

## Beliefs About Physical Activity Among Children Who Are Visually Impaired and Their Parents

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**Abstract:** This survey of 25 visually impaired children aged 10-12 and their parents investigated the value the parents placed on their children's physical activity and the barriers to physical activity that the children faced. The results revealed that as vision loss increased, parents' expectations for their children's ability to be physically active decreased, as did the children's views that physical activity is important or useful.

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The authors thank the American Printing House for the Blind for supporting this research.

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Maintaining an appropriate level of physical activity is associated with physical, mental, and social well-being (U.S. Department of Health & Human Services, DHHS, 2000). Children who engage in regular physical activity are more likely to have an active lifestyle in adulthood. Contrary to the common belief that children are "naturally" active, American children do not engage in levels of activity that are sufficient to maintain adequate fitness (DHHS, 2000). Unfortunately, children with disabilities may be even more physically unfit, because of both physical and psychosocial constraints (Longmuir & Bar-Or, 2000). Inactivity among children without disabilities has been linked to a variety of psychosocial factors, one of which is parents' beliefs and

behaviors regarding physical activity. Thus, placing value on children being physically active may be a foundation for children developing an interest in exercise and physical fitness activities later in life.

## **Value of physical activity**

The expectancy-value model, described by Eccles et al. (1983), has been used to help predict why children develop physical activity behaviors. Specifically, the model highlights a combination of individual and social influences that interact to predict one's future achievement choices and persistence with those choices. Social sources of influence include significant others' beliefs and behaviors regarding achievement choices. Specifically, significant adults' expectations and the value placed on children's achievement choices influence children's beliefs about the value of participating and the goals that children develop for these activities. For example, Jacobs and Eccles (1992) demonstrated that parents' perceptions of their children's abilities influence children's and adolescents' self- and task beliefs for sports and academic activities, and Dempsey, Kimiecik, and Horn (1993) found a positive relationship between children's perceptions of the value that their parents place on physical activity and the value that the children place on it. Furthermore, Anderssen and Wold (1992) reported that parental and peer physical activity levels and parental and peer support for physical activity influence the reported levels of physical activity of adolescents. On the basis of these findings, we believe that parents who expect that their children can be successful in a given physical activity and who value success in that domain are more likely to encourage their children to engage in physical activity.

However, this relationship has yet to be explored among families of children with disabilities, specifically children who are visually impaired (that is, are blind or have low vision). It is known,

however, that parents of children who are visually impaired lack an understanding of their children's ability to be physically active and often engage in overprotective behaviors in an attempt to assist them (Lieberman & Lepore, 1998; Longmuir, 1998; Nixon, 1988).

Several studies have reported that children who are visually impaired have lower levels of health-related fitness than do their sighted peers, although no significant difference has been found between the fitness scores of children with low vision and those who are blind (Kozub & Oh, 2004; Lieberman & McHugh, 2001). For some children, their first exposure to physical activity and fitness behaviors may be their schools' physical education classes. Some visually impaired children do not participate (either fully or at all) in physical education classes or extra-curricular sports (Robinson, Lieberman, & Rollheiser, 2005). In some cases, this lack of participation reflects the lack of experience of teachers in including children with disabilities. Specifically, fears about the children's safety; the priority placed on academic or other specialized services, such as orientation and mobility, over physical activities; and the lack of understanding of the meaning of being physically active have been identified by instructors who work with children with disabilities (McHugh, 1995; McHugh & Pyfer, 1999).

Robinson et al. (2005) examined why children with visual impairments aged 9-12 lacked the perceived ability to be physically active. The sports classifications (B1, B2, and B3) of the U.S. Association of Blind Athletes (n.d.) were used to group the participants. The B1 classification refers to individuals who are totally blind or have the ability to perceive light. The B2 classification (also called "travel vision") refers to those who have the ability to see forms to a visual acuity of 20/600 after best correction or a visual field of less than 5 degrees in the better eye, or both. The B3 classification refers to those who have a visual

acuity of 20/600 to 20/200 after best correction in the better eye or a visual field of less than 20 degrees and more than 5 degrees in the better eye, or both (that is, legal blindness). Thirteen children in the B1 category, 2 children in the B2 category, and 10 children in the B3 category answered questions about their attitudes toward general physical education and their knowledge of the goals of their physical education Individualized Education Programs (IEPs). The findings revealed that only 10% of the participants in the B1 group, 23% of those in the B2 group, and 14% of those in the B3 group knew the physical education goals and objectives in their IEPs. Thus, the majority of the participants had no understanding of the objectives of participating in physical education.

## **Barriers to physical activity**

Winnick (1985) noted that the various delays that students who are visually impaired experience within inclusive physical education are not necessarily associated with genetic limitations, but are predominantly the result of the discouraging behaviors of physical education teachers who do not afford these students optimal opportunities to participate in physical education activities. Robinson and Lieberman (2004) found that teachers, parents, and administrators make most of the decisions regarding all aspects of children's in-class activities, regardless of the level of the students' visual impairment, and that the children have few opportunities to make decisions for themselves at school.

Physical education teachers have also stated that their own fears and lack of education in working with children who are visually impaired have hampered their ability to help the children develop independent physical activity behaviors (Lieberman, Houston-Wilson, & Kozub, 2002; Suvak, 2004). Ponchillia, Strause, and Ponchillia (2002) found that the more actively involved in physical education a student with visual impairments is, the more

likely the student will be to participate in sports after school.

Successful physical activity experiences for children with disabilities (particularly as children move from basic movements to more dynamic sports and recreational activities) are contingent upon factors that are related to teachers' preparation and attitudes and perceived and actual barriers to instruction (Bouchard & Tetrault, 2000; Folsom-Meek, Nearing, Groteluschen, & Krampf, 1999; Hodge & Jansma, 1999, Sherrill, 2004). Children who are blind generally have fewer opportunities and incentives to engage in activities that provide the amounts and kinds of stimulation that are typical for sighted children (Gosch, Bambring, Gennat, & Rohlmann, 1997; O'Mara-Maida & McCune, 1996). These limitations result in delays in physical activity (Lieberman & McHugh, 2001); motor development (Celeste, 2002; Jan, Sykanda, & Groenveld, 1990; Pereira, 1990); and motor skills, particularly locomotor activities (Pereira, 1990; Sleenwenhoek, Boter, & Vermeer, 1995). Moreover, research has shown that when children who are visually impaired are given an equal opportunity to participate in regular physical activity, their physical fitness improves, and they exhibit levels of fitness that are comparable to those of sighted children (Blessing, McCrimmon, Stovall, & Williford, 1993; Ponchillia, Powell, Felski, & Nicklawski, 1992; Williams, Armstrong, Eves, & Faulkner, 1996).

Research on barriers to physical activity has also been conducted with young adults who are visually impaired. For example, Tepfer's (2002) study of the socialization of 31 elite athletes with visual impairment into competitive sports indicated that the biggest barriers to entry were the lack of others with which to participate, sighted guides, opportunities (programs), equipment, and negative perceptions of visually impaired athletes held by others.

Thus, lower expectations and value of physical activity by children who are visually impaired and the greater barriers these children face could exacerbate the deficits in physical activity that these children already experience compared to sighted children. For this study, value was conceptualized as the importance and usefulness of engaging in physical activity, based theoretically on the conceptualization of subjective task value by Eccles et al. (1983) and Bandura's (1986) self-efficacy theory, which highlights the influence of expectations for success in attempts to achieve a goal. Specifically, expectations for success in this study reflected the children's expectations that they could successfully engage in physical activity for a certain frequency during a one-week period. Bandura also contended that encouragement by significant others (such as parents) and the beliefs of significant others in the abilities of children with visual impairment were strongly related to children's beliefs about their own abilities in the physical domain.

Thus, the purpose of this study was twofold. The first purpose was to examine the relationship between parent and child variables concerning the physical activity of children with visual impairment. Specifically, the parent variables were the perceived value placed on the children's physical activity and the expectations of success for the children's physical activity. The children's own value for physical activity and expectations for success in the physical domain served as the child variables. The second purpose was to examine self-identified (parent and child) barriers and solutions to the children's ability to be physically active.

## **Methods**

### **Participants**

The 50 participants included 25 children (14 boys and 11 girls)

aged 10-12 who attended a one-week summer sports camp for children with visual impairment and the primary parent of each of child ( $n = 25$ ). The visual status of the children were categorized as B1 ( $n = 13$ ), B2 ( $n = 2$ ), and B3 ( $n = 10$ ), according to the sports classifications of the U.S. Association of Blind Athletes (n. d.). All the children were enrolled in inclusive general physical education classes during the school year. Because of the low number of children in the B2 group, these children were added to the B3 group and labeled legally blind. All the children were visually impaired and had no other disabilities. None of the parents had a visual impairment. No other demographic information was collected for the parents.

## **Procedures**

Each parent received a letter and a consent form in the mail one month before the camp began, requesting permission to have the child participate in an on-site interview at the camp and to consent to participate in the study as a primary parent. On the first day of camp, the parents filled out their questionnaire packet and provided the informed consent forms for their children's participation. Each child also completed an informed consent form in order to participate.

Each child completed the survey with one of the two main researchers. The survey interview was conducted at a time of day when the children were between activities in a quiet area of the dormitory on the camp site. The researchers were careful to ensure that the intended meaning of the questionnaire was understood. For the children who could not read on their own, each question was read to them, including the forced-choice Likert-scale response items. The scale was read in reverse order to determine social desirability bias. For example, the children were asked, "How much do you enjoy being physically active-- very much, somewhat, or not much at all?" The next time the

question was asked, the response categories were given in an order of "not much at all, somewhat, or very much." The interviews took an average of 20 minutes to complete.

## **Measures**

### ***Parents' demographic questions***

The parents were asked to complete a demographic section of their questionnaire that first asked them to describe the physical activities that their visually impaired children engaged in outside school. They were also asked to specify the level of their children's visual impairment, ranging from B1 to B3.

### ***Parent value inventory***

The two subscales that were adapted from the subjective task value inventory (Eccles et al., 1983) were used to measure the perceived importance and usefulness of the children's physical activity behaviors using two items per subscale. Examples of items included "How important is it that your child is physically active at least three times per week?" or "How useful is it for your child to be physically active?" A definition of physical activity was provided. A Likert scale, ranging from 4 (extremely useful) to 1 (not at all useful) served as the response scale. Cronbach's alpha coefficients of .90 and .95 were attained for the two parent subscales.

### ***Child value inventory***

Initial comments of orientation for the children included clarifying what the researchers meant by physical activity. Using the comments of orientation recommended by Anderssen and Wold (1992), the interviewer asked, "Outside school hours, can you describe to me the types of sports or exercise that you do until you are breathing heavy or you are sweating?" The



interviewer further clarified what was meant by physical activity by stating, "I am not talking about activities, such as shopping or playing with toys or computer games." When there was mutual understanding about the term *physical activity*, the interviewer read the main questions of the instrument.

Two subscales (attainment and utility value) from the subjective task value inventory (Eccles et al., 1983) were used, with two items per subscale. An example of a utility value item for the child's value question was, "How useful is it to you to participate in physical activity at least three times per week?" A Likert scale, ranging from 4 (extremely useful) to 1 (not at all useful) served as the response scale. An example of a child attainment question was, "How important is it to you to be physically active at least three times per week?" The response scale again ranged from 4 (extremely important) to 1 (not at all important).

With an alpha of .70 or greater, internal reliability has been demonstrated with each of the three subscales for students in Grade 5 and older (Eccles, Wigfield, Harold, & Blumenfeld, 1993), along with content and construct validity for Grades 5-8 and acceptable reliability. For this population, the reliability Cronbach's alpha coefficients ranged from .80 to .88 for the child subscales.

### ***Expectations for success inventory***

The parents were asked to answer questions about expectations that their children could be successful in being physically active on a regular basis. The questions aligned with a self-efficacy theory (Bandura, 1986) in measuring expectations across increasing levels of difficulty. Sample questions included, "I am certain that my child with a visual impairment can engage in physical activity (1) once per week, (2) three times per week, (3) five times per week, or (4) every day." The response scale

included a Likert scale, ranging from 1 (not at all certain) to 5 (somewhat certain) to 10 (extremely certain). This inventory has been used in previous investigations with children aged 9-13 and has demonstrated content validity (Dempsey et al., 1993; Jacobs & Eccles, 1992).

The children were asked the same series of questions regarding their own confidence in themselves to be physically active. Cronbach's alpha coefficients ranging from .93 to .97 were attained for the parent subscales. The reliability scores for the child subscale ranged from .78 to .88 for the expectations-for-success items.

### ***Barriers inventory***

The barriers inventory used an open-ended format consisting of several questions. One question asked the parents to describe all the "possible things that stop your child (with a visual impairment) from being physically active," and another asked them to describe "what you see as the possible solutions to these barriers." Orienting comments for the child included, "Sometimes things happen that stop kids from being physically active. I'd like to hear about things that stop you from being physically active." The children were also asked to identify things that they thought could help them to be more physically active (solutions).

## **Results**

### **Main analyses**

To determine if there were differences across levels of vision among the dependent variables of expectations for success and value for physical activity, a series of one-way analyses of variance (ANOVAs) were conducted. Significant differences were found across levels of vision, but only for the B2 and B3

groups. That is, the B2 group was not significantly different from the B3 group, but differed significantly from the B1 group. Thus, the 2 children in the B2 group were combined with the children in the B1 group to create two separate categories for the analysis, travel vision ( $n = 13$ ) and totally blind ( $n = 12$ ). The first ANOVA revealed significant differences for parents' expectations across level of vision:  $F(2, 22) = 16.46, p < .001$ . Specifically, as vision loss increased, parents' expectations for their children's ability to be physically active decreased. The children's own expectations for being physically active approached significance ( $p < .06$ ) and showed similar trends among the children, with children with total blindness having the lowest expectations for success. In terms of value, only the child value variable was significant across all levels of vision. Specifically, children with higher vision reported physical activity was more important and useful than did the children with less vision:  $F(2,22) = 4.85, p < .01$ .

Because of the small number of participants in each vision group, bivariate correlations were conducted to determine the relationship between the parent and child variables. Significant findings revealed a positive but moderate relationship among several parent-child variables. Specifically, there was a positive relationship between children's expectations for success and parents' expectations for success (.43). In other words, as the children's expectations about being physically active increased, so did the parents' expectations. A positive relationship was also found between the children's value for physical activity and the parents' expectations for success (.46). Thus, as the children placed more importance on being physically active, the parents' expectations that their children could engage in regular physical activity increased. A significant and positive relationship was also found between the children's own value and the children's expectations for their ability to engage in regular physical activity. Nonsignificant relationships included the relationship between children's expectations and the value that the parents

placed on physical activity.

## **Barriers inventory: Parents and children**

The parents were asked to list the "barriers to your child's participation in physical activity." The parents of children who were blind cited different barriers than did the parents of children with low vision. Specifically, the top three barriers listed by the parents of children who were blind were (1) possibility of injury from engaging in physical activity, (2) lack of activities for their children, and (3) inability of physical education teachers to assist their children (see [Table 1](#)). The top three -parent-identified barriers for children with low vision were (1) untrained physical education teachers, (2) the lack of peers to be active with, and (3) the lack of opportunities (see [Table 2](#)).

The children also completed their own barriers inventory with the assistance of a researcher. The barriers that they cited also differed by level of vision. Specifically, the children who were blind listed the following barriers most frequently: (1) being made fun of, (2) no activities to do, and (3) no one to do activities with. The children with low vision listed (1) not sure what to do, (2) no one to do activities with, and (3) people making fun of them. Several of the children with low vision ( $n = 5$ ) said that there were no barriers to their being physically active (see [Table 3](#)).

The parents and children were also asked about possible solutions to the barriers that they cited (see [Table 4](#)). Among some of the solutions that the parents listed were (1) having local organizations to support athletes who are blind and disabled, (2) having transportation, and (3) having more knowledgeable physical educators. The children most commonly talked about the following solutions: (1) having someone to be physically active with, (2) having peers who would not make fun of them, (3) having the opportunity to participate.

# Discussion

## Value of physical activity

This research examined the relationship between parents' and children's beliefs about the children's physical activity behaviors. Specifically, it examined the value of, and expectations regarding, physical activity by children who are visually impaired. In nondisabled populations, consistent relationships have been found between parents' beliefs and their children's beliefs about achievement behaviors (Jacobs & Eccles, 1992). Although the sample size of this study was small, the results also indicate a relationship between parents' beliefs and beliefs by their children with visual impairment. The results indicate that these children perceived messages from their parents about the value of physical activity, as well as what their parents expected that the children could accomplish in the physical domain. Therefore, it is important to understand the relationship between the beliefs of parents and children about attempts to achieve physical activity goals among families of children with disabilities, albeit using larger samples.

A consistent relationship between expectations for success and behavior has been well established in the literature, but little research on this topic has been conducted among populations with disabilities. The positive relationship between parents' higher expectations for their children's success and both the children's value for physical activity and level of vision warrants further investigation. Specifically, these results underscore the importance of parents attending to the messages, both verbal and nonverbal, that they send regarding their confidence in their children's abilities. The study found that as children's level of visual impairment increased (having more vision loss), the parents' confidence that the children could be physically active

decreased. The children's own expectations of their ability to be physically active were also relatively low and showed similar trends across vision level, with the children who were blind having the lowest expectations for success. In terms of value, as visual impairment increased, the responses of the children and parents indicated that physical activity was not as important or as useful as did the responses of parents and children with more vision.

### **Lower expectations and lack of opportunities**

It is not surprising that there was a link between the lack of opportunity and lower expectations for success. Regardless of ability, individuals need to have the opportunity to engage in attempts to master physical activities. However, lower expectations for children with disabilities may directly translate into significant adults providing fewer opportunities for mastery attempts. Therefore, both physical education teachers and parents need to be well educated about the possibilities for adapting activities for children with disabilities. The parents in this study, for example, identified barriers, such as the fear that their children would get hurt during physical activity and the belief that their children did not have the ability to be physically active--limiting beliefs and expectations that the children may have internalized. In addition, the lack of opportunities and the lack of peer involvement limit participation in activities, both in and out of school, which may lead to lesser self-determination, isolation, and loneliness (Robinson & Lieberman, 2004). The finding of the lack of activities, combined with no one to do activities with, is similar to Tepfer's (2002) finding that even elite athletes had a hard time finding opportunities for participation and peers with whom to engage in physical activity. Ponchillia, Strause, and Ponchillia (2002) also found that the more actively involved a student is in physical education, the more likely it is that the student will be involved in sports programs. Thus, future research may include

gaining an understanding of the opportunities that children who are visually impaired have in physical education classes and their involvement in organized sports.

## **Barriers to physical activity**

Researchers have begun to recognize the role that barriers play in deterring physical activity. The findings of this study are consistent with those of previous studies that found that more than 80% of children who are visually impaired perceived a limitation in their ability to engage in physical activity (Longmuir & Bar-Or, 2000). In contrast, other studies have found that with equal opportunity, the fitness of individuals who are visually impaired who engage in regular physical activity improves and that these individuals exhibit levels of fitness that are comparable to those of sighted individuals (Blessing et al., 1993; Ponchillia et al., 1992; Williams et al., 1996). The parents of the children who were blind in this study were fearful that their children would be hurt when engaging in physical activity. In addition, the parents identified barriers that exposed the need for regular physical education teachers to gain further knowledge about strategies for working with students with disabilities (Lieberman et al., 2002).

The barriers identified by the children who were blind included being made fun of, which is not uncommon. Nikolarazi, and Reybekiel (2001) reported that sighted children in inclusive education settings expressed a hesitation to interact with children who were blind. This lack of engagement and understanding may result in the fearful reactions of these children, which often causes them to ridicule children who are visually impaired. This common occurrence underscores the need for purposeful disability-awareness education.

Among some of the solutions that the parents identified were (1) having local organizations to support athletes who are blind or

have other disabilities, (2) having transportation, and (3) having more knowledgeable physical educators. The children talked about (1) having someone to be physically active with, (2) having peers who would not make fun of them, and (3) having the opportunity to participate.

## **Practical implications**

The practical implications of these findings include the need to provide disability-awareness programs. These programs could be implemented by schools to help minimize some of the misunderstanding among teachers and students that may lead to teasing and ridicule by students and teachers with low teaching efficacy for children with disabilities (Lieberman et al., 2002). A solid, inclusive physical education program may also increase opportunities for and the value of physical activity among children who are visually impaired. Teaching children how to modify activities and advocate for themselves may also help increase opportunities for participation. Finally, parent education programs and resources may help parents to learn about available opportunities for their children with disabilities to engage in sports and physical activity. Thus, the positive relationship between beliefs and behaviors that was found in this study supports the need for continued education and research to advocate for increased opportunities for physical activity for children with disabilities.

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