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Research in Developmental Disabilities
24 (2003) 281–305

Research
in
Developmental
Disabilities

Involvement in Special Olympics and its relations to self-concept and actual competency in participants with developmental disabilities

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Received 4 November 2002; received in revised form 15 January 2003; accepted 12 February 2003

Abstract

The current study examined the relations among components of a physical activity program, Special Olympics (SO), and the self-concepts (i.e., perceived physical competence, social acceptance, and general self-worth) and adaptive behaviors of individuals with developmental disabilities. This research can assist in the development of theoretical models of *how* physical activity programs can be implemented to effect psychological change. Participants consisted of a randomly selected group of 97 individuals with developmental disabilities, between 9 and 43 years of age, and their parents. Participants' self-concepts and adaptive behaviors were measured both by direct interview and parental report. Examined program components consisted of the length of time affiliated to the organization, number of competitions attended, of hours spent in training, of sports, and of medals obtained. Multiple regression analyses suggest relations between specific components of SO and participants' self-concepts and adaptive behaviors. These relations highlight the importance of competition and sport for individuals with developmental disabilities.

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Keywords: social acceptance; self-concepts; disabilities

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The importance of self-concept for psychological well-being has been known since the time of ancient Greek philosophy, when the Oracle at Delphi proclaimed to “know thyself” (Hattie, 1992), however, a relative dearth of attention has been paid to the self-concept of individuals with developmental disabilities (Evans, 1998). Self-concept is commonly viewed as the perception and evaluation of the self, and includes the beliefs, feelings, and intentions that a person holds in regard to self (Sherrill, 1993). It is not surprising that, when referring to self-concept, there are a number of terms that are used almost interchangeably, including self-esteem, self-worth, self-regard, and self-perception, which are all covered under this definition (Sherrill, 1993).

In general personality theory, self-concept is largely seen as a multidimensional construct of characteristics, competencies, attributes, and roles (Fox, 2000). The orthogenetic view of development (Werner, 1957) specifies that self-concept is global and undifferentiated early in development, becoming increasingly differentiated and hierarchically integrated with age. That is, while preschool age children hold a single, unstructured view of the self across salient areas of their lives, school age children demonstrate multiple, yet interrelated, perspectives of themselves that differ based on those relevant areas (Harter, 1983). This orthogenesis is thought to continue into adolescence, with still greater differentiation of self-aspects (Evans, 1994).

The majority of research has tended to view self-concept as a unitary, global construct, leading to an absence of measures designed to assess distinct aspects of the self (Evans, 1998). Research has shown that instruments that provide a global score can mask distinctions of the self that are relevant to children (Harter, 1985). One important alternative is the work by Harter (1982), who developed a self-report measure of self-concept that taps distinct aspects of the self that are important to children over 8 years of age. Four domains were identified: cognitive competence, physical competence, social acceptance, and general self-worth. Although reliable factors emerged for children over 8 years of age, analysis of a downward pictorial extension of the self-report measure revealed that children younger than 8 years fail to make similar distinctions (Harter & Pike, 1984).

In individuals with developmental disabilities, the development of self-concept may follow a similar sequence of orthogenesis, although its progression seems to be largely governed by developmental level. That is, individuals with mental retardation may show more global self-concepts than age-matched peers without delays (Dykens, Rosner, & Butterbaugh, 1998), and self-concept structures consistent more with their mental age equivalent (Evans, 1998; Fine & Caldwell, 1967; Loveland, 1987; Mans, Cicchetti, Sroufe, 1978). Similar to typically developing younger children, children aged 9–12 years with developmental disabilities (with IQs ranging from 55–85) fail to differentiate between their physical and academic domains and do not demonstrate the awareness of an independent sense of general self-worth (Silon & Harter, 1985). They are able, however, to differentiate between their sense of general self-competence and social acceptance. By adolescence, a more realistic self-concept appears to

develop in individuals with developmental disabilities (Widaman, et al., 1992), fitting with the developmentalist view (Evans, 1998).

1. Self-concept in relation to psychological well-being

In typical development, a positive view of the self has been linked to emotional stability and positive adjustment (Sonstroem, 1997), to independence and resiliency to stress (Wylie, 1989), and inversely related to mental illness (Baumeister, 1993). Similar to typically developing individuals, negative self-concept in individuals with developmental disabilities has been associated with anger and depression (Benson & Ivins, 1992; Dagnan & Sandhu, 1999) and with low motivation and anxiety (Silon & Harter, 1985; Zigler, 1971; Zigler, Balla, & Watson, 1972).

Children and adults with intellectual delays are particularly prone to developing negative self-concepts (Evans, 1998). Perceived intellectual inadequacy, repeated failures in academic and social domains, and prolonged stigmatization often experienced by individuals with developmental disabilities are all risk factors for poor self-efficacy and low self-esteem (Zigler & Hodapp, 1986). Indeed, whereas individuals with developmental disabilities might share similar self-concept *structures* to those of typically developing individuals of equivalent mental age, the *evaluations* of ideal self-images in children with developmental disabilities have been found to be more negative than matched peers without delays (Leahy, Balla, & Zigler, 1982; Zigler et al., 1972). As well, compared to typically developing mental and chronological age-matched individuals, adolescents with developmental disabilities express significantly more feelings of frustration and inadequacy, and may believe that their lives are uninteresting and empty (Levy-Schiff, Kedem, & Sevilla, 1990). It follows that young adolescents with intellectual delays have been found to report significantly more negative self-concepts in academic and non-academic domains than non-delayed peers (Widaman et al., 1992).

While cognitive factors seem to be important determinants in the structural and organizational development of self-concept, life experiences continue to heavily influence an individual's evaluative perception of the self (Zigler & Hodapp, 1986). As such, attempts must be made to explicate effective mechanisms with which to improve the self-concepts of individuals with developmental disabilities. One such avenue is to examine the role perceived competence plays in contributing to a sense of positive self-worth or self-concept.

1.1. Perceived competence

Perceived competence has been cited as one multidimensional component of self-concept (Harter, 1985; Weiss, 1986), and in both clinical and non-clinical populations, has been consistently associated with general self-worth and positive motivation (Harter, 1993; Harter, Whitesell, & Junkin, 1998; McGuire et al., 1999).

As individuals with developmental disabilities are often limited in their adaptive behaviors (i.e., their actual competencies), it seems highly relevant to examine their perceptions of competence when assessing their self-concepts. In their qualitative interviews of salient domains of self-concept in 48 adults with mild to severe mental retardation, [Zetlin and Turner \(1988\)](#) found that their perceived abilities to conform socially, to participate in activities, and to have competent interpersonal skills appeared to matter most in how respondents evaluated themselves. Thus, perceived feelings of competence in social and activity domains appear to be important for individuals with developmental disabilities. These findings corroborate [Silon and Harter's \(1985\)](#) 2-cluster factor analysis of the Perceived Competence Scale for Children, finding loadings on popularity and general competence in children with developmental disabilities.

1.2. Perceived social acceptance

A related construct that is important for an individual's self-concept is social acceptance. Childhood peer rejection, for example, has been linked to poor self-concept in typically developing adolescents ([McDougall, Hymel, Vaillancourt, & Mercer, 2001](#); [Rubin et al., 1995](#)). As well, a perception of group belonging has been hypothesized to act as a shield against negative social comparisons, which can otherwise lead to poor self-image ([Allen & Gilbert, 1995](#)). Similarly, individuals with developmental disabilities attribute greater life satisfaction to the presence of family and friends and active social lives ([Edgerton, Bollinger, & Herr, 1984](#); [Landesman-Dwyer & Berkson, 1984](#)).

Unfortunately, many individuals with developmental disabilities, while being physically integrated into the mainstream, still appear to be to a large extent socially segregated ([Hughes, Rodi, Lorden, Pitkin, Derer, Hwang, & Cai, 1999](#)). They often have smaller social support networks composed of more service providers and family, and less peers, than the networks of typically developing individuals, thus lacking in an important group ([Rosen & Burchard, 1990](#)). In an investigation of the quality of life of adults with developmental disabilities living in the community, [Schalock, Harper, and Carver \(1981\)](#) found that, along with importance of perceived functional skills and autonomy, respondents reported a consistent desire for more friends. Furthermore, the deficiency in peer relationships in the lives of individuals with developmental disabilities can be partly attributed to what some authors refer to as a social skills "Catch 22" ([Hughes et al., 1999](#)). Because of limited social competence and cognitive skills, individuals with developmental disabilities are often excluded from many common peer situations, and consequently may have less opportunity to learn the social skills needed for effective interactions, resulting in isolation and an inability to function successfully in the social environment ([Anderson, Grossman, & Finch, 1983](#)).

There is reason to expect that increasing the network of peer contacts can promote healthy self-concepts in individuals with developmental disabilities. In their evaluation of the effects of a 6-week play-oriented physical development program on the self-concept and interpersonal relationships of 74 children with

developmental disabilities (with ages ranging from 4 to 17 years), Johnson, Fretz, and Johnson (1968) suggest that “newly formed relationships and self-confidence gained in the clinic program most likely permitted [participants], in postclinic evaluation, to see themselves in more interpersonal relationships even in the unstructured situation” (p. 564).

1.3. Actual competencies

Consequently, along with fostering perceived social acceptance by increasing the network of peers affiliated with individuals with developmental disabilities, enhancing social competence might indirectly lead to a greater sense of group belonging. While there exists a distinction between perceived feelings of competence and actual competency, the latter may be positively related to self-concept, as improving adaptive abilities may lead to increased perceptions of competence and consequently to a more positive self-concept in individuals with developmental disabilities (Dykens et al., 1998; Gresham & MacMillan, 1997).

2. Improving perceived competence, perceived social acceptance, and actual competency through physical activity programming: the case of Special Olympics

One possible way to improve the self-concept of individuals with developmental disabilities may be through the implementation of physical activity programs that serve to enhance participants’ actual competency while at the same time addressing issues of perceived competence and social acceptance. Research suggests that individuals with developmental disabilities are sensitive to changes in their environment in ways that impact their self-concepts (Schurr, Towne, & Joiner, 1972), and as such, programs that enhance perceptions of competence and social acceptance may contribute to more positive self-concepts in these individuals.

With typically developing individuals the benefits of exercise on psychological functioning have been demonstrated empirically for many years. The International Society of Sport Psychology (ISSP, 1992) published a position statement, congruent with the views of the American National Institute of Mental Health (see Morgan & Goldston, 1987), concluding that benefits of physical activity include “positive changes in self-perceptions and well-being [and] improvement in self-confidence and awareness” (p. 88). However, little conclusive evidence of psychological benefit exists for individuals with developmental disabilities.

Gabler-Halle and colleagues (1993) have reviewed the literature on the effects of aerobic exercise on the intellectual functioning, behavior, and self-concept in individuals with developmental disabilities. Research has demonstrated a consistent positive relation between exercise and behavioral management, including effects on stereotypic behavior, maladaptive behaviors, and work performance. However, the generalizability of results is limited due to typically very low sample

sizes (i.e., usually five participants or less) and a lack of comparison groups. In terms of the effects of physical exercise on self-concept, detailed research is lacking and results are thus far mixed. Not surprisingly, literature reviews have called for more controlled empirical research examining the effects of physical activity on psychological functioning in individuals with developmental disabilities (Gabler-Halle, Halle, & Chung, 1993; Lancioni & O'Reilly, 1998).

Special Olympics (SO) may be an ideally suited organization for effecting change in people with developmental disabilities, including changes in participant self-concept and competency (Lancioni & O'Reilly, 1998). Although theoretically plausible, surprisingly little empirical research has evaluated the psychosocial benefits of SO on participants (Dykens & Cohen, 1996). The majority of research focusing on SO has been limited to anecdotal reports, program evaluations, and needs assessment of the programs (Riggen, 1992). Songster (1984), former director of International Special Olympics, has claimed that SO competition contributes to the physical fitness and psychological well-being of participants. More recently, Klein, Gilman, and Zigler (1993) surveyed the attitudes held toward SO by both parents of Special Olympians, and by experts in the field of developmental disabilities. Most experts surveyed felt that SO was a beneficial program, enhancing the self-esteem, confidence, independence, and socialization of participants, and promoting community understanding of people with disabilities. Not only did parents strongly agree that SO was beneficial for social adjustment and life satisfaction; they added that the program enhanced levels of family support, involvement, cohesiveness, and understanding. Unfortunately, empirical research to substantiate these beliefs is lacking.

A handful of studies have examined the relation between self-concept in individuals with developmental disabilities and SO involvement. There is some data to suggest that participants experience significant change in general self-concept over 8- to 10-week training periods (Castagno, 2001) and compared to a non-participatory control group (Wright & Cowden, 1986). Others have measured the perceived competence and social acceptance of children with developmental disabilities following a 1-1/2-day SO track and field competition, finding significant improvement in competing participants' feelings of physical competence and peer acceptance, compared to pre-competition measures and to a non-participation comparison group (Gibbons & Bushakra, 1989). Although some research has found significant change, other studies have found non-significant trends or no improvement over time (Edminston, 1990; Maiano, Ninot, & Errais, 2001; Ninot, Bilard, Delignieres, & Sokolowski, 2000; Ninot, Bilard, & Sokolowski, 2000; Riggen & Ulrich, 1993).

One of the strongest investigations demonstrating the potential benefits of SO was conducted by Dykens and Cohen (1996). One hundred and four Team USA participants were assessed at the 1993 International World Games, through both direct interview and parental and coach reports. The authors adopted a "three-pronged approach" developed by Cook and Reichardt (1979). First, participants' actual competencies and self-perceptions were examined in relation

to age, IQ, and years in SO. Results indicated that, regardless of IQ or age, the time spent in SO was positively associated with participants' actual levels of social competence as rated by parents. While there were no significant relations with participants' self-concept and variables pertaining to involvement in SO, Special Olympians did have significantly better self-concepts and greater social competence and adaptive behaviors than a well-matched group of non-participating peers with developmental disabilities, results that were maintained over time since competition. Such results support the hypothesis that SO can improve participants' social skills, and perhaps indirectly improve their perceptions of social acceptance.

Such triangulated results add credence to the assertion that participation in SO positively influences participants' psychological well-being. At the same time, there are limits in Dykens and Cohen's study that are addressed in the present research. Namely, the Team USA participants are not necessarily representative of the majority of participants within SO, and thus limit the generalizability of results. All Team USA members were randomly selected from 6000 gold medallists who won in their sport at the state level. The disadvantage to selecting such a successful sample is that it tells us very little about how the average Special Olympian is influenced in terms of psychological well-being. Furthermore, studying gold medal winners makes it difficult to differentiate between the effects of SO participation and the effects of optimal success. The question remains to whether all effort and success, even at the local level, contributes to self-concept and adaptive behavior.

The present study is an attempt to build upon the preliminary results of past research by improving sample representativeness and by examining the relation between various components within SO on participant self-concept and actual competency. As Dykens and Cohen (1996) astutely highlight, there has been no investigation into the components within SO that might be instrumental in effecting positive change. Determining components within the physical activity program that predict positive self-concept and actual competency can help direct program development by highlighting the relative importance of various aspects of the athletic experience, distinguishing between social, competitive, and training components. As well, such knowledge can serve as the basis for developing theoretical mechanisms to explain *how* these programs might effect change.

This research examines the relations between participant self-concepts and actual competencies and SO components that reflect length of time in the organization, physical skill development, the promotion of accomplishment, and the enhancement of social interactions, social skills, and friendship. For example, in addition to measuring involvement in SO by the number of years, it is highly relevant to examine more direct reflections of skill development (e.g., number of hours/week training; number of sports), of competition (number of competitions), and of recognized accomplishment (number of medals and ribbons won). In addition, these various components may be differentially related to distinct domains of an individual's self-concept, namely their general self-worth, perceived physical competence, and perceived social acceptance.

Along with presenting information on participants' ratings of their own self-concepts, this study inquires into how mothers and fathers view their children's self-concepts. It has been noted that different conceptualizations of self-concept can emerge depending on whether direct interviews with individuals with developmental disabilities are undertaken or if alternative informants are assessed, such as parents or teachers (Finlay & Lyons, 2001). Previous research has suggested that parental attitudes towards the self-concept of a child with a disability may be mediated by the amount of autonomy afforded to participants, and participants' opportunity to participate in "ordinary" activities (Jahoda, Markova, & Cattermole, 1988). By assessing participants, mothers and fathers, this study provides insight into the reliability of parents' views of their children's self-concepts, and into components of SO that may be important for parental views of their children. The applied and theoretical benefits of this study are most relevant by continuing where the most methodologically sound study left off (i.e., Dykens & Cohen, 1996)—by examining the relation between SO components and the self-concept and competencies of a highly representative group of individuals with developmental disabilities.

3. Method

3.1. Participants

Ninety-seven (64 males, 33 females) participants from Ontario Special Olympics and their parents (90 mothers and 56 fathers) were involved in the study. The 97 participants were derived from a randomly selected sample of 150 members of Ontario Special Olympics, resulting in a 65% participation rate. A major strength of the present research was its attempt to be as representative as possible of the Ontario SO population. As such, participants were sampled from regional Special Olympics chapters across Ontario, as well as across ability levels, ages, disabilities, and type of sport. In contrast to prior research, participants were selected regardless of their level of success with SO. Although the current sample represents a highly accurate portrayal of SO participants at the community level, participants were required to be in regular contact with at least one parent or legal guardian. A One-sample Kolmogorov-Smirnov test of normality indicated that age was normally distributed, $Z = .89$, $p = .41$, ranging from 9.3 to 42.5 years, with an average age of 24.9 years ($SD = 8.6$). Participants' IQ scores, as assessed using the Kaufman Brief Intelligence Test (K-BIT; Kaufman & Kaufman, 1990), were also normally distributed, $Z = 1.14$, $p = .15$, ranging from 40 to 90, with a mean score of 53.9 ($SD = 12.7$).

The vast majority of participants lived with at least one parent ($n = 85$), whereas 12 were split between residential care and independent living. Parents were asked to report any diagnosis given to participants. Some diagnoses, which occurred only once in the entire sample, were collapsed into "Organic Specified Other", and include such genetic causes of intellectual impairment such as

Table 1
Breakdown of sample by diagnosis in percents

Diagnosis	Percent of sample (%)
Downs Syndrome	35
Developmental Delay—Unknown	34
Organic specified—Other	11
Cerebral Palsy	5
Autism/PDD	5

SOTOS or Williams Syndrome. Table 1 reflects the percent of participants that fell within each diagnostic category. Findings are therefore representative of a heterogeneous group of individuals. While Cerebral Palsy does not in and of itself reflect a developmental disability, its noting by numerous parents warrant its inclusion.

In terms of involvement in Special Olympics, participants were involved with the organization for a mean of 9.5 years ($SD = 6.7$), ranging from .5 to 27 years. Athletes trained with SO for an average of 4.2 hr per week ($SD = 2.4$), ranging from 1 to 11 hr. Athletic participation in SO ranged from 1 to 8 sports, with 3 sports being average ($SD = 1.8$). Individuals were involved in various high active (e.g., Swimming; $n = 85$), low active (e.g., Bowling; $n = 74$), team (e.g., Soccer; $n = 65$), and individual sports (e.g., Gymnastics; $n = 89$). Whereas past research has focused on elite participants competing at the international level of competition (e.g., Dykens & Cohen, 1996), athletes in the present study have experienced varying degrees of success at five levels of competition (from local to international). Participants experienced a mean total number of 34 ($SD = 44$) competitions.

3.2. Measures

3.2.1. Demographic information and involvement in Special Olympics

Participant involvement in Special Olympics was assessed by parental completion of a demographic questionnaire that elicited information regarding individual characteristics (e.g., age, sex, type of disability), Special Olympics involvement (e.g., number of years in SO, of sports, of medals, and of competitions), and family characteristics (SES, family educational background, ethnicity).

3.2.2. IQ

Participants' cognitive abilities were assessed using the K-BIT (Kaufman & Kaufman, 1990). Of the 97 participants, 82 were administered the brief intelligence test. The K-BIT is a motor-free individually administered screener of verbal and nonverbal intelligence. Internal consistency reliabilities average .94 for the overall K-BIT IQ Composite, .93 for the Vocabulary subtest, and .88 for the Matrices subtest. Test–retest reliabilities are also strong (Vocabulary: .86–.97, Matrices: .80–.92, and IQ Composite: .92–.95).

3.2.3. *Self-concept*

In accordance with Ridden and Ulrich's (1993) and Harter's (1985) recommendations, multiple components of participants' self-perceptions were examined using a modified version of the Perceived Competence Scale for Children (Harter, 1982), deemed the Perceived Competence Scale for Special Athletes (Ridden, 1992). Despite being normed on typically developing children, the Perceived Competence Scale for Children has been used successfully to assess the self-concept of individuals with developmental disabilities (Glenn & Cunningham, 2001; Marsh, 1990; Silon & Harter, 1985). For the present study, wording on the children's version was modified to be age-appropriate for use with adults with intellectual disabilities and demonstrates good internal consistency, Chronbach alpha = .89, and test-retest reliability, $r = .86$ (Ridden, 1992; Ridden & Ulrich, 1993).

The children's measure consists of 28-items comprising four subscales (7 items/subscale): Cognitive competence, physical competence, social acceptance, and global self-worth. Because there is no theoretical reason for participation in Special Olympics to influence perceptions of scholastic competence, the modified version of the scale consists of 21 items equally reflecting the domains of general self-worth, social acceptance, and physical competence. All testing with participants was done in an interview format. Participants were first required to choose the statement that most reflected themselves (i.e., the high or low competence statement), and then to indicate the degree to which the statement was true (e.g., "Sort of true" or "Really true"). Items are counterbalanced to reduce the likelihood of socially desirable responses. Of the 82 participants interviewed, 62 gave consistent and reliable answers on the Perceived Competence for Special Athletes items. Along with investigating participants' self-perceptions of competence, we asked both parents (when possible) to complete the measure about their child in the study. Of the 97 families, 71 mothers and 42 fathers separately completed this questionnaire in reference to the participant in question.

3.2.4. *Competence*

Competence was assessed by the Adaptive Behavior Scales- Residential and Community Edition, Second Edition (ABS-RC2; Nihira, Leland, & Leland, 1993). This measure of adaptive functioning, by parental report, examines nine skill domains and seven maladaptive behavior domains, and is one of the most commonly used measures of adaptive functioning in individuals with developmental disabilities. The 16 domains load onto one of five main factors, three adaptive (Personal Self-Sufficiency, Community Self-Sufficiency, Personal-Social Responsibility) and two maladaptive (Social Adjustment, and Personal Adjustment).

The five factors represent relatively distinct areas of participants' actual competence. *Personal Self-Sufficiency* refers to an individual's ability to take care of themselves on a daily basis. These items involve taking care of one's home, preparing meals, doing laundry, moving about in the community, and being

intact intermodally and motorically. *Community Self-Sufficiency* reflects an individual's ability to function in society through their competence in using community resources. This factor reflects an individual's skills to communicate, handle money, maintain a clean home, and tell time, all skills necessary for normalization into society. *Personal–Social Responsibility* represents participants' competence in maintaining healthy interpersonal relationships, such as caring for others and participating in group activities. Thus, high scores on this scale indicate an individual's ability to conform to society's interpersonal demands. *Social Adjustment* reflects aggressive, antisocial, and inappropriate interpersonal behaviors, and individuals who score low on this scale often act out, are rebellious, and are unpredictable in their relationships. Finally, *Personal Adjustment* reflects behaviors that are autistic, stereotyped, and maladaptive, but not antisocial or aggressive towards others. Individuals who score low on this factor demonstrate more inappropriate interpersonal manners such as excessive touching or kissing and hyperactive and self-injurious behavior.

The ABS-RC2 was standardized on over 4000 individuals with developmental disabilities ranging in age from 18 to over 60 years. For participants under the age of 18, the ABS-School edition was used, with norms for individuals with developmental disabilities between 3 and 18 years of age. The five factors demonstrate good test–retest reliability, $r = .82-.98$, and internal consistency, Chronbach alpha = $.92-.99$.

3.3. Procedures

Participants met individually with a researcher and were interviewed using the Perceived Competence Scale for Special Athletes (Riggen & Ulrich, 1993), followed by the K-BIT (Kaufman & Kaufman, 1990). The principal researchers traveled to participants' cities within a 12-week period and met with participants and their parent(s). The entire interview took between 40 and 60 min, and all participants appeared to enjoy the experience.

Prior to meeting with the athlete, participants' parents were mailed a package that included the demographic questionnaire, the ABS-RC2, and a copy of the Perceived Competence Scale for Special Athletes (for parents to complete).

4. Results

Preliminary analyses examined the relations between SO components (the number of Years in the organization, of Competitions, of Sports, of Hours per week training, and of Medals and ribbons obtained) and participants' self-concepts, parental views of participants' self-concepts, and participants' actual competency, by means of Pearson product-moment correlation. As not all parents reported information on all components, individual sample sizes for each component are reported. Components found to be significantly correlated with the self-concept and actual competency variables were in turn entered as

predictors into stepwise multiple regression analyses. Participant age and IQ were controlled for in all multiple regression analyses by entering them on the 1st step, regardless of their correlations to the dependent variables.

For clarity, results are divided based on the variable of interest, namely (a) participants' self-concepts, (b) parental views of participant self-concepts, and (c) participants' actual competencies. As well, tables reporting multiple regression results report only the final models' outcomes. No significant differences in gender were noted in athlete involvement in competition, self-concept, or adaptive behaviors.

4.1. Relations between participant self-concept and Special Olympics components

4.1.1. General Self-Worth

As displayed in Table 2, participants' general self-worth was positively correlated to the number of Years in SO, Competitions, and Medals, and negatively correlated with IQ. When the correlated components were entered in a stepwise manner into the equation, only the number of competitions emerged as a significant predictor. The overall model was found to account for 22% of the variance, $F(3, 36) = 3.47$, $p < .05$, whereas the number of Competitions accounted for 11% unique variance. Table 3 reports the multiple regression results for age, IQ, and the correlated component(s) that resulted as being significant predictors based on the stepwise procedure.

4.1.2. Perceived Physical Competence

Participants' perception of their physical competence was positively associated with the number of Years, Sports, Competitions, and Hours per week (see Table 2). When these components were entered into the multiple regression analysis in a stepwise manner, both the number of Years and number of Sports emerged as significant predictors in an overall model that accounted for 30% of the variance, $F(4, 49) = 5.34$, $p < .01$. As shown in Table 3, only the number of

Table 2
Pearson product-moment correlations between participant self-concept domains and Special Olympics components

	General Self-Worth	Physical Competence	Social Acceptance
Age	.19 (61)	.15 (61)	.02 (61)
IQ	-.26* (61)	-.11 (61)	-.27* (61)
Years	.37** (61)	.35** (61)	.20 (61)
Sports	.19 (61)	.30* (61)	.09 (61)
Competitions	.43** (46)	.31* (46)	.17 (46)
Medals	.39* (44)	.16 (44)	.39* (44)
Hours per week	.07 (61)	.29* (61)	.29* (59)

* $p < .05$.

** $p < .01$.

Table 3
Multiple regression results of participants' self-concepts and Special Olympics components

Self-concept domains	SO components	<i>B</i>	<i>t</i>	<i>p</i>	<i>R</i> ²
General Self-Worth	IQ	-.19	-1.29	ns	
	Age	.02	.10	ns	
	Competitions	.39	2.22	.03	.11
Physical Competence	IQ	-.11	-1.14	ns	
	Age	-.23	-1.30	ns	
	Years	.56	3.11	.003	.14
	Sports	.35	2.95	.005	.12
Social Acceptance	IQ	-.20	-1.16	ns	
	Age	-.19	-1.31	ns	
	Competitions	.42	2.57	.01	.14

Years and the number of Sports were significant predictors, respectively, accounting for 14 and 12% of the unique variance.

4.1.3. *Perceived Social Acceptance*

Participants' perception of their social acceptance was negatively correlated to IQ, and positively correlated with the number of Medals and number of Hours per week training in SO. When entered in the multiple regression analysis in a stepwise manner, only the number of Medals emerged as a significant predictor in an overall model that accounted for 22% of the variance, $F(3, 36) = 3.34, p < .05$. As shown in Table 3, it was the only significant variable, accounting for 14% unique variance.

4.2. *Relation between parental perceptions of participant self-concept ratings and mother and father ratings of participant self-concept*

Initial analyses of parental perceptions examined whether mothers and fathers differed from each other in their views of their children's self-concepts, and whether mother and father ratings differed from participants' self-concept ratings, through separate Paired samples *t*-tests. Table 4 presents the mean self-concept ratings for participants, mothers, and fathers, out of a possible high score of 28, and the Paired samples *t*-test results. Findings indicated that mothers and fathers did not significantly differ from each other in their ratings of their children's General Self-Worth, $t(38) = .11$, Physical Competence, $t(38) = -1.02$, or Social Acceptance, $t(38) = .73$, all *ps* > .05. As shown in Table 4, participant ratings of their own self-concepts were consistently significantly higher than mother and father ratings.

4.3. *Relations between mother and father ratings of participant self-concept and Special Olympics components*

The relations between mother and father ratings of their children's self-concepts and Special Olympics components were first investigated with Pearson

Table 4

Paired samples *t*-test results of participants' self-concept ratings in comparison to mothers' and fathers' ratings

Self-concept domains	Participant ratings (<i>n</i> = 61)	Mother ratings (<i>n</i> = 71)	<i>t</i> (df)	Father ratings (<i>n</i> = 42)	<i>t</i> (df)
General Self-Worth					
<i>M</i>	23.3	20.9	-3.42** (46)	20.9	-1.80 ⁺ (29)
SD	3.51	4.04		4.00	
Physical Competence					
<i>M</i>	22.3	17.5	-7.54** (46)	18.0	-5.11** (29)
SD	3.99	4.17		4.16	
Social Acceptance					
<i>M</i>	22.9	20.7	-3.56** (46)	20.9	-2.11* (29)
SD	4.17	4.08		4.00	

⁺ *p* < .10.

* *p* < .05.

** *p* < .01.

product-moment correlations. Because no Special Olympics components were significantly related to fathers' ratings of Social Acceptance or to mothers' ratings of General Self-Worth, no multiple regression analyses were conducted on these variables.

4.3.1. Mother ratings of Physical Competence

As shown in Table 5, the number of Sports, number of Hours per week, and number of Medals won were positively related to how favorably mothers rated their children's sense of Physical Competence. When these components were entered in a stepwise manner into the equation, after forcing in participant Age and IQ, both the number of Medals and Sports emerged as significant

Table 5

Pearson product-moment correlations of mother and father ratings of participant self-concept

	MGSW	FGSW	MPC	FPC	MSA	FSA
Age	-.25* (71)	-.22 (42)	-.07 (71)	-.15 (42)	.09 (71)	-.02 (42)
IQ	-.16 (62)	-.13 (39)	-.20 (62)	-.24 (39)	-.10 (62)	.09 (39)
Years	-.10 (71)	.11 (42)	.13 (71)	-.08 (42)	.14 (71)	.06 (42)
Sports	-.03 (71)	.45** (42)	.33** (71)	.49** (42)	-.06 (71)	.06 (42)
Competitions	.07 (51)	.08 (33)	.11 (51)	.10 (33)	.32* (51)	.11 (33)
Medals	.13 (49)	.14 (29)	.32* (49)	.13 (29)	.27* (49)	.00 (29)
Hours per week	-.10 (69)	.18 (41)	.23* (69)	.43** (41)	.01 (69)	.07 (41)

MGSW: mother ratings of participant General Self-Worth (GSW); FGSW: father ratings of participant GSW; MPC: mother ratings of participant Physical Competence (PC); FPC: father ratings of participant PC; MSA: Mother rating of participant Social Acceptance (SA); FSA: father rating of participant SA.

* *p* < .05.

** *p* < .01.

Table 6
Multiple regression results of parental ratings of self-concept and SO components

Self-concept domains	SO components	<i>B</i>	<i>t</i>	<i>p</i>	<i>R</i> ²
MPC	Age	-.25	-1.90	.06	.04
	IQ	-.18	-1.41	ns	
	Sports	.44	3.54	.001	.19
	Medals	.37	2.73	.009	.11
MSA	Age	-.12	-.71	ns	
	IQ	-.04	-.26	ns	
	Competitions	.37	2.21	.03	.10
FGSW	Age	-.27	-1.85	.07	.07
	IQ	-.09	-.60	ns	
	Sports	.46	3.18	.003	.21
FPC	Age	-.21	-1.46	ns	
	IQ	-.19	-1.37	ns	
	Sports	.49	3.42	.002	.24

MPC: mother ratings of participant PC; MSA: mother rating of participant SA; FGSW: father ratings of participant GSW; FPC: father ratings of participant PC.

predictors. The overall model was found to account for 35% of the variance, $F(4, 44) = 5.82$, $p < .001$, where the number of Sports accounted for 19% of unique variance, and the number of Medals won accounted for 11% (see Table 6).

4.3.2. Mother ratings of Social Acceptance

Both the number of Competitions and number of Medals were significantly correlated to mother rating of Social Acceptance, and were entered into a stepwise multiple regression analysis (Table 5). Results indicated a non-significant overall model, $F(3, 45) = 1.89$, $p > .05$, but that the number of Competitions was a significant predictor, accounting for 10% of unique variance (see Table 6).

4.3.3. Father ratings of General Self-Worth

Fathers' ratings of their children's General Self-Worth were significantly correlated to the number of Sports they participated in. When the number of Sports was entered into a multiple regression after forcing in Age and IQ, it remained a significant predictor, in an overall model accounting for 28% of variance, $F(3, 35) = 4.45$, $p < .01$. As shown in Table 6, the number of Sports accounted for 21% unique variance within the model.

4.3.4. Father ratings of Physical Competence

Fathers' ratings of their children's perceived Physical Competence were significantly associated to the number of Sports and number of Hours per week. When the correlated components were entered into the multiple regression analysis, number of Sports emerged again as a significant predictor, in an overall model that accounted for 28% of the variance. As shown in Table 6, the number of Sports accounted for 24% of unique variance.

Table 7

Pearson product-moment correlations between participants' actual competencies and SO components

	ABS1	ABS2	ABS3	ABS4	ABS5
Age	.15 (81)	.40** (77)	.30** (77)	.17 (84)	.32** (82)
IQ	-.09 (74)	.35** (71)	.35** (70)	.08 (74)	.10 (72)
Years	.19 (81)	.35** (77)	.35** (77)	.23* (84)	.30** (82)
Sports	.18 (81)	.22* (77)	.16 (77)	.03 (84)	.23* (82)
Competitions	.40** (54)	.44** (52)	.35** (53)	.33* (57)	.38* (56)
Medals	.34* (54)	.34* (52)	.36** (51)	.18 (55)	.42** (53)
Hours per week	.05 (80)	.04 (76)	-.01 (76)	.04 (83)	.10 (81)

ABS1: Personal Self-Sufficiency; ABS2: Community Self-Sufficiency; ABS3: Personal–Social Responsibility; ABS4: Social Adjustment; ABS5: Personal Adjustment.

* $p < .05$.

** $p < .01$.

4.4. Relations between participant actual competencies and Special Olympic components

4.4.1. Factor 1: Personal Self-Sufficiency

The variables related to participants' Personal Self-Sufficiency were the number of Competitions and number of Medals won (see Table 7). When the number of Competitions and Medals were entered in the second block in a stepwise fashion, number of Competitions emerged as a significant predictor, with the overall model accounting for 14% of the variance, $F(3, 46) = 2.99$, $p < .05$. As shown in Table 8, the number of Competitions was the only significant predictor within the model.

Table 8

Multiple regression results of participants' actual competencies and SO components

ABS domains	SO components	<i>B</i>	<i>t</i>	<i>p</i>	<i>R</i> ²
ABS1	IQ	-.01	-.04	ns	
	Age	-.09	-.55	ns	
	Competitions	.44	2.72	.009	.14
ABS2	IQ	.43	3.69	.001	.13
	Age	.19	1.44	ns	
	Competitions	.41	2.99	.004	.13
ABS3	IQ	.39	3.20	.002	.15
	Age	.17	1.28	ns	
	Competitions	.35	2.68	.01	.12
ABS4	IQ	.14	1.09	ns	
	Age	-.03	-.17	ns	
	Competitions	.36	2.34	.02	.09
ABS5	IQ	.18	1.34	ns	
	Age	.18	1.29	ns	
	Medals	.38	2.67	.01	.12

ABS1: Personal Self-Sufficiency; ABS2: Community Self-Sufficiency; ABS3: Personal–Social Responsibility; ABS4: Social Adjustment; ABS5: Personal Adjustment.

4.5. Factor 2: Community Self-Sufficiency

As shown in Table 7, participants' community self-sufficiency was found to be positively related to Age, IQ, number of Years in Special Olympics, Sports, Competitions, and Medals. When these components were entered in the stepwise multiple regression analysis, results indicated that the number of Competitions was the only significant component within an overall model that accounted for 37% of the variance, $F(3, 46) = 10.48, p < .001$. Within the model, however, only IQ and the number of Competitions emerged significant (see Table 8). After controlling for age and IQ, number of Competitions was found to account for 13% of the unique variance.

4.5.1. Factor 3: Personal–Social Responsibility

Participants' Personal–Social skills were positively related to Age, IQ, number of Years in SO, Competitions, and Medals. Once again, when these variables were entered in a stepwise multiple regression, results indicated that the number of Competitions was the only significant component selected, in a model that accounted for 32% of the variance overall, $F(3, 47) = 7.43, p < .001$. Within the model, only IQ and Number of Competitions emerged significant (see Table 8). After controlling for age and IQ, the number of local competitions accounted for 12% of unique variance associated with participants' ability to demonstrate interpersonal responsibilities.

4.5.2. Factor 4: Social Adjustment

As shown in Table 7, the number of Competition and Years in SO were the only variables related to participants' social adjustment. As such, when the number of Competitions and Years were entered into the stepwise multiple regression, only Competitions was selected as a significant predictor, with the overall model accounting for 13% of the variance, $F(3, 53) = 2.54, p = .07$, and only the Number of Competitions was a significant predictor within the model (see Table 8), accounting for 9% of unique variance.

4.5.3. Factor 5: Personal Adjustment

As shown in Table 7, participants' personal adjustment was positively related to Age, number of Years in SO, Sports, Competitions, and Medals. When entered in the stepwise multiple regression, only the number of Medals emerged as a significant predictor of athletes' personal adjustment, with an overall model accounting for 23% of the variance, $F(2, 46) = 4.69, p < .01$. Specifically, only the number of Medals was found to be a significant predictor within the model, accounting for 12% of unique variance (see Table 8).

5. Discussion

By examining and comparing the relations among numerous Special Olympics components and participant self-concept and adaptive behavior, this study is the

first to attempt to determine the mechanisms of change within a physical activity program for individuals with developmental disabilities. While previous studies supported the hypothesis that involvement in Special Olympics promoted positive self-concept and competence in participants by using quasi-experimental pre–post designs or by correlating the length of enrolment in the organization with variables of interest (Castagno, 2001; Dykens & Cohen, 1996; Gibbons & Bushakra, 1989; Wright & Cowden, 1986), none reported on the components within programming instrumental in improvement. This research therefore offers empirical data to support and encourage the development of theoretical models of *how* physical activity programs can be implemented to effect psychological and behavioral change beyond improving physical fitness (Gabler-Halle et al., 1993). Further, the present study utilizes the most representative sample of Special Olympics participants in research to date, randomly selecting from local chapters across Ontario. As such, the study readily addresses calls for “further work on the social and emotional features of a broader range of athletes in this widely known international program” (Dykens & Cohen, 1996, p. 227), with findings generalizable to most individuals who participate in Special Olympics.

In assessing multidimensional aspects of participants’ self-concept, findings indicate that different Special Olympics components are related to various facets of an individuals’ view of the self. While the length of time in Special Olympics, the number of medals won, and the number of total competitions were all related to athletes’ sense of general self-worth, only the latter of the three was found to be a significant predictor. The more athletes participate in competition, from local to international level events, the more positive their general self-worth, after controlling for age and IQ. Whereas it may be that the better an athlete feels about him or herself, the more competitions they choose to participate in, research has shown that competition, when combined with peer acceptance, parental support, and a positive coaching style, can lead to improvements in athlete self-esteem (Hines & Groves, 1989; Shephard, 1983). It has been argued that participating in competitions increases an athlete’s sense of self-worth because it represents personal effort, the act of doing more than winning, and successfully meeting the challenges of a task (Gibbons & Bushakra, 1989; Harter, 1978), and because “with success comes confidence, and with confidence comes the sense of self-worth and accomplishment” (Songster, 1984, p. 75). In school-aged typically developing children, competition has been linked to high self-esteem when it is related to task mastery and not to the desire to outperform peers (Roberts & Treasure, 1992; Tassi, Schneider, & Richard, 2001), a context similar to the competitive spirit espoused by Special Olympics.

Factors other than competition appear to be important determinants when examining perceptions of physical competence and social acceptance. Specifically, the length of time in Special Olympics and the total number of sports were found to be significant predictors of how positive athletes rate their physical competence. Similarly, in typically developing children and adolescents, self-perceptions of physical competence have been positively associated to their level

of physical activity (Crocker, Eklund, & Kowalski, 2000) and to the number of sports they participate in (Feltz & Petlishkiff, 1983). Each sport, with distinct task demands, requires that athletes develop a new and ultimately more diverse repertoire of skills, which could serve to enhance their sense of physical mastery. As well, the greater the amount of time individuals are affiliated with a sports organization, the more firmly defined their role as an athlete becomes, which may contribute to a more positive sense of physical competence.

In terms of the self-perception of social acceptance, the number of medals won was the only Special Olympics component to be a significant predictor. It is highly possible that in the case of Special Olympics, the number of medals won does not truly reflect the amount of winning athletes achieve. Athletes are given medals, ribbons, or trophies for participating in competition, not merely for winning, and as such the number of medals may instead be better defined as the tangible reinforcement of effort by coaches, parents, and peers. Such concrete representations of approval and effort, especially from the often-scant peer networks, may serve to reinforce participants' sense of social acceptance.

In sum, different aspects of an athlete's experience in Special Olympics are linked to different facets of the self, highlighting the various pathways from which one may influence self-concept. In addition, by measuring involvement in Special Olympics through variables that reflect competition, skills development, and recognition of effort, as well as through length of time, these results may answer why some studies fail to find significant relations between participation in Special Olympics and self-concept (Dykens & Cohen, 1996; Ninot, Bilard, Delignieres, et al., 2000; Rikken & Ulrich, 1993). While the lack of significance may be partly due to an inconsistent definition of self-concept and measures assessing global self-worth as opposed to domain-specific self-perceptions (Harter, 1985), it may also be due to researchers' operational definition of "involvement" or "participation". Indeed, the present study suggests that looking at participation through individual experiences within the sports program, such as the number of competitions or sports experienced, may be more relevant than the number of years that athletes are affiliated with the organization.

This study also examined the relations between Special Olympics involvement and parental views of athlete self-concept, by asking mothers and fathers to rate their children's sense of general self-worth, perceived physical competence, and social acceptance. Whereas the present research replicated findings of no discrepancy between mother and father ratings of children with developmental disabilities (Bruce & Schultz, 1994), parents consistently underestimated their children's self-concept. Such results support the notion that parental or third-party measures used to assess the self-concept of individuals with developmental disabilities may be methodologically unsound (Finlay & Lyons, 2001). Although it provides information into how parents of children with disabilities evaluate their children's self-concepts, the current study indicates that parental perceptions may not accurately depict actual self-concept.

As with athletes' self-ratings, parental views of their children's self-concepts were not related to Special Olympics components reflecting length of time.

Instead, the number of sports athletes participate in was found to be a consistently important Special Olympics component in predicting how parents rate their children's self-concept. For mothers, the more sports and the more medals won by their children, the better they see their children's sense of physical competence. For fathers' ratings of their children's physical competence, the total number of sports that the athlete is involved in appears to be important. As well for fathers, the number of sports was predictive of their views of their children's general self-worth. Finally, the more competitions athletes participate in, the more positive mothers rate their children's sense of social acceptance. Therefore, it appears that parents of athletes who experience a more diverse range of sport, more competition, and more tangible recognition of effort, view their children's self-concepts more favorably than parents of less involved athletes.

While past research has found a link between length of time in Special Olympics and social and activity competence (Dykens & Cohen, 1996), the present analysis compared different components of Special Olympics in predicting personal and social competency. After adjusting for age and IQ, and relative to other correlated variables such as the length of time and the number of sports, only the number of competitions experienced emerged as a significant predictor on all three adaptive behavior factors and on the Social Adjustment factor, which together measure abilities in personal, community, and social domains. This consistency highlights the importance of looking at the amount of competition individuals can experience, especially taking into account more available and frequently occurring local-level events, in influencing an individual's actual competence. In conjunction with past research that supports the hypothesis that involvement in Special Olympics promotes competence (Dykens & Cohen, 1996), the present research suggests that the experiences of competition may mediate such influence.

These findings are congruent with suggestions within the field of therapeutic recreation that task-related competition be utilized to promote skills development in individuals with mental retardation (Dattilo, 1991; Miles, 1985). In fact, even playing conventional board games such as "Sorry", which foster healthy competition and cooperation, have been shown to promote social skills in adults with mild and moderate retardation (Foxy, McMorrow, & Schloss, 1983). As well, prior research on typically developing children has found positive relations between involvement in competitive situations and school adjustment and social skills (Tassi & Fonzi, 2001). Participating in competitions may increase the availability of contexts that allow for the practice of skills required in daily living, such as personal self-care, and of social skills, and may remedy the skills deficit found in past research (i.e., the "Catch 22"; Anderson et al., 1983; Hughes et al., 1999).

Because no random assignment was used, however, it may be that the above findings represent a selection bias where athletes more skilled in activities of daily living and the social arena are more capable of participating in competition and more quickly selected by their coaches to attend, especially at levels that demand an ability to travel fairly independently. Experimental research using controlled assignment is needed to yet determine the causal influence of competition within a

sports program on the skills development of participants with developmental disabilities. Given the consistent importance of competition, sport, and tangible reinforcement presented in this study, future endeavors would do well to manipulate these variables in a controlled manner to study their effects on self-concept and competence. Moreover, while the present research studied the most representative sample of participants in Special Olympics to date by using random selection, with findings generalizable across ability level, disability, age, and degree of involvement in the organization, the majority of the sample consisted of individuals who lived at home with at least one parent. Future research is needed to test whether similar findings hold for athletes whose primary caregiver is someone other than a parent and who live in more institutionalized settings (e.g., group home placements).

Although correlational, this research is the first to explicate the “active ingredient[s]” (Dykens & Cohen, 1996, p. 228) within Special Olympics programming linked to self-concept and actual competency. In so doing, practitioners working in the field of developmental disabilities are encouraged to infuse their programs with factors empirically linked to positive general self-worth, perceptions of physical competence and social acceptance, and to their clients’ actual level of competence. Namely, educators and others would be best able to promote positive self-perceptions and personal and social competence in participants by integrating competition and tangible recognition of effort into their programs.

Acknowledgments

This research was supported by Ontario Special Olympics, Inc., and by a scholarship from the *Fonds de la Recherche en Santé du Québec* (Fonds FCAR) to the first author and an *Ontario Graduate Scholarship* to the second author. The authors wish to thank April Sullivan and the anonymous reviewer for their helpful comments and the many families in Ontario Special Olympics for their participation.

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