

Perceived Physical Competence and Actual Motor Skill Competence of African American Preschool Children

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This study examined the relationship between perceived physical competence and actual motor skill competence in African American preschool children at risk of school failure and/or developmental delay ($N = 59$). A secondary purpose was to determine gender differences and the accuracy of self-perceptions. All children completed a perceived physical competence subscale (Harter & Pike, 1984). Actual motor skill competence was measured by Ulrich's (1985) Test of Gross Motor Development (TGMD), resulting in three scores (locomotor, object-control, and TGMD-Total). Stepwise regression analysis revealed that locomotor competence ($p = .99$) and gender ($p = .81$) did not predict perceived physical competence, but object-control competence ($p = .01$) did significantly predict perceived physical competence. Adding gender to this regression model did not significantly predict perceived physical competence ($p = .69$). These findings showed that these children are not accurate at perceiving their physical competence.

Key Words: At-risk preschool children, perceived physical competence, motor skill competence.

Over the past decade, competence motivation has been a prevalent topic of research in the psychomotor domain (Bandura, 1977; Bukowski & Moore, 1980; Burton & Martens, 1986; Duda, 1987; Feltz & Brown, 1984; Feltz & Petlichkoff, 1983; Harter, 1981, 1982; Harter & Connell, 1984; Harter & Pike, 1984; Horn & Hasbrook, 1986, 1987; Klint & Weiss, 1987; Nicholls, 1984, 1989; Roberts, 1975, 1984; Roberts, Kleiber, & Duda, 1981; Roberts & Pascuzzi, 1979; Rudisill, 1989; Rudisill, Mahar, & Meaney, 1993; Ulrich, 1987; Weiss, 1987; Weiss & Horn, 1990). Most of this research is based on Harter's (1978, 1982) developmental model of competence motivation. According to this model, perceptions of competence and social acceptance are basic variables contributing to the development of achievement motivation. Harter suggests that perceived competence is not a global ability

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but rather multidimensional or specific to domains. Children as young as age 4 show differences in motivation by domain (Harter, 1978, 1982; Harter & Pike, 1984). Children who perceive themselves to be highly competent at an activity or skill will persist longer and continue to attempt to master a skill. On the other hand, children who perceive themselves to possess low competence will not persist and will lose interest in the activity (Rudisill, 1989).

Harter proposes that actual competence is a contributing factor to a child's motivation, although its influence is not as strong as perceived competence (Harter, 1978, 1982). If a child is unaware of actual personal competence, abilities may be over- or underestimated (Ulrich, 1987). Overestimation may lead to unrealistic expectations and unsuccessful outcomes. Experiencing failure when a task is not perceived as difficult may result in low perceived competence (Harter, 1982). Likewise, a child underestimating actual competence may have low expectations for future competence, and this may negatively influence performance outcomes and motivation to persist. Therefore, it seems reasonable to assume that the way children perceive their physical competence will influence their motives to achieve and persist in movement activities.

Researchers have addressed the importance of perceptions of competence and the accuracy with which children perceive their own competence (Harter, 1982; Harter & Cornell, 1984; Harter & Pike, 1984; Rudisill et al., 1993; Ulrich, 1987). These studies have found that children between the ages of 5 and 11 years can assess their motor skill competence, but they are not very accurate at these self-perceptions. Researchers have suggested children's perceptions remain relatively constant (high) while their actual competence improves, resulting in more accurate perceptions (Rudisill et al., 1993; Ulrich, 1987).

Rudisill et al. (1993) studied the relationship between perceived and actual motor competence of typically developing 9-, 10-, and 11-year-old children. Regression analysis revealed that the relationship between actual and perceived motor competence was moderately correlated. Adding age to the multiple regression model significantly increased the multiple correlation, whereas adding gender to the model did not increase the correlation. Older children demonstrated higher levels of actual motor competence than younger children; yet data indicated no differences in perceived motor competence. In other words, as the ages of the children increased, actual motor competence increased and perceived motor competence remained the same. Rudisill et al. (1993) concluded that perceived competence is a function of actual motor competence and age, and this finding can be generalized to boys and girls. Other researchers investigating the accuracy of children's perceptions have reported similar results to those of Rudisill and colleagues (Harter, 1981; Ulrich, 1987). These studies found that, at age 8, accuracy plateaus off to a moderate level until approximately age 12. Ulrich (1987), who assessed children's (grades K-4) sport-related perceived competence and actual physical competence, found no differences between age groups on accuracy in the children's perceptions. Similarly, studies have found that children, 5 years of age, report high self-perceptions of physical competence but demonstrate low actual motor skill performance (Goodway-Scheibler, 1994; Overby, Branta, Goodway, & Smith, 1994; Ulrich, 1987).

To date, no studies have investigated the accuracy of perceived physical competence of African American preschool children who are at risk of school failure. There is a great need to better understand this population since practitioners have

documented concern with regard to their level of self-esteem. This concern is so great that prekindergarten curriculum goals (Fisher, Hansberry, Murtaugh, & Burtley, 1991) and educational reform efforts in urban school districts specifically cite the need to address improving the self-esteem of children who are at risk of school failure and/or developmental delay.

Therefore, the purpose of this study was to examine the relationship between actual motor skill competence and perceived physical competence of African American preschool children who are at risk of school failure and/or developmental delay. The relation to achievement motivation supports the importance of understanding accuracy in perceptions of physical competence. Because all children are involved in psychomotor learning during their early years, the accuracy with which they judge their competence must be known so the negative effects of inaccurate perceptions may be avoided. Discrepancies between perceived physical competence and actual motor skill competence may negatively influence children's motivation to achieve and persist in physical activities (Ulrich, 1987). National health objectives have identified the need to increase physical activity patterns in targeted populations. The African American population and low-income, at-risk population have been specifically targeted in Healthy People 2000 as needing to increase physical activity levels and persist in lifelong physical activity (U.S. Department of Health and Human Services, 1992; McGinnis & Lee, 1995; Pate et al., 1995). If these objectives are to be met, it is important to understand factors that may affect persistence in physical activity patterns. Perceived and actual motor skill competence are two such factors.

A secondary purpose of this study was to determine if gender differences for actual motor skill competence and perceived physical competence exist. Also, the accuracy of self-perceptions for males and females representing this population was examined. It was hypothesized that males would report higher perceived physical competence and demonstrate higher actual motor skill competence than females. However, it was suggested there would be no gender differences with regard to the accuracy of perceived physical competence and actual motor skill competence (Rudisill et al., 1993).

Studies investigating gender differences of predominately White children (ages 8 to 13) have found that males report higher perceived physical competence than females (Feltz & Brown, 1984; Harter, 1981; Maul & Thomas, 1975; Rudisill et al., 1993; Ulrich, 1987). Past findings also have demonstrated gender differences on actual motor skill competence (DiNucci, 1976; Glassow, Halverson, & Rarick, 1965; Kane & Meredith, 1952; Latchaw, 1954; Morris, Williams, Atwater, & Wilmore, 1982; Rudisill et al., 1993; Ulrich, 1987). These studies showed that boys' average performance usually exceeded the average performance of girls on power and force tasks, whereas girls usually performed better on balance and motor control tasks.

Rudisill et al. (1993) examined gender differences for perceived and actual motor competence. The results of the study showed that boys had higher perceived competence than girls. Similar gender differences were found for actual motor competence. Specifically, males performed better than females at motor competence (locomotor and object-control) activities. A more interesting point is that the results from the multiple correlation did not suggest that the boys were more aware of their actual motor competence than the girls. In other words, one sex did not

over- or underestimate their actual motor competence more than another. Both males and females tended to overestimate their motor competence.

Determining the accuracy with which young children perceive motor skill competence is important with regard to achievement motivation and motor competence (Harter, 1978). Further, African American children who are at risk of school failure and/or developmental delay are susceptible to health risks and educational failure. For this reason, it is imperative that researchers and practitioners learn more about their self-perceptions and actual competence.

Method

Participants

Participants were selected from three schools in a large urban Midwestern school district, situated in an industrial city with a high level of unemployment, poverty, and crime. The participants predominately lived in single-parent households with low family income and low parental educational attainment. Refer to Table 1 for participant demographic information.

Participants ($N = 59$) were chosen from a compensatory prekindergarten program that served African American, 4-year-old children who were identified as at risk of becoming educationally disadvantaged and/or developmentally delayed. Participants were all children enrolled in four intact classes within this program. Informed consent for involvement in the study was obtained for all children in the four intact classes. Eligibility for the program was based on identification of state-defined risk factors (Office of Compensatory Programs, 1991b) and the score on an objective-

Table 1 Demographic Information for Participants and Family

	%	<i>M</i>	<i>SD</i>	Range
Age (years)		4.74	0.31	4.00–5.25
Risk factors		5.54	1.71	2–11
Preschool readiness test score (max = 20)		5.11	3.11	0–9
Developmentally immature	72.7			
Single-parent family	74			
Maternal age (years)		28.48	5.74	21–43
Receive welfare	80			
Unemployed	69.5			
Maternal education level		11.87	1.18	9–16 grade
Mothers with GED (Graduate Equivalency Diploma)	77			
Paternal education level		11.68	1.52	5–16 grade

Note. $N = 59$.

referenced preschool readiness test (Office of Compensatory Programs, 1991a). The following list describes the risk factors that were identified by the state:

1. Serious concern expressed by a parent, primary caregiver, or professional regarding a child's development, the parent's style of parenting, or parent-child interaction.
2. Parent or primary caregiver with chronic or acute mental illness, developmental disability, or mental retardation.
3. Parent or primary caregiver with drug or alcohol dependence.
4. Parent or primary caregiver with a developmental history of loss and/or abuse.
5. Family medical/genetic history characteristics.
6. Parent or primary caregiver with severe chronic physical illness.
7. Acute family crisis.
8. Chronically disturbed family interaction.
9. Parent-child or primary caregiver-child separation.
10. Adolescent mother.
11. Parent has four or more preschool children.
12. Family income up to 200% of federal poverty guidelines.
13. Presence of one of the following: parent education less than ninth grade, neither parent employed, single parent.
14. Physical or social isolation and/or lack of adequate social support.
15. Lack of stable residence, homelessness, or dangerous living conditions.
16. Inadequate family health care or no health insurance.
17. Limited prenatal care.
18. Maternal prenatal substance abuse.
19. Severe prenatal complications.
20. Severe perinatal complications.
21. Asphyxia.
22. Very low birth weight.
23. Small for gestational age.
24. Bronchopulmonary dysplasia.
25. Excessive irritability, crying, or tremulousness on the part of the infant.
26. Atypical or recurrent accidents involving the child.
27. Chronic otitis media (inflammation or infection of the middle ear).

To determine children eligible for the program, readiness tests and risk-factor interviews were administered by the classroom teachers who were trained by the school district to undertake these procedures. The objective-referenced preschool readiness test (Office of Compensatory Programs, 1991a) included: (a) cognitive objectives, such as language development and counting; (b) affective objectives, such as trust, self-esteem, and emotional awareness; and (c) psychomotor objectives, such as running and scissors cutting. The maximum possible score for this test was 20 points. The children selected for the program, and subsequently for our research, were those with the lowest preschool readiness test score and the greatest number of risk factors. Once identified, the children participated in a half-day compensatory prekindergarten program, which focused on cognitive and social-affective objectives. Motor objectives were part of the curriculum, but only fine motor components, such as scissors cutting and painting, received substantial instructional time. No professional or structured physical education experiences were provided to the children.

Instrumentation

Perceived Physical Competence. The Harter and Pike (1984) Pictorial Scale of Perceived Competence and Social Acceptance (PSPCSA) for preschool and kindergarten children was used to assess perceived physical competence. The African American version of the PSPCSA (Harter & Pike, 1984) was used in which the children depicted in the picture plates were African American children rather than White children.

The PSPCSA contains four separate subscales (cognitive competence, physical competence, peer acceptance, and maternal acceptance), but only perceived physical competence was studied. The perceived physical competence subscale consists of six items (swinging, climbing, tying shoe laces, skipping, running, and hopping) represented by pictures that measure a child's perceptions of physical competence. Each item contains two separate pictures side by side. One picture depicts a child who is competent, and the other shows a child who is not so skillful. The child's task is to first select the picture which is most like him or herself. Then, the child focuses on that picture and indicates whether he or she is just a little bit like that child or a lot like that child. Scores were as follows: 1 representing a poorly skilled child "a lot like him/her"; 2 representing a poorly skilled child "a little like him/her"; 3 representing a skilled child "a little like him/her"; and 4 representing a skilled child "a lot like him/her."

Internal consistency reliability of the physical perceived competence subscale with preschool children was .66, and validity was claimed because interviews with children revealed that their self-perceptions were based on behavioral referents (Harter & Pike, 1984).

Actual Motor Competence. The Test of Gross Motor Development (Ulrich, 1985) was used to assess actual competence. This 12-item test includes seven locomotor skills (run, leap, jump, hop, gallop, slide, skip) and five object-control skills (throw, catch, strike, kick, bounce). TGMD yields scores for two subscales (locomotor, object-control) and a combined score of locomotor and object-control skills called the TGMD-Total score. The lowest possible score for each subscale and the total scale is zero. The highest possible score is 26 for the locomotor subscale, 19 for the object-control subscale, and 45 for the TGMD-Total score.

Raw scores from the locomotor and object-control subscales were used rather than standard scores. The investigators believed that actual competence toward mastery of the motor skills—as indicated by the raw score—portrays a more accurate indicator of children's perceived physical competence than does a standardized score. Standardized scores account for age differences, whereas raw scores do not. If a 4-year-old child were comparing him or herself to a 5-year-old child, it seems unlikely that the child would consider chronological differences in motor skill performance. Typically, the young child compares him or herself with others on the basis of mastery of a skill, regardless of age. Therefore, the investigators selected raw scores for the analyses.

Mean test-retest reliability coefficients were reported to be .96 for locomotor items and .97 for object-control items. Interrater reliability coefficients were comparable to the reliability coefficients (Ulrich, 1985). Content validity was established via assessment of the appropriateness of the items for preschool- and elementary-aged children by three motor development experts, and construct validity was established by factor analysis (Ulrich, 1985).

Procedure

The PSPCSA scale and the TGMD were individually administered by a female investigator to each participant in a quiet room away from distractions. A standardized test protocol was used to administer the PSPCSA (Harter & Pike, 1984) and the TGMD (Ulrich, 1985). The time to administer the TGMD and the PSPCSA was 20 min per child.

Results

Analyses were conducted to determine the following for African American pre-school children who were at risk of school failure and/or developmental delay: (a) gender differences in perceived physical competence and actual motor skill competence; (b) the relationship between perceived physical competence and actual motor skill competence; and (c) the relationship between perceived physical competence and actual motor skill competence with regard to gender.

Table 2 gives the means and standard deviations contrasted by gender for perceived physical competence and the three TGMD (locomotor, object-control, and TGMD-Total) actual motor skill competence scores. The locomotor mean scores translated to a percentile rank of 5 for males and 9 for females. The mean percentile rank for object-control scores was 16 for males and 5 for females.

Four separate ANOVAs were conducted to determine potential gender differences in perceived physical competence and actual motor skill competence (locomotor, object-control, and TGMD-Total). ANOVA documented that the boys and girls did not differ in perceived physical competence, $F(1, 57) = 0.427$, $p = .52$. Gender by locomotor competence, $F(1, 57) = 1.96$, $p = .17$, and TGMD-Total, $F(1, 57) = 0.73$; $p = .40$, were also not significant. The object-control component of actual motor skill competence differed for gender $F(1, 57) = 10.91$, $p < .001$. The boys' actual object-control motor skill competence exceeded the girls'.

Low correlations were found between perceived physical competence and locomotor ($r = .03$, $p = .82$), object-control ($r = .18$, $p = .18$), and TGMD-Total ($r = .12$, $p = .37$). Two separate stepwise regression analyses were conducted to ex-

Table 2 Means ($\pm$ SD) of Perceived Physical Competence and Actual Motor Skill Competence by Gender

Variable	Males ($n = 30$)	Female ($n = 29$)
Perceived physical competence	$3.32 \pm .37$	3.26 ± 0.39
Locomotor	10.43 ± 2.50	11.38 ± 2.69
Object-control*	3.93 ± 2.15	2.28 ± 2.50
TGMD-total	14.43 ± 3.69	13.62 ± 3.60

Note. *Significant at $p < .0001$.

amine the relationship between perceived physical competence and actual motor skill competence. The first analysis (see Table 3) revealed that neither locomotor competence or gender significantly accounted for variance in perceived physical competence.

The second analysis (see Table 4) indicated that object-control competence was significantly predictive of perceived physical competence ($p = .01$), whereas gender was not ($p = .69$).

Discussion

One purpose of this study was to determine if gender differences exist for perceived physical competence and actual motor competence for African American preschool-aged children. The results of the study showed that there were no gender differences for perceived physical competence. In contrast, results from earlier studies have found gender differences for perceived physical competence among typically developing children, ages 5 years and older (Feltz & Brown, 1984; Harter, 1981; Maul & Thomas, 1975; Rudisill et al., 1993; Ulrich, 1987). It appears at this age that African American children who are at-risk do not demonstrate gender differences in their self-perceptions of physical competence.

It is important to note that the perceived physical competence mean scores for this sample of at-risk males and females are not low in comparison to other children of the same age (Harter & Pike, 1984; Ulrich, 1987). The overall mean score for perceived physical competence was 3.32 for males and 3.26 for females (4.0 is the highest possible score for the perceived physical competence scale). These findings concur with the results of Harter and Pike (1984) who reported preschool subscale means ranging between 3.00 and 3.40. For the children in this

Table 3 Stepwise Regression Coefficients for Locomotor Competence and Gender on Perceived Physical Competence

Variable	<i>R</i>	<i>R</i> ²	<i>R</i> ² change	<i>F</i>	<i>p</i>
Locomotor	.001	.001	.001	.001	.999
Gender	.088	.008	.008	.217	.805

Table 4 Stepwise Regression Coefficients for Object-Control Competence and Gender on Perceived Physical Competence

Variable	<i>R</i>	<i>R</i> ²	<i>R</i> ² change	<i>F</i>	<i>p</i>
Object-control	.332	.110	.110	7.051	.010
Gender	.336	.113	.003	0.164	.687

study, feelings of physical competence are high in contrast to school district stereotypes which suggest that all children who are at risk of developmental delay and/or school failure possess low feelings of physical competence. Causgrove Dunn and Watkinson (1994) reported similar findings in that children demonstrating high levels of physical awkwardness did not report lower perceived competence than less physically awkward children. In the Causgrove Dunn and Watkinson study, participants reported low perceptions of physical competence relative to the children in the present study. Participants in both studies performed low in actual motor competence but did not report low perceived competence when compared to same age children.

The only significant gender difference found was for the object-control component of actual motor skill competence. Males performed better than females on object-control skills. It appeared with this sample of children that boys had practiced object-control skills more than girls. For example, boys demonstrated more familiarity with object-control vocabulary and skills than girls (specifically skills related to basketball). Interestingly, the regression analysis did not suggest that the boys were more aware of their actual motor skill competence than the girls. In other words, one sex did not over- or underestimate their actual motor skill competence more than another. Both males and females demonstrated low levels of actual motor skill competence, yet reported high perceptions of competence. This result suggests that both males and females overestimated their actual motor skill competence. This finding is similar to those found by Rudisill et al., 1993.

The primary purpose of this study was to determine the relationship between actual motor skill competence and perceived physical competence for African American preschool children who are at risk of school failure. The correlation between perceived physical competence and actual motor skill competence factors indicates that the children were not accurate at perceiving their motor skill competence.

Harter (1978), Ulrich (1987), and Rudisill et al. (1993) also found low to moderate correlations between perceived physical competence and actual motor skill competence. Harter (1982) found that the accuracy of children's perceptions improved until approximately 8 years of age. At that point, accuracy plateaus off to a moderate level until approximately age 12. When considering explanations as to why preschool children are not accurate assessors of their motor competence, the four psychological constructs that contribute to the development of perceived competence (Harter, 1978) and cognitive development (Piaget, 1955) should be considered. Harter proposes that competence motivation is based on four constructs: (a) past experiences, (b) difficulty or challenge associated with the outcome, (c) reinforcement and personal interactions with significant others, and (d) intrinsic motivation. Making evaluations of past experiences and outcomes, determining task or activity challenge, and interpreting personal interactions requires higher level cognitive functioning (Piaget, 1955). From a developmental perspective, it may be that children ages 4 and 5 years possess the cognitive abilities necessary to observe and acknowledge these personal and situational experiences; however, they are not capable of synthesizing all the information into an accurate conclusion regarding their competence (Piaget, 1955). Children in this study were in the preoperations stage of cognitive development and should not be capable of synthesizing and evaluating information until the concrete operations stage.

The children's family and community environment may be another contributing influence as to why the young children are not highly accurate at estimating

motor skill competence or proficient in the performance of fundamental motor skills. Data collected on these subjects, as part of a larger study (Goodway-Scheibler, 1994), indicated that the children had been exposed to minimal experiences in physical activity. Physical activity was not positively reinforced by parents. Outside activity was considered dangerous due to the presence of drugs and gangs, and inside activity was discouraged due to cramped living quarters. As a result of these factors, it may be that these children were not given the movement experiences necessary to develop their motor skill performance and accurate perceptions of competence. If provided with experience, instruction, and instructional feedback, perhaps children as young as age 4 years can more accurately assess their motor skill competence. This notion should be investigated in the future.

It was concluded that African American preschool children who are at risk of school failure and/or developmental delay are not capable of perceiving their own motor skill competence accurately. Because perceived physical competence is an important factor for achievement motivation in physical activity and sports (Harter, 1981; Nicholls, 1984; Weiner, 1985), it is necessary to provide children with movement instruction and opportunities designed to develop positive and accurate self-perceptions of competence. This is of particular importance given that Healthy People 2000 identified low-income groups and/or African American populations as target populations needing to increase physical activity (U.S. Department of Health and Human Services, 1992). One intervention strategy may be to provide developmentally appropriate motor skill programs designed to enhance perceived competence through developing actual motor skill competence (Goodway & Rudisill, 1996). It can be suggested that without actual motor skill competence, perceived physical competence will drop dramatically when children are capable of making more accurate assessments (at approximately age 8) of their own motor skill competence (Harter, 1981). Another intervention strategy may be to provide a psychological intervention to improve perceptions of competence. Theeboom, Dekriop, and Weiss (1995) demonstrated an intervention of this nature by manipulating motivational climate, resulting in more positive experiences for participants. Future research should investigate developmentally appropriate interventions on actual motor skill competence and perceived physical competence of children who are at-risk in order to develop the skills and attitudes for a lifetime of physical activity.

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