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## Original Articles

# Preliminary Development of the Children's Physical Self-Concept Scale

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**ABSTRACT.** The development of a healthy eating style and physical fitness regimen in adolescence or adulthood might be contingent on physical self-concept in childhood. Most available measures of physical self-concept are inappropriate for use with 1st and 2nd grade children, so the present study developed, piloted, and partially validated the 27-item Children's Physical Self-Concept Scale (CPSS), which assesses Global physical self-concept and subscales of Physical Performance, Physical Appearance, and Weight Control behaviors in children 6 to 11 years of age. The test exhibits adequate test-retest reliability and internal consistency. A comparison of 316 normal and overweight children indicated that normal-weight children obtained higher Global physical self-concept scores and higher subscale scores. In addition, the CPSS distinguished test groups of diabetic, overweight, and normal-weight children in a contrasted-groups analysis. *J Dev Behav Pediatr 19:1–8, 1998.* Key words: *obesity, physical appearance, physical performance, self-concept, weight control.*

Interest in children's development of physical self-concept stems primarily from research suggesting that perceptual body size or shape distortions are related to eating disorders.[1-4] The generation of information pertaining to the development of physical self-concept of young children should prove useful in preventing eating disorders. Also, information concerning physical self-concept might help adults to prevent young people with normal body sizes from undertaking or continuing dieting behaviors that could jeopardize their nutritional status and predispose them to eating disorders.[5-7]

Physical self-concept is conceptually distinct from the construct of body image. Body image pertains more directly to affect-bound evaluations of physical appearance.[8-10] For instance, children might report that they perceive themselves as being overweight (relating to physical self-concept) and then report that being overweight is distressing (pertaining to body image). A positive association does not necessarily exist between physical self-concept and body image, and neither construct is necessarily related to objective measures such as weight status.[9,11]

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In addition to its relationship to eating disorders, physical self-concept, particularly in children, is a contributing factor in the development of overall self-concept.[12,13] For instance, Fisher and Cleveland[14] noted that children's dissatisfaction with their bodies, in general, had adverse effects on their global self-concepts. Studies of 3- to 5-year-old children[15] and 5- to 8-year-old children[16] suggest that perhaps one dimension of global self-concept in children is a physical self-concept dimension, i.e., physical performance. Furthermore, Burnett[17] and Boivin et al[18] argue that from grades 2 to 7, physical appearance is the greatest contributor to overall self-concept. Moreover, physical self-concept seems to be relatively stable throughout childhood.[19]

A review of the current measures of physical self-concept for children indicates a number of weaknesses.[9] First, the strongest limitation in the existing literature is the inability of current measures to assess physical self-concept in children in the 1st and 2nd grades. The Piers-Harris Children's Self-Concept Scale,[20] the Multidimensional Self-Concept Scale,[12] and the Childrens' Eating Attitude Test[21] all require a 3rd-grade reading level or better. Given the strong influence that physical self-concept is posited to have on overall self-concept in this age group,[17,18] the lack of a measure of physical self-concept for 1st and 2nd graders is unfortunate.

Second, many of the extant measures of children's physical self-concept were standardized on samples unrepresen-

tative of children in the United States. For instance, the Self-Description Questionnaire–I[22] was normed on primary school children from Australia, and the Body Esteem Scale[13] was normed on a sample of young children from Quebec. Because self-concept might vary among children from different nationalities,[19,23] developing a measure of physical self-concept with norms based on young children from the United States would be a valuable addition to the literature.

Finally, researchers have consistently argued that physical self-concept is a multidimensional construct.[9] Previous studies identified three subdomains of physical self-concept: Physical Appearance, Physical Performance, and Weight Control.[21,24-26] Unfortunately, although all of the extant measures of physical self-concept assess at least one of these subdomains, none of the existing measures of physical self-concept assesses all three. Furthermore, there is evidence that existing measures of physical self-concept do not adequately assess the subdomains. For instance, Piers[27] admits that the Piers-Harris Children's Self-Concept Scale, one of the few measures available to assess Physical Performance and Physical Appearance, has questionable ability to discriminate between these facets of physical self-concept.

Given the limitations of existing measures of childhood physical self-concept, our study sought to develop a novel measure of physical self-concept in young children, i.e., ages 6 to 7 years, who have minimal or no reading skills. We also examined whether this instrument could be used with older children as well. If so, longitudinal studies could examine children's physical self-concept across a wide developmental period, i.e., from 1st to 6th grade. We describe here the item development and piloting of the instrument, as well as the validation and standardization of a comprehensive physical self-concept assessment device for young children, the Children's Physical Self-Concept Scale (CPSS).

This article is divided into three studies, representing distinct stages in the development of the CPSS. Study 1 presents CPSS item development and subscale refinement. Study 2 evaluates the reliability and validity of the CPSS. We thought that the 27-item CPSS resulting from Study 1 would be a reliable and valid measure capable of distinguishing normal and overweight children. Study 3 presents an additional test of the measure's ability to distinguish contrasted groups of children. We hypothesized that the CPSS would detect differences between groups of normal weight, overweight, and diabetic children, with the normal weight group scoring most favorably overall and in each domain.

## STUDY 1

### Methods

*Participants.* All children in one 1st grade (n = 16) and one 5th grade (n = 14) class attending a Memphis-area Catholic school were given consent forms by their teachers and asked to bring them home for their parents' review. The telephone number of the first author was provided for parents who had questions or concerns about the study. Children who did not return their consent form were excluded from the study. Twenty-five of the participants were white, and 3 were African-American. Eleven were girls, and 19 were boys. The majority of the children were from middle-class backgrounds.

*Instrumentation.* The evolution of the Children's Physical Self-Concept Scale (CPSS) began with the item development process. Through an extensive literature review and the adaptation of items from the previously mentioned self-concept measures, a number of potential content domains were formulated. Initially, items reflecting various domains were classified by the first author into broad categories, consistent with the domains identified in previous research, and tentatively identified as Physical Performance, Physical Appearance, and Weight Control. Physical Appearance refers to the perceived attractiveness of facial features and other aspects of physique that cannot be altered through lifestyle changes, i.e., through dieting or exercise. Physical Performance pertains to qualities such as stamina, strength, and agility. Weight Control involves concerns about body weight and related exercise and eating habits.

General guidelines presented by Thorndike[28] for developing test items were followed during item creation. Items were expressed as clearly and concisely as possible, with an attempt to tailor item difficulty to the youngest group of respondents without losing meaning for the sake of ease in understanding. When the total item pool was constructed, the items were presented to five graduate student raters who were told about each of the identified domains and asked to classify items according to the domains they assessed. Agreement between the five raters was assessed, and those items that received at least 80% agreement (not more than one disagreement)[29] were used to mark the domain. The resulting pool of items was then presented to an editorial board for review, consistent with Thorndike's recommendations. The editorial board was comprised of elementary school teachers from a local Catholic school, University of Memphis developmental psychologists, and non-psychologically trained parents of young children known to the first author. The editorial board was asked to review the list of items and to identify any that they thought would be problematic for children, e.g., words that were too big or wording that was difficult to understand. Items labeled as difficult for children to understand were modified or eliminated. Subsequent to review, 53 items remained.

Novel test directions were developed to administer the measure. The directions were also reviewed by the aforementioned editorial board. A response booklet was developed for the children, on which they were instructed to mark their responses as each item stem and corresponding responses were read. The booklet includes sample or practice items on the first page. Successive pages include five sets of response boxes per page. Each response box presents four drinking glasses with increasing levels of water to indicate the students' level of agreement with the item stem with regard to frequency, e.g.,

- I never try to change how much I weigh,
- I try a little of the time to change how much I weigh,
- I try most of the time to change how much I weigh, or
- I try all of the time to change how much I weigh,

or to quality, e.g.,

- I am not happy with how much I weigh,
- I am a little happy with how much I weigh,
- I am pretty happy with how much I weigh, or
- I am really happy with how much I weigh.

This graphic format was used to allow students to respond without requiring the student to read response options. Each

box is numbered 1 through 5 to ensure proper placement. In addition, in the top corner of each page is an easily identifiable icon to ensure proper page placement, e.g., a sock, a baseball.

*Procedure.* The 53-item version of the CPSS was administered to 30 1st grade (n = 16) and 5th grade (n = 14) children. Item stems and responses were read aloud to all of the children. The examiner and a proctor identified items with which children experienced obvious difficulty (e.g., asked questions of examiner or friends, giggled over the item) during the scale administration, in addition to any other problems resulting from the administration of the measure.

## Results

*Internal Consistency.* As Table 1 shows, estimates of internal consistency for both the CPSS Global score and subscale scores were well above the standard of .70 set by Nunnally[30] for fledgling research instruments. The alpha coefficient for the Global score, which was .94, far exceeded Nunnally's standard. In addition, for both the 1st and 5th grade groups, the Global score either met or surpassed .90. Also depicted in Table 1 are the coefficient alphas for the three subscales. With alpha coefficients of .86 to .90, the internal consistency of the subscales are also well above the standard recommended by Nunnally.

*Test-Retest Reliability.* We also assessed the stability of the CPSS. Table 1 shows 2-week test-retest correlations for the Global score and three subscales. For the entire field sample (N = 30), test-retest correlations are .80 or above. According to Nunnally,[30] test-retest reliability coefficients of .80 for a measure indicate that the instrument is sufficiently stable to use in research settings.

*Item Refinement.* In an effort to achieve additional refinement of the CPSS while still maintaining content validity, we took three major steps. First, items identified during administration by the examiner as problem items were discarded or modified. Second, we examined corrected item-total correlations to identify items that evidenced low correlations with the total score (≤ .30) or that reduced their respective subscale's overall internal consistency. Identified items were eliminated if so doing would not diminish content validity. Finally, lower quality items, e.g., less easily understood items or items with seemingly lower face validity, were excluded until each subscale consisted of an equal number of items (nine items per scale). Because of the length of the CPSS (27 items with 4 responses), Table 2 presents only the item stems, but copies of the CPSS can be obtained from the first author.

**Table 1. Coefficient Alpha and Test-Retest Reliability (Stability) for the Children's Physical Self-Concept Scale Global Scale and Subscales**

| | Alpha | Stability |
|---|---|---|
| Combined sample (N = 30) | | |
| Global Score | .94 | .88 |
| Physical Performance | .90 | .81 |
| Physical Appearance | .86 | .80 |
| Weight Control | .90 | .84 |
| 1st grade (n = 16) | | |
| Global Score | .91 | .86 |
| Physical Performance | .81 | .69 |
| Physical Appearance | .86 | .77 |
| Weight Control | .87 | .83 |
| 5th grade (n = 14) | | |
| Global Score | .90 | .93 |
| Physical Performance | .74 | .94 |
| Physical Appearance | .85 | .87 |
| Weight Control | .86 | .89 |

## STUDY 2

## Methods

*Participants.* The resulting 27-item Children's Physical Self-Concept Scale (CPSS) was tested using a larger standardization sample to assess reliability and validity as well as to investigate differences between groups. A sample of 316 1st grade (n = 75), 2nd grade (n = 90), 4th grade (n = 78), and 5th grade (n = 73) boys and girls from six Memphis-area private Catholic schools participated. Informed consent for all of the participants was obtained through forms brought home by the school children for parental signature. The informed consent document was approved by both University of Memphis and school review boards. A cover letter attached to the informed consent document provided a phone number that the parents could call with any concerns that needed to be addressed. In all, 12 parents did not sign the informed consent document, and their children were not included in the study.

Thirty-five percent of the sample were girls, 84% were white, and 10% were African-American. Weight was obtained using a Seca floor scale, and height was taken using a tape measure secured to a wall. Forty percent of the sample was overweight, as defined by the 75th percentile or greater of relative weight. The 75th percentile was used as the criterion for obesity because it is a commonly used classification of overweight status[31-33] and because it approximates a body weight that is 20% more than the ideal. In addition, the 75th percentile has been identified as the critical point at which weight problems track from infancy to adulthood.[34] Finally, the 75th percentile of relative weight was selected as the cri-

**TABLE 2. Children's Physical Self-Concept Scale Item Stems**

| Physical Performance | Physical Appearance | Weight Control |
|---|---|---|
| I am bad at sports | I am cute | I want to change how much I weigh |
| I am good at catching a ball | My hair looks nice | I try to change how much I weigh |
| I can balance well | My teeth look bad | I exercise so I will look better |
| I can jump high | I am happy with how much I weigh | I worry about how much I weigh |
| I can climb trees fast | I look good just the way I am | I feel sad about how much I weigh |
| I can run fast | I have a cute face | I eat too much |
| I am good at throwing a ball | I like the way I look in the mirror | I eat until I get sick |
| I drop things | The way I look makes me feel sad | I eat candy |
| I get hurt | I am ugly | I skip meals |

terion for being overweight because body mass index (BMI) cutoffs for obesity were not available at the time for children. BMI is defined as weight (kg)/height$^2$ (m). BMI, however, is reported in addition to the 75th percentile to offer the reader an additional assessment of the extent to which children were overweight. BMI was computed for the entire sample (mean, 17.25; standard deviation (SD), 3.02), the normal weight sample (mean, 15.41; SD, 1.59), and the overweight sample (mean, 19.96; SD, 2.56).

*Procedure.* Children were administered the CPSS in the classroom in groups. The original manual used in Study 1 was revised to reflect the 27-item measure. After the testing was completed, children were brought into the hallway individually for height and weight measurements.

## Results

*Internal Consistency.* Coefficient alpha was re-estimated for the standardization sample of 316 children. Table 3 shows the alpha value for this sample. The alpha coefficients for the Global score remain adequate with respect to the criteria established by Nunnally.[30] For the entire sample, alpha equals .77; for the 1st and 2nd grade sample, alpha equals .70; and for the 4th and 5th grade sample, alpha equals .82. Several of the subscales do not meet the .70 criteria, although they do approach it. The differences between the alpha estimates for the field sample and the alpha estimates for the standardization sample are most likely the result of a relative restriction of range in the standardization sample as compared with the field sample. In addition, shrinkage in alpha between samples is a common event.

Almost all of the children from participating classes were a part of this study, so we have no reason to expect that there exists a bias toward higher or lower intellect children. Test-retest reliability was high using the initial sample of 1st and 5th graders, so additional investigation of stability was not necessary for the 27-item CPSS.

*Construct and Face Validity.* Construct validity from a content sampling approach was established via an extensive sampling of the content universe. This was considered an initial study; construct validity, therefore, should be viewed as a beginning step in the process of validating the CPSS. Additionally, the editorial board (parents, teachers, psychologists) agreed that the measure evidenced face validity.

*Correlations Among Subscales.* Data from the standardization sample (N = 316) were used to determine the correlations among the subscales on the CPSS. On the basis of findings by Marsh,[35] we suspected that the Physical Performance and Physical Appearance subscales would be moderately correlated. We also hypothesized that the Physical Appearance and Weight Control subscales would modestly correlate. We found very scarce evidence for the correlation between Weight Control and Physical Performance, so we did not predict a significant correlation between these two subscales.

Three Pearson's $r$ values were computed for each subscale dyad. The Physical Appearance subscale was significantly correlated with both the Physical Performance subscale ($r = .25$, $p < .0001$) and the Weight Control subscale ($r = .26$, $p < .0001$). The Physical Performance and Weight Control subscales were not significantly correlated ($r = .08$, $p = .18$). The correlations suggest that, at most, the Physical Appearance subscale shares 7% of the variance with the other subscales. Although significant, these modest correlations suggest that each subscale contributes uniquely to the overall construct. The nonsignificant correlation between the subscales of Physical Performance and Weight Control suggests that these subscales each contribute uniquely to the Global construct but are not as strongly related to each other as they are to Physical Appearance. These correlations are similar to those reported by Marsh,[35] suggesting a correlation of 0.55 between Physical Performance and Physical Appearance, a correlation that Marsh states is much too small to justify collapsing the two traits into a single factor.

**TABLE 3. Coefficient Alpha for the Children's Physical Self-Concept Scale Global Scale and Subscales for the Standardization Sample**

| | Alpha |
|---|---|
| Combined sample (N = 316) | |
| Global Score | .77 |
| Physical Performance | .67 |
| Physical Appearance | .81 |
| Weight Control | .60 |
| 1st and 2nd grade students (n = 165) | |
| Global Score | .70 |
| Physical Performance | .67 |
| Physical Appearance | .78 |
| Weight Control | .55 |
| 4th and 5th grade students (n = 151) | |
| Global Score | .82 |
| Physical Performance | .68 |
| Physical Appearance | .81 |
| Weight Control | .68 |

*Comparisons Between Groups.* An analysis of variance (ANOVA) procedure was performed using the Global score as the dependent variable and weight status (normal weight, overweight), gender, and grade (1st + 2nd, 4th + 5th) as independent variables. On the basis of the existing literature, we hypothesized that normal-weight children would fare better than overweight children on all measures. We also suspected that boys would evidence a higher Global physical self-concept as well as higher Physical Performance and Physical Appearance scores. Finally, on the basis of the literature, we predicted that younger children would report higher Global physical self-concepts as well as higher scores on Physical Performance and Physical Appearance.

Table 4 presents means and SDs for the Global and three subscale scores. Results of the ANOVA indicated a significant difference between overweight and normal-weight children on the Global scale [$F(1,308) = 33.91$, $p < .0001$]. The analysis revealed that normal-weight children scored higher than overweight children, thus indicating that normal-weight children have higher Global physical self-concepts than do overweight children. There was also a significant difference between boys and girls [$F(1,308) = 4.36$, $p < .05$], with the results indicating that boys have a higher Global physical self-concept than do girls. There were no other main effects or interactions for this analysis.

An additional multivariate ANOVA was performed using the three subscales of Physical Performance, Physical Appearance, and Weight Control as dependent variables and

**TABLE 4. Means and Standard Deviations for Global Scale and Subscales by Weight Status, Gender, and Grade Level**

| | Mean | SD | Mean | SD |
|---|---|---|---|---|
| | Normal Weight (N = 189) | | Overweight (N = 127) | |
| Global Scale | 86.36 | 8.09 | 79.87 | 9.06 |
| Physical Performance | 29.16 | 3.59 | 27.39 | 3.82 |
| Physical Appearance | 29.84 | 4.94 | 27.21 | 5.02 |
| Weight Control | 27.37 | 3.99 | 25.27 | 4.29 |
| | Boys (N = 156) | | Girls (N = 160) | |
| Global Scale | 85.13 | 8.83 | 82.41 | 9.11 |
| Physical Performance | 29.69 | 3.24 | 27.23 | 3.87 |
| Physical Appearance | 28.47 | 5.12 | 29.08 | 5.14 |
| Weight Control | 26.96 | 4.18 | 26.09 | 4.26 |
| | 1st and 2nd grades (N = 165) | | 4th and 5th grades (N = 151) | |
| Global Scale | 85.07 | 8.49 | 82.30 | 9.47 |
| Physical Performance | 28.65 | 3.92 | 28.23 | 3.61 |
| Physical Appearance | 30.03 | 4.98 | 27.42 | 4.96 |
| Weight Control | 26.39 | 4.30 | 26.66 | 4.17 |

SD, standard deviation.

weight status, gender, and grade as independent variables (Table 4 lists means and SDs). If the overall multivariate statistics were significant, then we examined the univariate results. Results of the second analysis indicated a significant multivariate statistic (Hotelling's $T^2 = .14$, $p < .0001$) for the main effect of gender. No significant multivariate statistics for the interactions were obtained. Univariate analysis revealed a gender difference only on the Physical Performance subscale [$F(1,308) = 27.74$, $p < .0001$, standardized discriminant function coefficient = .89]. A comparison of the means suggested that girls reported a lower physical self-concept with respect to Physical Performance than did boys. The multivariate statistic for the main effect of grade was also significant (Hotelling's $T^2 = .08$, $p < .0001$). Univariate analyses indicated a significant difference between older and younger children on the Physical Appearance subscale [$F(1,308) = 14.95$, $p < .0001$]. A comparison of the means revealed that younger children reported a higher physical self-concept with respect to Physical Appearance than did the older children. Finally, the multivariate statistic for the main effect of weight status was significant (Hotelling's $T^2 = .12$, $p < .0001$). Univariate analyses revealed significant differences between normal-weight and overweight children on all three of the subscales: Physical Performance [$F(1,308) = 14.31$, $p < .0001$, standardized discriminant function coefficient = $-.81$]. Physical Appearance [$F(1,308) = 13.46$, $p < .0001$, standardized discriminant function coefficient = $-.03$], and Weight Control [$F(1,308) = 19.63$, $p < .0001$, standardized discriminant function coefficient = $-.69$]. Comparison of the means revealed that normal-weight children thought more positively about themselves than did overweight children on all three of the subscales of physical self-concept.

## STUDY 3

A study of contrasted groups was performed to achieve an additional assessment of the validity of the Children's Physical Self-Concept Scale (CPSS). We selected groups of children on the basis of the hypothesis that children with differing physical conditions would vary in their levels of physical self-concept. The first group, a normal-weight group, was hypothesized to have the best physical self-concept. A second group consisted of children with a nonvisible physical limitation, i.e., children with diabetes.

Researchers have been interested in the relationship between diabetes and self-concept for several years.[36-38] Moreover, a large body of empirical research documented the psychosocial impact that insulin-dependent diabetes mellitus (IDDM) can have on children, as well as the impact of psychosocial variables on diabetes management.[36,37,39] Related to physical self-concept, research has shown an increased vulnerability to develop eating disorders among some diabetic patients, a finding that cannot be completely explained by the dietary restrictions involved in diabetes management.[40-42] Thus, children with IDDM provide an interesting comparison group in the study of physical self-concept because they are vulnerable to psychosocial problems and because their physical limitations are mostly invisible to the public.

The final group was composed of overweight children, i.e., 75th percentile or greater of relative weight. A visible, nonlimiting handicap such as being overweight was selected over a visibly limiting handicap, because children with physical disabilities would very likely score lower than other groups of children on the Physical Performance subscale. Richardson et al.[43] in a study that has been replicated in a variety of settings and cultures, found that 10- and 11-year-old children, with respect to preference, ranked obese children below those with obvious limiting handicaps and disfigurements. In summary, this investigation used a design that compared three groups of children:

- a group with a visible physical challenge, i.e., overweight children,
- children with an invisible physical challenge, i.e., diabetic children, and
- a group with no known physical challenge.

This design provided a strong test of the construct validity of the CPSS.

### Method

*Participants.* Forty children from the standardization sample (20 normal weight and 20 overweight) were matched by sex and grade to 20 diabetic children recruited through a local physician's office.

*Procedure.* The same procedure was used with the group of diabetic children as was used with the standardization sample. They were tested as a group, with height and weight taken individually.

## Results

On the basis of the Study 2 results, we hypothesized, again, that overweight children would score lower than normal-weight children on all of the measures. We also predicted that the diabetic group would seem more similar to the normal-weight than to the overweight group on Global physical self-concept, Physical Performance, and Physical Appearance. On the basis of the dietary constraints imposed on diabetic children, we predicted that normal-weight children would score higher than both diabetic and overweight children.

An analysis of variance (ANOVA) was performed comparing the three groups on the Global CPSS score. Table 5 presents group means and standard deviations for the Global and three subscale scores. The results of this analysis indicate that the groups differed significantly on their Global scores [$F(2,57) = 8.27$, $p < .001$]. A Tukey follow-up test revealed that both the normal-weight and diabetic groups differed significantly from the overweight group.

A multivariate ANOVA procedure was performed using the Physical Performance, Physical Appearance, and Weight Control subscale scores as dependent variables and group status as the independent variable. The overall multivariate test was significant (Hotelling's $T^2 = .38$, $p = .004$). Examination of the univariate analyses revealed no significant differences between groups on the Physical Performance subscale, but there were significant differences between groups on the Physical Appearance subscale [$F(2,57) = 9.11$, $p < .0001$]. Follow-up analyses revealed that both the normal-weight and diabetic groups scored significantly higher than the overweight group. In addition, the univariate results for the groups on the Weight Control subscale were significant [$F(2,57) = 3.58$, $p < .05$]. Follow-up analyses revealed that the normal-weight group scored significantly higher than the overweight group.

**Table 5. Group Means and Standard Deviations for Global Scale and Subscales for Contrasted-Groups Validity Study**

| | Mean | SD |
|---|---|---|
| Global Scale | | |
| Normal Weight | 88.30 | 7.73 |
| Diabetic | 84.65 | 7.40 |
| Overweight | 77.85 | 9.46 |
| Physical Performance | | |
| Normal Weight | 28.80 | 3.33 |
| Diabetic | 26.85 | 4.20 |
| Overweight | 26.60 | 3.90 |
| Physical Appearance | | |
| Normal Weight | 30.95 | 4.12 |
| Diabetic | 30.05 | 3.85 |
| Overweight | 25.80 | 4.25 |
| Weight Control | | |
| Normal Weight | 28.55 | 2.91 |
| Diabetic | 27.75 | 4.05 |
| Overweight | 25.45 | 4.30 |

N = 20 per group.
SD, standard deviation.

## DISCUSSION

Until now, it was unknown how children as young as 1 and 2nd graders felt about their physical performance ar physical appearance and whether they attempted to contr their weight. The Children's Physical Self-Concept Scal (CPSS) examined Global physical self-concept along th three dimensions of Physical Appearance, Physic Performance, and Weight Control behaviors in 1st, 2nd, 4th and 5th grade students. In an effort to maximize construc validity, the CPSS was developed through a process o extensive literature review and item development, includin adaptation of items from other self-concept measures. Item were modified or deleted on the basis of their contribution t reliability. This process involved scrutiny by a panel of experts practice administrations, and computation of corrected item-total correlations. Modification or deletion of an iten was always balanced by that item's contribution tc content validity.

The development of the CPSS included an assessment of the scale's reliability. The alpha coefficients exceed standards set by Nunnally[30] for fledgling research instruments, but these estimates of alpha should be interpreted cautiously because additional implementation of the CPSS on a larger child sample is needed to establish psychometric characteristics and norms. In addition to the good reliability of the CPSS, there is also support of its face and construct validity. The ability of the CPSS to distinguish groups of normal-weight, overweight, and diabetic children indicated that the CPSS demonstrated validity by the method of contrasted groups, as well.

The contrasted groups analyses provided preliminary evidence of the construct validity of the CPSS. Normal-weight children scored higher than overweight children on the Global scale and the three subscales. The magnitude of the differences between normal-weight and overweight subjects, although modest, was promising. On average, the Global scale scores of the normal-weight children were 13.4% higher than the scores of overweight individuals, but their Physical Appearance subscale scores were a full 20% higher. In addition, boys scored higher than did girls on the Global scale and Physical Performance subscale. The finding that younger children attained higher Physical Appearance scores than older children is possible evidence that children increasingly incorporate societal ideals of beauty as they age. A comparison of normal-weight, overweight, and diabetic children revealed differences on the Global scale, with normal-weight and diabetic groups scoring higher than the overweight group.

The results of these studies suggest that being overweight early in childhood could have a significant impact on physical self-concept. Children apparently begin to compare their appearance and physical performances to those of societal ideals at a very young age. Therefore, these data indicate that interventions aimed at preventing children from undertaking potentially dangerous dieting practices and building confidence in physical prowess should begin in the earliest school grades.

The CPSS has several shortcomings that should be noted when considering the findings of this study. Most importantly, children were not asked specifically whether they desired or

attempted to lose or gain weight, but only whether they desired or attempted to change their weight status. Although the children frequently wrote in the margins or commented to the test administrator that the desired direction was to lose weight, it cannot be safely assumed that all of the children wanted to decrease their weight. In addition, the sample size of the group of diabetic children might limit the generalizability of findings in this section. Our sample does not represent the population of diabetic children, which would vary widely according to such factors as time since diagnosis and level of diabetic control. One other potentially limiting factor of this study is the use of students from Catholic schools, the majority of whom were required to wear uniforms. Because items assessing personal sense of fashion and comparison with peers were not included on the CPSS, however, it is unlikely that this standard for conformity of physical appearance would have an impact on physical self-concept.

The limitations of the CPSS offer many avenues for future research. For example, it would be beneficial to ascertain the direction of the desired weight change and to determine whether any differences exist between boys and girls. Second, although many children report wanting to and attempting to change their weight, future efforts should be aimed at investigating the reasons behind this drive. Efforts to intervene would benefit from a better understanding of what motivates children as young as 1st and 2nd graders to attempt to modify their weight. Third, researchers interested in the area of eating disorders should channel investigative work in the direction of gaining an understanding of which strategies young children are using to lose weight. Fourth, future studies should examine physical self-esteem among a larger, diverse sample of children with diabetes. Finally, the samples used in this study were predominantly white. Across studies, however, it seems that African-American students report higher physical self-concepts than any other racial/ethnic group, whereas Asians tend to score the lowest.[19,23,44] Future research should investigate potential ethnic differences in physical self-concept of young children.

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## Culture, Health and Human Development Training Opportunity

University of Connecticut
Storrs, Connecticut
May 13–21, 1998

A 9-day interdisciplinary research training workshop on Culture, Health, and Human Development will be held in Mystic, Connecticut, in May 1998. This workshop will provide for 20 social/behavioral and biomedical scientists in a formative stage of their careers: (1) an appreciation of the role of culture in regulating healthy development; (2) a theoretical framework for understanding culture, health, and human development that they can apply to their own topical interests; (3) sufficient familiarity with interdisciplinary research methods to engage in collaborative projects; and (4) elementary skill in the use of selected cultural methodologies applicable to a variety of research problems in health and human development. Theory and research techniques will be drawn from the fields of psychology, anthropology, public health, and human biology.

The distinguished faculty includes H. Bernal, J. Boster, W.P. Handwerker, S. Harkness, R.L. Harwood, G.W. Ryan, J.F. Stallings, C.M. Super, T.S. Weisner, and C.M. Worthman. Participation is fully funded by the National Institutes of Health and includes travel, lodging, books, supplies, and meals for all participants. Advanced graduate and postdoctoral students and junior faculty can apply by sending (1) a curriculum vitae; (2) a 200- to 300-word explanation of their research interests, background, and goals; and (3) a brief letter of recommendation from their department head, advisor, or senior colleague to: Culture, Health, and Human Development Research Workshop, School of Family Studies, University of Connecticut, Box U-58, Storrs, CT 06269 USA. Selection of applicants will begin January 21.

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