Mothers' Expectancies and Young Adolescents Perceived Physical Competence: A Year-long Study

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ABSTRACT

Perceived physical competence can be an important predictor of the physical activity behavior of children and adolescents. Investigated in this study was the role of mothers' expectancies effects in shaping their child's perceived physical competence. Data were obtained from 156 French children and young adolescents and their mothers. Structural equation modeling revealed that mothers' perceptions of their child's physical competence predicted their child's own perceived physical competence one year later, independent of the child's previously demonstrated physical ability and the child's initial level of perceived competence. Child's gender moderated the relation in that mothers' perceptions of their daughters' competence were related significantly to their child's perceived competence but that relation was not present between mothers and sons.

KEY WORDS: expectancy effects, perceived competence, physical activity, parental socialization, motivation.

Mothers' Expectancies and Young Adolescents Perceived Physical Competence: A Year-long Study

Over the past two decades, a number of theoretical models have been developed for the purpose of assisting researchers in understanding and explaining differences among individuals regarding their motivation, performance, and behavior in achievement contexts (e.g., Bandura 1997; Deci & Ryan, 1985; Dweck & Leggett, 1988; Eccles, Adler, Futterman, Goff, Kaczala, Meece & Midgley, 1983; Harter, 1981; Nicholls, 1989; Vallerand, 1997). Although those theories differ from each other in a number of important ways, all of them stress the importance of self-perceptions of ability (e.g., perceived competence, self-concept of ability, self-efficacy) as antecedents of, and contributors to, motivational and affective outcomes. Within the domain of sport and physical activity, self-perception characteristics have been fundamental components of theoretical and empirical work and perceived physical competence has been the most commonly studied self-perception.

The knowledge base on children's and adolescents' sport participation and physical activity involvement has been grounded similarly in the role of young people's self-perception characteristics as such appraisals are anticipated to influence motivational patterns, affective experiences, and behavioral outcomes. Because physical activity and sport involvement typically are 'free choice' leisure-time activities, young people's motivation to be involved in the physical domain are likely to reflect strongly on their domain-specific competence appraisals (Eccles & Harold, 1991).

The current knowledge base strongly indicates that young people's perceptions of their own physical abilities are instrumental in shaping their choices to participate in physical activity and sport as well as on the affective characteristics of that involvement. Specifically, higher levels of perceived physical competence have been linked to young people's interest

and desire to engage in physical activity and sport (e.g., Brustad, 1993, 1996; Feltz & Petlichkoff, 1983) and appears to contribute to higher levels of enjoyment (Scanlan, Stein, & Ravizza, 1989) and lower levels of anxiety while involved (Passer, 1983; Scanlan & Lewthwaite, 1986). Thus, physical competence has been instrumental particularly in understanding the participatory characteristics of children and adolescents in this achievement context (see also Roberts, 1992; Weiss & Chaumeton, 1992 for reviews).

Children's socialization into physical activity and sport is a particularly worthy area of interest because the knowledge base indicates that physical activity and sport involvement can affect young people's physical and psychological health, as well as the quality of their social relationships. For example, children's involvement in physical activity affects their current health status and tendency toward obesity, as well their predisposition to a variety of potential health risks during adolescence and adulthood (Clark & Blair, 1988; Durrant, Linder, & Mahoney, 1983). With regard to psychological and social outcomes, physical activity and sport participation affect children's self-concept, self-esteem, friendship formation and maintenance, and peer acceptance, among other outcomes (for more complete reviews see Brustad, Babkes, & Smith, 2001; Martinsen & Stephens, 1994). Given the multiple benefits that accrue from the regular practice of physical activity, it is important to identify the factors that are related to the development of children's perceptions of competence, given its role in affecting physical activity and sport involvement.

Researchers have identified a variety of contributors to perceived physical competence for children and adolescents (see Horn & Amorose, 1998 for a review). Among those, social influences appear to constitute a crucial source of information for children to estimate their competence. Significant others, including teachers, coaches, parents, siblings, and peers assume that important socialization role by providing feedback, support, and opportunities for young people in this domain (Brustad, 1992, 1993, 1996; Brustad et al., 2001; Horn & Weiss,

1991; Jacobs & Eccles, 1992; Weiss, Ebbeck & Horn, 1997). When considering social influences, parents, particularly, seem to be fundamental contributors to perceived physical competence for children and young adolescents (Brustad, 1992; Eccles, Jacobs & Harold, 1990; Greendorfer, 1992; Harter, 1981; Horn & Hasbrook, 1986; Woolger & Power, 1993). That influence might be even greater in the sport domain than in other domains because parents are likely to be the ones who provide and structure initial sport opportunities for their sons and daughters (Greendorfer, Lewko, & Rosengren, 1996) and frequently are engaged more actively in their children's sport experiences than in other achievement areas (Brustad et al., 2001). Unfortunately, only a limited amount of research to date has examined the ways in which parents influence children's sport-related self-perceptions.

The relative socialization influence of parents in sport is related also to the developmental status of their children. Research indicates that the particular sources of competence information to which individuals most closely attend varies in relation to the individual's developmental status (e.g., Frieze & Bar-Tal, 1980; Horn & Hasbrook, 1986). Research on preferred sources of competence information has indicated that children and young adolescents have a preference for using adult sources of feedback in forming perceptions of competence across achievement areas (Frieze & Bar-Tal, 1980; Horn & Hasbrook, 1986; Horn & Weiss, 1991). Parents are particularly important sources of information for young people in forming self-perceptions of ability, because it is during late childhood and early adolescence that many young people engage in certain achievement domains, such as sport, for the first time. A developmental shift in utilization of competence information sources begins to occur around 12 to 14 years of age in that adolescents in this age range begin to rely more heavily on peer-based informational sources. Specifically, adolescents in this age range typically actively compare their abilities to their peers and are more attentive to the feedback and appraisals provided by peers than at other phases of the

lifecycle. During later adolescence, individuals use a variety of information sources, including peer comparison, peer evaluation, and internal sources of information (Horn & Hasbrook, 1986; Horn & Weiss, 1991). Although those developmental tendencies occur, the importance of parental feedback about competence during childhood and early adolescence cannot be underestimated due to the central role of parental socialization influence on their children in various achievement areas during those developmental phases

A number of forms of parental influence have been identified in the literature. First, modeling or identification with the parents (e.g., Bandura, 1986; Crandall, 1963), has been proposed as a primary form of parental influence. In relation to the parental modeling hypothesis, it is anticipated that children will reproduce the behaviors of their parents and adopt their parents' system of beliefs. Those outcomes are anticipated to occur primarily as a result of observational and social learning processes. Although the modeling hypothesis has received some support in the sport context (e.g., Gregson & Colley, 1996; Freedson & Evenson, 1991; Moore et al., 1991), other researchers have failed to find adequate support for that explanation in academic contexts (e.g., Parsons, Adler, & Kaczala, 1982) or in sport (e.g., Brustad, 1996; Dempsey, Kimiecik, & Horn, 1993). Thus, it has been suggested that parental modeling might be an important form of parental influence but that, at minimum, modeling needs to be considered in conjunction with other forms of influence (Brustad, 1996; Parsons et al., 1982).

A second general category of parental influence on children's perceived physical competence has been proposed to occur as a result of parental acceptance and support. The results of various studies have revealed a significant, positive link to children's perceived physical competence through parental encouragement (e.g., Brustad, 1993, 1996), parental satisfaction with the child's performance (e.g., Scanlan & Lewthwaite, 1986), and active parental involvement in the child's sport activities (e.g., Babkes & Weiss, 1999; Dempsey et

al., 1993). Through those positive affective responses, parents implicitly convey the idea to the child that he or she has sufficient competence to benefit from continued participation.

A third crucial dimension of parental influence on children's sport-related self-perceptions can occur as the consequence of parental belief systems (Eccles et al., 1983; Eccles & Harold, 1991). From a socialization perspective, important components of parental belief systems include parents' perceptions of the child's competencies in various achievement domains, parents' beliefs about the relative value or importance of varying achievement domains (e.g., academics, art, music, sports, etc.), and parents' expectations that their child will attain success in a given domain. Parental beliefs can contribute to actual outcomes through expectancy effects. An "expectancy effect" designates the phenomenon through which the expectancy that one person (the perceiver) holds concerning another person (the other) affects (a) the other's perception of himself or herself, (b) the other's behavior, and (c) the interpretation of the other's behavior by the perceiver (see Jussim, 1986; Miller & Turnbull, 1986; Snyder & Stukas, 1999). Several theoretical models have been used to explain the phenomenon (e.g., Cooper & Good, 1983; Jussim, 1986). With regard to influences on young people's self-perceptions those models usually consist of three stages: (a) the perceiver develops expectations for the other's future achievement, (b) the other is treated differently than other children in relation to those expectations, and (c) the differential treatment influences the specific socialization experiences that the other person receives, and eventually shapes the other's own behavior and self-perceptions.

The relation between parental belief systems and children's self-perceptions of ability has been the focus of several empirical investigations (e.g., Frome & Eccles, 1998; Parsons et al., 1982; Phillips, 1987). Those studies have revealed that children's perceptions of their academic ability are linked strongly to their parents' beliefs about the child's capacity and that parental belief systems typically supersede in importance the actual ability information

available to the child (as measured by standardized achievement tests or academic grades) in contributing to the child's perceived competence. In other words, children's perceived ability typically is consistent more with their parents' expectations than with their own previous and current academic performance. In the sport domain, studies have revealed a correspondence between parents' perceptions of their child's competence and the child's perceived physical competence (Babkes & Weiss, 1999; Dempsey et al., 1993; Kimiecik, Horn & Shurin, 1996; McCullagh, Matzkanin, Shaw & Maldonado, 1993), even in cases in which actual levels of physical ability were controlled statistically (Eccles, Jacobs & Harold 1990; Felson & Reed, 1986; Jacobs & Eccles, 1992). Studies by Eccles and colleagues (Eccles & Harold, 1991; Eccles et al., 1990) also have revealed that parents' perceptions of their children's competence in sport are gender differentiated, in that, parents typically rate their sons as having more competence and interest in sports than they do their daughters. In line with those parental belief systems, boys rate themselves as more competent in sports than do girls (e.g., Eccles & Harold, 1991; Eccles et al., 1990; Felson & Reed, 1986). Although evidence exists that boys generally are advanced more than girls are in some sport-related skills during childhood, those "actual" differences are much smaller than the gender-of-child effects on either parent's perceptions or children's self-ratings (Eccles et al., 1983; Eccles & Harold, 1991).

The means by which expectational effects occur can be explained by the Eccles theoretical model of parental socialization (Eccles et al., 1983; Eccles & Harold, 1991). That theory uses an expectancy-value framework to explain the relation between parental belief systems and psychological outcomes for children. In accordance with the theory, parents form expectancies about their children's abilities in various domains in relation to perceptions of their children's attitudes, temperaments, interests, talents, and history of success. Similarly, parents value certain achievement domains (e.g., mathematics, athletics, music) more so than they do for other domains. As a consequence of parental expectancies and

values, and due to parental interest in providing their children with success experiences in the most desirable achievement domains, parents provide greater encouragement and participatory opportunities for their children in those achievement areas in which the parents hold higher expectancies and stronger values. In turn, the expectations that parents communicate to children can shape children's own success expectancies. Furthermore, greater opportunities and encouragement in particular domains can foster children's abilities in those domains, thus affirming the parents' initial expectancies.

Overall, the Eccles expectancy-value theory has received consistent support both in academic and sport settings. Various studies have indicated that parental perceptions of their children's abilities are strong predictors of their children's own self-perceptions of abilities (e.g., Eccles & Harold, 1991; Felson & Reed, 1986; Phillips, 1987). However, some limitations to those conclusions have to be acknowledged. As Frome and Eccles (1998) have noted, a major problem with most previous work in this area is that investigations have relied on data collected at a single point in time, making causal interpretation problematic. Indeed, it seems obvious that parental influence requires some amount of time to operate. Consequently, interpretation of such effects in cross-sectional designs might be problematic because concurrent measurement of variables precludes such effects from occurring (Gollob & Reichardt, 1991). In this case, longitudinal designs including autoregressive influence are preferred (MacCallum & Austin, 2000). That is, if it is hypothesized that variable A at time 1 (A1; e.g., parent's perception of child's ability) influences variable B at time 2 (B2; e.g., child's self-perception of ability), the child's initial perceived competence (B1) also should be measured and included in the model to understand the relation between B1 on B2 as well as the relation between A1 and B1 (Gollob & Reichardt, 1991; MacCallum & Austin, 2000).

Another limitation with previous correlational designs has been the omitted-variable problem, or the possibility that a relevant predictor was excluded from the analysis (Judd &

McClelland, 1989). In that regard, parental perceptions can appear to affect directly children's ability perceptions when, in fact, both parental perceptions and children's self-perceptions are influenced by an unmeasured third factor. Among the relevant factors likely to influence parents' and children's perceptions could be the child's actual current achievement level, and to truly test for an "expectancy effect" this variable should be controlled statistically. Such is rarely the case. Only one study (Felson & Reed, 1986) was identified in which objective tests were used to control statistically for the child's actual performance. In two other studies (Eccles et al., 1990; Jacobs & Eccles, 1992) researchers used teachers' estimation of the child's ability to assess actual ability, but there might be limitations in the accuracy of teacher's estimations (Jussim, 1991a, 1991b).

A third limitation of previous studies has been that children's perceptions of parental beliefs have been relied on rather than parents' own self-reports (e.g., Babkes & Weiss, 1999; Brustad, 1993, 1996; Kimiecik et al., 1996). The reliance on self-reports from single sources can be problematic, in that the associations identified might be due to shared method variance rather than to actual relations involving the construct of interest. In line with that concern, a final limitation pertains to the fact that parents' influence often is assessed without distinguishing between the mother's and the father's beliefs (e.g., Brustad, 1993, 1996; Dempsey et al., 1993; Kimiecik et al., 1996). Fathers and mothers might not share similar appraisals of their child's aptitudes and abilities and it is likely that one parent might be more influential in shaping the child's achievement-related beliefs. Because mothers typically are immersed more fully in the rearing of their children during childhood and early adolescence, mothers' perceptions particularly might be important in shaping children's achievement-related beliefs (Ames & Archer, 1987), including in stereotypically masculine achievement domains such as sport (Jacobs & Eccles, 1992). Research conducted by Parsons et al. (1982) also indicated that mothers' beliefs were related more strongly than were fathers' beliefs to

children's achievement-related self-perceptions. Moreover, it has been suggested (Bussey & Bandura, 1999) that a parent's influence is stronger for a child of the same gender. However, previous studies (e.g., Eccles et al., 1990; Jacobs & Eccles, 1992; Frome & Eccles, 1998) always have included child's gender as a control variable and gender as yet has not been used as a moderator of the relation between parents' beliefs and their child's perceived competence.

The Present Study

The main purpose for this study was to investigate the presence and extent of expectancy effects of mothers' perceptions[1] of their child's capacity on children's and adolescents' own perceptions of sport competence. Another concern was to extend the current knowledge on parental socialization in the sport domain to a non-American sample. Using a French sample provided an opportunity to test mothers' expectancy effects in another western country. Special attention was devoted also to methodological concerns because previous studies in which expectancy effects have been investigated always have not accounted for other relevant variables. A 12-month study was conducted with data collected at two points in time. Structural equation modeling (SEM) was used to determine whether theoretically anticipated relations were found. SEM, which is useful particularly in longitudinal research (Bentler, 1980; MacCallum & Austin, 2000), allows for examination of hypothesized relations among all of the constructs involved in a model, using a latent representation of these constructs that is less vulnerable to measurement errors, such as those that can be encountered in research with child and adolescent populations. The hypothesized model for the present study is illustrated in Figure 1. According to Jussim (1991a), if the researcher desires to interpret the association between mothers' and children's perceptions as evidence of the existence of an expectancy effect, it is necessary that the mothers' initial perceptions predict the child's self-perceptions one year later even after controlling for

variables that might have an impact on the child's self-perceptions, namely the child's previous physical performance and the initial level of the child's perceived competence[1] (autoregressive effect). A thick line in Figure 1 symbolizes that hypothesis. The thin line symbolizes the variables of control. As a complementary hypothesis, it was expected that mothers' perceptions would be based on valid information such as the child's performance and/or motivation (i.e., perceived competence). That hypothesis is symbolized by dotted lines in figure 1. That analysis would reveal whether mothers are more likely than children to base their perceptions on objective standards. Findings from the Eccles studies (e.g., Eccles & Harold, 1991; Eccles, et al., 1990; Frome & Eccles, 1998; Parsons et al., 1982) have revealed that children's self-perceptions are related more directly to their parents' perceptions than to their own past performance and that relation was tested in the current investigation. Finally, gender differences were expected. First, in line with previous research, it was anticipated that the boys would rate themselves as having higher competence than would girls in sports, in part because parents of boys have higher perceptions of their child's physical competence than do parents of girls (Eccles & Harold, 1991). Second, a test was conducted also to determine whether the child's gender would moderate the relation between mothers' perceptions of their child's competence and their child's own perceived competence. It was expected that mothers would be more influential with regard to their daughters' self-perceptions of competence than on their sons' competence perceptions due to same-sex gender socialization effects.

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METHOD

Participants

A sample of 156 children (75 boys and 81 girls) who were enrolled in four differing French elementary schools (grades 3 through 5) located in three differing cities (each with a

population of 15,000 to 30,000 inhabitants), and their mother[2], served as the sample for this study. The participants included in this study were those who presented a complete data set across all child and mother variables and were part of a larger, original group of 344 children and their parents. The child participants ranged from 8 through 12 years of age ($\overline{X}$ = 10.4 years, SD = 0.90 years) and their mothers averaged 38.3 years (SD = 4.5 years). The participant sample was comprised primarily of middle to upper class families. In terms of family structure, 71% of the children in the participant sample lived within a two-parent home whereas 26% lived in a single-parent home. Three percent of the sample did not provide information concerning their current family structure.

With regard to physical activities, the French school system differs from the United States system in that all children from elementary through high school have physical education lessons. The French national school system defines the subjects that are taught each year and the amount of time allowed to each subject at each grade. Consequently, physical education in France is taught at least two hours a week at each grade level.

Procedure

Agreement was obtained both from parents and from the school director for the child to participate in the study and verbal assent was obtained from each child prior to their involvement. Data were obtained from (a) questionnaires completed by mothers and children, and (b) through physical ability tests for children. Two waves of data were collected. The first wave (Wave 1) was collected from parents and children in September of 1999, and data in the second wave (Wave 2) was collected from children in September 2000. Children completed questionnaires in the classroom in a group with an assistant reading the questions aloud and providing help and clarification as necessary. Subsequently, children were given questionnaires for their mothers to complete and were asked to return them a week later.

Physical tests were performed during physical education lessons. Two class periods were necessary for each class to perform all the tests.

Measures

Perceived physical competence. Children completed a French version (Sarrazin, Bois, & Trouilloud, 2000a) of the Harter (1985) Perceived Physical Competence Scale for Children. The back-translation method (see Brislin, 1986) was used to translate the original scale into French. Items were scored on a 4-point response format using the Harter (1985) structured alternative approach. An example of one of the four items used in this scale is, "Some kids are sure that they are good at sports BUT other kids don't think they are good at sports". On this scale, "1" reflected a low level of perceived physical competence and "4" a high level of perceived physical competence with "2" and "3" indicating intermediate levels of perceived competence. In previous research, this scale has been found to be valid and reliable (Sarrazin et al., 2000a). In the present study, the internal consistency was satisfactory: Cronbach's α = .70 (Wave 1) and .78 (Wave 2), including when alphas were computed by age (from .68 to .82, respectively, for the three following groups: under 10 years of age, between 10 and 11, over 11 years).

Physical performance. Four physical tests from the Eurofit battery (1993) were used to assess physical performance. Two were physical aptitude tests and the other two were motor coordination tests. The aptitude test consisted of the standing long jump, for which performance was assessed as distance in meters. Two tries per child were measured and the better score was retained. The second aptitude test was a thirty-second sit-up endurance test (Mathews, 1978). The performance was the number of situps executed in 30 seconds (one try per child). The motor coordination tests consisted of a ball dribbling test and a running motor coordination test. The dribble test involved dribbling a ball through a zigzag course and around 6 pins that were separated evenly. The measure of performance was the time spent to

perform the course in seconds. The other motor coordination test was a 20 meter shuttle-hurdle running test. The measure of performance was also the time spent to complete the course in seconds. For those two tests, children had two practice trials, and the third test was timed and used as the indicator of performance.

Mothers' perceptions of their child's sport competence. Mothers completed a French version (Sarrazin, Bois, & Trouilloud, 2000b) of the Jacobs and Eccles (1992) questionnaire on mothers' perceptions of their child's physical competence. The back-translation method was used to translate this 4-item scale into French. A sample item was, "In general how good is your child in sports?" Each item is rated on a scale from 1 = not at all good through 5 = very good. In previous research, this scale has been found to be valid and reliable (Sarrazin et al., 2000b). In the present study, the internal consistency was satisfactory: $\alpha = .88$.

Data Analysis

Descriptive statistics and preliminary data analysis were performed to obtain an overview of possible gender differences. Then a confirmatory factor analysis (CFA) was conducted to examine the construct validity of the variables in the study. The primary research question related to the influence of mothers' expectancy effects on their child's perceived competence was tested through structural equation modeling (SEM). Subsequently, the same model was run in a multi-sample analysis to assess the moderating function of gender of the child.

RESULTS

Descriptive Statistics and Preliminary Analyses

Means and standard deviations for boys and for girls are presented in Table 1. One-way ANOVAs were conducted to investigate gender differences (Table 1). Boys had significantly better scores ($p < .05$) than did girls on long jump ability, sit-ups, the ball dribble test, and perceived physical competence both at Wave 1 and Wave 2. No significant

differences existed between mothers of sons and mothers of daughters in perceptions of their child's ability.

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Confirmatory Factor Analysis

The variables were subjected to a confirmatory factor analysis (CFA) to test for construct validity. In light of the already high number of variables in the model in relation to the number of participants, it was decided to reduce the number of variables and hence keep the model degrees of freedom reasonable. Items on each subscale were aggregated randomly to form only two composite scores for each construct (Bentler, 1980; Byrne, 1994), except for the construct of physical performance, which consisted of the four measured ability variables. The CFA model thus was based on ten observed variables and four latent factors. The analysis was conducted with LISREL 8.3 (Jöreskog & Sörbom, 1999) using a covariance matrix[3] and maximum likelihood method of estimation. In view of the current controversy regarding measures of overall goodness of fit, it generally is considered appropriate to report multiple indices (Bollen, 1989). Thus, the chi-square statistic, the goodness-of-fit index (GFI), the non-normed fit index (NNFI), the comparative fit index (CFI) and the standardized root mean square residual (SRMR) all were used to evaluate the adequacy of the fit of the model to the data. For GFI, NNFI and CFI values above .90 are considered satisfactory. For SRMR, values below .10 indicate a good fit of the model to the data.

The model provided an adequate fit to the data, $\chi^2(29, N = 156) = 39.62$, $p = .09$, GFI = .95, NNFI = .95, CFI = .97, SRMR = .05. All λ were significant ($t>2.00$). The computed reliabilities[4] for the constructs were .73 for physical performance, .82 for mothers' perceptions of their child's ability, and .69 and .79 for children's perceived physical competence at Wave 1 and Wave 2, respectively. Thus, adequate construct validity for the variables was demonstrated. The correlations between latent factors, disattenuated for error

measurement, are displayed in Table 2. There were significant correlations between the child's physical performance and mothers' perceptions (ϕ = .52) and between child's physical performance and child's perceived physical competence at Wave 2 (ϕ = .22). In addition, there were significant correlations between mothers' perceptions and the two measures of child's perceived physical competence (ϕ =. 37 and .43, respectively) for Wave 1 and Wave 2.

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Structural Model

After having assessed the adequacy of the factor structure, tests were conducted of the hypothesized relations among the variables, as predicted in Figure 1. The hypothesized model provided a good fit to the data , $\chi^2(29, N = 156) = 39.62$, $p = .09$, GFI = .95, NNFI = .95, CFI = .97, SRMR = .05. The structural and measurement coefficients of the model are displayed in Figure 2. The relation between mother's perceptions of her child's ability and her child's own perceived competence one year later (i.e. at Wave 2) was significant (β = .26) despite the significant autoregressive effect of the child's perceived competence (β = .42) from Wave 1. The path from child's physical performance to child's perceived competence at Wave 2 was non significant. The variables entered in the model accounted for 33% of the variance in child's perceived physical competence at Wave 2. Mother's perceptions of her child's ability were related significantly to her child's physical performance (β = .47) and her child's perceived physical competence at Wave 1 (β = .29). Those variables explained 35% of the variance in mothers' perceptions and thus show a relative accuracy with mothers' perceptions[5].

Multigroup Structural Equation Modeling: Testing Moderating Effect of Child's Gender

To test the gender moderation hypothesis, the same model was run using multigroup structural equation modeling (Jaccard & Wan, 1996). That procedure allows the researcher to

set cross-group equality constraints on parameters of interest. A gender difference in parameter estimates will be present if there is a significant improvement in data-model fit in terms of the chi-square statistic when an equality constraint is released. The moderation effect was tested on the path between mother's perceptions of her child's ability and child's perceived physical competence at Wave 2 to see if mothers' influence was stronger for daughters as compared to mother influence for sons (see Figure 2). When the equality constraint was relaxed, the decrease in chi-square was significant ($\Delta\chi^2 = 6.17$, $p < .02$). For the unconstrained model ($\chi^2 = 75.09$, $df = 73$, $p = .41$, NNFI = .98, CFI = .98) the standardized path coefficient between mother's perceptions of her child's ability and child's perceived competence was .05 (ns) for sons and .65 ($p<.001$) for daughters. None of the other paths in the model differed as a function of child gender. Therefore, the results support the hypothesis that the influence of mothers' perceptions is stronger for daughters than for sons.

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DISCUSSION

The three main goals in this study were: (a) to examine if mother's perceptions of her child's physical ability predicted child's perceived physical competence one year later, independent of previous level of the child's perceived competence and physical performance; (b) to examine the antecedents of mothers' and children's perceptions; and (c) to investigate gender differences, particularly to determine if the child's gender would moderates the relation between mother's perceptions and child's perceived competence. Results will be discussed with regard to those three issues.

Influence of Mother's Perceptions on her Child's Perceived Physical Competence

Evidence was found in this study for the effect of mother's expectancies on their children's perceived competence in sport. The results supported that hypothesis and indicated that the more favorable were mother's perceptions of the child's physical competence, the

more likely it was that the child perceived himself or herself as physically competent. That result supports previous findings both in sport and in academic domains (Frome & Eccles, 1998; Jacobs & Eccles, 1992). However, the findings are strengthened by the fact that a year-long investigation was conducted with data collected at two points in time and were controlled for essential intervening variables (i.e., child's previous perceived physical competence and child's previous physical performance) in such a way as to provide a strong test of the hypotheses. Demonstrating mother's influence on her child's perceived competence is quite an important finding given that perceived competence is a fundamental predictor of involvement and of motivation in the sport domain (Brustad et al., 2001; Roberts, 1992; Weiss & Chaumeton, 1992). Furthermore, because that finding was obtained from a French sample, rather than a United States sample, the findings strengthen the generalizability of previous research findings.

The model accounted for 33% of the variance in children's perceived physical competence. Consequently, it seems that mothers' influence only explains a moderate portion of the variance in children's perceived physical competence. There are two possible reasons for that finding. First, it is important to remember that many sources of competence information are available to the child, including fathers, siblings, teachers, and coaches. However, those sources of influence almost always are assessed separately. Further studies should be designed for consideration of the relative influence of various forms of social influence in shaping children's perceived competence. Second, some authors have hypothesized that expectancy effects should be cumulative over time (Smith, Jussim & Eccles, 1999). Indeed, the influence of mothers' expectancies that were found over one year has the potential to be much more powerful if it were reproduced over many years. Longitudinal studies conducted over longer periods of time are necessary to corroborate that hypothesis.

Antecedents of Mothers' and Children's Perceptions

The results showed that mothers' perceptions were based on the child's previous performance and motivation (i.e., perceived competence). That indicates that mothers base their perceptions on relatively objective standards that might prevent mothers from having stereotyped perceptions of their children. The current results also indicate weak or no correlations between the child's performance and his or her perceived competence in Wave 1 or Wave 2 (see Table 2). Thus children, unlike their mothers, did not base their perceptions of competence on their previous performance. According to previous studies both in sport (e.g., Horn & Hasbrook, 1986; Horn & Weiss, 1991) and academic (e.g., Frome & Eccles, 1998) domains, the current results showed that, in estimating their physical competence, children appear to rely more heavily on what their mothers think of them than they do on their own past performance. In summary, these results show that mothers are rather accurate in their perceptions of their child's competence and that they assume an important role as interpreters of the child's previous performance. Therefore, mothers should be aware of the magnitude of influence of the information that they provide to their children as it can affect a child's self-concept.

Gender Differences

Consistent with numerous studies (e.g., Brustad, 1996; Eccles & Harold, 1991; Jacobs & Eccles, 1992), the current findings revealed gender differences in children's self-perceptions of their sport competence, with the boys rating themselves as more competent than did the girls. Previous studies (Eccles et al., 1990; Jacobs & Eccles, 1992) have concluded that those gender differences in children's self-perceptions could be attributable, in part, to gender-related stereotypes held by their parents. Although gender stereotypes were not assessed directly, that outcome does not seem to be the case in that study insofar as the results demonstrated that mothers hold similar perceptions for their sons and for their

daughters. It is possible that social changes over the past decade might account for this unique set of results. With the growing visibility of women in sport in Western societies, sport is probably considered to be less stereotypically masculine than it was previously. In any event, that seems to be the case for the French mothers in this study. In the United States, a similar tendency might exist. In a recent study (Kimiecik & Horn, 1998) it was found that neither fathers nor mothers held gender-differentiated perceptions of their children's physical competence. Additional cross-cultural studies with other populations and with variables other than (or different from) perceived competence are necessary further to explore that question.

Was examined also the moderating role of gender in the relation between mother's perceptions of her child's ability and child's perceived physical competence. The multigroup analysis revealed that the interaction between mothers' perceptions and a child's gender was predictive of the child's perceived competence. The results indicated a significant relation between mothers and daughters but not between mothers and sons. To our knowledge, no studies have been used for the examination of the gender moderation effect in the relation between mother's perceptions and her child's perceived competence. However some studies have revealed that parental encouragement and involvement appear to be particularly important influences on same-gender children (e.g., Greendorfer & Ewing, 1981; Linver & Silverberg, 1997; McElroy & Kirkendall, 1980), which is consistent with our findings. Further studies are needed to confirm those results and especially to test if a symmetrical relation exists, namely that sons are more influenced by their fathers than by their mothers. Two possible explanations can be proposed to explain the current findings: (a) mothers produce differing sets of behaviors with regard to their sons than to their daughters and/or (b) sons are less sensitive to the perceptions and behaviors of their mothers. The first explanation can be evaluated with respect to the Bandura theory (Bandura, 1986; Bussey & Bandura, 1999). In that framework, child's gender development is influenced actively by parents and

especially by the same-sex parent. For example, mothers talk more to their daughters than to their sons and use more supportive forms of speech with their daughters than with their sons (Bussey & Bandura, 1999). Consequently, a daughter can be more sensitive to the behaviors of her mother and thus can be affected more by mother's beliefs about her competency. According to the second proposition, it can be argued that boys might not consider their mothers, as compared to their fathers or coaches, as reliable sources of information from which to estimate their physical competence, especially if they consider that sport typically is a masculine domain[6]. Thus sons can be unaffected by differentiated perceptions and behaviors from their mothers. Therefore, the moderating effect of child's gender might be due either to a greater sensitivity by the girls and/or to a greater indifference by the boys, in relation to mothers' differentiated behaviors and perceptions. The data did not allow to make a conclusion in this matter and further studies will be necessary to explore that question. However, the results of this study highlight the importance of examining mothers' and fathers' influence separately.

Although special attention was devoted to methodological precaution, the results remains correlational in nature and causality cannot be inferred. Only experimental studies can provide a strong inference of causality because situational variables are controlled for by such designs. Although consistent efforts were made trying to control for relevant variables, particularly the child's objective physical performance, it always is possible that one relevant variable was omitted (Judd & McClelland, 1989). Furthermore, only mothers' influence was examined in this study which is why further study should take into account the simultaneous influences of several significant others.

Children's decisions to participate in physical activity and sport have important implications for their physical, psychological, and social development. Because perceived physical competence appears to be an important contributor to participatory involvement in

this domain, it is important to identify contributors to those self-appraisals. The influence of mothers in shaping their child's perceived physical competence was supported by this investigation and the generalizability of previous research has been strengthened by the findings with a French sample. This finding is consistent with research in academic contexts (e.g., Eccles et al., 1990; Felson & Reed, 1986; Jacobs & Eccles, 1992) and further highlights the importance of examining parental socialization influence on children's and adolescents' motivation and performance in varying achievement contexts. However, mothers have been found to only influence their daughters, whereas mothers' influence on sons was not demonstrated. That result highlights the possible differential sensitivity of boys and girls to their mothers' socialization influence and this form of same-gender socialization influence warrants further investigation.

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Footnotes

1. As suggested by a reviewer, recent studies (Wigfield, Eccles, Yoon, Harold, Arbreton, et al., 1997, Jacobs, Lanza, Osgood, Eccles and Wigfield, 2002) using longitudinal data have showed that children self-perceptions of physical competence declined steadily across grades 1 through 12. Therefore it seems also necessary to control this variable in the model. Interested readers should see Wigfield et al., (1997) and Jacobs et al. (2002), for more information on this domain.

2. Data were collected both from fathers and mothers but this report was limited to mothers only. Fathers' results were not presented because their sample was not large enough to meet statistical standards.

3. Covariance matrix used in this study is available from the first author.

4. Reliability estimates for the total scales are obtained by (Bollen, 1989) : $\rho = (\Sigma\lambda i)^2 / ((\Sigma\lambda i)^2 + \Sigma\delta ii)$ where λi are the factor loading and δii the error variances.

5. As suggested by an anonymous reviewer, a model that included age as a control variable on mothers' perceptions and child's perceived competence at Wave 2, was tested. The model fits the data well. Age significantly predicted child's perceived competence at Wave 2 (β = -.28) but that association was not related significantly to mothers' perceptions. As this variable added only 1 % to the explained variance in the child's perceived competence at Wave 2, and significantly did not change any of the other paths within the model, it was decided to retain the original model for clarity.

6. Sport still is presented as a masculine domain, particularly in televised media sport coverage in which not only are there few images of female athletes, but in addition, women who participate in sports, especially activities considered as stereotypically inappropriate for women, often are depicted in a deprecatory manner (Koivula, 1999). Moreover, female participation in sport continues to be far lower than that of males. For example, in France males constitute 66 % of the participants involved in organized sport activities (French Ministry for Youth and Sports in 1997).

Figure Caption

Figure 1 : General model.

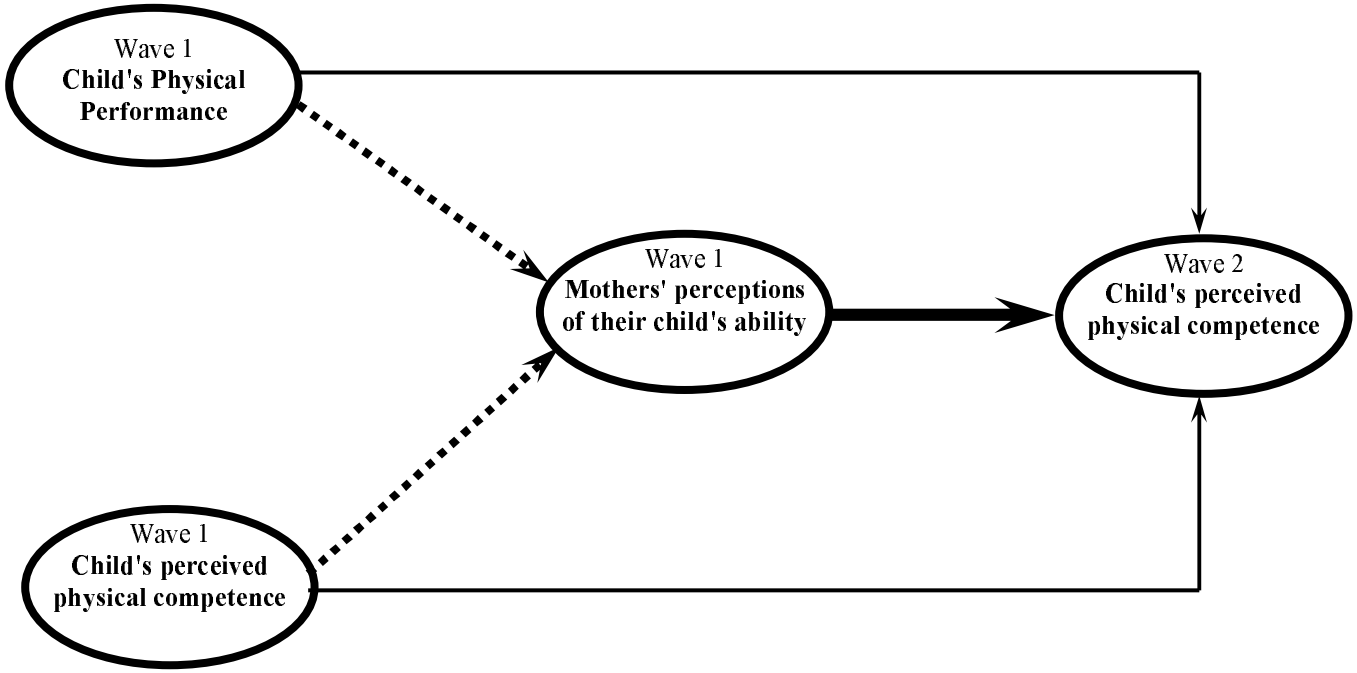
Wave 1
Child's Physical Performance
Wave 1
Mothers' perceptions of their child's ability
Wave 2
Child's perceived physical competence
Wave 1
Child's perceived physical competence

Figure Caption

Figure 2 : Structural equation model of mothers' influence on their child perceived physical competence. Standardized solutions are presented. *$\underline{p} < .05$. **$\underline{p} < .01$. ***$\underline{p} < .001$. Above the arrow beta's for the whole sample are available and under the arrow beta's for the multi-sample analysis are provided (girls/boys). The square multiple correlation ($\underline{R^2}$) are given with regard to the whole sample.

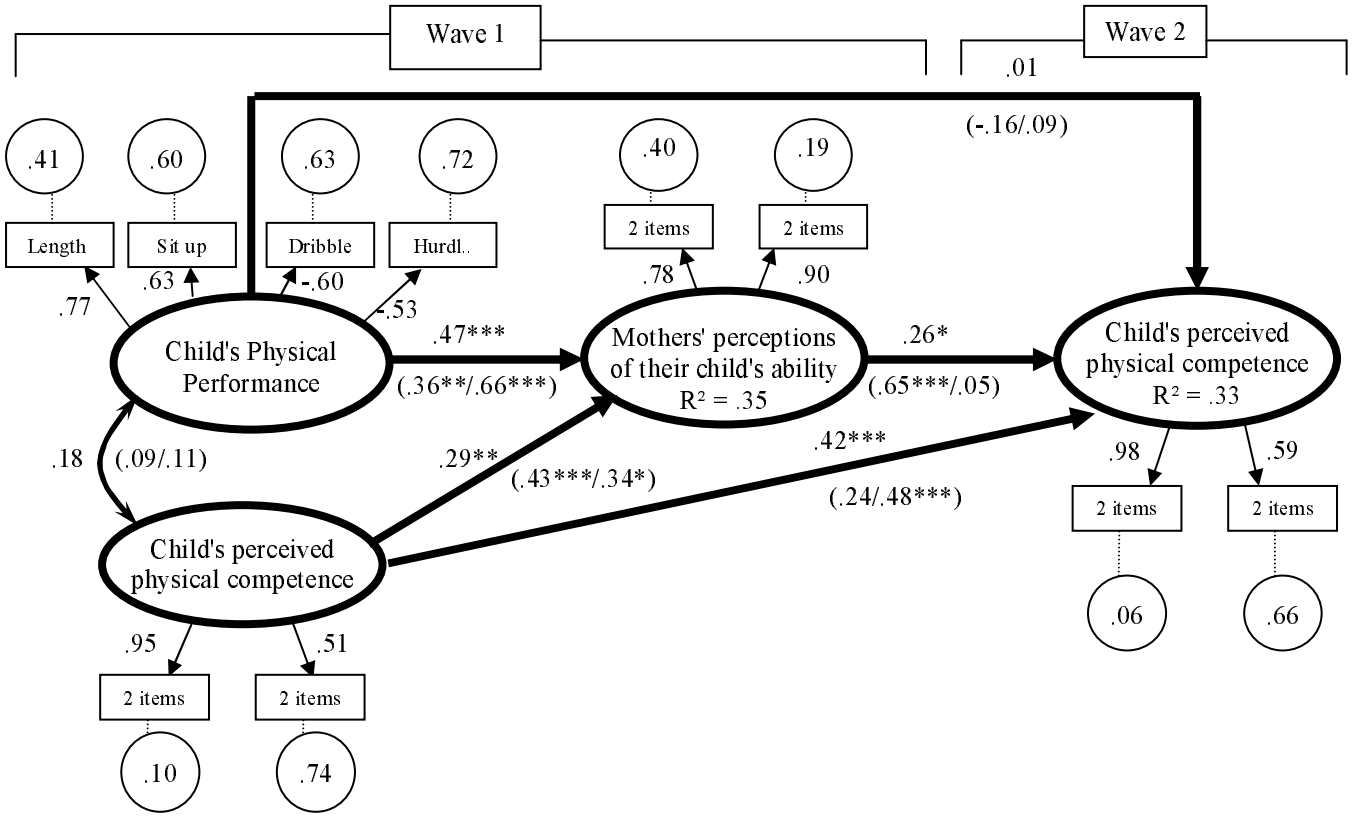
Wave 1
Wave 2
.01
(-.16/.09)
.41
.60
.63
.72
.40
.19
Length
Sit up
Dribble
Hurdl..
2 items
2 items
.63
-.60
.78
.90
.77
-.53
Child's Physical Performance
.47***
(.36**/.66***)
Mothers' perceptions of their child's ability
R² = .35
.26*
(.65***/.05)
Child's perceived physical competence
R² = .33
.18
(.09/.11)
.29**
(.43***/.34*)
.42***
(.24/.48***)
.98
.59
2 items
2 items
Child's perceived physical competence
.06
.66
.95
.51
2 items
2 items
.10
.74

Table 1: Mean Ratings and Standard Deviations of Children's and Mothers' Variables.

	Girls		Boys			
Variable	$\overline{X}$	SD	$\overline{X}$	SD	F	df
1. Long jump	1.28	0.15	1.39	0.16	22.28***	1,154
2. Sit up test	17.42	4.58	19.18	4.19	6.27*	1,154
3. Dribble test	72.46	20.26	57.04	16.24	27.22***	1,154
4. Hurdles test	15.62	2.55	16.05	2.44	1.13	1,154
5. Mothers' perceptions	3.41	0.67	3.41	0.72	0	1,154
6. Child's Perc. Comp. (Wave1)	3.15	0.67	3.36	0.55	4.48*	1,154
7. Child's Perc. Comp. (Wave2)	2.98	0.71	3.20	0.49	5.20*	1,154

Note: * $p<.05$. *** $p<.001$. Child's Perc. Comp =. Child's perceived physical competence

Table 2: Correlation Matrix Between Latent Factors

	1	2	3	4
1. Child's Physical Performance	-			
2. Mothers' Perceptions	0.52***	-		
3. Child's Perceived Physical Competence (Wave1)	0.18	0.37***	-	
4. Child's Perceived Physical Competence (Wave2)	0.22*	0.43***	0.52***	-

Note : * p<.05. *** p<.001