

Children's Ability Perceptions and Values During the Elementary School Years

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## ABSTRACT

In this study we examined the development of children's achievement self-perceptions during the elementary school years. 865 first, second, and fourth grade children completed questionnaires assessing their perceptions of ability and valuing of mathematics, reading, computer activities, music, sports activities, and social activities, as well as their general self-esteem. Factor analyses showed that even the first graders had differentiated self-perceptions for the various activities. These analyses also indicated that within several of the activity domains children's ability perceptions and achievement values formed distinct factors. Analyses assessing gender and age differences in children's beliefs showed that boys had more positive beliefs than did girls for sports activities, mathematics, and computer activities. Girls had more positive beliefs than did boys for reading, music, and social activities. Children's self-esteem did not differ by gender or across grade. For all the activities except for sports, younger children's (particularly the first graders) ability perceptions and valuing of the activities tended to be more positive than did the beliefs of the older children.

## Children's Ability Perceptions and Values During the Elementary School Years

Different views of achievement motivation, such as attribution theory, expectancy - value theory, self-efficacy theory, and the self-worth perspective all have posited an important role for individuals' achievement self-perceptions in motivating their achievement behavior (e.g., Bandura, 1986, 1989; Covington, 1984; Eccles et al., 1983; Nicholls, 1984; Schunk, 1984; Weiner, 1979, 1985). These theorists hold that individuals' interpretations of their achievement outcomes exert important influences on achievement behavior, persistence, and choice of achievement activities beyond that explained by individuals' previous performance on different achievement tasks.

Children's perceptions of their ability (SCA) are one central achievement-related belief, and there now has been a great deal of work that has examined the nature of children's ability perceptions and how they change over time (see Covington, 1984; Dweck & Elliott, 1983; Harter, 1982; Nicholls, 1984; and Stipek & Mac Iver, 1989 for detailed discussion of this work). For instance, Covington (1984) stated that in the school setting maintaining positive perceptions of ability is the most important determinant of children's overall sense of self-worth. Other theorists, while acknowledging the central role of ability perceptions, have argued that children's valuing of different tasks also is an important predictor of their achievement behavior (e.g., Eccles, 1984a,b; Eccles et al., 1983; Eccles et al., 1989; Wigfield, 1984; Wigfield, Eccles, Mac Iver, Reuman, & Midgley, 1989). Taking an expectancy - value approach to explaining achievement behavior, Jacque Eccles and her colleagues have demonstrated that children's choices of which activities to do are based both on their ability perceptions as well as on how valuable the activities are to them (see also Feather, 1982, 1988). We have distinguished (both conceptually and empirically) different aspects of children's achievement values for various tasks, and found that values consist of children's interest in the activity,

the importance of the activity, and how useful the activity will be in the future (Eccles et al., 1983; Eccles & Wigfield, 1989). Children's valuing of different tasks has been shown to relate positively to their perceptions of their ability, and also to children's choice of different achievement tasks (Eccles et al., 1983; Eccles & Wigfield, 1989; Meece, Wigfield, & Eccles, 1990).

The major purpose of the present study is to examine how children's ability perceptions and values differ across the elementary school years. We assessed these differences in several ways: First, we looked at how the structure of children's ability perceptions and values differed across age, to see if older children's beliefs are more differentiated than those of the younger children. Second, we examined the structure of children's beliefs in several different activity domains: mathematics, reading, computer activities, music, sports activities, and social activities, to determine how similar or different the belief structure is in the different domains. Third, we examined grade level and gender differences in the mean levels of the identified components of children's ability perceptions and values.

#### Differences in the Structure of Children's Achievement Self-Perceptions

Researchers have assessed whether children's achievement self-perceptions are relatively global or more differentiated, and how the structure of children's beliefs differs across age. Most of this work has been done with children's ability perceptions. Harter (1982) developed scales to assess children's competence perceptions for academic, sports, and physical skills activities. Using factor analytic techniques, she showed that children as young as third grade differentiate between these different kinds of competence perceptions. Harter and Pike (1984) developed a pictorial version of these (and other) scales to assess young children's perceptions of academic competence, physical competence, peer acceptance, and maternal acceptance. They found that preschool through second grade children

did not differentiate between academic and physical competence, or between peer acceptance and maternal acceptance. However, the children's perceptions of competence and perceptions of acceptance were differentiated.

In a study of second through fifth graders, Marsh, Barnes, Cairns, & Tidman (1984), using the Self-Description Questionnaire (SDQ) developed by Marsh and his colleagues (e.g., Marsh, Smith, & Barnes, 1983), also found that young children's self-perceptions are differentiated. The SDQ measures different domains of the self-concept: physical abilities, physical appearance, relationship with peers, relationship with parents, mathematics, reading, and all school subjects, and the items on this scale tap children's perceptions of ability in the different areas, and their liking of the area. Marsh et al. (1984) found that at grades two through five children's self-descriptions were differentiated across these different domain. However, they did report that for the older children the factors were more clearly identified and that the correlations among factors were lower, suggesting some further differentiation in beliefs across this age range. In general, however, it appears that children's competence perceptions in different areas are differentiated at a relatively early age.

Fewer studies have examined the structure of children's achievement task values. Eccles & Wigfield (1989) have shown that for fifth through twelfth grade children, children's ability perceptions and task values are separable (though related) belief structures. They also showed that three different components of achievement task values can be empirically identified: interest, importance, and usefulness. In this study we examine the structure of first, second, and fourth grade children's ability perceptions and task value beliefs for several different activities.

### Age Differences in Children's Achievement Self-Perceptions

With few exceptions (e.g., Harter, 1982) studies of children's ability perceptions and achievement task values show that these beliefs decrease as children get older. For instance, Nicholls (1979) found that six and 8 year old children ranked their reading ability relative to others in their class as very high, but that 10 and 12 year olds' rankings were more varied. He also found that as children get older their perceptions of ability relate more closely to teacher's assessments of their ability (see also Harter, 1982, and Marsh, Relich, & Smith, 1983), suggesting that children's perceptions become more accurate as they get older. Marsh (1989) found that for all of the components of self-concept from the SDQ, mean scores are lower for the older children than the younger children, and the effect across grades primarily was linear. Many other studies find similar decreases in children's perceptions of ability (see Eccles, Midgley, & Adler 1984 and Stipek & Mac Iver, 1989, for reviews).

Eccles and her colleagues have found that the decreases in children's achievement self-perceptions occur more in some domains than in others. For mathematics, children's perceptions of their ability and valuing of mathematics are more negative in high school than in junior high or elementary school (Eccles et al., 1983; Wigfield, 1984). In contrast, the older students' ability perceptions and valuing of English are more positive than those of the younger children. In a large-scale study of how children's achievement-related beliefs in different domains change across the transition to junior high, Eccles, Wigfield, Flanagan, Miller, Reuman, & Yee (1989) and Wigfield, Eccles, Mac Iver, Reuman, & Midgley (1989) report that during sixth and seventh grade children's ability perceptions and valuing of math and sports activities become more negative. Children's perceptions of their ability and valuing of English and social activities become

more negative across the junior high transition, though the value children attach to these activities increases some during seventh grade.

In accordance with this earlier work, we predicted that younger children generally would have more positive ability perceptions for the different activities than would the older children, particularly for the academic activities. We also predicted younger children would value those activities more.

#### Gender Differences in Children's Achievement Self-Perceptions

Several researchers report gender differences in children's achievement self-perceptions, particularly in certain domains. Harter (1982) found that across third through ninth grade boys consistently have higher perceptions of their physical competence than do girls. She did not find gender differences on her other scales. Marsh and his colleagues also have obtained gender differences favoring boys on the physical ability scale from the SDQ (Marsh, 1989; Marsh, Relich, & Smith, 1983; Marsh, Smith, and Barnes, 1983, Marsh et al., 1984). In those studies girls reported higher self-concepts for reading. In addition, Marsh, Parker, & Barnes (1985) found that fifth and sixth grade boys had higher self-concepts for mathematics than did fifth and sixth grade girls. Dusek and Flaherty (1981) reported that adolescent girls had higher self-perceptions for congeniality/sociability than did adolescent boys.

Eccles and her colleagues also have found gender differences in children's ability perceptions and achievement task values. During the late elementary school and secondary school years boys' ability perceptions about mathematics and sports are more positive than girls' ability perceptions in those areas. Boys and girls value math similarly, but as would be expected boys value sports activities much more than do girls. Girls have higher ability perceptions and values for English than do boys, and value social activities more than boys do (Eccles et al., 1983; Eccles et al., 1989; Wigfield, 1984; Wigfield et al., 1989).

In the present study, we predicted that boys would have higher ability perceptions and values for math and sports activities than would girls, whereas girls' ability perceptions and values for reading and social activities were expected to be higher than those of boys. For the new activities assessed in this study, we predicted that boys would have higher ability perceptions and values than would girls for computer activities, whereas girls would have more positive beliefs for music. We anticipated that these gender differences would increase across grade.

## Method

### Participants

The present study is part of a four-year longitudinal project that is investigating the early development and socialization of children's achievement self-perceptions and activity choices. The participants are 865 first, second, and fourth grade children attending 10 elementary schools in southeastern Michigan. The children are from lower middle class to middle class backgrounds, and over 95% are white. The children agreed to participate in the study, and also received parental permission to participate.

### Measures

In the spring of 1988, the children completed questionnaires tapping their beliefs about academic activities, social activities, and physical skills activities, as well as their gender-role beliefs, perceptions of their personality characteristics, the rule structure in their families, and many other constructs. Within each of the activity domains, children answered questions about specific activities. In the academic area, the questionnaires assessed children's beliefs about mathematics, reading, computers, and music. In the social domain, children's beliefs about their popularity and friendship-making skills were assessed. In the physical skills area, children answered questions about sports in general, tumbling, and throwing and catching a ball.



The specific beliefs assessed included children's perceptions of ability for each activity, their expectancies for current and future success on the items, their valuing of those activities (including perceptions of how interesting each activity is, how important the activity is to the child, and how useful the activity will be in the future), the difficulty of each activity, and how worried the child was about doing poorly on the activity. The questions tapping children's beliefs about specific activities were modified from earlier questionnaires developed by Eccles and her colleagues (1983, 1988) to assess children's beliefs about mathematics, English, sports, and social activities. For this study, similar questions were developed to assess children's perceptions about computers and music. These questions have been used in several studies of early adolescents' and adolescents' self-perceptions discussed in the introduction. The items have excellent psychometric properties (see Eccles, 1988).

Because the children in the current study were younger than children in the earlier studies, great care was taken to ensure that the children understood the constructs being assessed. All questions were read aloud to the children.

For this report, we assessed children's self-concepts of ability, valuing (the importance attached to each activity, its usefulness, and how much it is liked), perceptions of difficulty of the task for self and others, and worries about the following activities: mathematics, reading, computer activities, music, sports activities, and social activities. Most of the self-perceptions were assessed by two or three items, and so we created scales for each of those construct, based on results of factor analyses of the items within each activity domain (see below). Due to space limitations in the questionnaire, in some activity domains (particularly computers and music) single-item indicators of the constructs were obtained, and certain of the constructs were not assessed in these domains.

Along with these specific self-perceptions, children completed three items from Harter's (1982) general competence scale. We use these items as a measure of general self-esteem. These items were chosen based on our previous work with that scale with late elementary and junior high school students. The items selected from this scale assessed whether children wanted to change or stay the same, how happy they are with themselves, and how happy they are about the way they do things. Children also completed two items assessing their anxiety about tests.

## Results

### Factor Analysis of Children's Beliefs

Children's responses to the questions were factor analyzed in order to assess the dimensionality of children's beliefs, and to create scales for further analyses. Two kinds of factor analyses were done. In one kind, the 67 items assessing children's beliefs across all the activity domains were included in the same analysis, to determine whether children's perceptions of the different domains formed separate factors. In the second kind, the set of items assessing children's perceptions in each domain were analyzed separately, to determine the dimensionality of children's beliefs within each activity area. We performed both kinds of analyses for the sample as a whole and separately for each of the grades. We used Cattell's (1966) scree test as well as the eigenvalue greater than one approach to determine how many factors best described the data, and decided to include factor loadings that were greater than .40 on any given factor. We also examined both the orthogonal and oblique solutions in each analysis.

### Across Domain Factor Analyses

For the sample as a whole and at each grade, a nine factor solution seemed to best describe the data. In general, the factor structure of children's beliefs is similar across the grades, both in terms of the number of factors and the items loading on each of the factors. In each of the analyses, children's beliefs about

each domain (math, reading, computers, music, sports, and social activities) form separate factors, which shows that the children (even the first graders) clearly distinguish the different domains. For the whole sample and at all grades, in the math and reading domains the items assessing children's perceptions of ability, expectancies for success, and difficulty of the task for themselves loaded on the factor, with the difficulty item loading in the negative direction. Certain of the values items, especially those tapping interest, also loaded on this factor, though there was some variation in this pattern across grades. For sports, computers, music, and social activities, for the whole sample and at each grade the ability perception, expectancies for success, task difficulty and values items loaded on the factor for each domain. Interestingly, the item assessing children's perceptions of tumbling ability loaded on the social factor, suggesting that children view tumbling as a social rather than a sports activity.

Three other interesting factors emerged in each of these analyses. One factor contains items assessing children's valuing of the different activities across the different domains, particularly in reading and math. There is some variation across grade in the items that load on this factor, with the usefulness item loading in the analysis of the whole sample, second, and fourth graders, but not the first graders. In addition, for the fourth graders items assessing the value of social activities also loaded on this factor. This factor might mean that children have both domain-specific valuing of the different activities and a general sense of whether or not they value certain of the activities we assessed. The second factor contains each item assessing children's worry about doing poorly in the different domains. This factor would seem to indicate that children's worries are not domain-specific; rather children worry (or don't worry) about all of the activities. The third factor contains items assessing children's perceptions of how difficult the different activities are for other children. Though children's perceptions of how difficult

each item is for themselves loaded (negatively) on the factor containing items for each of the separate domains, the items assessing children's perceptions of the difficulty of the activities for other children formed a separate factor. This might suggest that children's notions about how hard a task is for others does not affect their beliefs about their own abilities about specific activities.

To summarize, results of these analyses indicated that children's perceptions of the various domains are differentiated. Across the different grades, the number of factors is very similar, and the pattern of loadings is relatively similar. The factor structure of the first graders' beliefs is most different from the other groups, though the analyses clearly indicate that first graders' beliefs also are differentiated.

#### Within-Domain Factor Analyses

The analyses done separately within each of the domains again showed similarity across grade levels, both in terms of the number of factors and the loadings on those factors. This is particularly true for math and reading. For math and reading activities, in general a two factor solution best described the data. One factor contains items assessing children's ability perceptions, expectancies for success, and task difficulty for oneself, with the task difficulty item loading in the negative direction. The other factor contains the items assessing children's valuing of the different activities. In the analysis of the first graders, there was some evidence for two math values factors, one containing items assessing usefulness and importance, and the other containing items assessing interest in math.

For computer activities, a two factor solution best fit the data, with one factor representing children's perceptions of ability at computers, and the other the values they attached to computers. However, the liking item tended to load on the first factor for all but the first graders. For the fourth graders, the second factor

was more a task difficulty factor. For music, a one factor solution appeared to best, and it contains the items assessing children's ability perceptions and values for the activities. The first graders again were the exception; for them a two factor solution appeared to be the best, with one factor representing their perceptions of ability in music, and the other their valuing of music. There are two possible explanations for these results in the computer and music domains: Either children's beliefs are less differentiated in these domains, or the fact that we had fewer items assessing each construct led to a single factor.

Sports beliefs also generally forms two factors, one tapping children's ability perceptions (with the item tapping liking also loading on this factor for the whole sample, first grade, and fourth grades), and the other their valuing of sports. For the fourth graders, the values factor is weak, since most of the values items load on the first factor.

The factor structure for social activities is more complex, and differs more across grade. Three factors emerged from these analyses, though the items loading on the factors varied some across grades. One factor includes items assessing perceptions of popularity, importance of being popular and/or being a leader, and appearance. This last item did not load on this factor in the first grade analysis. For the fourth graders, the item assessing how good children are at making friends also loads on this factor. A second factor contains items assessing children's perception of how good they are at making friends, how difficult it is to make friends (negative loading), and how important it is to make other children feel better (though this item loaded on the first factor for the fourth graders). This factor varied the most across grades. The third factor includes items assessing the importance of being good at making friends/being socially adept, and worries about being disliked and about hurting others' feelings. The varying patterns across grades, and the distinctive ways in which items load on "ability" and "values" factors, suggests that

children's beliefs in this domain might be organized in rather different ways than their beliefs in the other domains.

### Scale Creation

Scales were created based on the results of these factor analyses, and used in subsequent analyses. Table 1 provides the internal consistency reliabilities for the scales that were created based on these factor analytic results. The SCA scales for the math, reading, computers, music, and sports domains include items tapping children's perceptions of ability, expectancies for success, and ability to learn new things in the domain. For the social domain, this scale includes items assessing children's perceptions of how good they are at making friends, and at making others feel better when they are sad. The general achievement value scale include items assessing interest, importance, and usefulness in the math, reading, and sports domains. For computers and music, this scale includes items assessing interest and importance, since items assessing usefulness were not included in these domains.

Though the values items did not differentiate further in many of the factor analyses, based on the theoretical distinctions made by Eccles et al. (1983) and results of previous research (Eccles & Wigfield, 1989), in the math, reading, and sports domain scales tapping the usefulness and importance of each activity were developed. For the social domain, a scale tapping the importance of social activities was created. In the math, reading, music, and sports domains, separate scales assessing interest/liking of the activity were created.

Separate scales also were created for test anxiety, and for across-domain worry. All of these scales were used in the analyses assessing gender and grade-level differences in children's self-perceptions.

### Gender Differences and Grade-Level Differences in Children's Self-Perceptions

Children's responses to the scales and individual items tapping their self-perceptions were analyzed with 2 (Gender) x 3 (Grade) analyses of variance. Table 2 presents the gender effects from these analyses, and Table 3 presents grade level effects. Significant grade-level effects were followed up with Tukey's (1953) HSD tests to assess the significance of the difference between each pair of means. The .01 level of significance was adopted for these paired comparisons. We discuss results for each construct in turn.

### Self-Concept of Ability

Figure 1 presents gender differences in children's SCA for the different activities. As can be seen in Table 2 significant gender differences occur for math, computer activities, music, sports, and social activities. Boys have higher SCA than do girls for math (boys'  $\underline{M}$  = 5.67, girls'  $\underline{M}$  = 5.38), computers (boys'  $\underline{M}$  = 6.02, girls'  $\underline{M}$  = 5.73), and general sports activities (boys'  $\underline{M}$  = 6.14, girls'  $\underline{M}$  = 5.22). Girls also have higher SCA than do boys for music (girls'  $\underline{M}$  = 5.15, boys'  $\underline{M}$  = 4.41) and social activities (girls'  $\underline{M}$  = 5.80, boys'  $\underline{M}$  = 5.34). Boys' and girls' SCA for reading are similar.

Another way to examine gender differences is to look at the ways in which boys' and girls' SCA are rank-ordered (see Figure 1). The orderings also are quite different for boys and girls. Boys' perceptions of ability are highest for sports activities, followed closely by computers, then reading and math, and their ability perceptions are lower for social activities, and music. In contrast, girls' ability perceptions are highest for social activities, then reading, computers, math, sports, and music. These different patterns further indicate the magnitude of the gender differences in ability perceptions

Figure 2 presents grade-level differences in children's SCA. In general, (except for sports) children's self-concepts of ability decrease across grade. As can be seen in Table 3, the overall grade differences are significant for math, reading,

computer activities, music, and social activities; thus the only activity where no grade level difference occurs is sports. For each activity where the differences are significant, the younger children have higher self-concepts of ability than do the older children. The post-hoc follow up tests show that for perceptions of math ability, computer ability, and social ability, the first graders' mean ratings are significantly higher than those of the fourth graders, with none of the other differences significant. For reading ability perceptions and music ability perceptions, both first and second graders' means are significantly higher than the mean for the fourth graders.

#### Achievement Values

Gender differences in achievement values occurred in the reading, music, and sports domains (see Table 2). Boys' and girls' valuing of the different activities are shown in Figure 3. Girls value reading ( $\underline{M} = 5.84$ ) and music ( $\underline{M} = 5.61$ ) more than do boys ( $\underline{M}$ 's = 5.34 and 4.62, respectively). Boys ( $\underline{M} = 6.19$ ) value sports activities more than girls do ( $\underline{M} = 5.66$ ). Boys and girls valuing of math and computer activities did not differ

Boys' and girls' valuing of the activities show a fairly different rank ordering (see Figure 2). Boys value sports activities the most, followed by computers, math and reading, and then music. Girls value reading and computer activities the most, followed by sports, then music, and finally math.

Grade level differences in general achievement values are found for reading, computers, music, and sports activities. Where differences occurred, they tend to show that children's valuing of the activities decrease across grade, except for sports, where an increase in values across grade occurs (see Table 3), and Figure 4 shows the means for the different activities for each grade group. The post-hoc tests indicate that for reading value, the first graders' mean ratings are significantly higher than those of the fourth graders, with no other differences



significant. For computers, none of the groups' means are significantly different. For music, first and second graders' means are significantly higher than the means for the fourth graders. For sports, the opposite pattern occurred. Fourth graders value sports significantly more than the first graders, with none of the other differences significant.

#### Usefulness and Importance

There are few gender or grade-level differences in children's ratings of the usefulness and importance of the different activities (see Tables 2 and 3). Figure 5 presents the ratings for the boys and girls. Boys ( $\underline{M} = 5.86$ ) rate sports activities as more useful and important than do girls ( $\underline{M} = 5.43$ ). On the single item assessing children's assessment of the importance of music, girls ( $\underline{M} = 5.22$ ) report that music is more important than do boys ( $\underline{M} = 4.38$ ).

The rank-orderings for the usefulness/importance ratings is similar across activities for boys and girls. Both gender groups think math and reading are most important, and music least important. The only difference for the two groups is the relative importance of sports versus social activities, with sports ranked after reading and math for boys, and social activities following reading and math for girls.

Figure 6 presents the grade-level differences. None of the main effects are significant. There is a gender by grade interaction effect for children's ratings of the importance of social activities,  $F(2, 859) = 4.47$ ,  $p < .05$ . This interaction occurs because at each successive grade level girls rate social activities less important, whereas boys rate those activities more important.

#### Interest

Figure 7 presents the gender differences in children's interest in the different activities. Significant differences occur for reading, music, and sports (see Table 2). For reading and music, girls ( $\underline{M}$ 's = 5.53 and 5.80) report more interest

than do boys ( $\underline{M}$ 's = 4.69 and 4.75). Boys ( $\underline{M}$  = 6.53) are more interested in sports than are girls ( $\underline{M}$  = 5.89).

The rank-ordering of boys' and girls' liking of the activities shows some differences across gender: boys like sports a great deal, followed by math, music, and reading. There is a large gap between their liking of sports and liking of the other activities. Girls also like sports activities the most, followed closely by music, then reading, and math. It is noteworthy that the girls like the academic activities the least.

Grade-level differences in children's interest in the different activities is presented in Figure 8. The grade differences are significant for reading, music, and sports (see Table 3), and show that for reading and music interest decreases across grade, whereas for sports children's interest increases. For reading, first graders report more interest in the activity than second or fourth graders, and second graders report more interest than do the fourth graders, and the post-hoc tests show that each of these differences is significant. For music, the first graders report significantly more interest than do the fourth graders, with none of the other differences significant. For sports, the fourth graders report the most interest, followed by the second graders and then the first graders, with the differences between first and fourth graders significant.

#### Test Anxiety and Worries About Doing Poorly

Both the gender and grade effects are significant on the test anxiety scale, as can be seen in Tables 2 and 3. Girls ( $\underline{M}$  = 3.93) are more test anxious than are boys ( $\underline{M}$  = 3.63). Children's test anxiety increases at each successive grade; first graders ( $\underline{M}$  = 3.63) are less test anxious than second graders ( $\underline{M}$  = 3.70), who in turn are less anxious than fourth graders ( $\underline{M}$  = 4.06); however none of these differences are significant on the post-hoc tests. Girls ( $\underline{M}$  = 3.53) also are significantly more

worried about doing poorly on the different activities than are boys ( $M = 3.26$ ) (see Table 3)

### Self-Esteem

We found no grade-level or gender differences in children's self-esteem.

### Discussion

The results of this study support the view that children's achievement self-perceptions are relatively differentiated, even in first grade. The results thus corroborate the findings of Harter (1982), Harter and Pike (1984), and Marsh et al. (1984), who have shown that children's perceptions of their ability in different domains are clearly differentiated. We have extended this work by showing how children's beliefs are differentiated across activity domains not previously studied: (computers and music), as well as across the mathematics, reading, social, and sports domains, which have been studied by Harter and Marsh et al. These findings have important implications for models of self-concept that argue that children's self-concepts are relatively undifferentiated early on and gradually become more differentiated. Our results suggest that this differentiation occurs quite early, even before children have had a lot of experience with the different activities in school.

Along with showing that children's beliefs are differentiated across different activity domains, we also showed that within certain of the domains children distinguish between perceptions of ability for different activities and their valuing of those activities. This distinction has not been examined in the previous factor analytic work on children's achievement self-perceptions. The fact that children do distinguish between ability perceptions and values (especially in math and reading) provides support for expectancy - value models of achievement behavior, which posit that expectancies for success (which are closely tied to ability perceptions) and task values both influence individuals' motivation in achievement situations (see Eccles, 1984; Eccles et al., 1983).

Though elementary-school aged children distinguish between ability perceptions and task values, within each of those constructs there is no further differentiation. That is, children's ability perceptions consist of beliefs about ability, expectations for success in the domain, and perceptions of the difficulty of tasks in the domain, rather than each of these beliefs being separately defined. These results are similar to those reported by Eccles & Wigfield (1989) in a study of fifth through 12th grade children. These findings have implications for views of achievement motivation that make fairly clear distinctions between perceptions of ability and expectancies for success (e.g., Weiner, 1979). Our results suggest that for children in "real-world" achievement situations, these distinctions are not made.

For the most part, children's perceptions of achievement task value also formed a single factor, though occasionally children's liking of certain activities appeared to be distinct from the importance they attached to that activity and its perceived usefulness. These results differ from those of Eccles & Wigfield (1989), who found strong evidence for three separate components of achievement task values (interest, importance, and usefulness). There are two possible explanations for these different results. One is that younger children do not distinguish across these beliefs in the same way the older children do. The other is a methodological explanation; fewer task value items were included in the present study, which could have restricted the amount of differentiation that occurred. We have incorporated additional items assessing task values into the questionnaire, and so will be able to test these two alternative explanations.

Though generally the differences in the factor structure across age were not large, some did emerge. When they did occur, they tended to show that first graders' beliefs were different from the beliefs of children at the other two grades. Interestingly, however, in some cases the first grade children's beliefs actually

were more differentiated than those of the older children. The simple explanation that younger children's beliefs are less differentiated than those of older children does not fit these results. And though some grade differences did occur, the similarities across grade rather than the differences are more striking, particularly with respect to the number of factors that emerged in the analysis.

Children's beliefs across the different activity domains seemed relatively similar in structure, except for the social domain. In that domain two kinds of ability perceptions seemed to emerge, one dealing with skill at making friends and the other with popularity and appearance. The values factor in this domain centered on the importance of social activities, and worries about others/being disliked. The factor patterns varied more across age in this domain as well. Perhaps the social domain does not fit as neatly as the other domains into the expectancy - value perspective.

Turning to the gender and grade differences in children's beliefs, these results show that the gender differences in important achievement self-perceptions found in Eccles' work (e.g., Eccles, 1984a,b; Eccles et al, 1983; Eccles, Wigfield, Flanagan, Miller, Reuman, & Yee, 1989; Wigfield, 1984; Wigfield et al., 1989) with early adolescents and adolescents also are obtained with children in elementary school. Gender differences in children's beliefs and attitudes about different school subjects and other activities emerge during the very early elementary school years, if not earlier. As we predicted, boys' ability perceptions are higher than those of girls for math, computers, and sports activities, whereas girls' ability perceptions are higher than those of boys for social activities and music. And though girls thought they were less able in sports in general, their ability perceptions for tumbling were much higher than those of boys. This result illustrates the importance of looking at beliefs about specific activities within a domain rather than at domains in general. Boys like sports activities and thought

them more important than did girls, whereas girls like reading and music more than boys do. It is quite interesting that girls like sports as well as any of the other activities we asked them about, despite feeling sports are less important, and not feeling particularly competent at sports.

Contrary to our prediction, most of the gender differences did not change in magnitude or type from first through fourth grade. We had anticipated that the differences might increase from the earlier to later grades, and that more differences might emerge later in elementary school, after children have had more experience with the different activities. Perhaps the differences emerged early on because children at first and second grade have fairly rigid views about what is appropriate for boys and girls to do, because of their recently-formed notions of gender constancy (see Huston, 1983). Given the similar pattern of the gender differences across age and the fact that the study included children as young as first graders, these results show how early these differences are established. As we begin to explore how children's beliefs about different activities relate to their parents' perceptions of the activities both for themselves and their children, we will be able to test how their parents may have influenced these beliefs.

We also are interested in looking at how the differences in beliefs about specific activities influences children's choice of which activities to do. For instance, girls think math ability is as important as the boys do, yet girls do not believe they are as competent in math as boys do. This difference between the girls' importance ratings and ability perceptions could create problems for them later on, particularly as math gets more difficult, and may help explain why girls tend to stop taking math more than do boys when that option becomes available. Such differences between ability perceptions and importance ratings also could have consequence for children's self-esteem. Though we observed no differences in self-esteem in this study, we would predict that over time if children belief

certain activities are quite important and do not feel they are particularly good at those activities, this discrepancy could have a negative impact on their self-esteem. Boys do not have a similar discrepancy in their ability perceptions and importance ratings for any of the activities, except perhaps for social activities.

As Nicholls has reported for children's ability perceptions for reading, we found that younger elementary school-aged children, particularly first graders, are more optimistic than fourth graders about their abilities at different activities. Though there are some differences between first and second graders and second graders and fourth graders, most of the differences are between the first and fourth graders. These differences could be due to the increasing pessimism of the older children, or perhaps increasing realism or accuracy on their part. Nicholls (1979) reported that the correlations between children's assessments of their reading ability and their performance in reading increases across the elementary school years. We will see whether this pattern occurs for the academic and non-academic activities we have assessed by looking at how children's self-perceptions relate to the different indicators we have obtained of children's actual performance on the activities.

Along with the issue of whether children's achievement self-perceptions become more accurate as they get older, we will assess whether there are differences in the accuracy of children's self-perceptions across activity domains. For instance, will the correlation between children's math grades and self-concepts of ability in math be stronger than the correlation between performance in sports and sports self-concepts of ability? Perhaps the feedback children receive about their school performance is clearer than that about their physical skills, and so children's academic self-perceptions will correlate more highly with their school grades. We will do these comparative analyses across the different activity areas we have assessed.

Children's general valuing of the different activities showed fewer differences across grade levels, particularly for the academic subject areas. For instance, there were no grade differences in children's ratings of the importance of math or reading ability. Though fourth grade children's ability perceptions are not as positive as those of the younger children, they still regard math and reading as quite important to them. And although the dominant pattern across all activities was for younger children to give higher ratings of their ability and valuing of the different activities, the one exception was children's liking of sports, which increased across age. This result may indicate a shift in emphasis from academic to non-academic activities in the middle elementary school years, at least in terms of interest in certain activities.

The patterns of children's beliefs across activities seems more similar at the different grade levels than it did for boys and girls, despite the observed grade-level differences for many of the individual activities. This is particularly true for children's self-concepts of ability and importance ratings. One aspect of the rank ordering of beliefs that is troubling is children's lack of interest in math at all the grades. Even though children rate math as important, and have reasonably high ability perceptions in math, they do not like math very much. If this pattern continues (which previous research suggests), it could have serious consequences for children's continued involvement with math.

Children from first through fourth grade do not differ in their general self-esteem, despite the differences in their beliefs about the specific activities that they do. This result could have occurred because children feel competent enough about certain activities (or value those activities enough) so that their general self-esteem is not affected by differences in beliefs about certain of the activities we assessed. One interesting issue we hope to address is how the different activities predict to children's general self-esteem, to see if there are certain activities



critical for self-esteem maintenance. We would anticipate that the academic activities may be the key ones, but sports (especially for boys) and social activities (especially for girls) also may play important roles.

The information we have reported here is our first look at how boys and girls at different elementary grade levels differ in their self-perceptions of ability and valuing of different activities that they frequently do. In subsequent reports we will examine how these beliefs change longitudinally, and how they relate to children's performance on the different activities. We also are very interested in how these beliefs relate to children's choices about which activities to spend their time and energy on both in and out of school. And we will look carefully at the impact parents and teachers have on children's beliefs, and how their influence may change over time.

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Table 1 Reliabilities for the Scales Assessing Children's Beliefs About the Different Activities

Scale	Whole Sample	First	Second	Fourth
<u>Self-Concept of Ability</u>				
Math	.78	.71	.78	.82
Reading	.82	.73	.82	.76
Computer	.63	.53	.68	.66
Music	.73	.67	.76	.72
Sports	.78	.78	.78	.81
Social	.52	.47	.56	.52
<u>Achievement Task Values</u>				
Math	.61	.55	.62	.70
Reading	.65	.53	.69	.74
Computers	.46	.36	.47	.59
Music	.82	.76	.83	.86
Sports	.70	.65	.70	.77
<u>Usefulness and Importance</u>				
Math	.36	.34	.27	.53
Reading	.45	.35	.46	.67
Sports	.58	.49	.57	.72
Social	.57	.53	.64	.53

Table 1 (continued)

	Whole Sample	First Grade	Second Grade	Fourth Grade
<u>Interest</u>				
Math	.74	.71	.76	.77
Reading	.74	.55	.76	.80
Music	.84	.80	.84	.88
Sports	.74	.60	.82	.87
Test Anxiety	.73	.69	.71	.81
Worry Across Domain	.70	.69	.73	.68

Table 2 . Sex differences in children's beliefs and attitudes toward the different activities.

**Self-Concept of Ability**

<u>Activity Domain</u>	MS	df	F	p
Math	17.79	1, 858	16.61	.000
Reading	1.58	1, 858	1.40	.24
Computers	16.69	1, 859	10.58	.001
Music	123.07	1, 849	51.09	.000
Sports	181.46	1, 849	144.54	.000
Throwing	90.11	1, 841	36.08	.000
Tumbling	279.61	1, 844	78.43	.000
Social	62.70	1, 850	30.52	.000

**General Achievement Values**

<u>Activity Domain</u>	MS	df	F	p
Math	7.02	1, 858	3.66	.06
Reading	54.81	1, 857	30.13	.000
Computers	5.61	1, 849	2.66	.10
Music	209.22	1, 849	60.69	.000
Sports	61.76	1, 850	38.88	.000

**Usefulness and Importance**

<u>Activity Domain</u>	MS	df	F	p
Math	2.85	1, 858	1.66	
Reading	5.49	1, 857	2.99	.08
Sports	40.21	1, 850	15.86	.000
Social	1.02	1, 850	.442	.651



Table 2. (Continued)

**Interest**

Activity Domain

Math	12.81	1, 859	3.12	.08
Reading	154.44	1, 857	42.22	.000
Music	236.88	1, 849	57.65	.000
Sports	87.91	1, 850	43.84	.000
Self-Esteem	..001	1, 833	.001	.976
Test Anxiety	18.62	1, 857	3.99	.05
Worry Across Domains	15.15	1, 856	5.79	.016

Table 3. Grade differences in children's beliefs and attitudes toward the different activities.

**Self-Concept of Ability**

<u>Activity Domain</u>	MS	df	F	p
Math	6.74	2, 858	6.29	.001
Reading	31.83	2, 858	28.30	.000
Computers	5.51	2, 857	3.49	.031
Music	68.68	2, 859	28.49	.000
Sports	1.35	2, 849	1.08	.341
Throwing	10.50	2, 841	4.21	.015
Tumbling	25.01	2, 844	7.02	.000
Social	7.25	2, 850	3.52	.030

**General Achievement Values**

<u>Activity Domain</u>				
Math	.009	2, 858	.005	.99
Reading	10.32	2, 857	5.65	.004
Computers	7.14	2, 849	3.40	.034
Music	47.31	2, 849	13.72	.000
Sports	6.12	2, 849	3.86	.022

**Usefulness and Importance**

<u>Activity Domain</u>				
Math	3.16	2, 858	1.69	.178
Reading	2.23	2, 857	1.21	.339
Sports	2.53	2, 850	.99	.369
Social	.996	2, 850	.429	.651

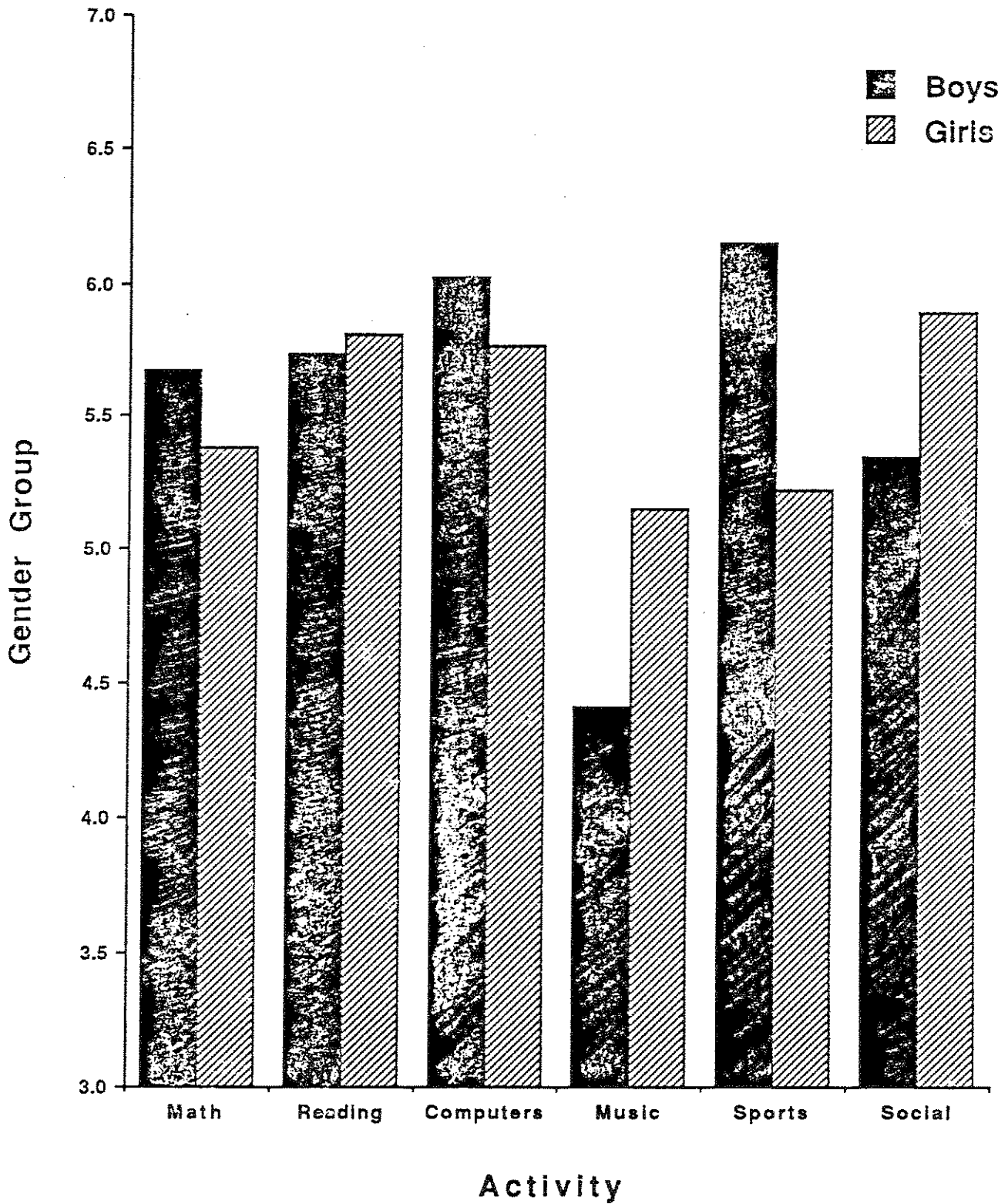
Table 3 (continued)

## Interest

Activity Domain

Math	3.09	2, 858	.754	.471
Reading	60.75	2, 857	16.61	.000
Music	20.94	2, 849	5.09	.006
Sports	20.37	2, 850	11.15	.000
Self-Esteem	.340	2, 833	.546	.579
Test Anxiety	14.45	2, 857	3.09	.05
Worry Across Domain	.219	1, 850	.084	.92

Figure 1: Sex Differences in SCA



**Figure 2: Children's Ability Perceptions by Grade for Different Activities**

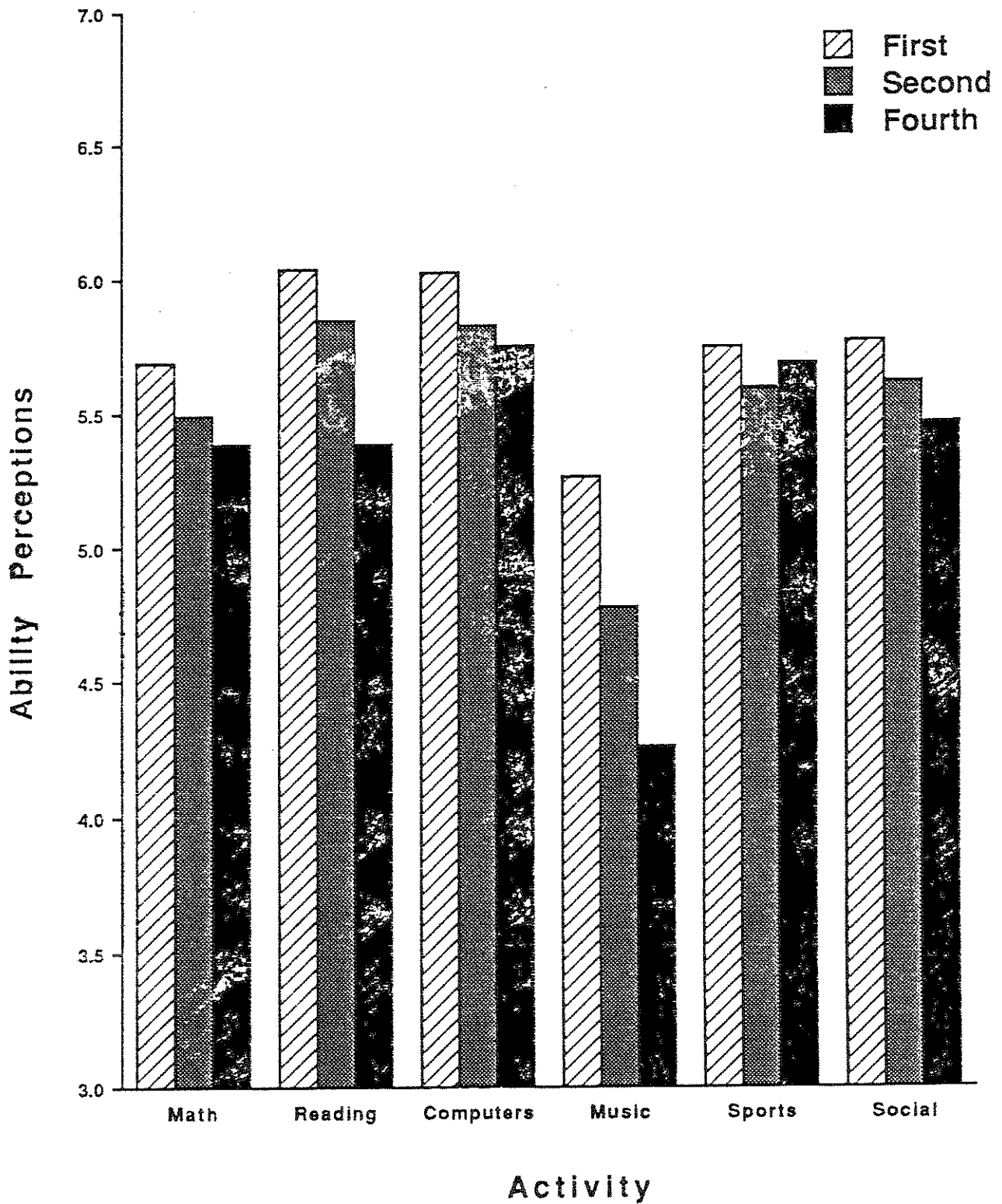


Figure 3: Sex Differences in General Values

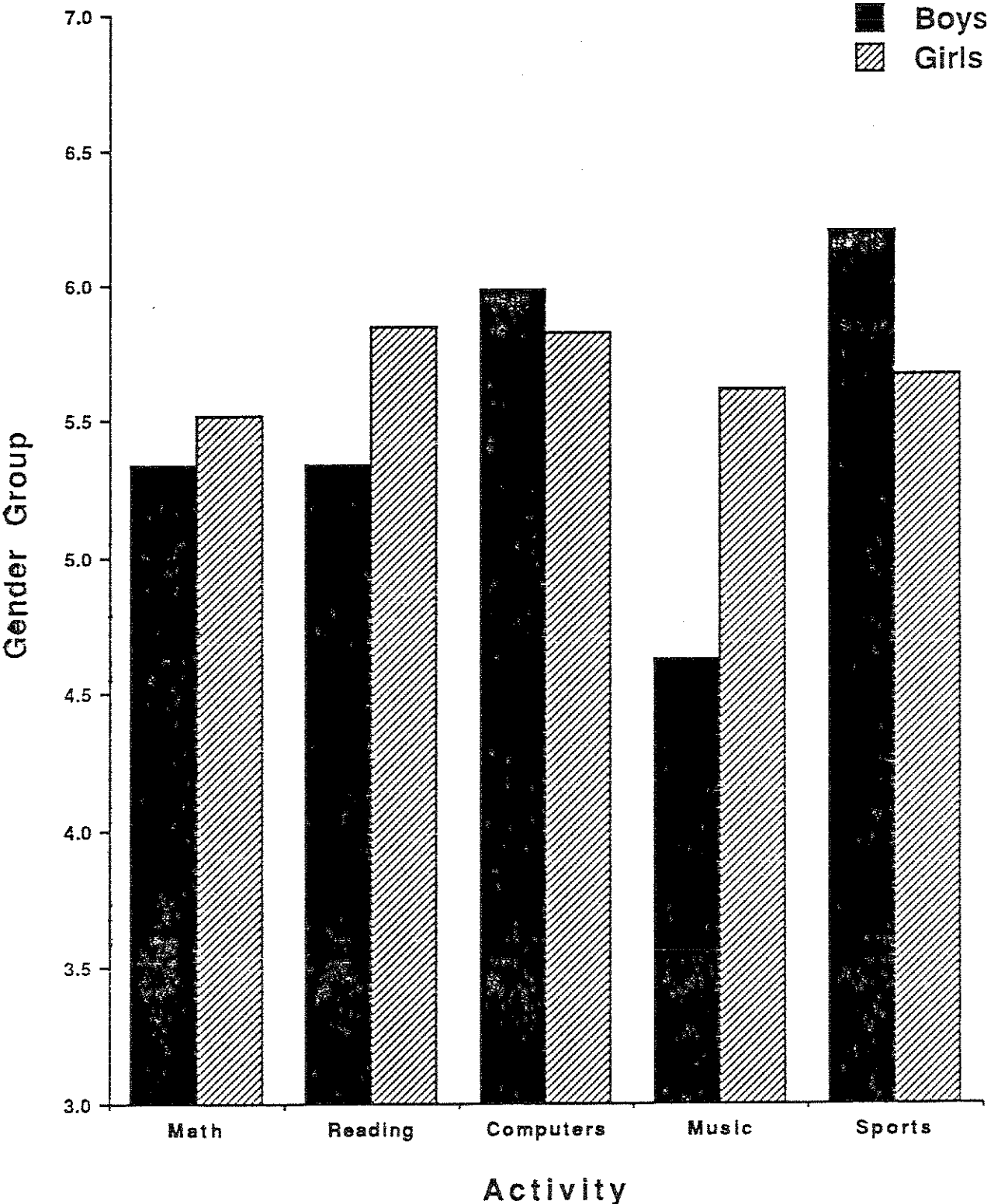


Figure 4: Age Differences in Values

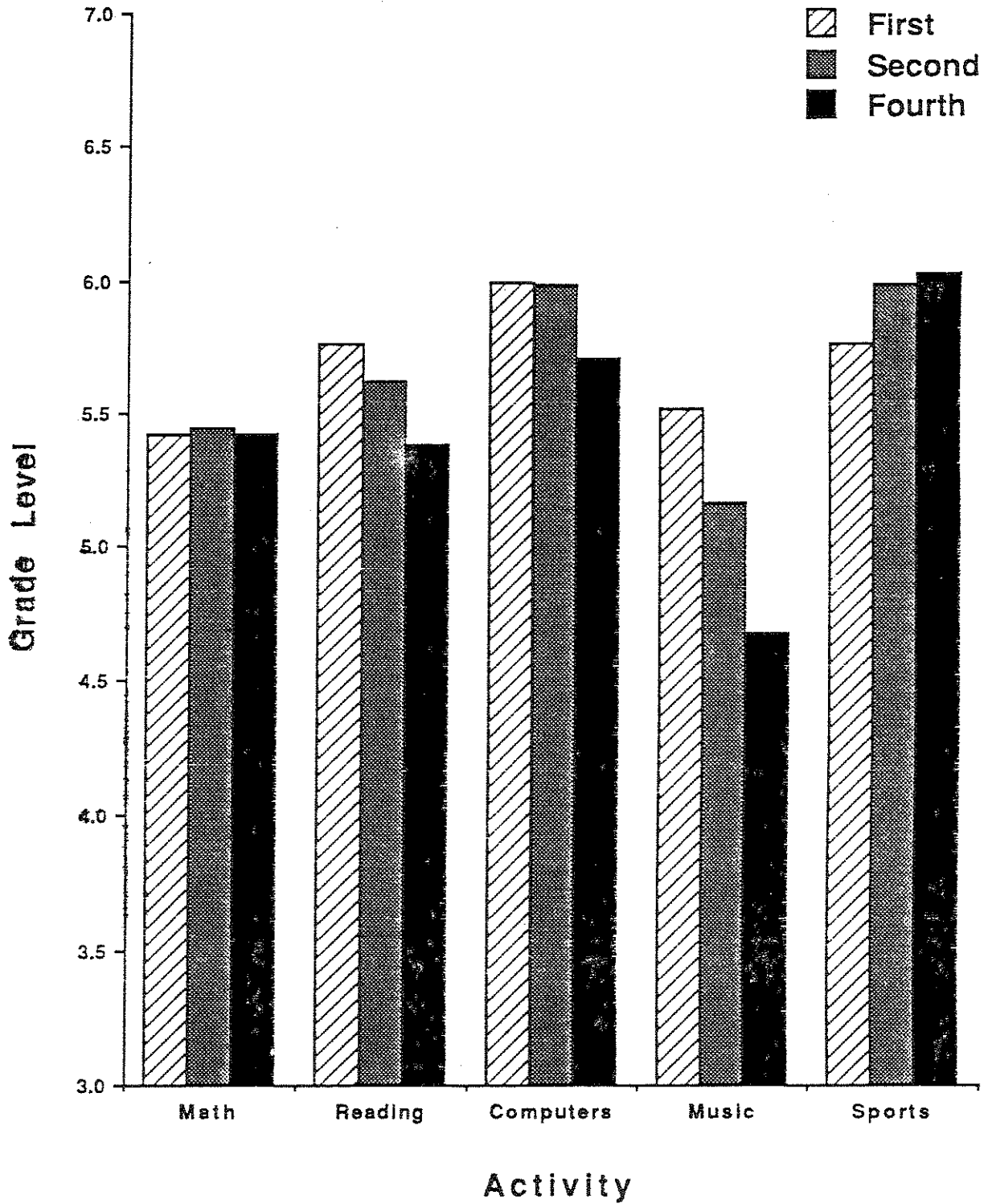


Figure 5: Sex Differences in Use/Importance

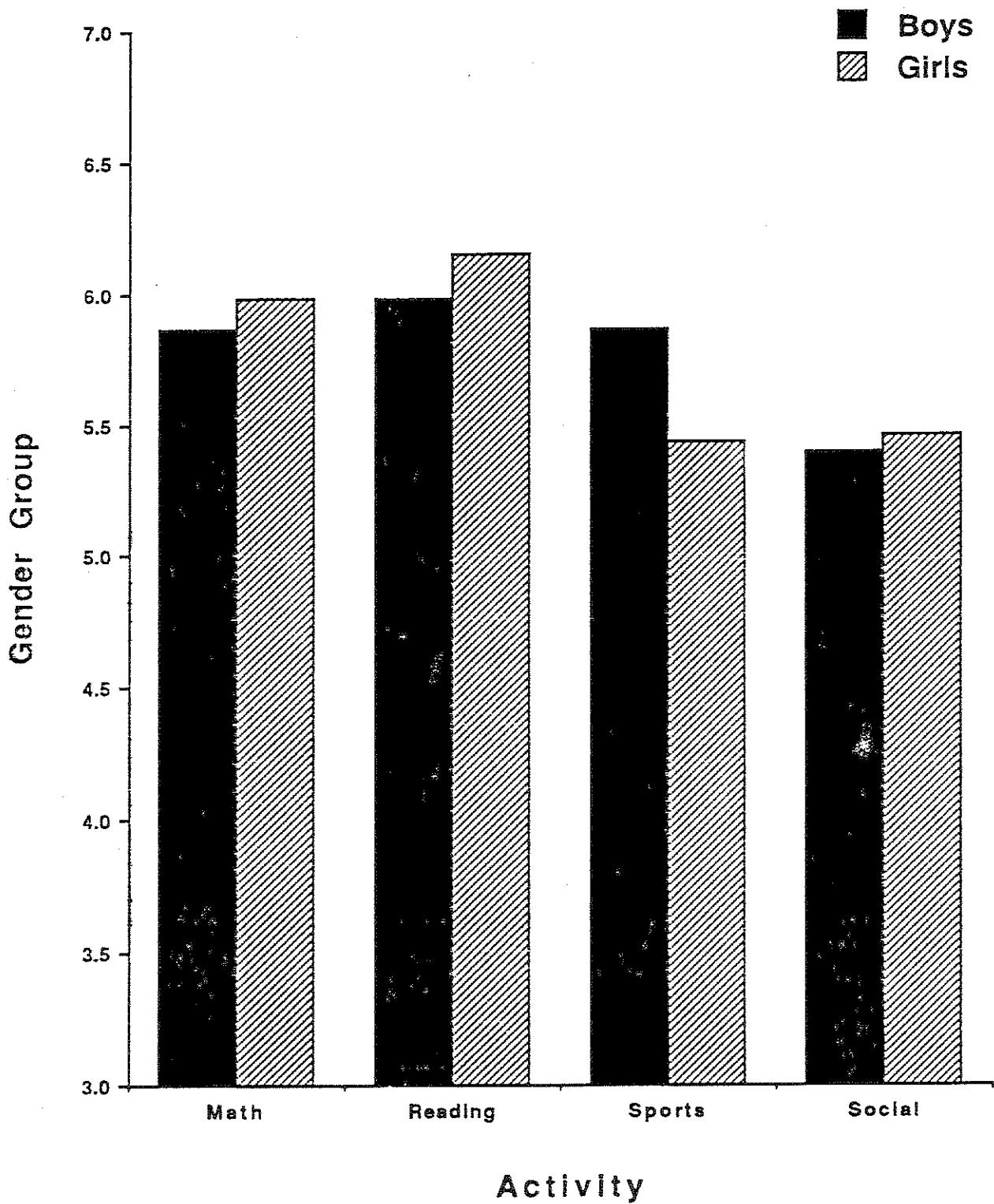




Figure 6: Age Differences in Use/Importance

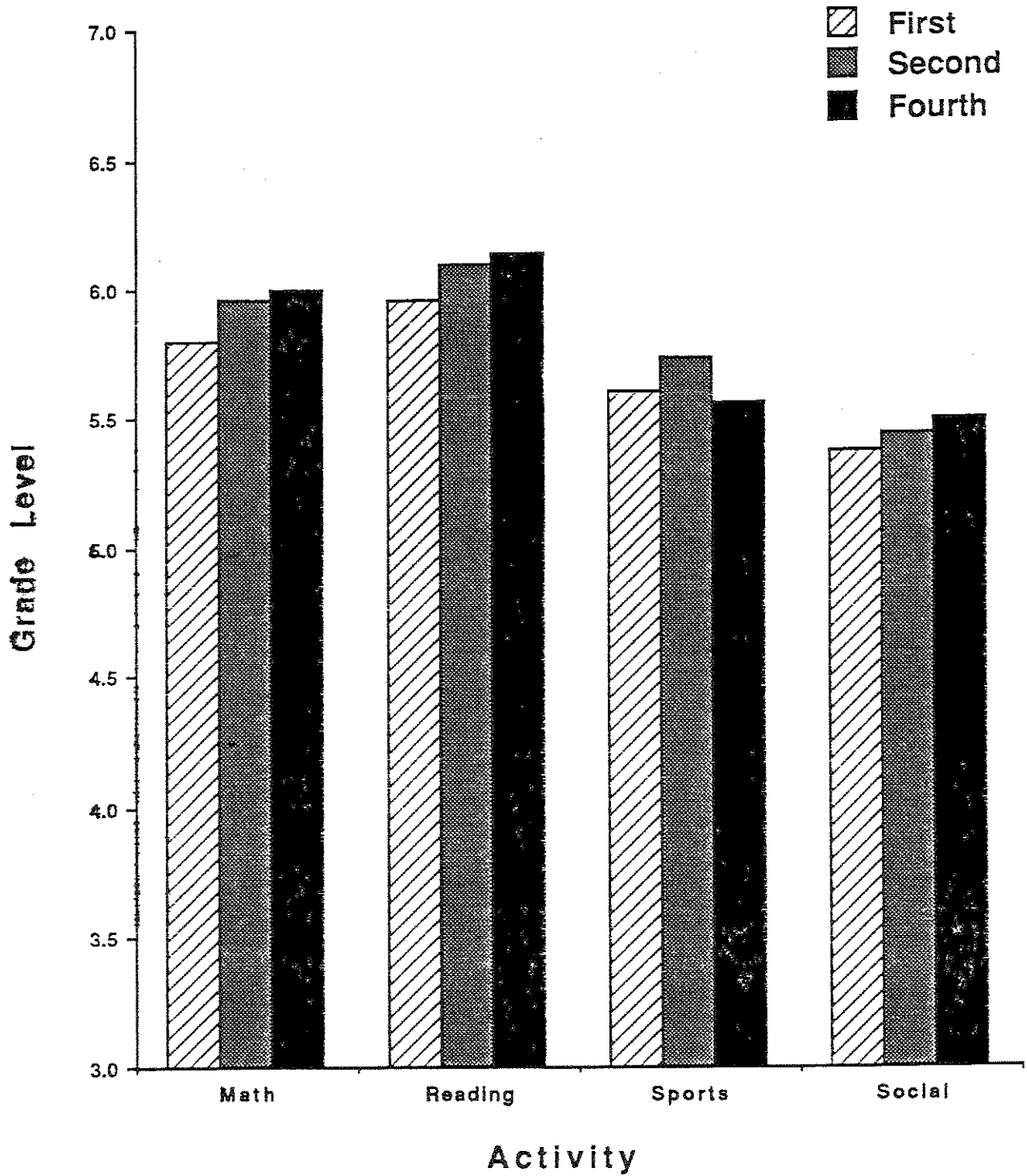


Figure 7: Sex Differences in Interest

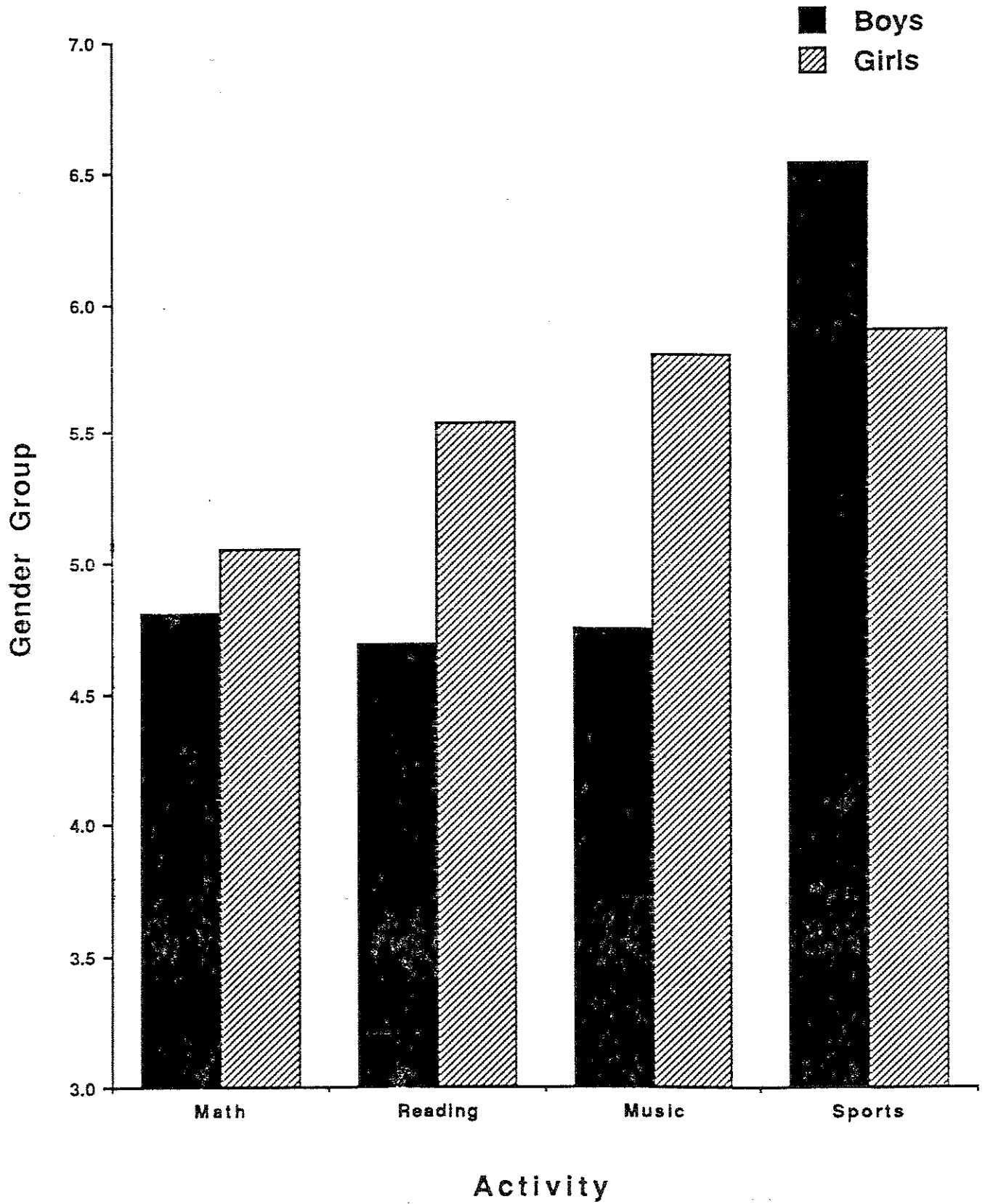


Figure 8: Age Differences in Interest

