Developmental Psychology
1991, Vol. 27, No. 4, 552-565

0012-1649/91/$3.00

Transitions During Early Adolescence: Changes in Children's Domain-Specific Self-Perceptions and General Self-Esteem Across the Transition to Junior High School

Allan Wigfield, Jacquelynne S. Eccles, Douglas Mac Iver, David A. Reuman, and Carol Midgley
Institute for Social Research
University of Michigan

Young adolescents' (N = 1,850) achievement self-perceptions in 4 activity domains (math, English, social activities, and sports) and self-esteem were examined across the transition from elementary to junior high school. Self-esteem scores declined across the transition to junior high, but increased during 7th grade. Self-concepts of ability for math, English, and social activities declined after transition, but perceptions of social ability increased during 7th grade. Perceptions of sports ability declined across 6th and 7th grades. The liking of math and sports declined over time, whereas liking of English and social activities declined immediately after transition but increased across 7th grade. Many of these changes are attributed to changes in the school and classroom environments encountered on entering junior high school.

During the early adolescent years, children experience the social and biological changes associated with puberty. Most young adolescents also make an important school transition at this time, moving from elementary to middle school or junior high school. Different theorists (e.g., Blyth, Simmons, & Carlton-Ford, 1983; Eccles, Midgley, & Adler, 1984; Hill & Lynch, 1983; Rosenberg, 1986; Simmons, Blyth, Van Cleave, & Bush, 1979) have proposed that these changes can have a significant impact on students' self-perceptions and self-esteem.

Eccles, Midgley, and Adler (1984) reviewed evidence showing that many young adolescents become more negative about school and themselves after the transition to junior high school. They become more anxious about school (Fyans, 1979; Harter, Whitesell, & Kowalski, 1987) and have lower academic intrinsic motivation (Harter, 1981; Harter et al., 1987). Many studies also show that young adolescents have lower ability self-concepts than do their younger peers (Eccles et al., 1983; Eccles, Adler, & Meece, 1984; Marsh, 1989), although this pattern is not always found (Harter, 1982). Some studies suggest that adolescents' beliefs about mathematics become particularly negative (Brush, 1980; Eccles, Adler, & Meece, 1984). In addition to these changes in specific self-perceptions, Simmons, Rosenberg, and Rosenberg (1973) showed that, after the transition to junior high school, young adolescents' general self-esteem is lower and less stable and their self-consciousness higher.

Eccles and her colleagues (Eccles, Midgley, & Adler, 1984; Eccles & Midgley, 1989) and Simmons and her colleagues (Blyth et al., 1983; Simmons et al., 1973, 1979; Simmons & Blyth, 1987) have postulated that these changes in young adolescents' attitudes and beliefs are due in part to differences in the school environments of elementary and junior high school. These differences include a greater emphasis on evaluation and social comparison among students (Feldlaufer, Midgley, & Eccles, 1988; Harter et al., 1987), stricter grading standards (Blyth, Simmons, & Bush, 1978; Kavrell & Petersen, 1984; Schulenberg, Asp, & Petersen, 1984), and a disruption of young adolescents' social networks (Berndt, 1987) among other things (see Eccles, Midgley, & Adler, 1984; Eccles & Midgley, 1989 for a complete review).

The biological and social changes associated with puberty may also be responsible for some of these changes in young adolescents' self-perceptions. Several investigators have suggested that gender-role appropriate activities may become more important to young adolescents, as they try to conform more to gender-role stereotypes for behavior (Eccles, 1987; Hill & Lynch, 1983; Parsons & Bryan, 1978); Hill and Lynch labeled this phenomenon *gender-role intensification.* This phenomenon may lead young adolescents to have less positive beliefs about and be less involved in activities that they see as less appropriate to their own gender. In support of this hypothesis, girls' beliefs and attitudes about mathematics become more neg-

Portions of this article were presented at the annual meeting of the American Educational Research Association, Washington, DC, April 1987. Support for this research was provided by Grant MH31724 from the National Institute of Mental Health, Grant HD17296 from the National Institute of Child Health and Human Development, and Grant BNS-8510504 from the National Science Foundation.

We would like to thank Harriet Feldlaufer and David Klingel for their help with data collection and data management for this project. We would also like to thank Laura Klem for statistical advice related to this project.

Jacquelynne S. Eccles is now at the University of Colorado. Douglas Mac Iver is now at Johns Hopkins University. David A. Reuman is now at Trinity College.

Correspondence concerning this article should be addressed to Allan Wigfield, who is now at the Department of Human Development, University of Maryland, College Park, Maryland 20742.

ative after the transition to junior high school, but their attitudes toward English remain more positive (Eccles, 1984; Eccles et al., 1983).

Though there is much evidence that children's self-perceptions become more negative in early adolescence, there has been some debate about the magnitude and generality of these negative changes, particularly in the case of students' general self-esteem. Recent longitudinal studies of children's self-esteem during adolescence suggest that such changes are actually somewhat positive (Dusek & Flaherty, 1981; O'Malley & Bachman, 1983), even across the transition to junior high school (Nottelmann, 1987). Although Simmons et al.'s (1973) cross-sectional work indicates that children's self-esteem is disturbed during early adolescence, their longitudinal work (e.g., Blyth et al., 1983; Simmons et al., 1979) has shown that, for most children, self-esteem scores increase across adolescence. In their studies, White girls who make the transition to junior high school are the only group to show consistent evidence of declining self-esteem. To date there have been few longitudinal studies of how young adolescents' domain-specific beliefs change across the transition to junior high.

In this study, we examined change across the junior high school transition in young adolescents' general self-esteem as well as changes in their self-concepts of ability and liking for mathematics, English, social activities, and sports activities. We assessed these variables because they are central constructs in expectancy—value theories of achievement motivation and have been shown to influence students' achievement behavior, such as their performance on different activities and their choice of which activities to pursue (see Eccles et al., 1983; Eccles, Adler, & Meece, 1984). Most previous studies (e.g., Cauce, 1987; Harter, 1982) of domain-specific beliefs have assessed young adolescents' perceptions of ability for different activities. We assessed young adolescents' liking of the different activities to obtain an indicator of the value they attach to those activities. The different activity areas were chosen because they represent activity domains that are common to childhood. Previous studies have shown that children make meaningful distinctions among these beliefs and that their self-perceptions vary across these activities (Cauce, 1987; Eccles et al., 1983; Eccles, Adler, & Meece, 1984; Harter, 1982; Marsh, 1989).

We assessed these variables at two time points (fall and spring) before each student made the transition to junior high school and at two time points (fall and spring) after the transition. This design allows us to clarify some of the conflicting findings of previous work concerning change in self-esteem and self-concept of ability, which could be due to different designs (cross-sectional vs. longitudinal), different times of measurement, or different levels of specificity of measurement. Furthermore, by examining change in both general self-esteem and beliefs about specific activities, we can provide a more complete picture of the development of young adolescents' self-perceptions.

We predicted that changes in young adolescents' general self-esteem and specific self-perceptions would follow different patterns. Self-esteem was expected to decrease immediately after the transition to junior high school, as students adjusted to the school change and developed new social networks and roles. As this adjustment proceeded, young adolescents' self-esteem was expected to rebound so that the decrease would disappear by the spring of the seventh grade year.

In contrast, if changes in school and classroom environments account for changes in young adolescents' subject-matter-specific beliefs, as predicted by Eccles, Midgley, and Adler, (1984), their self-concepts of ability and liking for different academic activities should show only moderate changes immediately after the transition to junior high school. These beliefs should become increasingly negative across the seventh grade year as young adolescents have more experience with the different kinds of teaching practices characteristic of seventh-grade instruction. In addition, to the extent that the negative changes in school and classroom environments are more characteristic of math than of English instruction, as suggested by Brush (1980) and Eccles and Midgley (1989), the negative changes should be stronger for early adolescents' self-concepts of ability and liking for mathematics than for English.

Because of the disruption of young adolescents' social networks that comes with the move to junior high school (see Berndt, 1987), the pattern of changes in young adolescents' self-concepts of ability for social activities should be similar to self-esteem changes. Their self-concepts of ability for social activities should decline immediately after the transition and then recover. In contrast, young adolescents' liking of social activities should increase during seventh grade because of the salience of peer acceptance in early adolescence (Berndt, 1987).

Changes in young adolescents' self-concepts of ability and liking for the sports domain are more difficult to predict. Young adolescents' ability perceptions in this area may decrease after the junior high school transition because of the larger social-comparison group they encounter. However, because sports activities often take place out of the school context, this transition per se may have little effect on students' self-concepts of sports ability.

Along with looking at the general effects of the junior high transition on young adolescents' beliefs, we also assessed how two individual-differences variables—level of math competence and gender—affect the pattern of change in students' self-perceptions. We included competence level in this study because previous work has shown that students' level of competence influences their achievement self-perceptions (see Eccles & Wigfield, 1985). Because this study was conducted in mathematics classrooms, we examined how young adolescents' math competence (as assessed by teacher ratings at the beginning of the study) influenced their self-esteem and self-concept of ability.[1] We predicted that students with higher math competence would have higher general self-esteem than other students because academic activities are quite central to students' (particularly boys') overall self-evaluations at this age (see Walker & Greene, 1986). Students with higher math competence should also have higher math self-concepts of ability than do other students. Because math and language-arts abilities and performance are correlated (Marsh, 1986), students with higher math

[1] Because of space limitations we do not discuss the effects of rated math ability level on young adolescents' liking of the different activities, although the means are presented in Table 6. Discussion of these results is available on request.

ability ought to have higher English self-concepts of ability than do other students, although this difference should not be as strong as it is in the math domain.

How math ability affects young adolescents' self-concepts of ability in the other two domains is, however, less clear. Young adolescents doing relatively poorly in school may try to develop competence in other domains, such as sports or social activities. If this occurs, it is possible that students with lower math competence will have higher sports or social-ability perceptions (or both) than the students with higher math competence, particularly if the students with higher academic abilities have focused on academic activities at the expense of competence in other areas. Alternatively, greater academic competence might also relate to greater competence perceptions in other areas. Finally, academic ability may be unrelated to competence in sports and social activities, in which case there would be no effect of math ability on these variables.

Regarding effects of student gender, consistent with past work, we predicted that boys would have more positive math and sports self-concepts of ability than would girls; in contrast, girls were expected to have more positive English and social self-concepts of ability than boys (Eccles et al., 1983; Eccles, Adler, & Meece, 1984; Eccles et al., 1989; Harter, 1982; Maccoby & Jacklin, 1974; Marsh, 1989). Boys were expected to have higher general self-esteem than girls. In addition, to the extent that gender-role intensification occurs during this period of development, the predicted gender differences were expected to increase over the four times of measurement.

Method

Study Overview

The data presented in this study were collected as part of a larger investigation, the Michigan Adolescence Study (formerly referred to as the Transitions in Early Adolescence Project). The Michigan Adolescence Study focuses on the impact of change in the classroom and family environments on adolescents' beliefs, motives, values, and behaviors in several activity domains. The study has a 7-year design. The data reported in this article are drawn from the first 2 years of the study. A four-wave design was used in this portion of the study to examine how the transition into junior high school influences young adolescents' self-perceptions. Two waves were gathered in the year prior to the transition (Grade 6) and two were gathered in the year following the transition (Grade 7). Participants completed questionnaires twice each year (fall and spring) over this 2-year period in order to allow the assessment of both within- and across-year changes.

Sample

Twelve school districts located in low- to middle-income communities participated. The districts are located within a 50-mile radius of a large city in the midwestern United States. Almost 90% of the students in these districts are White. All the teachers who taught mathematics to sixth-grade students scheduled to make a transition the next year to junior high school were recruited for Year 1 measurement; 95% of the teachers, representing 117 classrooms, agreed to participate. Of these classrooms, 75% were heterogeneously grouped, and 25% grouped students between classes by ability. All of these teachers' students were asked to take part in the study, and 79% agreed to participate at Year 1 and received parental permission to participate. The students were then followed into 131 junior high school mathematics classrooms for the Year 2 measurement. All of the Year 2 teachers participated in the study. Forty-three percent of the Year 2 classrooms were heterogeneously grouped, and 57% used between-classroom ability grouping; hence, between-classroom grouping was much more prevalent in Year 2. There was a 14% attrition rate between Years 1 and 2 in the student sample, primarily because students moved away from the participating school districts. Approximately 1,850 students completed questionnaires at all four waves, that is, twice in the sixth grade and twice in the seventh grade.

Student Questionnaire

Student questionnaires measuring a large number of theoretical constructs across multiple activity domains were administered by field staff to students during the period they normally received mathematics instruction for 2 consecutive days in the fall and spring of each school year. The questionnaire contained items assessing a broad range of students' beliefs, attitudes, and values regarding mathematics, English, sports, and social activities as well as many other constructs. Many of these items have been used in previous studies (e.g., Eccles et al., 1983; Eccles, Adler, & Meece, 1984; Wigfield & Meece, 1988), and their general psychometric properties have been reported elsewhere (Eccles et al., 1983; Eccles, Adler, & Meece, 1984; Parsons, Adler, & Kaczala, 1982).

The dependent variables reported in this article include (a) young adolescents' self-esteem, assessed with Harter's (1982) General Self-Worth Scale; (b) young adolescents' self-ratings of their ability for mathematics, English, sports, and social interactions, assessed by two items in each domain (alphas for these two item scales all exceed .60, with nearly all in the .78 to .90 range; the two items for math, English, and sports were "How good at _____ are you?" and "If you were to rank all the students in your class from the worst to the best in _____, where would you put yourself?", and the two items for the social domain were "How good are you at making friends?" and "How popular are you at school?"); and (c) young adolescents' liking of activities in each domain, assessed with the question "How much do you like doing _____?". We used only one item for liking because previous work with this construct has shown that different items assessing liking are highly correlated (e.g., Eccles et al., 1983; Eccles, Adler, & Meece, 1984; Parsons et al., 1982) and because of space limitations in the questionnaire. Participants answered each item on a scale of 1 to 7. Correlations among these variables at Wave 1 are reported in Table 1. Only the Wave 1 correlations are presented because the pattern of correlations was similar at the other waves. Stability correlations for these variables were presented in Eccles et al. (1989).

Math Ability Ratings

Math ability was measured by the sixth-grade teachers' ratings of each child's natural talent for and relative performance in math. We used teacher ratings as a measure of students' ability because these ratings have been used in previous studies in this area and correlate highly with standardized ability measures (see Harter, 1982; Hoge & Coladarci, 1989; Mac Iver, 1987). Three groups were formed from these ratings (high-, average-, and low-ability groups). To keep the two extreme groups as meaningful as possible, we tried to split the sample at ±1 standard deviation from the population mean. However, the distribution of scores did not allow us to make this exact break. The best-fitting split led to a 12–66–22% distribution for the low-, average-, and high-ability groups, respectively. Girls are slightly overrepresented in the average- and high-ability groups, and boys are slightly overrepresented in the low-ability group.

Scoring

Each item on Harter's (1982) General Self-Worth Scale was answered on the 1 to 4 response scale she developed, and the scores were coded so

Table 1
Correlations Among the Dependent Variables at Wave 1

Variables	1	2	3	4	5	6	7	8	9
1. Self-esteem	—								
2. Math SCA	.34*	—							
3. English SCA	.20*	.37*	—						
4. Sports SCA	.20*	.25*	.16*	—					
5. Social SCA	.27*	.28*	.33*	.39*	—				
6. Math liking	.19*	.45*	.07*	.13*	.15*	—			
7. English liking	.07*	.02	.45*	.09*	.13*	.07*	—		
8. Sports liking	.15*	.15*	.08*	.73*	.24*	.12*	.04	—	
9. Social liking	.12*	.12*	.19*	.18*	.38*	.10*	.09*	.15*	—

Note. SCA = self-concept of ability.
* $p < .01$.

that higher scores indicated higher self-esteem. The scores for each item were summed to form a total score for self-esteem, which could range from 5 to 20. For self-concept of ability, the two items in each domain were averaged so that scores ranged from 1 to 7, with higher scores indicating more positive self-concept of ability. Scores for liking also ranged from 1 to 7, with higher scores indicating greater liking.

Analysis

Each set of dependent variables (self-esteem, self-concept of ability, and liking) was analyzed in separate, repeated measures multivariate analysis of variance (MANOVA). The number of subjects in each analysis varies somewhat because of different patterns of missing data. Because of the large sample size and large number of possible effects, we adopted the .01 level of significance for all analyses. The MANOVA on the self-esteem scores included one within-subjects factor, which was time of measurement (4 levels), and two between-subjects factors, which were teacher-rated math ability (3 levels) and gender (2 levels). The MANOVAs assessing self-concept of ability and liking had two within-subjects factors, which were time of measurement (4 levels) and activity domain (4 levels), and two between-subjects factors, which were the same as in the self-esteem analysis. For the time-of-measurement factor, significant effects were interpreted by examining whether change over time was linear, quadratic, or cubic. Quadratic trends indicate one shift in the direction of change over time, and cubic trends indicate two shifts in the direction of change over time (Kirk, 1968). These trend analyses allowed us to assess how the junior high school transition influenced students' beliefs. Significant activity-domain main effects and interactions with other factors were followed up with three-way MANOVAs that assessed gender, ability level, and time-of-measurement effects separately in each domain. These analyses provided univariate follow-up tests for the various significant multivariate findings. Post hoc tests were performed as follow-up tests to the trend analysis and the three-way MANOVAs to determine whether the means differed significantly from each other.

Results

Self-Esteem

Significant effects from the 3 (math ability level) × 2 (gender) × 4 (time of measurement) MANOVA on self-esteem scores are presented in Table 2.[2] The Time-of-Measurement effect was significant, and changes in young adolescents' self-esteem showed a significant cubic trend. The means for the four waves were as follows: 14.32 for Wave 1 (SD = 3.23); 14.44 for Wave 2 (SD = 3.18); 13.96 for Wave 3 (SD = 3.09); and 14.20 for Wave 4 (SD = 3.15). As predicted, early adolescents' self-esteem was lowest immediately after the transition to junior high school and increased during the seventh grade. The post hoc tests showed that young adolescents' self-esteem was significantly lower at Wave 3 than at all other waves. Also, Wave 2 self-esteem was significantly higher than Wave 4 self-esteem, indicating that self-esteem remained lower in the spring of the seventh grade than in the spring of the sixth grade.

As predicted, the effect for math ability was also significant. Across all four waves, young adolescents with high-rated math ability (M = 14.86, SD = 2.52) had the highest self-esteem, followed by the average-rated group (M = 14.18, SD = 2.44), and then by the low-rated group (M = 13.37, SD = 2.26). Each of these differences was significant. Contrary to prediction, however, the Math Ability Level × Time of Measurement interaction was not significant. This finding suggests that students' school performance had a strong impact on their general self-esteem and that this effect was already in place by the beginning of Grade 6.

As predicted, there was also a significant sex effect: Across all four waves, boys (M = 14.70, SD = 2.28) reported significantly higher self-esteem than did girls (M = 13.82, SD = 2.55). The size of this difference did not change over time.

Self-Concept of Ability: Longitudinal Changes

Effects from the 3 (math ability level) × 2 (gender) × 4 (activity domain) × 4 (time of measurement) MANOVA are presented in

[2] To determine the generality of the findings for self-esteem, we did these analyses separately for the four highest, four middle, and four lowest income districts in the sample. Results were remarkably similar, both in terms of the significant effects and the means. For all three groups of districts, self-esteem scores were highest at Wave 2. For the highest and middle income districts, self-esteem scores were lowest at Wave 3. For the lowest income districts, students' self-esteem was equally low at Waves 3 and 4. In each group of districts, the young adolescents rated high in math ability had the highest self-esteem, followed by those average in ability, and then by those rated low in math ability. In each group of districts, boys had significantly higher self-esteem than did girls. A complete report of these findings is available on request.

Table 2
Effects of Gender, Math Ability Level, and Time of Measurement on Self-Esteem

Effect	*df*	*MS*	*F*
Between-subjects			
Gender (G)	1	728.45	31.69*
Math ability level (AL)	2	589.80	25.66*
G × AL	2	1.92	1.92
Within cells	1673	22.99	—
Within-subjects			
Time of measurement (TM)	3, 1671	—	11.60*
Cubic trend	1, 1673	135.42	29.54*
TM × G	3, 1671	—	2.80
TM × AL	6, 3340	—	0.87
TM × G × AL	6, 3340	—	0.69

* $p < .001$.

Table 3. The three-way effects within domains are shown in Table 4. As predicted, the Activity Domain × Time of Measurement interaction was significant in the four-way analysis (see Table 3), indicating that the pattern of change in self-concept of ability differed across the domains and over time. These changes are shown in Figure 1.

Math and English. For both math and English self-concept of ability, students' beliefs were similar in the fall and spring of the sixth-grade year but then declined across the transition to junior high school and during the seventh-grade year. However, these differences were significant only for English, and they reflect a linear trend (see Table 4). The post hoc tests showed that students' Wave 1 and Wave 2 English-ability perceptions were significantly higher than those at Waves 3 and 4, suggesting that the decline was a transition effect.

Social domain. There were two significant developmental patterns for students' self-concepts of social ability, a linear trend and a cubic trend. Both the relative size of the effects and the pattern of means suggest that the cubic trend best describes the developmental change. As predicted, students' self-concept of social ability markedly decreased after the transition to junior high school, as the significant post hoc tests comparing the means at Waves 2 and 3 showed. Social-ability perceptions also showed within-year changes. Social-ability perceptions were higher in the spring than in the fall for both years of the study, and each of these pairs of means was significantly different. In addition, as predicted, students' self-concepts of social ability were highest in the spring of the sixth-grade year, prior to the school transition; that is, the Wave 2 mean was significantly higher than each of the other means. Although adolescents' self-concepts of social ability increased during the seventh grade year, they did not return to the high level apparent at the end of the sixth grade year.

Sports domain. There was a significant linear trend for young adolescents' sports-ability perceptions. The post hoc tests indicated that students' self-concepts of sports ability declined significantly from Wave 1 to Wave 3 and remained the same between Waves 3 and 4. The post hoc tests showed that the means at Wave 1 and Wave 2 were significantly higher than those at Waves 3 and 4 and that the mean at Wave 1 was higher than the mean at Wave 2. Because the decline in self-concept of sports ability began before the junior high school transition, these changes cannot be attributed to changes in instructional practices after the transition.

Self-Concept of Ability: Ability Level Effects

As predicted, the two-way interaction between math ability group and activity domain was significant. The means for the

Table 3
Effects of Gender, Math Ability Level, Time of Measurement, and Activity Domain on Self-Concept of Ability and Liking

	SCA			Liking		
Effect	*df*	*MS*	*F*	*df*	*MS*	*F*
Between-subjects						
Gender (G)	1	149.4	18.52**	1	20.11	2.14
Ability level (AL)	2	424.64	52.63**	2	132.38	14.05**
G × AL	2	18.52	2.30	2	9.20	0.98
Error	1769	8.07	—	1849	9.42	—
Within-subjects						
Domain (D)	3, 1767	—	4.85*	3, 1847	—	794.24*
Time of measurement (TM)	3, 1767	—	22.11**	3, 1847	—	32.13**
D × G	3, 1767	—	91.28**	3, 1847	—	61.50**
D × AL	6, 3532	—	54.95**	6, 3692	—	16.31**
D × TM	9, 1761	—	5.13**	9, 1841	—	5.75**
TM × G	3, 1767	—	1.55	3, 1847	—	2.69
TM × AL	6, 3532	—	2.26	6, 3692	—	2.18
D × G × AL	6, 3532	—	0.88	6, 3692	—	0.58
TM × G × AL	6, 3532	—	0.49	6, 3692	—	1.05
D × TM × G	9, 1761	—	2.60**	9, 1841	—	2.07
D × TM × AL	18, 3520	—	3.39**	18, 3680	—	2.87
D × TM × G × AL	18, 3520	—	1.14	18, 3680	—	1.06

Note. SCA = Self-concept of ability.
* $p < .01$. ** $p < .001$.

Table 4
Effects of Gender, Math Ability Level, and Time of Measurement on Young Adolescents' Self-Perceptions Within Each Activity Domain

Variable	SCA				Liking			
	df	MS_e	MS_h	*F*	*df*	MS_e	MS_h	*F*
Between-subjects effects								
Gender (G)	4, 1766	—	—	69.84**	4, 1846	—	—	53.60**
Mathematics (M)	1, 1769	3.05	54.45	17.84**	1, 1849	8.52	1.70	0.20
English (E)	1, 1769	3.42	74.04	21.68**	1, 1849	8.50	490.81	57.74**
Sports (Sp)	1, 1769	5.65	821.42	145.29**	1, 1849	7.38	511.63	69.35**
Social (So)	1, 1769	3.95	8.93	2.26	1, 1849	2.35	115.33	49.08**
Math ability level (AL)	8, 3530	—	—	67.62**	8, 3690	—	—	16.76**
Mathematics	2, 1769	—	710.54	232.82**	2, 1849	—	387.94	45.53**
English	2, 1769	—	214.56	62.82**	2, 1849	—	21.94	2.58
Sports	2, 1769	—	8.12	1.44	2, 1849	—	7.62	1.03
Social	2, 1769	—	8.32	2.10	2, 1849	—	33.04	14.06**
G × AL	8, 3530	—	—	1.32	8, 3690	—	—	0.74
Mathematics	2, 1769	—	4.24	1.39	2, 1849	—	2.75	0.32
English	2, 1769	—	10.46	3.06	2, 1849	—	16.86	1.98
Sports	2, 1769	—	6.46	1.14	2, 1849	—	0.15	0.02
Social	2, 1769	—	3.54	0.90	2, 1849	—	1.63	0.70
Within-subjects effects								
Time of measurements (TM)	12, 1758	—	—	9.90**	12, 1838	—	—	13.03**
Mathematics								
Linear trend	—	—	—	—	1, 1849	2.39	76.73	32.07**
Quadratic trend	—	—	—	—	1, 1849	1.37	30.14	21.94**
English								
Linear trend	1, 1769	1.19	30.20	25.26**	—	—	—	—
Cubic trend	—	—	—	—	1, 1849	1.84	29.28	15.91**
Sports								
Linear trend	1, 1769	0.75	47.84	63.39**	1, 1849	1.29	71.78	55.77**
Quadratic trend	—	—	—	—	1, 1849	0.86	9.81	11.39**
Social								
Linear trend	1, 1769	0.86	8.77	10.21**	1, 1849	0.98	7.24	7.38**
Quadratic trend	—	—	—	—	1, 1849	0.67	8.19	12.32**
Cubic trend	1, 1769	0.51	12.93	25.49**	1, 1849	0.75	10.39	13.82**
TM × G	12, 1758	—	—	2.32*	12, 1838	—	—	2.12
Social								
Cubic trend	1, 1769	0.51	7.09	13.99**	—	—	—	—
TM × AL	24, 3514	—	—	3.05*	24, 3674	—	—	2.80*
Mathematics								
Linear trend	2, 1769	0.95	9.02	9.42**	2, 1849	2.39	22.06	9.22**
Cubic trend	2, 1769	0.49	6.86	13.79**	—	—	—	—
Sports								
Quadratic trend	—	—	—	—	2, 1849	0.86	14.54	16.88**
TM × G × AL	24, 3514	—	—	0.98	24, 3674	—	—	1.08

Note. For the between-subjects effects, the MS_e are presented only for the gender effect because they are the same for the other two effects. For the trend analyses in the time-of-measurement effect, only significant effects are presented. SCA = Self-concept of ability; MS_h = Mean square hypothesis.
* $p < .01$. ** $p < .001$.

three ability groups collapsed across waves are presented in Table 5. The three–way within-domain MANOVA showed that the only significant differences among the ability groups were for mathematics and English (see Table 4). The post hoc tests showed that high-rated math students' self-concepts of ability in math and English were significantly higher than those of the average- and low-rated students and that average-rated students' self-concept scores were significantly higher than those of low-rated students.

The significant three-way interaction between activity domain, math ability, and time of measurement suggests that these patterns varied across time. The three-way within-domain analysis showed that this interaction occurred only for math. In this domain there were significant linear and cubic trends (see Tables 3 and 4). These trends are presented in Figure 2 and indicate that the direction of change in self-concept of math ability depended on the students' math ability level. Contrary to what might be expected, the mathematics self-concept of the high-rated adolescents declined across the transition to junior high school. The post hoc tests indicated that their mean

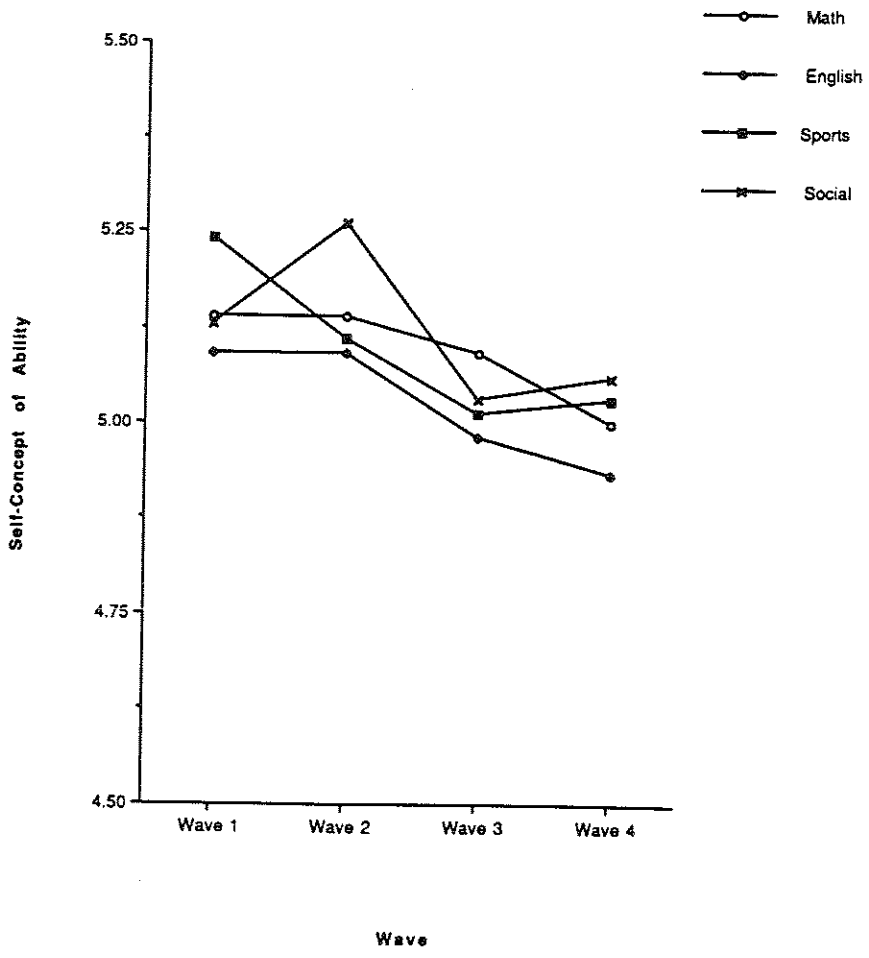

Figure 1. Changes in young adolescents' self-concepts of ability for the different activities.

self-concept scores at Waves 1 and 2 were significantly higher than those at Waves 3 and 4. The self-concepts of math ability of low-rated students increased somewhat across Waves 1 through 3, although the post hoc tests showed that none of the differences were significant. Average-rated students' math self-concept scores at Wave 4 were significantly lower than their scores at any other wave.

Self-Concept of Ability: Gender Effects

As predicted, boys' and girls' self-concepts of ability differed across activity domains, as indicated by the significant two-way interaction between sex and activity domain (see Table 3) and the univariate effects tests for sex within domain (see Table 4). The means, summed across time of measurement, are presented in Table 5. As predicted, boys had significantly higher math- and sports-ability perceptions than did girls, and girls had significantly higher English-ability perceptions than did boys. Contrary to prediction, however, boys' and girls' social-ability perceptions did not differ.

As predicted, the three-way Sex × Activity Domain × Time of Measurement interaction was significant, suggesting that the magnitude of the Sex × Activity Domain effect differed across time. However, the only significant univariate sex difference over time was a significant cubic Sex × Wave trend in self-concepts of social ability (see Table 4). This trend is shown in Figure 3. The interaction effect occurred because boys' social-ability perceptions were affected more strongly and negatively by the transition to junior high school than were those of the girls, although these differences were not large. The post hoc tests showed that boys' social-ability perceptions were significantly higher at Wave 2 than at any other wave. Their Wave 1 mean was higher than the means at Waves 3 and 4. Similar to the boys', girls' social-ability perceptions at Wave 2 also were significantly higher than at any other time. None of the other differences were significant.

Liking of Each Domain: Longitudinal Effects

Overall changes across time in young adolescents' liking of activities in each domain are shown in Figure 4. Effects of the four-way MANOVA for liking are shown in Table 3, and those of the three-way within-domain MANOVA are shown in Table 4. There was a very large domain main effect for liking. In general, the post hoc tests indicated that students liked social activities and sports activities more than math and English and

Table 5
Mean Self-Concept of Ability, Averaged Over Waves and Broken Down by Math Ability Level and Gender

Group	*n*	Math	English	Social	Sports
		Math ability level			
Low	213				
M		4.16	4.60	4.99	5.19
SD		1.01	1.04	1.09	1.23
Average	1,175				
M		5.05	4.96	5.13	5.10
SD		0.91	0.92	0.98	1.23
High	387				
M		5.74	5.44	5.17	4.99
SD		0.73	0.92	0.97	1.35
		Gender			
Girls	957				
M		4.99	5.16	5.16	4.71
SD		0.95	0.89	0.96	1.21
Boys	818				
M		5.21	4.86	5.07	5.53
SD		1.01	1.03	1.02	1.16

reported liking English the least (see Figure 4). Students also reported liking social activities more than sports activities at each wave.

The predicted two-way Activity Domain × Time of Measurement interaction was significant and showed that the domain effects changed over time. Young adolescents' liking of mathematics and sports activities declined steadily over the four waves, as shown by the highly significant linear trends for each wave (see Table 4). For math, the means at Waves 1 and 2 were significantly higher than the means at Waves 3 and 4. In addition, young adolescents' liking of math was significantly higher at Wave 3 than at Wave 4, and the quadratic trend was significant, suggesting a transition effect. For sports, the exact same pattern occurred, with the addition of a significant difference between the means at Waves 1 and 2. For the social domain, all three trends were significant, but the cubic trend was the strongest (see Table 4). Post hoc tests suggested that this trend resulted from the following pattern: Students reported liking social activities slightly more in the spring of each year than in the fall, particularly in the sixth grade (though the differences in liking were small). In addition, the Wave 2 mean was significantly higher than the means at any other wave. The significant cubic trend and post hoc comparisons also indicated that young adolescents' liking of English was more positive in the spring than in the fall of each year. These results show that the students liked English significantly more at Wave 2 than at any other wave.

Liking of Each Domain: Gender Effects

As predicted, the two-way interaction between gender and activity domain was significant (see Table 3). The means for each activity, collapsed over time of measurement, are presented in Table 6. The univariate effects in the three-way analysis show that boys and girls differed significantly in their liking of sports activities, social activities, and English. As predicted, boys reported liking sports more than did girls, whereas girls reported liking social activities and English more than did boys. These effects did not interact with time of measurement as one might expect if gender intensification had occurred.

Discussion

Two main conclusions can be drawn from this study: (a) young adolescents' self-perceptions and self-esteem changed over time, and (b) these changes were systematically related to changes in the social lives of these adolescents. Overall, the junior high school transition affected young adolescents' self-perceptions in the ways that we predicted. The longitudinal changes in students' self-perceptions are discussed first, followed by a discussion of findings associated with students' level of math ability and gender.

Longitudinal Changes in Self-Esteem

The decline we observed in self-esteem probably reflects young adolescents' reactions to their new school environment. In the sixth grade, the students were the oldest students in their schools, and as such, were likely to have the most status. They knew their school routines well, and the school environment was familiar to them. Not surprisingly, then, their self-esteem was quite high during the spring of their sixth-grade year. In the seventh grade, the students were the youngest children in their school and were adjusting to their new school environment. This adjustment period may have induced the temporary drop in their self-esteem in the fall of the seventh-grade year. Our findings complement and extend those from previous studies. Our longitudinal data confirm Simmons et al.'s (1973, 1979) cross-sectional findings that children's self-esteem is lower immediately after the transition to junior high school. However, as

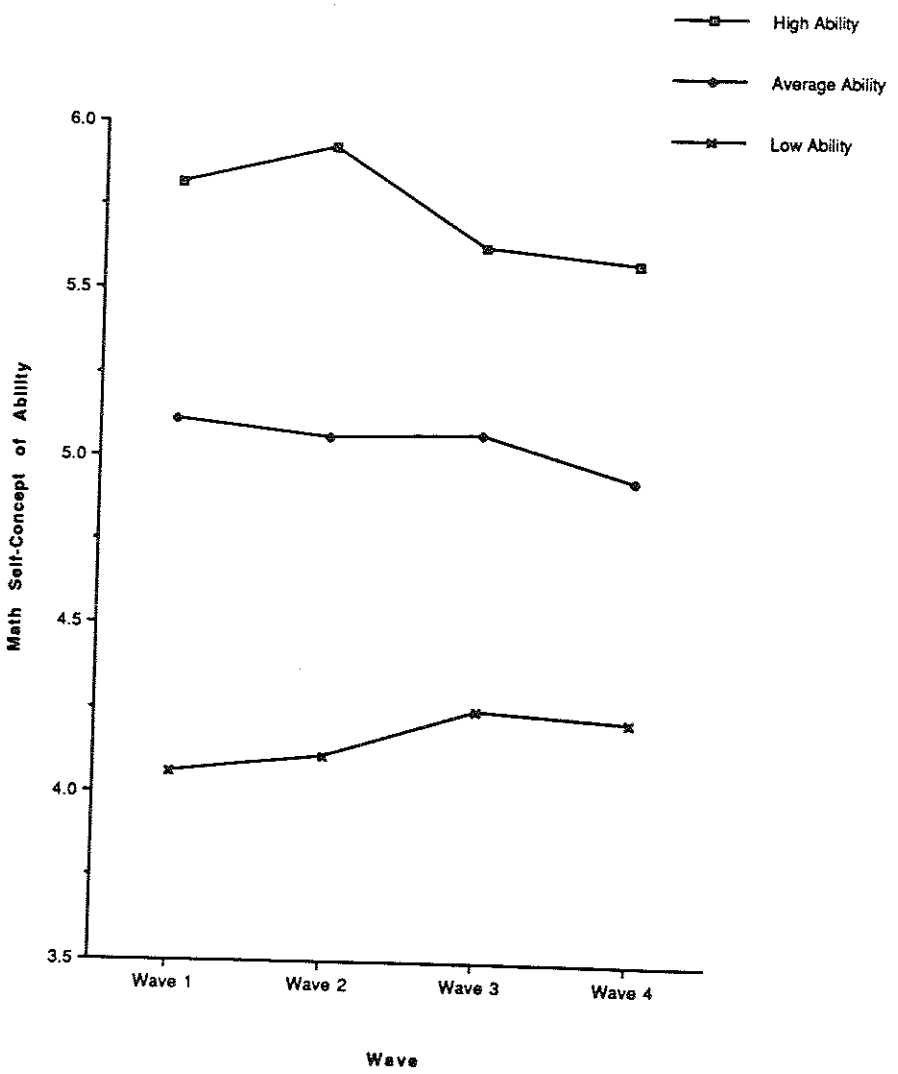

Figure 2. Changes in self-concepts of mathematics ability for young adolescents rated high, average, and low in math ability.

mentioned earlier and as found by others (Nottelmann, 1987), the students' self-esteem increased during the seventh-grade year; thus, the disruption in self-esteem was not long-lasting. As we follow these adolescents through high school, we will examine whether their self-esteem continues to increase, as would be predicted from O'Malley and Bachman's (1983) and Dusek and Flaherty's (1981) results. We will also look to see if the pattern of change varies for different adolescents; some students' self-esteem may be disrupted again following the transition to high school. Adolescents doing poorly in school should also be especially vulnerable to this second transition (Simmons & Blyth, 1987).

Longitudinal Changes in Domain-Specific Beliefs

As predicted, young adolescents' mathematics, English, social, and sports self-concepts of ability and their liking of those activities became more negative immediately after the junior high school transition. Their social and (to a lesser extent) sports self-concepts of ability rebounded over the seventh-grade year, as did their liking of English and (to a lesser extent) their liking of social activities. The marked decline in the adolescents' confidence in their social skills between Waves 2 and 3 illustrates the impact of the transition to junior high school on these beliefs. This decline probably occurred because the transition disrupted young adolescents' social networks (Berndt, 1987) at a time when social activities were becoming increasingly important (see Hartup, 1983). As these networks were reestablished over the course of the school year, the adolescents' confidence appeared to rise. But the fact that their self-concepts of social ability had not returned to the level of the spring of the sixth grade by the end of the seventh grade suggests that some adolescents still lacked confidence in their social abilities. Work by Simmons and her colleagues (e.g., Simmons & Blyth, 1987; Simmons et al., 1973) suggests that some young adolescents never regain their pretransition levels of self-confidence. De-

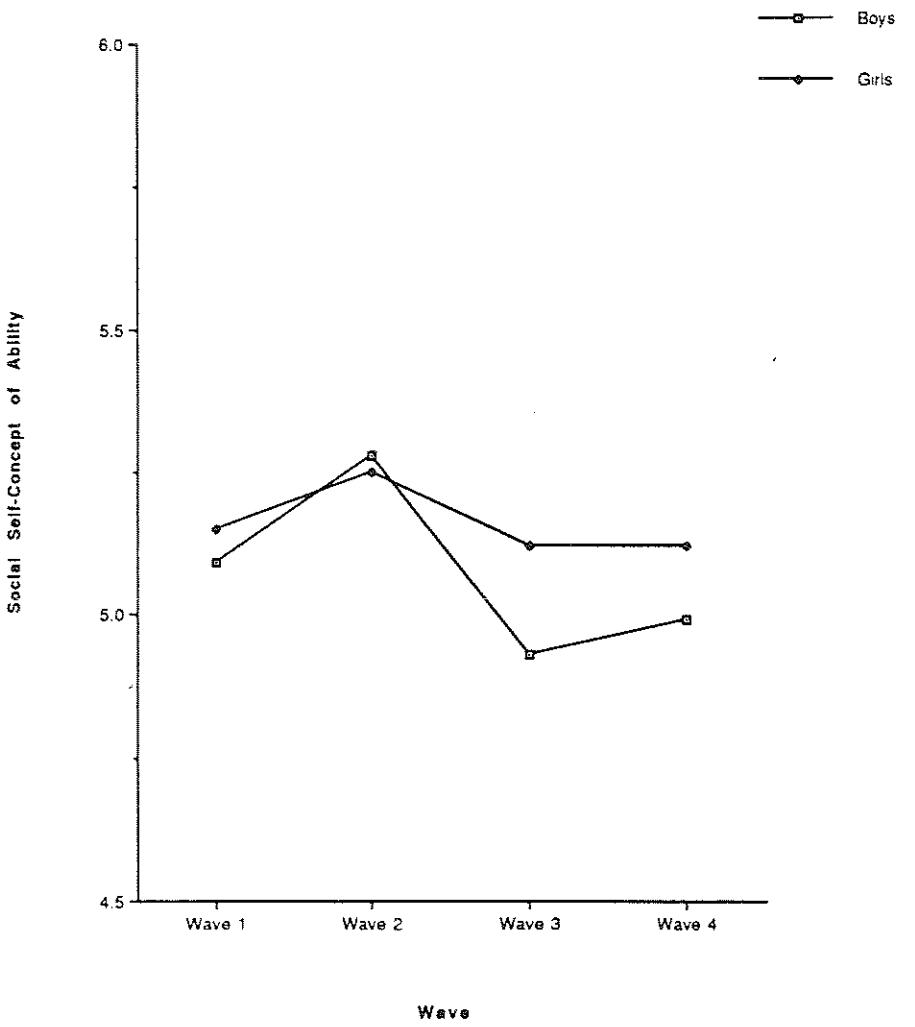

Figure 3. Changes in boys' and girls' self-concepts of social ability.

spite these problems with social self-concepts, social activities remained most-liked by these young adolescents.

Similar to cross-sectional results reported by Marsh (1989), we found that young adolescents' perceptions of their physical competence were lower in the seventh than in the sixth grade. Because both self-concept of ability and liking of sports began to decline at Wave 2, prior to the transition to junior high school, differences in instructional practices in physical education courses are not the most likely explanation for these observed changes. In the communities represented in this study, sports teams become more selective during this time period, both in and out of school. Perhaps young adolescents feel less competent at sports and like them less because of these increases in competitiveness. Future research should attempt to determine more specifically why young adolescents' self-concept of sports ability decreases during this time period, and what this pattern of change looks like over the entire adolescent period.

Young adolescents' math and English self-concepts of ability declined between Waves 2 and 3 and continued to decline throughout the seventh-grade year. These results thus confirm the results of previous cross-sectional studies (e.g., Eccles et al., 1983; Marsh, 1989; Wigfield, 1984) by showing a decrease in young adolescents' self-concept of ability in these areas during early adolescence. They also demonstrate the importance of examining specific self-perceptions; in Harter's (1982) cross-sectional study of perceived competence, young adolescents' general perceptions of their cognitive competence did not differ by age across the third through ninth grade. But the studies of children's and adolescents' perceptions of ability in specific areas show that these beliefs do decline; perhaps children can maintain a relatively positive general sense of academic competence even though their beliefs about specific subject areas become more negative.

What explains these declines in young adolescents' self-concepts of math and English ability? Because of the timing of these declines in self-perceptions, we believe that differences between the classroom environments in elementary and junior high school play a major role. We have been exploring the specific impact that mathematics classroom environment changes have on students' achievement-related beliefs concerning mathematics. Our results show that junior high school math teachers

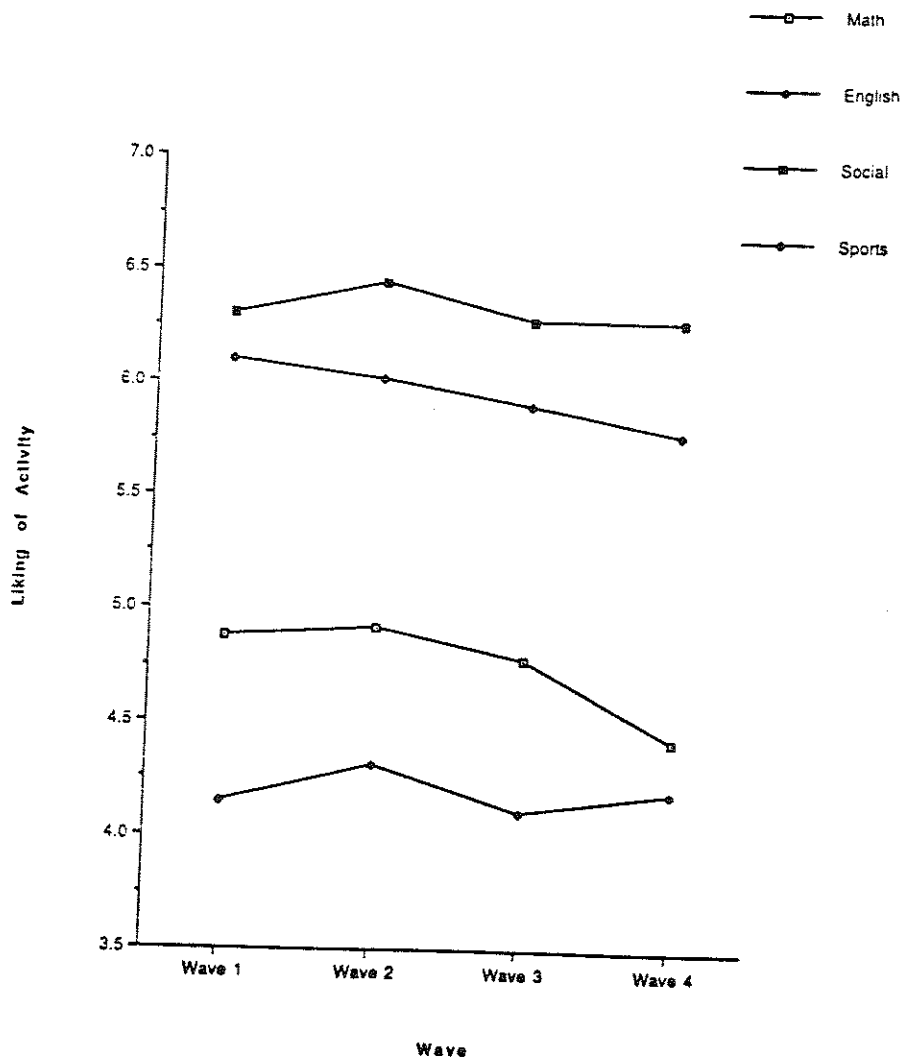

Figure 4. Changes in young adolescents' liking of the different activities.

feel less efficacious than do sixth-grade teachers (Midgley, Feldlaufer, & Eccles, 1989) and that student–teacher relationships are less positive in junior high school (Feldlaufer, Midgley, & Eccles, 1988; see also Brophy & Evertson, 1978; Willower, Eidell, & Hoy, 1967). Eccles and Midgley (1989) suggested that both of these changes could result in the observed negative change in students' achievement beliefs concerning mathematics. The stricter evaluative practices that students encounter in junior high school (see Blyth et al., 1978; Kavrell & Petersen, 1984; Schulenberg et al., 1984) could also produce the declines in academic self-concept that we found.

Because these changes may be more likely to occur in mathematics classrooms than in English classrooms (Brush, 1980), we had expected stronger negative changes in students' self-concepts of math ability than in their self-concepts of English ability, but this did not occur. We have other evidence showing that students' valuing of math decreases more after the junior high school transition, whereas their valuing of English increases somewhat (Eccles et al., 1983; Wigfield, 1984); these findings support our expectations and may suggest that classroom practices in English do not change in the same negative ways that we have found in mathematics classrooms. Future studies should include observations in both math and English classrooms to test this hypothesis more directly.

Ability Level Differences

The transition to junior high school influenced young adolescents who were rated high, average, or low in math ability in different ways. The differences in self-concept of math ability between high- and low-ability students lessened somewhat after the transition to junior high school because, over time, the high-rated students' math self-concepts declined, whereas those of the low-rated students increased slightly. Reuman, Mac Iver, Eccles, and Wigfield (1987) found that this pattern of shifts in self-concept of ability was particularly strong for students who went from heterogeneously ability-grouped classrooms in the sixth grade to homogeneously grouped classrooms in the seventh grade. Schwarzer and Lange (1982) have obtained similar results. These studies suggest that changes in young adoles-

Table 6
Mean Liking Ratings Averaged Over Waves and Broken Down by Math Ability Level and Gender

Group	*n*	Math	English	Social	Sports
		Math ability level			
Low	223				
M		4.06	4.36	6.06	5.87
SD		1.57	1.41	1.96	1.37
Average	1,232				
M		4.73	4.17	6.35	5.97
SD		1.46	1.52	0.78	1.36
High	400				
M		5.22	4.15	6.40	5.95
SD		1.40	1.51	0.70	1.50
		Gender			
Girls	1,013				
M		4.73	4.53	6.48	5.65
SD		1.48	1.44	0.68	1.45
Boys	842				
M		4.78	3.79	6.14	6.31
SD		1.50	1.48	0.87	1.24

cents' social-comparison reference groups could produce the changes in ability self-assessment. In heterogeneous classrooms, high-ability children outperform most of the other children in the class. However, when they are grouped with other high-ability children, they may not be as outstanding. Relative to other children in a heterogeneous group, low-ability children may perceive themselves as having little ability. But in a low-ability class, their relative ability perceptions could increase. We are assessing these same students' self-concepts of math ability in the 10th and 12th grades. It will be interesting to see if the declines in high-ability students' and increases in low-ability students' math self-concepts continue, or if the differences between the two groups start to widen again. We predict that the gap will begin to widen again, as the more general implications of tracking in math become clearer to students.

We had speculated that adolescents with relatively low math ability might compensate by raising their perceptions of their abilities in the nonacademic domains. However, we found little evidence of this. Although the low-math-ability adolescents did report higher self-concepts of ability for social and sports activities than they did for math and English, their social and sports self-concepts were not higher than those of the middle- and high-math-ability groups. Thus, the low-ability adolescents do not appear to have compensated for their low perceived academic abilities by elevating their views of their nonacademic abilities. This pattern of differences in specific ability self-perceptions may also explain why the low-math-ability adolescents had significantly lower self-esteem than their average- and high-ability peers, because domain-specific ability perceptions are predictive of global self-esteem (see Harter, 1990; Walker & Greene, 1986).

Gender Differences

Boys reported higher self-esteem than girls did at all four waves. Similar findings have been reported by many others (e.g., Blyth et al., 1983; Nottelmann, 1987; Rosenberg & Simmons, 1972; Simmons et al., 1979). We are unsure whether this finding reflects true gender differences in self-esteem or response bias, because boys tend to be more self-congratulatory than girls in their responses to self-report measures (Maehr & Nicholls, 1980), whereas girls may be more modest in their self-reports (Eccles, Adler, & Meece, 1984).

Rosenberg (1986) suggested that girls are more affected by the physical changes occurring at puberty, and their self-concepts thus are more volatile than those of boys during this time period. Our longitudinal findings regarding gender differences in self-esteem do not support this view, nor did we replicate the pattern of gender differences reported by Simmons and Blyth (1987). We did not find a significant interaction between gender and time of measurement, indicating that changes in self-esteem in this sample were similar for boys and girls. Simmons and Blyth found that the junior high transition had a negative effect only on girls' self-esteem. Whether this difference reflects sample differences, measure differences, or some more substantive differences remains unclear.

We observed many gender differences in beliefs about the different activities; boys had higher self-concepts of ability for sports and math than did girls, and girls had higher self-concepts of ability for English. These gender differences in self-concept of ability confirm and extend previous cross-sectional work (e.g., Eccles et al., 1983; Marsh, 1989; Wigfield, 1984). Although it is encouraging that boys and girls liked math similarly, the fact that girls had less positive views of their ability in math could be problematic. If these trends continue into high school, as previous studies suggest (e.g., Eccles et al., 1983; Wigfield, 1984), the girls should be less likely than the boys to take optional advanced level math courses. This potential problem could be further exacerbated by the fact that girls reported liking social activities so much more than math; social activities also could interfere with continued participation in mathematics.

Although, overall, there were no differences between boys'

and girls' self-concepts of social ability, boys' social-ability perceptions were more affected by the transition to junior high school than were those of girls, a finding we find most interesting. As mentioned earlier, Simmons and Blyth (1987) found the greatest disruptive effects of junior high school on girls' rather than boys' self-esteem. Although Simmons and Blyth did not measure social self-concept, given the importance all children attach to social competence, it seems likely that confidence in one's social skills is highly related to general self-esteem (see Harter, 1990). If this were true, boys' general self-esteem would have been disrupted more by the junior high transition. As just discussed, we did not find this, but we also did not find that girls' self-esteem was more disrupted than the boys' self-esteem. Our failure to replicate Simmons and Blyth's self-esteem findings could be due to the fact that the girls' self-concepts of social ability were disrupted less than the boys'.

The gender differences in liking of English, social activities, and sports activities followed our predictions. In addition, within each gender, the ordering of the boys' and girls' ratings of enjoyment matched the gender-role stereotyping of the domains; boys liked sports more than social activities and math more than English, whereas girls liked social activities more than sports. The one exception to this pattern was girls' liking for math. That is, girls and boys reported liking math equally well, and girls liked math slightly more than they liked English. Does this finding run counter to our prediction that young adolescents would like gender-role appropriate activities better than gender-role inappropriate activities? It does if girls stereotype mathematics as a male-typed activity! Perhaps girls in this sample viewed math as being just as appropriate for females as for males. In support of this suggestion, Jacobs (1987) found that girls in this sample do stereotype sports as a male domain, social activities as a female domain, and math as gender neutral. Earlier, Stein and Smithells (1969) also found that girls at this age do not view math as a male activity.

Contrary to prediction, the gender differences did not increase over the four waves of the study. We do not know when the gender differences emerged, although recent work (Wigfield et al., 1990) suggests that many of these differences appear in children as young as the first grade. We suspect, on the basis of previous studies (Eccles et al., 1983; Stein & Smithells, 1969; Wigfield, 1984), that the gender differences will increase in subsequent years. We will be able to test this prediction with the high school follow-up data that we are gathering now.

To conclude, we found that the transition to junior high school was associated with important changes in young adolescents' general self-esteem and their domain-specific beliefs. Although these changes were not always large, they were systematic, reliable, and largely predictable. We also found large differences in the beliefs of young adolescents with different levels of mathematics competence, and differences between boys and girls. We are most concerned about the negative shift in many of the beliefs we measured, particularly for the low-math-ability students. We may see in these data the beginning of psychological processes that put these adolescents at risk for later school failure. Schools need to provide some means for young adolescents to develop more positive beliefs about the legitimate activities they can participate in at school.

References

Berndt, T. J. (1987, April). *Changes in friendship and school adjustment after the transition to junior high school.* Paper presented at the biennial meeting of the Society for Research in Child Development, Baltimore, MD.

Blyth, D. A., Simmons, R. G., & Bush, D. (1978). The transition into early adolescence: A longitudinal comparison of youth in two educational contexts. *Sociology of Education, 51,* 149–162.

Blyth, D. A., Simmons, R. G., & Carlton-Ford, S. (1983). The adjustment of early adolescents to school transitions. *Journal of Early Adolescence, 3,* 105–120.

Brophy, J. E., & Evertson, C. M. (1978). Context variables in teaching. *Educational Psychologist, 12,* 310–316.

Brush, L. (1980). *Encouraging girls in mathematics: The problem and the solution.* Cambridge, MA: Abt Books.

Cauce, A. M. (1987). School and peer competence in early adolescence: A test of domain-specific self-perceived competence. *Developmental Psychology, 23,* 287–291.

Dusek, J. B., & Flaherty, J. F. (1981). The development of the self-concept during the adolescent years. *Monographs of the Society for Research in Child Development, 46*(4, Serial No. 191).

Eccles, J. S. (1984). Sex differences in mathematics participation. In M. L. Maehr & M. Steinkamp (Eds.), *Women in science* (pp. 93–137). Greenwich, CT: JAI Press.

Eccles, J. S. (1987). Gender roles and women's achievement-related decisions. *Psychology of Women Quarterly, 11,* 135–172.

Eccles, J. S., Adler, T. F., Futterman, R., Goff, S. B., Kaczala, C. M., Meece, J. L., & Midgley, C. (1983). Expectancies, values, and academic behaviors. In J. T. Spence (Ed.), *Achievement and achievement motivation* (pp. 75–146). San Francisco, CA: Freeman.

Eccles, J. S., Adler, T., & Meece, J. L. (1984). Sex differences in achievement: A test of alternate theories. *Journal of Personality and Social Psychology, 46,* 26–43.

Eccles, J. S., & Midgley, C. (1989). Stage/environment fit: Developmentally appropriate classrooms for early adolescents. In R. Ames & C. Ames (Eds.), *Research on motivation in education* (Vol. 3, pp. 139–181). San Diego, CA: Academic Press.

Eccles, J. S., Midgley, C., & Adler, T. (1984). Grade-related changes in the school environment: Effects on achievement motivation. In J. G. Nicholls (Ed.), *The development of achievement motivation* (pp. 283–331). Greenwich, CT: JAI Press.

Eccles, J. S., & Wigfield, A. (1985). Teacher expectations and student motivation. In J. B. Dusek (Ed.), *Teacher expectancies* (pp. 185–226). Hillsdale, NJ: Erlbaum.

Eccles, J. S., Wigfield, A., Flanagan, C., Miller, C., Reuman, D., & Yee, D. (1989). Self-concepts, domain values, and self-esteem: Relations and changes at early adolescence. *Journal of Personality, 57,* 283–310.

Feldlaufer, H., Midgley, C., & Eccles, J. S. (1988). Student, teacher, and observer perceptions of the classroom environment before and after the transition to junior high school. *Journal of Early Adolescence, 8,* 133–156.

Fyans, L. J. (1979). *Test anxiety, test comfort, and student achievement test performance.* Paper presented at the Educational Testing Service, Princeton, NJ.

Harter, S. (1981). A new self-report scale of intrinsic versus extrinsic orientation in the classroom: Motivational and informational components. *Developmental Psychology, 17,* 300–312.

Harter, S. (1982). The Perceived Competence Scale for Children. *Child Development, 53,* 87–97.

Harter, S. (1983). Developmental perspectives on the self-system. In P. H. Mussen (Series Ed.) & E. M. Hetherington (Vol. Ed.), *Handbook of child psychology* (Vol. 4, pp. 275–385). New York: Wiley.

Harter, S. (1990). Processes underlying adolescent self-concept forma-

tion. In R. Montemayor, G. R. Adams, & T. P. Gullotta (Eds.), *From childhood to adolescence: A transitional period?* (pp. 205–239). Newbury Park, CA: Sage.

Harter, S., Whitesell, N., & Kowalski, P. (1987). *The effects of educational transitions on children's perceptions of competence and motivational orientation.* Manuscript submitted for publication.

Hartup, W. W. (1983). Peer relations. In P. H. Mussen (Series Ed.) & E. M. Hetherington (Vol. Ed.), *Handbook of child psychology* (Vol. 4, pp. 103–196). New York: Wiley.

Hill, J. P., & Lynch, M. E. (1983). The intensification of gender-related role expectations during early adolescence. In J. Brooks-Gunn & A. C. Petersen (Eds.), *Girls at puberty* (pp. 201–228). New York: Plenum Press.

Hoge, R. D., & Coladarci, T. (1989). Teacher-based judgements of academic achievement: A review of the literature. *Review of Educational Research, 59,* 297–313.

Jacobs, J. E. (1987). *Parents' stereotypes and perceptions of their child's abilities: Influences on the child.* Unpublished doctoral dissertation, University of Michigan (Ann Arbor).

Kavrell, S. M., & Petersen, A. C. (1984). Patterns of achievement in early adolescence. In M. L. Maehr (Ed.), *Advances in motivation and achievement* (Vol. 4, pp. 1–35). Greenwich, CT: JAI Press.

Kirk, R. E. (1968). *Experimental design: Procedures for the behavioral sciences.* Monterey, CA: Brooks/Cole.

Maccoby, E., & Jacklin, C. (1974). *The psychology of sex differences.* Stanford, CA: Stanford University Press.

Mac Iver, D. (1987). Classroom factors and student characteristics predicting students' use of achievement standards during ability self-assessment. *Child Development, 58,* 1258–1271.

Maehr, M. L., & Nicholls, J. G. (1980). Culture and achievement motivation: A second look. In N. L. Warren (Ed.), *Studies in cross-cultural psychology* (Vol. 3, pp. 221–267). San Diego, CA: Academic Press.

Marsh, H. W. (1986). Verbal and math self-concepts: An internal/external frame of reference model. *American Educational Research Journal, 23,* 129–149.

Marsh, H. W. (1989). Age and sex effects in multiple dimensions of self-concept: Preadolescence to early adulthood. *Journal of Educational Psychology, 81,* 417–430.

Midgley, C., Feldlaufer, H., & Eccles, J. S. (1989). Change in teacher efficacy and student self- and task-related beliefs in mathematics during the transition to junior high school. *Journal of Educational Psychology, 81,* 247–258.

Nottelmann, E. D. (1987). Competence and self-esteem during the transition from childhood to adolescence. *Developmental Psychology, 23,* 441–450.

O'Malley, P. M., & Bachman, J. G. (1983). Self-esteem changes and stability between ages 13 and 23. *Developmental Psychology, 19,* 257–268.

Parsons, J. E., Adler, T., & Kaczala, C. (1982). Socialization of achievement attitudes and beliefs: Parental influences. *Child Development, 53,* 310–321.

Parsons, J. E., & Bryan J. (1978). *Adolescence: Gateway to androgyny.* University of Michigan (Ann Arbor), Women's Studies, Occasional Paper Series.

Reuman, D. A., Mac Iver, D., Eccles, J. S., & Wigfield, A. (1987, April). *Changes in students' math motivation and behavior at the transition to junior high school.* Paper presented at the annual meeting of the American Educational Research Association, Washington, DC.

Rosenberg, M. (1986). Self-concept from middle childhood through adolescence. In J. Suls & A. Greenwald (Eds.), *Psychological perspectives on the self* (Vol. 3, pp. 107–136). Hillsdale, NJ: Erlbaum.

Rosenberg, M., & Simmons, R. G. (1972). *Black and White self-esteem: The urban school child.* Washington, DC: American Sociological Association.

Schulenberg, J. E., Asp, C. E., & Petersen, A. C. (1984). School from the young adolescent's perspective: A descriptive report. *Journal of Early Adolescence, 4,* 107–130.

Schwarzer, R., & Lange, B. (1982). Test anxiety with respect to reference groups in school. In R. Schwarzer, H. M. Van der Ploeg, & C. D. Spielberger (Eds.), *Advances in test anxiety research* (Vol. 1, pp. 95–104). Hillsdale, NJ: Erlbaum.

Simmons, R. G., & Blyth, D. A. (1987). *Moving into adolescence: The impact of pubertal change and school context.* Hawthorne, NY: Aldine de Gruyter.

Simmons, R. G., Blyth D. A., Van Cleave, E. F., & Bush, D. (1979). Entry into early adolescence: The impact of school structure, puberty, and early dating on self-esteem. *American Sociological Review, 44,* 948–967.

Simmons, R. G., Rosenberg, F., & Rosenberg, M. (1973). Disturbance in the self-image at adolescence. *American Sociological Review, 38,* 553–568.

Stein, S., & Smithells, T. (1969). Age and sex differences in children's sex-role standards about achievement. *Developmental Psychology, 1,* 252–259.

Walker, L. S., & Greene, J. W. (1986). The social context of adolescent self-esteem. *Journal of Youth and Adolescence, 15,* 315–322.

Wigfield, A. (1984, April). *Relationships between ability perceptions, other achievement-related beliefs, and school performance.* Paper presented at the annual meeting of the American Educational Research Association, New Orleans, LA.

Wigfield, A., Harold, R., Eccles, J. S., Aberbach, A., Freedman-Doan, K., & Yoon, K. S. (1990, April). *Children's ability perceptions and values during the elementary school years.* Paper presented at the annual meeting of the American Educational Research Association, Boston, MA.

Wigfield, A., & Meece, J. L. (1988). Math anxiety in elementary and secondary school students. *Journal of Educational Psychology, 80,* 210–216.

Willower, D. J., Eidell, T. L., & Hoy, W. K. (1967). The school and pupil control ideology (Pennsylvania State Studies Monograph No. 24). University Park: Pennsylvania State University Press.

Received November 14, 1989
Revision received August 22, 1990
Accepted November 7, 1990 ■