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School Transitions and Adjustment During Early Adolescence

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Abstract: The aim of this investigation was to determine the impact of the timing and number of school transitions on young adolescents' subsequent adjustment. Three groups of adolescents (total $N = 253$) were compared: those making a single early school transition prior to sixth grade, those making a single later transition prior to seventh grade, and those making a double transition prior to both sixth and seventh grades. Adjustment was assessed in terms of course grades and self-image. Negative effects were found for both early and repeated school transitions, with the double transition being especially debilitating. In addition, effects were seen primarily with course grades. Few gender differences were observed in the response to early and double transitions, but those that emerged suggest that girls may be more adversely affected than boys.

Early adolescence has been characterized as a period of change, not only in terms of individual physical and cognitive development, but also in terms of the changes that occur in the adolescents' social contexts (e.g., Petersen, 1987). This period offers special challenges and opportunities for developmental researchers to examine the relationship between individual development and contextual changes. The most dramatic "normative age-graded" change (Baltes & Nesselrode, 1979) that many American children face is the transition from an elementary to a middle school or junior high school. This change can be considered

“normative” in that most children in a community experience it at a particular age or point in their development, often between the fifth and sixth grade (for middle school), or the sixth and seventh grade (for junior high school). The exact nature, timing, and number of these school transitions during adolescence vary across communities and individual school districts. However, most involve common structure and process changes, including going from a relatively small to a larger, more departmentalized, impersonal, and complex school; and experiencing differences in grading practices, teacher expectations, and teacher behavior in general (Feldlaufer, Midgley, & Eccles, 1988; Simmons & Blyth, 1987). The change in school structure is also related to changes in the peer group and in various aspects of adolescent behavior (e.g., Blyth, Hill, & Smyth, 1981). Thus, the transition involves changes in both physical setting and social roles, and this discontinuity may require adaptive efforts from young people (e.g., Cotterell, 1986).

A student's ability to cope with the transition to secondary school is likely to depend on several factors, including personal maturity and coping resources, the nature of the new school environment, and the level of preparation and social support available prior to and during the transition. The experience of having to adapt may have some impact on further development as well (Rutter, 1981). For some, this change may be stressful and detrimental to well-being, undermining the development of adaptive capacities. For others, the challenges and demands may generate, mobilize, or enhance the development of internal resources and abilities; they may provide new opportunities for growth and have a “strengthening,” “steeling,” or “inoculating” effect (Garmezy, 1985). The school transitions at early adolescence are of special interest and concern because they coincide with the individual (e.g., puberty) and contextual changes that may make this period a particularly challenging one (Hamburg, 1974; Petersen & Spiga, 1982).

EFFECTS OF SCHOOL TRANSITIONS

Course grades and measures of self-perceptions, such as general self-esteem, are the indicators most commonly used to examine school transition effects. Course grades are a relatively objective indicator of how well adolescents are performing in the new school environment. Self-perceptions indicate the extent to which disruptions in the school context affect students' feelings about

their adjustment and competence more generally. In previous research, the effects of transitions on grades appear to be quite consistent; effects on self-perceptions, however, vary somewhat depending on the measure used and on characteristics of the sample.

Grades. A decline in grades has been found in studies of school transitions in early adolescence (Blyth, Simmons, & Bush, 1978; Blyth, Simmons, & Carlton-Ford, 1983). In these studies grades declined with each school transition in junior high and high school. A decline in grade point average (GPA) following the transition to high school has been reported for other samples as well (e.g., Felner, Primavera, & Cauce, 1981). Declines in grades following a school transition may reflect teacher grading practices as well as any transition-related disruptions in student performance. Standards for performance increase as the student progresses through the educational system, and the application of more stringent standards will result in some students receiving poorer grades than they had previously. Thus, although grades provide a measure of students' relative performance in the new, more demanding context, a moderate decline does not necessarily reflect a serious disruption in effort or adjustment.

Self-Perceptions. While the work of Blyth and Simmons shows disruptive effects of transitions on global self-esteem (particularly for girls), as measured by the Rosenberg Self-Esteem Inventory (Rosenberg, 1965), other aspects of self-perceptions are less consistently influenced. Several studies using Harter's Perceived Competence Scale (which examines self-perceptions in the domains of Cognitive Competence, Social Acceptance, and Physical Competence as well as general self-worth) show that only the Social subscales show decline after a transition (Harter, 1983; Hawkins & Berndt, 1985; Nottelmann, 1982).

The Simmons and Blyth studies were based on a large, heterogeneous urban sample. Studies using the same self-esteem measure with other samples have often failed to replicate the decline in self-esteem following the transition to junior high school. For example, Thornburg and Jones (1982) found no significant drop in self-esteem among students in their Arizona sample who made a school transition at seventh grade, although a significant decline was found for those making a transition to middle school at sixth grade. Jones and Thornburg (1985) found no differences between students making either a sixth grade or seventh grade transition and students remaining in the same school. Finally, Fenzel and Blyth (1986) found no change in self-esteem fol-

lowing the seventh grade transition to junior high school among students in their White, middle-class, suburban sample; Hirsch and Rapkin (1987) also reported no change in self-esteem between sixth grade and seventh grade despite a school transition. Although the lack of replication may be due in part to smaller sample sizes than those in the Blyth and Simmons work, differences in sample characteristics could also be responsible, along with unmeasured differences in secondary school environment and level of student preparation.

Taken together, the prior literature has provided evidence that a normative school transition can be challenging and potentially disruptive. Given these findings, the factors that moderate (either mitigate or augment) disruptive effects take on particular importance for researchers and those responsible for educational policy. Two key factors would seem to be the timing and number of school transitions. Previous research suggested that active coping is required with the change to a new school environment with a different physical layout, different role expectations, and higher standards for performance; therefore, the timing and number of transitions may be crucial factors affecting the ease with which students adapt. School transitions that occur too early, that is, at an age when adolescents have not yet developed sufficient personal coping resources, may prove more disruptive than transitions occurring at a later time. Similarly, transitions that coincide with other changes requiring substantial adaptive efforts (e.g., puberty or the development of heterosexual relationships) may overload the adolescent's capacity to cope. The number of school changes may also be important in this regard. Multiple school changes requiring successive readjustments may undermine coping efforts. In addition, multiple transitions may impair coping ability by further disrupting the development of peer networks that might provide social support.

Prior research has suggested also that the timing and number of school transitions may indeed have important additional effects. In general, the Blyth and Simmons studies have shown a seventh-grade transition to be more disruptive than later transitions, with more long-term and "disabling" effects, particularly for self-esteem in girls. Although any school transition appears to be associated with short-term increases in perceived anonymity for boys and girls, early transitions have long-lasting negative effects on extracurricular participation and self-esteem in girls. Although there is some recovery in these domains over the subsequent two years, girls are also vulnerable

to further disruptions when they move into senior high school. A later single transition "seems to reduce the magnitude of disruptions which occur and the time it takes to recover" (Blyth, Simmons, & Carlton-Ford, 1983, p. 119).

The Simmons and Blyth research compared students who made the transition into junior high school at seventh grade with others who remained in elementary school through eighth grade. Whether the detrimental effects of an earlier transition hold generally or are specific to a transition at seventh grade has rarely been addressed in previous research. In one study (Thornburg & Jones, 1982), however, students making a transition at sixth grade showed a decline in self-esteem whereas those making a transition at seventh grade did not, a finding consistent with the hypothesis that early transitions are especially difficult.

Regarding the number of school transitions, two hypotheses may be formulated. The inoculation effect as discussed in the stress literature (Petersen & Spiga, 1982) would suggest that students who have already changed schools once will fare better at a second transition than those who have not yet changed schools, because they are familiar with the types of adjustments required and have already developed the necessary coping skills. Simmons and Blyth (1987), however, found that students undergoing two changes (at seventh and tenth grades) did not fare as well as those making a single transition between eighth and ninth grade. This suggests the opposite hypothesis: Two moves are worse than one. Some research on the effects of multiple school changes due to residential mobility also has supported this interpretation (e.g., Felner, Primavera, & Cauce, 1981), although the evidence concerning this "nonnormative" type of school change is mixed. It was believed that the data from the present study would support this latter hypothesis because the changes in school setting and social context were likely to be disruptive to students who were coping also with pubertal changes and changes in peer relationships.

In the course of a longitudinal study of early adolescent development (Petersen, 1984), a "natural experiment" provided the opportunity to examine the effects of timing and number of school changes. Two demographically comparable school districts were involved in the study. District A served a suburban population of about 30,000, while District B served a suburban population of 14,000. Each school district had several elementary

schools that fed into a middle school or junior high school. In the first year of the study, District A had two sixth through eighth grade middle schools. Students in this district typically made the transition to middle school prior to sixth grade. In the second year of the study, one of the middle schools was converted into District A's junior high school, serving seventh and eighth grades. Between the sixth and seventh grades, students who were already in this school remained, while those at the other middle school made a second transition into the newly formed junior high school. Thus, all District A students that particular year made a transition into middle school between the fifth and sixth grades, and half of these students made an additional transition between the sixth and seventh grades. All District B students (and District A students in later years) made only a single transition between the sixth and seventh grades, from elementary to junior high school. These transition paths are depicted in Figure 1.

Therefore, it was possible to examine the timing-of-transition question by comparing a move prior to sixth grade with one prior to seventh grade. If the results of other studies can be generalized to the hypothesis that an earlier transition is worse, the group who changed schools prior to sixth grade was expected to adjust more poorly than those who changed schools one year later. Similarly, effects of multiple versus single transitions could be studied by comparing students who changed schools at both sixth and seventh grade with those making a single transition prior to seventh grade. Students who made two transitions were expected to fare worse.

Finally, it was hypothesized that any effects would be especially strong among girls. Evidence of greater vulnerability to school transitions among girls has been observed in prior research. In the Blyth and Simmons study, decrements in self-esteem were found primarily for girls, although the authors did not directly compare patterns of change for boys and girls (Blyth et al., 1983; Simmons, Blyth, Van Cleave, & Bush, 1979; Simmons, Rosenberg, & Rosenberg, 1983). Similarly, Hirsch and Rapkin (1987) reported an increase in psychological symptoms among girls relative to boys during the seventh grade school transition. Negative effects on long-term participation in extracurricular activities were also stronger among girls than boys (Blyth et al., 1983). Whether the same sex difference would be obtained with course grades is unclear.

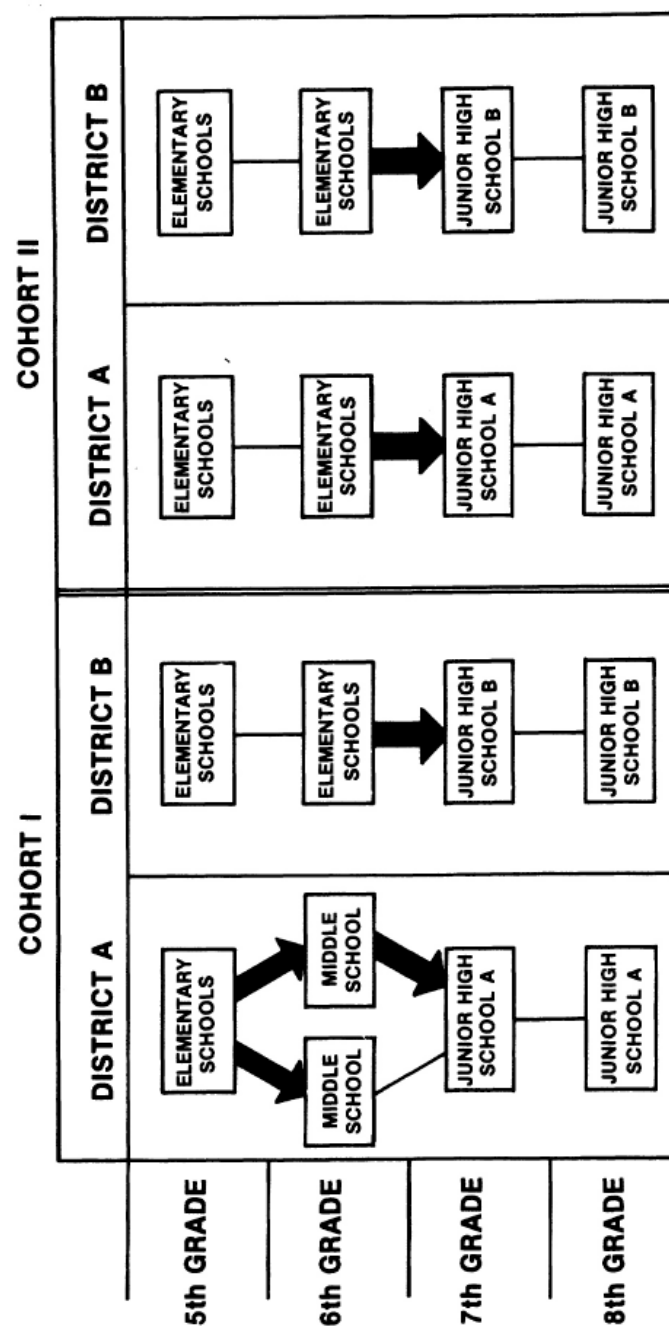


Figure 1 Flow Chart of School Transitions Made by Students in Each Cohort, by School District and Grade Level. Arrows indicate a transition to a new school. (From "School from the young adolescent's perspective: A descriptive report," by J. E. Schulenberg, C. E. Asp, and A. C. Petersen, 1984, *Journal of Early Adolescence*, 4, pp. 107-130.)

METHOD

This study was part of a larger investigation of development during early adolescence (Petersen, 1984). Using a cohort-sequential longitudinal design (Baltes, 1968; Schaie, 1965), students from two middle- to upper-middle-class suburban school districts were selected randomly from two successive sixth-grade cohorts and followed through the eighth grade. (See Richardson, Galambos, Schulenberg, & Petersen, 1984, for a detailed description of the sample.) Subjects were interviewed and tested during the fall and spring of each school year. The total number of subjects participating in the larger study was 335; however, the present study used a longitudinal subsample of 253 boys and girls from whom data were available from at least four of six interviews and four of six testing sessions. This subsample was utilized to ensure that the same students were compared at each grade level; it did not differ from the total sample on any variable examined thus far.

To maximize the number of cases available for analysis, missing values for the primary variables (course grades and self-image) were replaced with estimated values for subjects who had two data points but were missing a third (Little & Rubin, 1987). This procedure is appropriate because data are missing at random (e.g., out of school on the testing day). Data for a given individual at a given time of measurement were estimated using the cell mean weighted by the average deviation for that individual over the two times of measurement when data were present. The percentage missing averaged 11.2 and 11.3 for course grades and self-image, respectively.

Measures

Course Grades. Final (year-end) course grades in five subject areas (language arts, literature, mathematics, science, and social studies) were obtained from school records for each school year and coded on an 12-point scale, with 0 corresponding to "F" and 11 to "A," including plus (+) and minus (−) grades.

Self-Image. Self-image was assessed by the Self-Image Questionnaire for Young Adolescents (SIQYA), which students completed in group testing sessions held in the fall of each school year. The SIQYA is a 98-item self-report instrument rated on a 6-point Likert-type scale (Petersen, Schulenberg, Abramowitz, Jarcho, & Offer, 1984). Personal functioning was scored in six subscales: impulse control, emotional tone, body-image, mastery and

coping, psychopathology, and superior adjustment; social functioning was scored in three subscales: peer relations, family relations, and vocational-educational goals. All sub-scales were scored such that higher scores reflect better adjustment. A total score consisted of the average of the nine scale scores.

The SIQYA subscales showed adequate internal consistency: Alpha coefficients for boys and girls range from .54 to .88, with a median of .78. In addition, the scale scores correlate significantly with the Rosenberg Self-Esteem Inventory (Rosenberg, 1965), and have been found to discriminate adolescents who report psychological problems from those who do not, within a normal population (Petersen et al., 1984).

IQ. IQ was assessed in the sixth grade, using the Otis-Lennon Form K (Kavrell & Petersen, 1984). Scores were obtained from school records.

Father's Occupational Prestige. Information on father's occupation was obtained through questions included in the parent interview in sixth grade. Occupational prestige was rated using the system developed by the National Opinion Research Center (NORC; Featherman, Sobel & Dickens, 1975). In the present sample, occupational prestige ranged from 14 to 82 with a median of 61.5, indicating a range from middle to upper-middle class.

Analyses. For the purposes of this study, three transition groups were identified (see Figure 1). The *Early Single* group (Cohort 1, District A, $n = 34$) made a single transition into a middle school between the fifth and sixth grades. The *Double* group (Cohort 1, District B, $n = 38$) made two transitions, one between the fifth and sixth grades, and another between the sixth and seventh grades. Preliminary analyses showed no significant differences among the remaining groups (Cohort 1, District B, Cohort 2, Districts A and B) in levels and patterns of change in the outcome measures of interest; therefore, these groups were combined to make the *Late Single* group ($n = 181$).

The number of boys and girls in each transition group is provided in Table 1 for course grades and self-image. The small numbers in the Early Single and Double groups may reduce the likelihood of detecting differences, especially those involving interactions with gender. At the same time, effects that are significant despite the small ns are likely to be robust.

The primary analytic approach involved multivariate analyses of variance, performed on course grades and self-image scores at sixth, seventh, and eighth grades. These analyses included a priori contrasts comparing the Early Single group and Double group, respectively, with the Late Sin-

TABLE 1. Number of Subjects Separately by Transition Group and Gender

Group	Measure	
	SIQYA	Course Grades
Early Single		
Boys	20	20
Girls	14	14
Double		
Boys	16	16
Girls	22	22
Late Single		
Boys	77	74
Girls	104	96

NOTE: The number of subjects is the same over sixth, seventh, and eighth grades.

gle group.¹ Using this approach, it was possible to examine three issues: (a) the effects of moving to secondary school at sixth grade versus remaining in elementary school, (b) the effects of an early versus a later transition to secondary school, and (c) the effects of a double versus a single school transition. The effect of moving into secondary school at sixth grade was assessed with contrasts comparing sixth grade scores of the Early Single and Double groups with those of the Late Single group. In sixth grade the Early Single and Double groups had made the transition to secondary school, but the Late Single had not. Early versus later timing was examined through contrasts comparing the Early Single and Late Single groups at seventh and eighth grade. By seventh grade both groups had moved to secondary school, but the transition had been earlier for the Early Single group. Finally, the effect of number of transitions was examined via contrasts comparing the Double and Late Single groups at seventh and eighth grade. By seventh grade the Double group had made two transitions; the Late Single group only one. The eighth grade comparisons were included to test for the persistence of any effects due to timing or number.

Gender was an additional factor in these analyses. Interaction effects, rather than main effects of gender, were of interest. Gender by transition group interactions were expected, with stronger effects of early or double transitions emerging for girls.

TABLE 2. Effects of Timing and Number of School Transitions on Course Grades

Effect	Multivar F (5,232)	Univariate Effects (Fs)				
		Language Arts	Literature	Math	Science	Social Studies
Grade 6						
Timing	1.31	4.00 ^a	4.67 ^a	.79	2.47	1.49
Timing × Sex	1.02	1.45	.01	.01	.18	.59
Number	8.36 ^d	21.48 ^d	19.21 ^d	14.56 ^c	20.29 ^d	41.20 ^d
Number × Sex	.60	.05	.41	.04	.06	.30
Grade 7						
Timing	5.80 ^d	2.47	2.88	2.71	.06	7.98 ^b
Timing × Sex	.55	1.16	.64	1.38	2.42	.64
Number	5.14 ^c	12.09 ^c	13.01 ^c	.06	3.43	9.68 ^b
Number × Sex	.16	.05	.17	.10	.05	.00
Grade 8						
Timing	4.79 ^c	5.23 ^a	1.06	3.31	5.39 ^a	6.11 ^a
Timing × Sex	.46	.49	1.01	1.22	1.00	.17
Number	3.93 ^b	6.69 ^b	5.07 ^a	.12	10.52 ^b	14.47 ^c
Number × Sex	.32	.00	.01	.27	.03	.41

NOTE: *N* = 242. Multivariate degrees of freedom are the same for all effects across year in school.

a. *p* < .05.

b. *p* < .01.

c. *p* < .001.

d. *p* < .0001.

RESULTS

Although in most cases the same analyses were used to examine the effects of timing and number of transitions, as well as the general effect of moving into secondary school, results will be described separately in terms of the hypotheses. The tables, however, present all the information together. Group means are provided in the Appendix.

Course Grades

The results of analyses concerning course grades are summarized in Table 2. Significant multivariate effects of gender were found at sixth and eighth

grade. In each case, significant univariate effects emerged for language arts and literature, with girls outscoring boys. These gender differences have been reported in previous work (Kavrell & Petersen, 1984; Schulenberg, Asp, & Petersen, 1984) and will only be noted here. There were no interactions between gender and transition group. Thus, only the main effects for each transition group are discussed.

Transition Versus No Transition. A priori contrasts on the sixth grade data were used to compare each group that had experienced a school transition (Double and Early Single) with the group that had not (Late Single). As can be seen in Table 2, somewhat different results were obtained for the two post-transition groups. The Double group differed significantly from the Late Single group at the multivariate level and in each specific course area. Inspection of the means revealed that, in each case, the Double group received poorer grades than the Late Single group, as expected. Results concerning the Early Single group were less clear-cut. The multivariate effect was not significant, although the two significant univariate effects (for language arts and literature) were in the expected direction, with the Early Single group receiving poorer grades.² (See Appendix for means.)

Timing of Transition. A priori contrasts at seventh and eighth grade compared adolescents making a single school transition prior to sixth grade (Early Single) with those making a single transition prior to seventh grade (Late Single). At seventh grade, the multivariate effect for transition group was significant, and a significant univariate effect was found with social studies grades. Inspection of the means indicated that the Early Single group received poorer grades than the Late Single group, as anticipated.

The multivariate effect for transition group was also significant at eighth grade. In addition, significant univariate effects were found for language arts, science, and social studies. Inspection of the means indicated that all differences were in the predicted direction, with the Late Single group doing better than the Early Single group.

Number of Transitions. Contrasts at seventh and eighth grade compared students who made transitions prior to the sixth and seventh grades (Double) with those who made a single transition prior to seventh grade (Late Single). At seventh grade, the multivariate effect and three univariate effects were significant: those for literature, language arts, and social studies (see Table 2). Inspection of the means for these scales indicated that all significant differences were in the predicted direction. At eighth grade the multivariate effect and

four univariate effects (all except that for math) were significant. Again, all differences were in the predicted direction.

Self-Image

Results of the analyses concerning self-image are summarized in Table 3. Gender differences in favor of boys were observed but have been reported elsewhere (Abramowitz, Petersen, & Schulenberg, 1984) and will not be discussed here.

Transition Versus No Transition. A priori contrasts compared groups who had made the transition to secondary school (Double and Early Single) with the group that had not (Late Single) using sixth grade self-image scores. Results for the Double group were in line with predictions. The multivariate effect was significant, along with two of the univariate effects, those for mastery and coping and superior adjustment (Table 3). In both cases the mean score was lower in the Double group. No significant differences were found between the Early Single and Late Single groups. The only significant effect was a gender by transition group interaction for body-image. In this case, the means indicated that girls and boys in the Late Single group were similar in body-image, whereas in the Early Single group they were markedly different, with girls showing poorer body-image than boys. Boys in the Early Single group had higher body-image than those in the Late Single group; the reverse was true for girls.

Timing of Transition. No significant differences were found between the Early Single and Late Single groups at any grade level at either seventh or eighth grade.

Number of Transitions. The Double and Late Single groups were compared at seventh and eighth grade (Table 3). At seventh grade the only significant effect was a gender by transition group interaction for the peer relations scale. The means indicated that the girls in the Late Single group reported slightly better peer relations than the boys. In the Double transition group, in contrast, boys' peer relations scores were much higher than girls': The double transition boys' scores were the highest of all groups, and the double transition girls' were the lowest.

At eighth grade the multivariate effect for transition group was significant. None of the univariate effects was significant, however, making the group difference difficult to interpret. Based on the *F*-values in Table 3, it appeared that the significant multivariate effect was due primarily to the relatively large

TABLE 3. Effects of Timing and Number of School Transitions on Self-Image Scores

Effect	Univariate Effects (<i>F</i> s)									
	Multiv <i>F</i> (9,239)	Impulse Control	Emot'l Tone	Body Image	Peer Relns	Family Reln	Mastery Coping	Voc/Ed Goals	Psycho- pathol	Superior Adjust
Grade 6										
Timing	1.31	3.09	.04	.17	3.02	2.02	.01	1.04	.16	.32
T x Sex	1.30	.47	1.44	4.99 ^a	1.12	1.23	2.90	.00	.00	.03
Number	2.59 ^b	3.27	1.00	3.13	.19	.48	4.84 ^a	.02	.17	10.05 ^b
N x Sex	.64	.02	1.24	3.81	1.55	.04	.06	.18	1.99	.63
Grade 7										
Timing	.75	1.22	1.39	.12	.08	.16	1.65	.19	.03	.19
T x Sex	.40	.73	.37	.06	.11	1.00	.02	1.22	.40	.42
Number	1.13	3.52	.11	1.72	.36	.23	1.05	1.00	.04	3.67
N x Sex	1.42	.08	3.14	2.09	8.47 ^b	.13	.38	.00	.38	.01
Grade 8										
Timing	.53	.01	.56	1.58	.23	1.05	1.70	1.09	.21	.10
T x Sex	.84	.74	.00	.58	.00	.00	1.18	3.63	.17	.64
Number	2.24 ^a	.29	.35	.78	.41	2.18	.55	.04	2.88	1.32
N x Sex	1.94 ^a	2.77	2.77	2.71	2.31	1.33	1.86	.60	1.03	.37

NOTE: *N* = 253. Multivariate degrees of freedom are the same for all effects across year in school.a. *p* < .05.b. *p* < .01.

(though nonsignificant) effect sizes for family relations and psychopathology. On these two subscales, the Double group had slightly higher scores than the Late Single group.

The main effect for transition group was also qualified by a significant multivariate gender by transition group interaction. As with the transition group effect, however, no interaction was significant at the univariate level, making interpretation of the results difficult. The relatively large effect sizes for impulse control, emotional tone, body-image, and peer relations were probably responsible for the significant multivariate effect. Inspection of the means for these scales indicated that gender differences were negligible in the Late Single group but relatively large in the Double group, with girls scoring lower on three out of four scales. Moreover, in three of four cases boys in the Double group had somewhat higher scores than those in the Late Single group, whereas the reverse was true for girls.

Additional Tests of Timing

Since effects of any school transition may diminish with time, it was important to control for the amount of time since a transition was made when assessing effects of timing and number. In the analyses concerning number of transitions this was done automatically, since the most recent transition for both the Double and Late Single groups occurred between sixth and seventh grades. For the examination of timing effects, however, an additional set of analyses was necessary. It is important to note that such analyses assume that no other grade-related changes were relevant, an assumption unlikely to be valid, especially since the grade-based control in age is lost. In these analyses, groups undergoing transitions at different grade levels were compared during the first year after their respective transitions and again during the second year post-transition. Specifically, sixth grade scores for the Double and Early Single groups were compared with seventh grade scores from the Late Single group. Similarly, seventh grade scores from the Early Single group were compared with eighth grade scores from the Late Single group. (Students in the Double group could not be included in the latter analysis, because their second transition would have confounded the results.) For these analyses separate multivariate analyses of variance were conducted for course grades and self-image scores. Gender was included as a second factor in order to examine gender by transition group interactions. Results are presented in Tables 4 and 5.

TABLE 4. Effects of School Transitions on Course Grades Controlling for Time from Transition

Time from Transition	Univariate Effects (<i>F</i> s)					
	Multivar <i>F</i>	Language Arts	Literature	Math	Science	Social Studies
First Year <i>df</i> = (5,232)						
Timing	1.61	.96	0.03	4.55 ^a	1.68	0.13
Timing × Sex	0.43	1.26	0.08	0.55	0.46	0.07
Number	4.34 ^c	1.44	4.05 ^a	0.17	1.24	14.82 ^c
Number × Sex	0.94	0.10	0.03	0.75	0.04	0.00
Second Year <i>df</i> = (5,196)						
Timing	4.92 ^c	2.10	2.75	1.63	0.96	4.22 ^a
Timing × Sex	0.38	0.71	0.77	1.02	1.74	1.11

NOTE: *N* = 242 for First Year. *N* = 204 for Second Year.a. *p* < .05.b. *p* < .01.c. *p* < .001.

Course grades. Sixth grade scores of the Double and Early Single groups, respectively, were compared to seventh grade scores of the Late Single group, using a priori contrasts (Table 4). The Double group differed significantly from the Late Single group at the multivariate level. In addition, there were two significant univariate effects, for literature and social studies. In both cases mean grades were lower in the Double group. No interaction effects were significant. The Early Single and Late Single groups did not differ at the multivariate level. A significant univariate effect emerged for mathematics grades, but in this case students in the Early Single group received higher grades than those in the Late Single group, contrary to prediction. Again, there were no significant interaction effects.

Effects in the second year post-transition were examined by comparing seventh grade scores from the Early Single group with eighth grade scores from the Late Single group (Table 4). The multivariate effect was significant, with the only significant effect being with social studies. In this case, students in the Late Single group received better grades. There were no significant interaction effects.

TABLE 5. Effects of School Transitions on Self-Image Scores Controlling for Time from Transition

Time from Transition	Univariate Effects (<i>F</i> s)									
	Multiv <i>F</i>	Impulse Control	Emot'l Tone	Body Image	Peer Relns	Family Relns	Mastery Coping	Voc/Ed Goals	Psycho-pathol	Superior Adjust
First Year <i>df</i> = (9,239)										
Timing	2.54 ^b	4.41 ^a	1.93	2.34	0.24	1.23	0.22	0.82	2.15	0.61
T × Sex	1.36	0.68	1.88	6.42 ^b	1.70	0.61	2.66	0.05	0.21	0.01
Number	1.82	4.70 ^a	5.19 ^a	0.55	1.17	0.17	6.65 ^b	0.01	2.41	3.24
N × Sex	1.08	0.07	1.67	5.02 ^a	2.30	0.00	0.03	0.34	3.66	0.23
Second Year <i>df</i> = (9,203)										
Timing	0.57	0.00	0.37	1.03	0.00	1.58	1.41	0.55	0.04	0.07
T × Sex	0.79	1.44	1.40	0.54	0.65	0.28	0.21	1.06	1.40	0.51

NOTE: *N* = 253 for the first year. *N* = 215 for the second year.a. *p* < .05.b. *p* < .01.

Self-Image. Results for the first and second years post-transition are presented in Table 5. In the first year, the Double and Late Single groups did not differ at the multivariate level, although there was a trend in that direction. Significant univariate effects were found for impulse control, emotional tone, and mastery and coping. In each case the Double group had lower scores. The Early Single and Late Single groups differed at the multivariate level, and a significant univariate effect in favor of the Late Single group emerged with impulse control. In neither case was there a significant multivariate interaction effect. In both cases, however, a significant univariate interaction effect emerged with body-image. These means indicated that the gender difference was small in the Late Single group but larger in the Double and Early Single groups, with girls showing poorer body-image than boys. In the second year post-transition, no significant differences related to transition group emerged at either the multivariate or univariate level.

Tests Controlling on IQ and SES

Preliminary analyses revealed small but significant group differences in IQ scores and in father's occupational prestige, an indicator of socioeconomic status (SES). IQ in the Late Single group was significantly higher than in the other two groups, which did not differ from one another. Father's occupational prestige was significantly higher in the Early Single group but did not differ between the Double and Late Transition groups. To examine potential effects, all analyses described previously were redone with the effects of IQ and father's occupational prestige covaried out. It should be noted that the sample size for this set of analyses was somewhat reduced: The N was 202 for course grades and 212 for self-image; this sample is also a smaller subset from the one described previously. Rather than presenting additional tables, results are described in the text and discrepancies from the original findings noted. Discrepancies were largely attributable to the effects of IQ, since occupational prestige was never a significant covariant of either course grades or self-image scores. Note, however, that the higher SES in the Early Single group may have moderated the impact of any negative effects with this group. In contrast, IQ was a significant covariant for all course grades and selected self-image scales at each grade level.

Course Grades. The sixth grade results comparing a sixth grade transition with no transition were largely unchanged. The Double group still differed significantly from the Late Single group at the multivariate level, $F(5,192)$

$= 4.27, p < .001$. In addition, all univariate effects were significant. (For language arts, $F(1,195) = 10.37, p < .01$; literature, $F(1,195) = 5.94, p < .05$; math, $F(1,195) = 4.17, p < .05$; science, $F(1,195) = 9.64, p < .01$; social studies, $F(1,195) = 19.38, p < .0001$.) The Early Single group did not differ from the Late Single group at either the multivariate or univariate level. (Thus, two significant effects in favor of the Late Single group were removed.) No interactions with gender were significant.

The pattern of results for number of transitions was largely un-changed, although fewer univariate effects were significant. At seventh grade the multivariate effect was significant, $F(5,192) = 3.10, p < .05$, along with the univariate effect for literature, $F(1,195) = 4.00, p < .05$. The Double group received poorer grades in this subject area. At eighth grade, the multivariate effect was reduced to a trend, $F(5,192) = 1.89, p < .10$, although the univariate effect for social studies was still significant, $F(1,195) = 4.36, p < .05$. In this area, the Double group received poorer grades.

The major change in results emerged in the analyses of timing effects. The Early Single and Late Single groups differed at the multivariate level at both seventh grade, $F(5,192) = 4.55, p < .001$, and eighth grade, $F(5,192) = 4.26, p < .001$. In each case the only significant univariate effect was for mathematics grades; in seventh grade, $F(1,195) = 6.22, p < .05$, and in eighth grade, $F(1,195) = 6.14, p < .05$. Inspection of the means revealed that the Early Single group outscored the Late Single group in this course area, indicating a reversal of the original effect. Only one interaction with gender was significant: a univariate effect with science at seventh grade. Based on the means, girls in the Early Single group outperformed boys, but girls and boys in the Late Single group were similar.

The comparisons during the first and second year post-transition showed a similar pattern of results. In the first post-transition year the Double group (in sixth grade) performed more poorly than the Late Single group (in seventh grade). The multivariate effect was significant, $F(5,192) = 3.10, p < .01$, as was the univariate effect for social studies, $F(1,195) = 5.31, p < .05$. The comparison of the Early Single and the Late Single groups showed the opposite pattern. The multivariate effect was significant, $F(5,192) = 3.45, p < .01$, along with the univariate effects for science, $F(1,195) = 10.21, p < .01$, and mathematics, $F(1,195) = 11.03, p < .01$. In each case, the Early Single group received better grades. During the second year post-transition, the Early Single and Late Single groups differed at the multivariate

level, $F(5,158) = 3.48$, $p < .01$, but no univariate effects reached significance. The multivariate effect was probably due to the relatively large effect sizes for mathematics, $F(1,160) = 3.12$, $p < .08$, and science, $F(1,160) = 3.74$, $p < .06$. In both cases, the means were somewhat higher for the Early Single group.

Self-Image. The sixth grade comparisons showed no significant multivariate effects for transition group. The initial multivariate difference between the Double and Late Single groups was reduced to a trend, and only the univariate effect for superior adjustment remained, $F(1,205) = 4.88$, $p < .05$. In this domain, the Double group still had poorer self-image. In addition, a univariate interaction effect for body-image emerged, $F(1,205) = 4.04$, $p < .05$. Based on the means, boys in the Double group had higher body-image than girls, whereas gender differences were minimal in the Late Single group.

The analyses concerning number of transitions revealed no significant differences between the Double and Late Single groups at either seventh or eighth grade. The interaction effect with peer relations at seventh grade was still significant, $F(1,205) = 7.12$, $p < .01$. As in the initial analyses, boys and girls in the Late Single group were similar, while boys in the Double group outscored girls. In addition, a significant multivariate interaction with gender emerged at eighth grade, $F(9,198) = 2.09$, $p < .05$. The only significant univariate effect was with body-image, $F(1,205) = 5.00$, $p < .05$. Again the pattern showed minimal gender differences in the Late Single group, with boys outscoring girls in the Double group.

The analyses of timing showed no multivariate differences between the Early Single and Late Single groups at either seventh or eighth grade. Significant univariate effects emerged for emotional tone and mastery and coping at seventh grade, $F(1,205) = 5.37$, $p < .05$ and $F(1,205) = 6.05$, $p < .05$, respectively. In both cases, the Early group had higher mean scores.

The comparisons one and two years post-transition showed few significant results. During the first post-transition year no differences emerged between the Double and Late Single groups. The only group-related effect was an interaction with gender for body-image, $F(1,205) = 5.26$, $p < .05$, where boys in the Double group outscored girls, but gender differences were minimal in the Late Single group. The Early Single group differed from the Late Single group in terms of the multivariate effect, $F(9,198) = 2.11$, $p < .05$, but no

univariate effects were significant. An interaction with gender occurred for body-image, $F(1,205) = 4.19$, $p < .05$. Mean gender differences in favor of boys were larger in the Early Single group than in the Late Single group. During the second year post-transition, there were no significant differences between the Early Single and Late Single groups. Interaction effects were also not significant.

DISCUSSION

The main purpose of the present investigation was to examine the effects of timing and number of school transitions on adolescents' subsequent functioning, as assessed by course grades and self-image. A related purpose was to examine differential impact for boys and girls. Evidence of negative impact was found primarily with a double transition and mainly with respect to course grades. Evidence regarding the effects of timing was less clear-cut. Gender differences in the impact of early and repeated transitions were rare but showed a consistent pattern suggesting greater vulnerability among girls. These effects will be discussed in turn.

Number of Transitions

The comparisons of the Double and Late Single transition groups consistently revealed poorer academic performance by students in the Double group. The differences were significant at seventh and eighth grade in the initial contrasts, and some differences persisted after IQ was controlled, although in a weaker form as the number of significant univariate effects was reduced. These findings suggest that making two, closely spaced school changes is indeed more debilitating than making a single transition prior to seventh grade. This conclusion is consistent with previous literature examining multiple school transitions (Blyth et al., 1983; Simmons & Blyth, 1987). The fact that differences remained at eighth grade, over a year after the second transition, suggests that the effects of a double transition may be persistent. The sensitivity of course grades to a range of life changes (including school transitions) had been noted in other research (Simmons, Burgeson, & Carlton-Ford, 1987).

The findings with respect to self-image were generally weaker and less likely to remain once the effect of IQ was controlled. Moreover, in the initial analyses there was some indication that by eighth grade the Double group tended to have higher self-image than the Late Single group. Thus, it could be concluded that the double transition did not prove more detrimental in terms of self-image.

Although controlling for IQ tended to decrease the size and number of results, it is probably not the case that the uncontrolled results were due to IQ differences. First, the reduction in degrees of freedom was sizable in the IQ analyses, reducing the power to detect differences; in addition, the Early Single group was reduced by six subjects, or by 18%. Second, IQ scores have demonstrated situation effects in other research (e.g., Honzik, MacFarlane, & Allen, 1948). Because the IQ data were obtained after a school change for the Double and Early Single groups, any effects suppressing functioning may have also affected IQ test performance. Thus, IQ may not be an appropriate control but instead may be truly confounded with course grades and self-image.

Timing of Transition

The results pertaining to an early school transition were less consistent with respect to both course grades and self-image. Initial contrasts comparing course grades in the Early Single and Late Single groups revealed significant differences in favor of the Late Single group at both the multivariate and univariate levels. However, when these two groups were compared in the first and second years after their respective transitions, findings were not as consistent; this analysis, however, confounded age with transition time. When IQ effects were covaried out, the direction of the initial differences was reversed, with students in the Early Single group outperforming those in the Late Single group in math and perhaps science; if IQ test performance were suppressed by the early transition, however, the remaining achievement outcomes with IQ controlled could indeed represent a different kind of effect.

When the Double group (which also made an early transition) was compared with the Late Single group in the first year post-transition, the results were more in line with prediction. Differences favored the Late Single group even after IQ was controlled. Thus, although a negative impact of an earlier

transition was indicated in some previous research (Blyth et al., 1983; Thornburg & Jones, 1982), clear support for such an effect was obtained only after one year in the present investigation.

Self-image appeared to be only weakly affected by an early transition. Although some analyses revealed significant differences related to timing, most of these effects disappeared when IQ and SES were controlled. Therefore, we cannot make a strong statement about whether a sixth grade transition is more debilitating to self-image than a seventh grade transition.

Gender Differences in Impact

Gender differences in the impact of timing and number were sparse, and, given the possibility of chance effects, should be viewed with caution. In particular, the single finding in the domain of course grades was most likely attributable to chance. The effects with respect to self-image, however, present a consistent pattern which may be worth considering despite small number of effects. Interaction effects were found primarily with body-image; some involved repeated transitions, and others involved early timing. In all cases, the means showed that gender differences were small in the Late Single group and relatively large in the other groups. Although a limited effect, this pattern was consistent with the hypothesis of differential vulnerability to school transitions: Boys experiencing an early or double transition showed equal or better self-image than those experiencing a single, seventh grade transition; girls in these circumstances tended to show poorer self-image, especially relative to boys. The limited nature of the effect was not surprising given that such gender differences in vulnerability are not always found in suburban samples (Fenzel & Blyth, 1986; Jones & Thornburg, 1985). The relative lack of number and timing effects on self-image deserves further comment. Although some previous research has suggested that transitions can have a disruptive effect on self-esteem (Blyth et al., 1983), neither the timing nor number of school transitions appeared to affect adolescents' self-image importantly in the present study.

This relative lack of effects for self-image is in line with other recent research that has failed to replicate the original findings of Simmons and Blyth (e.g., Fenzel & Blyth, 1986; Hirsch & Rapkin, 1987; Jones & Thornburg, 1985). Like the present investigation, many of these studies used suburban samples, rather than the heterogeneous, urban sample studied by Simmons

and Blyth. It is possible that adolescents in a middle- to upper-middle-class suburban context are less susceptible to the effects of a school transition, perhaps because of the generally greater extent of resources available to them.

The different patterns of results obtained with the Early Single and Double groups also require discussion. Different effects at seventh and eighth grade were expected, since by that time the experiences of the two groups had diverged due to the Double group's second school change. The different patterns emerging at sixth grade, however, are more difficult to explain. At this point both groups had made a transition to middle schools in the same school district. Yet the Double group differed from the Late Single group, particularly in course grades, whereas the Early Single group did not show stable differences. The lack of difference between the Early Single and Late Single groups is surprising because the Early Single group had made a school transition, while the Late Single group had not. Because SES was significantly higher among the Early Single group, it is possible that this factor buffered any negative effects. The implication is that in certain cases school transitions may not be disruptive at all.

The present results need to be viewed in light of the particular nature of the sample. First, the sample was White, suburban, and middle-class: The effects of timing and number may differ for other samples in other contexts, as indicated by the work of Simmons and Blyth (1987). Second, the small *ns* in some of the groups may have reduced the number of significant effects, and it would be useful to replicate the results in a larger sample. Finally, the possibility of confounds due to preexisting group differences cannot be entirely ruled out. Ideally, fifth grade data would have been available, allowing us to test for group differences existing prior to any school transitions and to control for any preexisting differences in course grades and self-image. The analyses controlling for IQ and father's occupational prestige provided information about the role of these two factors, but it is possible that other factors differed among the groups before the school transition. Another potential source of contamination involved differences in secondary school contexts or in the level of preparation students received prior to a transition. On the gross-est level such differences appear minimal: Students in all groups received similar preparation (consisting primarily of a tour of the new school), and the junior high schools in both districts were roughly comparable in functional size and organization. Differences may have existed on a subtler level, how-

ever, and it is possible that such differences contributed to the observed differences between groups. (For example, see Richards, Boxer, Petersen, & Albrecht, 1989.) Such variations in secondary school might be fruitfully explored in future research.

In sum, the results of the present investigation point to a negative impact of a double school transition on young adolescents' functioning, particularly with respect to course grades. They also suggest a limited gender difference in the impact of early and repeated transitions, with girls showing somewhat greater vulnerability as indexed by poorer body-image. Finally, the results highlight the need to distinguish the effects of school transitions on course grades (which appear to be strongly affected) and self-image (which seems to be minimally affected). In other words, measures reflecting the mechanics of the school change—learning the roles in a new school, learning to cope with different teacher expectations and grading practices—show the greatest impact. This challenge, however, may not strongly affect students' perceptions of their personal adjustment.

Appendix

TABLE A-1. Means and Standard Deviations for Course Grades by Transition Group

Group	Course				
	Language Arts	Literature	Math	Science	Social Studies
	\bar{X} (SD)	\bar{X} (SD)	\bar{X} (SD)	\bar{X} (SD)	\bar{X} (SD)
Grade 6					
Early Single	7.97 (1.78)	7.68 (1.51)	8.41 (1.81)	8.09 (2.05)	8.20 (1.71)
Double	7.23 (2.44)	7.06 (2.14)	7.40 (2.39)	6.97 (1.68)	6.46 (2.53)
Late Single	8.91 (1.97)	8.59 (2.06)	8.82 (2.04)	8.68 (2.16)	8.77 (1.93)
Grade 7					
Early Single	6.89 (1.52)	6.93 (1.56)	8.16 (1.81)	7.42 (2.33)	6.71 (1.92)
Double	6.34 (2.20)	6.34 (2.20)	7.63 (2.17)	6.63 (2.64)	6.82 (2.02)
Late Single	7.72 (2.34)	7.86 (2.47)	7.52 (2.29)	7.47 (2.59)	8.15 (2.54)
Grade 8					
Early Single	6.49 (2.40)	7.15 (1.92)	8.42 (2.22)	5.86 (2.31)	6.56 (2.20)
Double	6.61 (2.28)	6.87 (2.35)	7.55 (2.50)	5.64 (2.72)	6.60 (2.23)
Late Single	7.70 (2.42)	7.80 (2.30)	7.66 (2.36)	7.14 (2.55)	7.83 (2.59)

TABLE A-2. Means and Standard Deviations for Self-Image Scores by Transition Group

Group	Subscale										
	Impulse Control	Emot'l Tone	Body Image	Peer Relns	Family Relns	Mastery Coping	Voc/Ed Goals	Psy-chopathol	Superior Adjust		
	\bar{X} (SD)	\bar{X} (SD)	\bar{X} (SD)	\bar{X} (SD)	\bar{X} (SD)	\bar{X} (SD)	\bar{X} (SD)	\bar{X} (SD)	\bar{X} (SD)	\bar{X} (SD)	\bar{X} (SD)
Grade 6											
Early Single	4.31 (0.85)	4.65 (0.58)	4.84 (0.78)	4.93 (0.72)	4.84 (0.63)	4.91 (0.61)	4.92 (0.58)	4.46 (0.70)	4.65 (0.71)		
Double	4.31 (0.79)	4.49 (0.80)	4.39 (0.87)	4.67 (0.77)	4.91 (0.63)	4.61 (0.72)	5.03 (0.60)	4.41 (0.64)	4.31 (0.58)		
Late Single	4.58 (0.81)	4.64 (0.70)	4.69 (0.83)	4.64 (0.85)	4.99 (0.58)	4.88 (0.67)	5.04 (0.61)	4.38 (0.79)	4.72 (0.69)		
Grade 7											
Early Single	4.42 (0.74)	4.94 (0.66)	4.59 (0.66)	4.86 (0.74)	4.98 (0.54)	5.09 (0.52)	5.07 (0.50)	4.65 (0.68)	4.59 (0.67)		
Double	4.37 (0.63)	4.72 (0.73)	4.33 (0.67)	4.71 (0.84)	5.00 (0.58)	4.80 (0.53)	4.91 (0.63)	4.61 (0.66)	4.31 (0.63)		
Late Single	4.62 (0.76)	4.80 (0.68)	4.53 (0.76)	4.84 (0.71)	4.95 (0.64)	4.92 (0.67)	5.03 (0.68)	4.65 (0.73)	4.54 (0.68)		
Grade 8											
Early Single	4.41 (0.71)	4.98 (0.64)	4.66 (0.78)	4.95 (0.78)	4.96 (0.54)	5.08 (0.70)	5.09 (0.56)	4.70 (0.69)	4.60 (0.66)		
Double	4.42 (0.62)	4.75 (0.77)	4.51 (0.67)	4.93 (0.72)	5.01 (0.65)	4.83 (0.60)	5.04 (0.55)	4.82 (0.67)	4.45 (0.58)		
Late Single	4.45 (0.74)	4.86 (0.70)	4.43 (0.74)	4.88 (0.69)	4.85 (0.71)	4.94 (0.66)	5.01 (0.59)	4.63 (0.71)	4.57 (0.59)		

NOTES

1. The Early Single and Double transition groups were compared to the Late Single group because the Late Single group represents the typical junior high transition prior to seventh grade.
2. Although univariate effects are customarily discussed only when the multivariate effect is significant, all significant effects relating to the hypotheses will be noted, in order to provide a complete picture of the results. The small *ns* in two transition groups and the resulting loss of statistical power prompted this decision.
3. We are indebted to an anonymous reviewer for this suggestion.

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