

# **Prospective Study of Changes in Global Self-Worth and Strain During the Transition to Middle School**

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*An integrative model of the stress process in early adolescence during the transition to middle school was examined in this prospective study. In the model, student role strain (both peer and school work strain) was hypothesized to predict changes in feelings of self-worth, with perceived competence (social and scholastic) and social support (from close friends, parents, and teachers) serving as moderators of the relation. Reciprocal relations also were hypothesized. Results of prospective analyses showed support for the negative effects both of peer and school strain on changes in feelings of self-worth, as well as a role for perceived social competence and social support from close friends as moderators of this type of relation. Reciprocal influences of perceived competence, social support, and feelings of self-worth on levels of strain also were evident individually and in interaction with one another.*

Previous research (Crockett, Petersen, Graber, Schulenberg, & Ebata, 1989; Hirsch & Rapkin, 1987; Simmons & Blyth, 1987; Wigfield, Eccles, MacIver, Reuman, & Midgley, 1991) has shown that the transition to middle or junior high school is stressful for many students, especially girls, and can be accompanied by increases in psychological symptoms and declines in feelings of self-worth and in school performance. Individual differences regarding change in feelings of self-worth during the middle school transition are important to investigate both because of the potential for decreased feelings of self-worth to be precipitated by new academic and social competency challenges presented by a new and larger school environment, and because low feelings of self-worth have been found to mediate the development of psychological symptoms and academic difficulties for young adolescents (Harter, 1986, 1987, 1993).

Research on early adolescent school transitions currently is lacking, however, prospective investigations of factors that could influence changes in

feelings of self-worth that accompany the middle school experience. The present study addressed this issue by examining school-related strains, perceived competencies, and social support as predictors of changes in feelings of self-worth during the transition to middle school over three points in time: one prior to the transition and two during the first year of middle school. The reciprocal relations of feelings of self-worth, in combination with perceived competence and social support, to changes in strain also are investigated.

Researchers (in particular, Eccles et al., 1993; Simmons & Blyth, 1987) have pointed to many factors that contribute to the stressfulness of the transition to middle school, including increased academic demands and social comparisons, exposure to unfamiliar peers and teachers, and practices that fail to meet early adolescents' developmental needs for autonomy and self-management. With that work as a background, the role-strain framework (Fenzel, 1989a; Pearlin, 1982, 1983) was adapted for the present study to inform the types of stressors affecting young adolescents in the school context. This framework has been used to identify particular sources of role strain in the school context and the extent to which students are bothered by ongoing excessive or conflicting demands or pressures associated with the student role (Bobo, Gilchrist, Elmer, Snow, & Schinke, 1986; Fenzel, 1989b). Sources of role strain that have been identified for young adolescents (Bobo et al., 1986; Fenzel, 1989a) include work demands of school, treatment by teachers, and relationships with peers and parents. Researchers have found role strain to be related to declines in feelings of self-worth and of performance among adults (Pearlin, 1982, 1983) and early adolescents (Fenzel, 1990). These findings are consistent with other research during the past 15 years that has shown the damaging effects of ongoing daily stressors or hassles on early adolescent well-being (Cafasso, Jose, & Bryant, 1993; Kanner, Feldman, Weinberger, & Ford, 1987).

### Role-Strain Moderators

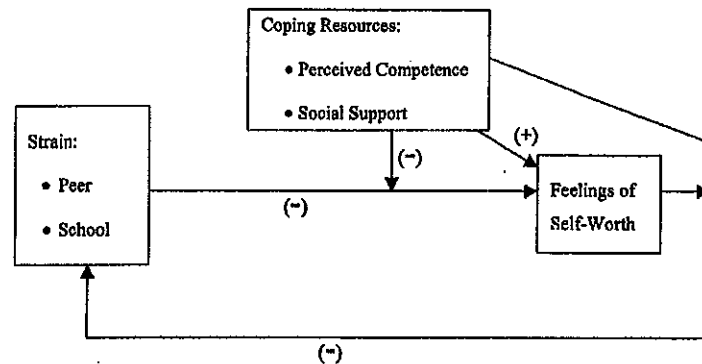
The traditional stress process model posits that not all individuals experience comparable levels of distress when exposed to similar levels of role strain (Allen & van de Vliert, 1984; Wheaton, 1983). Several theorists and researchers (Fenzel, 1990; Walker & Greene, 1987; Wheaton, 1983) have suggested that psychological and environmental resources, also referred to as personal coping resources and social support, tend to moderate the impact of strains on well-being. Support for this moderator effect has appeared in some cross-sectional research among adolescents with respect

to perceptions of self-competence (Fenzel, 1990) and peer social support (Walker & Greene, 1987).

According to Moos and Billings (1982), personal coping resources are best conceptualized as a set of relatively stable attitudinal and cognitive dispositions that promote effective adaptation, thereby reducing the potentially harmful effects of strain. On the other hand, individual vulnerability, or the lack of such characteristics, has the potential to amplify the effects of strain (Petersen & Spiga, 1982). Personal coping resources that have been indicated to reduce the detrimental effects of strain on children and adolescents include personal maturity, an internal locus of control, perceived competence, and self-efficacy beliefs (Compas, 1987; Crockett et al., 1989; Fenzel, 1990; Wheaton, 1983). Perceived competence, in particular, perceptions of competence in peer relations and school work, was chosen as the coping resource variable for the present study. Competence judgments have been shown to be predictive of global self-worth among this age group (Bohrnstedt & Felson, 1983; DuBois, Felner, Brand, Phillips, & Lease, 1996; Harter, 1985a, 1987, 1993) and their use is consistent with theoretical models of self-worth development (Harter, 1987, 1993). In addition, competency judgments in such domains have the potential to reflect social and scholastic skills that are important particularly in the early adolescent school context and that can be enhanced with proper interventions (Asher, 1983; Elias et al., 1986).

Research indicates that receiving support from important others in stressful times or during difficult transitions, or knowing that others are available if needed, provides protection from distress (House, 1981; Rowlinson & Felner, 1988). Although the conceptualization and operationalization of social support differs considerably, there is general agreement on the importance of emotional, appraisal, informational, and instrumental functions of support in times of stress (House, 1981; Wheaton, 1983). When using social resources in times of strain, early adolescents can seek support from peers, parents, and other significant adults in their lives. Research pertaining to the relative influence of peers and parents on adolescent well-being and adjustment (Berndt, 1982, 1999; Harter, 1993; Hirsch & DuBois, 1992) has indicated that peer support might be especially well suited to moderating strains related to social adjustment to school, whereas parents and perhaps teachers are more likely to provide beneficial support in the area of strain related to academic demands. It should be noted, however, that previous research has not found consistent support for a moderating effect of social support with stressful events among adolescents (e.g., Rowlinson & Felner, 1988).

In the present study of changes in feelings of self-worth among early adolescents, peer-related strain, competency evaluations, and social support



**Figure 1:** Integrative model of the stress process during the transition to middle school.

were expected to account for more variation in self-worth change than were measures of these types of factors related to teachers and parents. This expectation is consistent with findings that have indicated that global self-worth evaluations are affected by individuals' self-ratings of competence in specific domains of functioning to a greater extent when they place a high level of importance on those domains (Harter, 1993), and with the work of adolescent theorists (Berndt, 1999; Foster-Clark & Blyth, 1991; Youniss, 1980) who have shown consistently the psychological and social importance of peers for adolescent development.

Some researchers (e.g., Compas, Wagner, Slavin, & Vannatta, 1986; Hirsch & DuBois, 1992) also have found evidence of reciprocal relations between measures of psychological dispositions, stressors, and social support during and following school transitions. Those findings have indicated that the traditional model of the stress process might be inadequate for understanding the complexity of the adjustment to school transitions. It is possible, for example, for youth with low feelings of self-worth to have greater difficulty making friends, and for young adolescents who have less support from peers to experience greater difficulty negotiating the social and academic environment of a new school, both of which could result in increased transition-related strain. Thus, although stress has the potential to occupy a central role in processes that influence feelings of self-worth during school transitions, reciprocal patterns of linkage that affect levels of stress are also important to consider.

### An Integrative Model

The integrative model tested in the present study (see Figure 1) includes both direct and moderating effects of strain and personal and social coping resources on changes in feelings of self-worth, as well as the reciprocal relations of young adolescents' perceptions of self-worth and coping resources to changes in peer and school strain. Measures were obtained at three points in time: prior to the transition at the end of fifth grade and in sixth grade during late September and late February. In this way, it was possible to examine the integrative model over the course of the early and later phases of the transition to middle school.

## METHOD

### Participants

Participants were part of a longitudinal study of the transition from elementary to middle school in a small city school district in upstate New York. All fifth-grade students attending two different elementary schools that fed the same Grade 6 through Grade 8 middle school were recruited for the study. The final sample included 116 students (51 boys and 65 girls), who represented 91% of students in the two schools who made this transition and 94% of the initial sample of 123 students. The mean age of participants at the time of middle school entrance was 10.8 years. Most students were Caucasian (90%), and 71% reported living with two married parents. Students' parents were well educated, with 82% of fathers and 72% of mothers having at least one college degree. Parental consent was required for participation in the study.

### Measures

Students completed a set of pencil-and-paper questionnaires in classroom groups of 20 to 30 students approximately 3 weeks prior to the end of the fifth-grade school year (Time 1), 3 weeks after the beginning of middle school in September (Time 2), and in late February of sixth grade (Time 3). Descriptive statistics and estimates of internal consistency reliabilities for the measures included in the present study are shown in Table 1.

**Role strain.** The Early Adolescent School Role Strain Inventory (EASRSI) (Fenzel, 1989a) is a 27-item scale that assesses the quantity and

**TABLE 1: Means, Standard Deviations, and Scale Alpha Reliabilities of Variables Used in the Study**

Variable	Time 1		Time 2		Time 3		alpha
	$\bar{X}$	SD	$\bar{X}$	SD	$\bar{X}$	SD	
Peer strain	1.03	1.05	.79	1.00	.79	1.01	.85
School strain	1.01	1.02	.95	.97	1.03	.96	.79
Feelings of self-worth	3.17	.61	3.27	.64	3.28	.69	.82
Social competence	2.82	.69	3.04	.73	3.17	.88	.78
Scholastic competence	3.06	.57	3.13	.59	3.16	.84	.73
Close friend support	3.34	.67	3.43	.67	3.55	.64	.88
Parent support	3.44	.68	3.48	.67	3.54	.68	.86
Teacher support	3.12	.79	3.30	.63	3.26	.60	.85

NOTE: Mean alpha reliabilities for the three administrations are reported.

magnitude of school-related role strains. The instrument yields a single score or can be used to assess four types of strain: peer (9 items), school work (7 items), teacher relations (5 items), and parent control (6 items). Statements found on the EASRSI include the following: "My teachers give too much homework" (school work), "My teachers don't let me know how well I'm doing" (teacher relations), and "Kids make fun of me if I do well in school" (peer).

When completing the EASRSI, participants indicate first whether a given source of strain is *True* or *False* for them. If respondents choose *True*, then they proceed to indicate, on a 7-point scale from 0-*not at all* through 6-*a lot*, how much the strain has bothered them. Role-strain magnitude is computed for each subscale by summing the magnitude scores for the items subsumed under each subscale (or the total scale) and dividing by the number of items in the subscale. In this computation, *False* responses are assigned a value of 0. For the present study, the school work and teacher relations subscales were combined into a single measure of school work strain (12 items), the peer strain subscale was used in its original form, and the parent control subscale was omitted.

*Feelings of self-worth and perceived competence.* The Self-Perception Profile for Children (SPPC) (Harter, 1985a) is a 36-item pencil-and-paper instrument that assesses five specific domains of perceived competence/adequacy and global feelings of self-worth. Each subscale contains 6 items, with items scored from 1 through 4 in the direction of higher reported perceived competence/adequacy or feelings of self-worth. The scholastic competence and social acceptance (as a measure of perceived social competence) and global self-worth subscales were used in the present study.

*Social support.* The Social Support Scale for Children (SSSC) (Harter, 1985b) assesses respondents' perceptions of the extent to which significant adults and peers understand, like, care about, and are available to help and listen to them. The SSSC, which uses the same response format as the SPPC, contains 24 items and yields subscale scores for support from parents, teachers, close friends, and classmates. In the present study, the close friends, parent, and teacher subscales were used.

## RESULTS

Preliminary analyses were used to examine both concurrent and longitudinal zero-order associations among study measures. First-order partial correlations relating predictor variables to changes in feelings of self-worth, peer strain, and school strain are presented, followed by multiple regression analyses in which independent contributions of predictors and their interactions are examined.

### Zero-Order Correlations

A matrix of zero-order correlations among all study measures at Time 1 and Time 2, along with their associations with the three criterion measures (i.e., feelings of self-worth, peer strain, school strain) at Time 3, is shown in Table 2. The correlations among peer-related variables of strain, social competence, and social support at Time 1 and at Time 2 were moderate (absolute values range from .29 through .62 at Time 1 and from .25 through .59 at Time 2). The correlations between school strain and scholastic competence were -.31 at Time 1 and -.42 at Time 2. The magnitude of these correlations indicated little or no threat to multicollinearity among predictors for subsequent multiple regression analyses.

The results of the zero-order correlation analyses also inform the stability of study measures over time. Measures of feelings of self-worth showed the highest stability among criterion measures, with correlations between .68 and .74 over the three points in time. With respect to predictors, from Time 1 to Time 2, parent support and competence measures showed relatively high stability (*rs* between .63 and .68) and teacher support showed the lowest degree of stability (*r* = .33).

TABLE 2: Zero-order Interrelations of Time 1 and Time 2 Measures and Correlations of Time 1 and Time 2 Measures With Time 3 Criterion Measures

	Time 1								Time 2								Time 3		
	2	3	4	5	6	7	8	1	2	3	4	5	6	7	8	1	2	3	
Time 1																			
1. Peer strain	.38	-.54	-.62	-.32	-.29	-.50	-.15	.62	.42	-.53	-.44	-.22	-.26	-.36	-.23	.53	.36	-.48	
2. School strain		-.27	-.13	-.32	-.16	-.31	-.52	.17	.52	-.21	-.03	-.29	-.19	-.23	-.30	.25	.54	-.19	
3. Self-worth			.53	.49	.42	.62	.37	-.47	-.28	.72	.46	.44	.23	.34	.17	-.42	-.29	.74	
4. Social competence				.27	.41	.46	.11	-.58	-.31	.49	.63	.18	.28	.36	.19	-.47	-.25	.46	
5. Scholastic competence					.21	.40	.21	-.29	-.37	.29	.01	.67	.07	.21	.11	-.32	-.38	.36	
6. Close friend support						.38	.38	-.30	-.16	.26	.33	.11	.50	.25	.24	-.32	-.19	.37	
7. Parent support							.41	-.29	-.29	.48	.26	.28	.31	.68	.42	-.38	-.44	.54	
8. Teacher support								-.07	-.11	.19	.04	.13	.23	.34	.33	-.15	-.29	.31	
Time 2																			
1. Peer strain									.42	-.61	-.59	-.31	-.41	-.35	-.27	.79	.41	-.49	
2. School strain										-.31	-.22	-.42	-.17	-.35	-.33	.49	.67	-.38	
3. Self-worth											.60	.44	.35	.39	.29	-.48	-.23	.68	
4. Social competence												.27	.26	.21	.23	-.52	-.11	.46	
5. Scholastic competence													.12	.26	.14	-.29	-.37	.37	
6. Close friend support														.35	.29	-.42	-.25	.34	
7. Parent support															.57	-.34	-.41	.34	
8. Teacher support																-.25	-.33	.27	

NOTE: All  $r$ s  $\geq .18$  and  $\leq -.18$ , significant at  $p \leq .05$ . All  $r$ s  $\geq .24$  and  $\leq -.24$ , significant at  $p \leq .01$ .

TABLE 3: First-Order Partial Correlations of Predictors with Criterion Variable, Controlling for Earlier Value of Criterion Variables

Criterion	Predictors										Parent Support			Self-Worth		
	Peer Strain	School Strain	Social Competence	Scholastic Competence	Close Friend Support	Teacher Support	Parent Support	Self-Worth	Time 1	Time 2	Time 1	Time 2	Time 1	Time 2	Time 1	Time 2
Self-worth																
T1-T2	-.26***	-.01	.20**	-.07	-.04	-.10	.08									
T2-T3	-.14	-.23***	.07	.11	.14	.10	.11									
T1-T3	-.16*	-.01	.13	.01	.10	.06	.17*									
Peer strain																
T1-T2			-.32***	-.12	-.15	.03	.03									-.23**
T2-T3			-.11	-.07	-.17*	-.06	-.11									.01
T1-T3			-.21**	-.19**	-.20**	-.08	-.16*									-.20**
School strain																
T1-T2			-.29***	-.26***	-.10	.19	-.18*									-.18**
T2-T3			.05	-.13	-.19**	-.16*	-.25***									-.03
T1-T3			-.22**	-.26***	-.13	-.01	-.33***									-.23**

NOTE: T1 is Time 1, T2 is Time 2, and T3 is Time 3. The predictor is the variable assessed at the beginning of the period indicated. For example, for T1-T2, the predictor value at Time 1 is used.

\* $p \leq .10$ . \*\* $p \leq .05$ . \*\*\* $p \leq .01$ . \*\*\*\* $p \leq .001$ . All two-tailed.

## Partial Correlations

First-order partial correlations relating predictors at one point in time to later measures of the criterion variables, controlling for the earlier value of the criterion, are presented in Table 3. The results of these analyses provide information about the relations of predictor measures to changes in measures of feelings of self-worth, peer strain, and school strain over three time periods: Time 1 to Time 2 (early transition), Time 2 to Time 3 (midtransition), and Time 1 to Time 3 (extended transition).

The results showed that Time 1 peer strain predicted changes in feelings of self-worth in the expected direction during early transition (the Time 1-to-Time 3 relation showed a trend toward significance,  $p < .10$ ), as did peer social competence. During the Time 2-to-Time 3 period, school strain was the only significant predictor of self-worth change, with the relation being in the expected negative direction.

With regard to changes in strain, peer social competence and feelings of self-worth were significant predictors, in the expected negative direction, of changes both in peer strain and in school strain during the early and extended transition periods. In addition, scholastic competence predicted reduced school strain during the early and extended transition periods and decreased peer strain during extended transition. With respect to relations involving social support, the association between parental support and change in school strain was significant in the expected negative direction during midtransition and extended transition and showed a trend toward significance during early transition. In addition, the negative relation between parent support and peer strain change showed a trend toward significance during extended transition. Close friend support was related significantly and negatively to changes in school strain during midtransition and peer strain during the extended transition period, and the corresponding relation between close friend support and peer strain change showed a trend toward significance during midtransition. The only significant relation in the expected direction that involved teacher support was found during midtransition in the prediction of negative school strain change.

The preceding results provide some evidence of reciprocal relations among the three criterion measures. During early transition, peer strain, but not school strain, predicted changes in feelings of self-worth and feelings of self-worth predicted changes both in peer strain and in school strain. During the midtransition, however, only school strain predicted changes in feelings of self-worth and feelings of self-worth did not predict changes in either strain measure.

## Multiple Regression Analyses

In multivariate prospective analyses, the later value of a criterion measure during each of the three transition periods was regressed onto the earlier value of the criterion, as well as earlier, centered values of the predictors that included the two perceived competence subscales, the three social support subscales, participant gender, and either strain (peer and school) or feelings of self-worth. Following the forced entry of the earlier value of the criterion, the criterion was regressed in a stepwise fashion onto predictors eligible ( $p < .05$ ) for inclusion. Then, all remaining main effects were forced into the equation to enable the investigation of interaction effects, which were introduced into the equation through the same stepwise approach. Interaction terms, created by multiplying centered values of the predictors, included both strain and gender with perceived competence and support variables in the prediction of changes in feelings of self-worth and gender and feelings of self-worth both with perceived competence and support variables in the prediction of strain. Table 4 summarizes the significant findings of the multiple regression analyses during the three transition periods.

*Self-worth change.* In the regression predicting changes in feelings of self-worth during early transition, peer strain entered the regression equation first, ( $\beta = -.22$ ),  $F(1, 116) = 8.23$ ,  $p = .005$ , with no other predictors adding significant variance. The interaction of peer strain and perceived peer social competence was significant ( $\beta = .28$ ),  $F(1, 109) = 11.34$ ,  $p = .001$ , accounting for an additional 5% of the variance in self-worth change. Procedures outlined by Aiken and West (1991) were used to probe the pattern of the interaction. Specifically, the simple slope of the regression line was evaluated at three levels of perceived social competence: high (one *SD* above the mean), zero (the mean), and low (one *SD* below the mean). As shown in Figure 2, the results indicated that, for young adolescents who reported lower levels of social competence, higher reported strain levels predicted significantly more negative change in feelings of self-worth ( $b = -.011$ ) as compared to adolescents with higher reported perceived competence levels for whom greater reported strain levels predicted positive self-worth change ( $b = .027$ ),  $t_{diff}(115) = 3.37$ ,  $p < .01$ . This pattern is consistent with the hypothesized moderation effect of perceived social competence on the relation between peer strain and changes in feelings of self-worth.

During midtransition, school strain was the only significant main-effect predictor of self-worth change, ( $\beta = -.18$ ),  $F(1, 117) = 6.83$ ,  $p = .011$ . The stepwise analyses of interaction terms, controlling for the set of predictor variables, indicated two significant interactions. Peer Strain x Scholastic

TABLE 4: Summary of Multiple Regression Results for Prediction of Changes in Self-Worth, Peer Strain, and School Strain Over Three Time Periods

Time Period	Self-Worth Change			Peer Strain Change			School Strain Change		
	Predictor	$\Delta R^2$	$\beta$	Predictor	$\Delta R^2$	$\beta$	Predictor	$\Delta R^2$	$\beta$
T1-T2	T1 Self-Worth	.48***	.69	T1 Peer Strain	.40***	.63	T1 School Strain	.23***	.48
	T1 Peer Strain	.04**	-.22	T1 Social Competence	.06***	-.31	T1 Social Competence	.06**	-.25
	Peer Strain x Social			Self-Worth x Social			T1 Teacher Support	.03*	.21
	Competence	.05***	.28	Competence	.03*	.18	T1 Scholastic Competence	.03*	-.20
							Self-Worth x Teacher Support	.05**	-.22
T2-T3	T2 Self-Worth	.46***	.67	T2 Peer Strain	.63***	.79	T2 School Strain	.44***	.66
	T2 School Strain	.03**	-.18	(no significant main effects or interactions)			T2 Parent Support	.03**	-.20
	Peer Strain x Scholastic Competence	.03**	-.19						
	Social Competence								
	Competence x Gender	.03**	-.24						
T1-T3	T1 Self-Worth	.52***	.72	T1 Peer Strain	.28***	.53	T1 School Strain	.30***	.55
	(no main effects)			T1 Self-Worth	.03*	-.20	T1 Parent Support	.08***	-.29
	School Strain x Parent Support	.02*	-.17	Self-Worth x Friend Support	.03*	.20	Parent Support x Gender	.04**	-.28
	School Strain x Friend Support	.03**	.18						

NOTE: T1 is Time 1, T2 is Time 2, and T3 is Time 3.  
\* $p < .05$ . \*\* $p < .01$ . \*\*\* $p < .001$ .

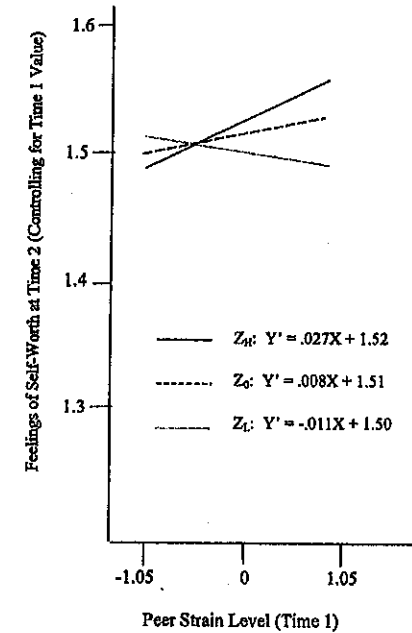
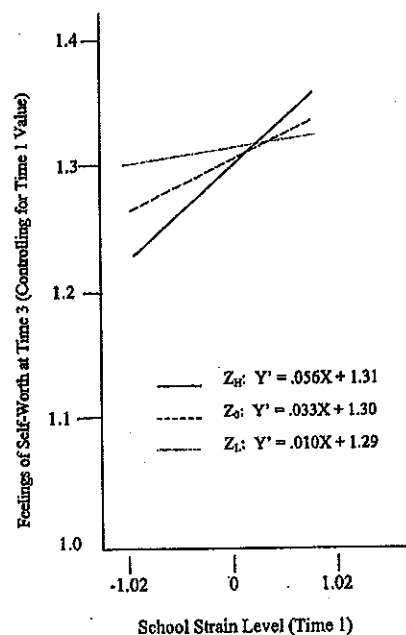


Figure 2: Relation between Time 1 peer strain (X) and Time 2 feelings of self-worth (Y'), controlling for Time 1 feelings of self-worth, at three values of the moderator, Time 1 peer social competence.

NOTE:  $Z_H$  = 1 SD above the mean,  $Z_0$  = the mean, and  $Z_L$  = 1 SD below the mean.

Competence emerged first, ( $\beta = -.19$ ),  $F(1, 109) = 7.86$ ,  $p = .006$ , followed by the interaction of social competence and gender, ( $\beta = -.24$ ),  $F(1, 108) = 6.70$ ,  $p = .01$ . With respect to the first interaction, students higher in perceived scholastic competence showed a significantly more negative relation between peer strain and change in feelings of self-worth ( $b = -.07$ ), when compared with students who reported lower levels of competence for whom a positive relation was evident ( $b = .11$ ),  $t_{diff}(116) = 2.85$ ,  $p < .01$ . This finding failed to provide support for the moderating effect of perceived scholastic competence on the relation between peer strain and changes in feelings of self-worth. With respect to the second interaction, boys showed a positive relation between social competence and change in feelings of self-worth ( $b = .14$ ), whereas girls showed a negative relation ( $b = -.12$ ).

From Time 1 to Time 3, no main effects and two interactions School, Strain x Parent Support ( $\beta = -.17$ ),  $F(1, 107) = 5.78$ ,  $p = .018$ , and School

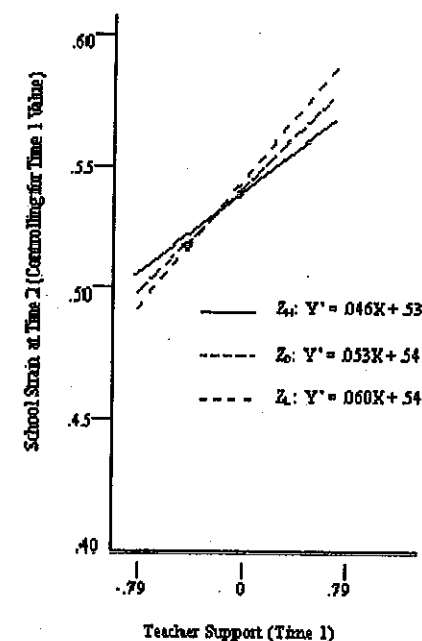


**Figure 3:** The relation between Time 1 school strain (X) and Time 3 feelings of self-worth (Y'), controlling for Time 1 feelings of self-worth, at three values of the moderator, Time 1 close friend social support.

NOTE:  $Z_H$  = 1 SD above the mean,  $Z_0$  = the mean, and  $Z_L$  = 1 SD below the mean.

Strain x Close Friend Support ( $\beta = .18$ ),  $F(1, 106) = 6.97$ ,  $p = .010$ , accounting for an additional 2% and 3% of the variation, respectively, were found. Follow-up analyses of the interaction effects showed that only the interaction of close friend support and school strain was consistent with the hypothesized moderation. As depicted in Figure 3, for adolescents who reported higher levels of friend support, higher reported school strain levels predicted greater positive change in feelings of self-worth ( $b = .06$ ), as compared to adolescents with lower reported levels of support for whom higher reported strain levels predicted less positive change in feelings of self-worth ( $b = .01$ ),  $t_{diff}(114) = 2.62$ ,  $p < .05$ .

**Peer strain change.** In the analyses of predictors of changes in peer strain during the early transition, social competence accounted for an additional 6% of the variance in strain, ( $\beta = -.31$ ),  $F(1, 114) = 12.73$ ,  $p < .001$ . No other main



**Figure 4:** The relation between Time 1 teacher support (X) and Time 2 school strain (Y'), controlling for Time 1 school strain, at three levels of feelings of self-worth.

NOTE:  $Z_H$  = 1 SD above the mean,  $Z_0$  = the mean, and  $Z_L$  = 1 SD below the mean.

effects entered the equation. The only significant interaction term to enter the equation was Feelings of Self-Worth x Social Competence, accounting for an additional 3% of the variance, ( $\beta = .18$ ),  $F(1, 107) = 6.07$ ,  $p = .015$ . Follow-up analyses of this interaction showed that for students with lower reported levels of feelings of self-worth, higher reported perceived competence predicted significantly more negative change in peer strain ( $b = -.09$ ), as compared to students with higher reported levels of feelings of self-worth ( $b = -.07$ ),  $t_{diff}(113) = 2.44$ ,  $p < .05$ .

Analyses of predictors of residual peer strain change from Time 2 to Time 3 showed no significant main effects or interaction effects. With respect to residual peer strain change from Time 1 to Time 3, only feelings of self-worth emerged as a significant predictor, ( $\beta = -.20$ ),  $F(1, 114) = 4.85$ ,  $p = .030$ . In addition, Feelings of Self-Worth x Close Friend Support emerged as a



significant interaction term, ( $\beta = .20$ ),  $F(1, 108) = 5.99$ ,  $p = .016$ . For young adolescents who reported lower levels of feelings of self-worth, higher levels of close friend support predicted more negative change in peer strain ( $b = -.018$ ), as compared to adolescents who reported higher levels of feelings of self-worth for whom little relation was evident ( $b = -.006$ ),  $t_{diff}(113) = 2.43$ ,  $p < .05$ . Thus, only at lower levels of feelings of self-worth was there evidence that higher levels of close friend support provided a benefit in terms of lower levels of peer strain.

**School strain change.** For the prediction of residual school strain change during early transition, three main effects were found in the stepwise multiple regression analyses: Step 2, social competence, ( $\beta = -.25$ ),  $F(1, 114) = 10.18$ ,  $p = .002$ ; Step 3, teacher support, ( $\beta = .21$ ),  $F(1, 113) = 5.34$ ,  $p = .023$ ; and Step 4, scholastic competence, ( $\beta = -.20$ ),  $F(1, 112) = 5.72$ ,  $p = .018$ . However, contrary to expectations, the beta coefficient for the inclusion of teacher support in the third step was positive, despite being negative as a first-order partial coefficient. Feelings of Self-Worth  $\times$  Teacher Support emerged as a significant interaction effect, ( $\beta = -.22$ ),  $F(1, 108) = 8.34$ ,  $p = .005$ . As depicted in Figure 4, for young adolescents who reported lower levels of feelings of self-worth, higher reported teacher support was a relatively strong positive predictor of change in school strain ( $b = .060$ ), as compared to youth who reported higher levels of feelings of self-worth, for whom a weaker relation in the same direction between teacher support and school strain change was evident ( $b = .046$ ),  $t_{diff}(113) = 2.89$ ,  $p < .01$ .

The only significant predictor of school strain change from Time 2 to Time 3 was parent support, ( $\beta = -.20$ ),  $F(1, 119) = 7.90$ ,  $p = .006$ . In addition, parent support was a significant predictor of school strain change from Time 1 to Time 3, ( $\beta = -.29$ ),  $F(1, 114) = 14.28$ ,  $p < .001$ , and the interaction of parent support and gender explained significant additional variance, ( $\beta = -.28$ ),  $F(1, 108) = 8.27$ ,  $p = .005$ . With respect to this interaction, girls showed a stronger negative relation between parent support and school strain change ( $b = -.05$ ) when compared with boys ( $b = -.03$ ).

## DISCUSSION

This study was undertaken to investigate an integrative model that proposed complex and reciprocal relations among strains related to peer relationships and school demands, perceived competence (social and scholastic), social support (from close friends, parents, and teachers), and global feelings

of self-worth over the course of the normative transition to middle school. The results provide support for the integrative model.

### Prediction of Self-Worth Change

The most noteworthy finding regarding the prediction of change in feelings of self-worth (the focus of the first part of the model) is that young adolescents who perceived themselves as more capable of making friends prior to the school transition were indicated to be less vulnerable to the potentially damaging effects of peer strain during the early part of the transition (Time 1 to Time 2). This finding suggests the importance of young adolescents' abilities to negotiate the challenges of the peer environment of middle school (DuBois et al., 1996; Harter, 1987, 1993) and to view difficulties in peer relationships as temporary (Asher, 1983).

In analyses of the transition over a longer time period (Time 1 to Time 3), results indicated that feelings of self-worth were enhanced by social support from close friends. With regard to peer relationships, this finding indicates that young adolescents benefit from having close relationships to draw on as resources during the process of adapting to a new school. Developing beneficial relationships with peers that include intimate sharing is an important developmental task of early adolescence (Berndt, 1982; Youniss, 1980) and a skill that has been shown to be related to changes in feelings of self-worth during a middle school transition (Fenzel & Blyth, 1986). It is also a skill that might include the effective initiating of social contact (Asher, 1983).

The results also indicate a shift from an effect on feelings of self-worth change of strain related to peers, to strain related to the demands of school, between the early and later months of middle school. School strain, which was not related to change in feelings of self-worth during early transition, predicted self-worth change during midtransition and in interaction with close friend support during the extended transition period. These findings are consistent with previous work (Eccles et al., 1993; Fenzel, 1990), indicating that students suffer from middle school environments that fail to meet their cognitive developmental needs. Cumulatively, the results of this research indicate that multiple sources of strain play an important role in early adolescent development with respect to self-evaluations. In addition, although the findings of moderator effects in the prospective analyses of the present study were not entirely consistent, they provide some support for previous cross-sectional work (Cafasso et al., 1993; Fenzel, 1990; Walker & Green, 1987) in which personal and social resources have been shown to moderate the potentially damaging effects of strain on adolescent well-being.

### Prediction of Changes in Peer and School Strain

To complete the analysis of the integrative model of the stress process tested in this study, the effects of feelings of self-worth, competence perceptions, and social support on subsequent changes in strain were examined. With respect to peer strain change, results indicated that feelings of self-worth and perceived social competence were significant predictors during the early and extended transition periods. Two significant interactions involving feelings of self-worth also indicated that feelings of self-worth interacted with perceived social competence during early transition and with close friend support during the extended transition period in the prediction of peer strain change. Although the patterns of these interactions were not entirely consistent with expectations, they do indicate that young adolescents who lack social competence or the support of close friends can benefit in terms of keeping levels of school strain low when they possess higher levels of feelings of self-worth. However, these interactions further indicate that possessing higher levels of feelings of self-worth might not provide added benefit for adolescents who possess higher levels of social competence or close friend support.

The preceding findings indicate that young adolescents who lack social competence with peers or close friend support are not destined necessarily to experience higher levels of peer strain following the transition to middle school. If those young adolescents can build feelings of self-worth by achieving success in other competency domains that are important to them (Harter, 1985a, 1993), they might be able to compensate for the lack of social skills that help facilitate peer acceptance or close friend support. The bad news, of course, is that young adolescents who possess relatively low feelings of self-worth, in addition to shortcomings in social competence or the support of one or more close friends, would seem to have heightened vulnerability to increased strain in peer relations in the new school environment.

A contribution of parental support to changes in peer strain was not evidenced. Although peers and parents continue to influence the lives of early adolescents (e.g., Youniss & Haynie, 1992; Simmons & Blyth, 1987), the current results indicated that parents contributed little to resolving peer difficulties during the middle school transition period. However, that finding does not imply necessarily that parents play little or no role in the process of early adolescent development of social competencies. Parents contribute to the social development of their children in peer contexts by encouraging peer interaction and structuring opportunities for their children to interact with peers. There is also evidence that the ways in which parents interact with

(including discipline) their children contribute to the quality of their children's peer relationships (e.g., Maccoby, 1980; Patterson, DeBaryshe, & Ramsey, 1989).

With respect to predicting changes in school strain, findings showed some consistencies with the results discussed previously in that competencies dominated the predictors during early transition, and support—from parents, in this case—was implicated as an influence during midtransition and extended transition. During early transition, measures of perceived social and scholastic competencies made independent contributions to the prediction of reductions in school strain, indicating again the importance of personal resources in alleviating strain associated with the academic work presented to students in middle school and the demands and expectations of unfamiliar teachers. As findings for the interaction of self-worth and teacher support show, however, perceiving higher levels of teacher support in elementary school was related in general to greater increases in school strain during early transition, and this was especially true for those young adolescents who reported lower levels of self-worth perceptions. Perhaps the support that students with lower feelings of self-worth received in elementary school was teacher initiated and directed toward them because of their perceived self-worth deficits, thus leaving them vulnerable to the demands of new teachers in whom they lacked the confidence to approach for support or whom they perceived as less warm than their elementary school teachers. These considerations suggest that in helping to boost the confidence of such vulnerable students, elementary school teachers should take particular care to prepare them for the demands of the new school environment.

The finding that later changes in school strain were predicted by parent support is consistent with previous research in which parents have been shown to exert a strong influence on adolescents with respect to issues surrounding school achievement and attainment (e.g., Grolnick, Kurowski, & Gurland, 1999). If, in fact, academic demands increase after teachers allow for an initial period of adjustment to middle school classes, parents likely would be called on by early adolescents to help them cope with such increased demands, as the results of the present study indicate. Thus, in combination with other research (Grolnick et al., 1999; Wentzel, 1999), the results of the present study indicate that, with respect to changes both in school strain and, to a lesser extent, feelings of self-worth, parental support can be of benefit in assisting children with the school transition.

### The Integrative Model

In addition to providing support for the traditional conceptualization of the stress process in early adolescence, results of this study indicated that the relations explored herein were reciprocal, in accordance with the proposed integrative model. Self-perceptions, including self-worth and competence, were indicated to contribute to changes in strain as were strain and competence perceptions indicated to contribute to changes in feelings of self-worth during the school transition. The findings also provide evidence of a role of social support in influencing changes in perceptions of self-worth and strain. The picture of the transition that emerges is one of reciprocal influences and one that is consistent with the findings in earlier prospective research (Compas et al., 1986; Hirsch & DuBois, 1992).

The ecological theory of human development offered by Bronfenbrenner (1979) provides a useful framework for conceptualizing the reciprocal processes by which strain, perceived competence, social support, and feelings of self-worth can affect one another during early adolescence, generally, and the transition to middle school, specifically. This model stresses the powerful mutual impact of relatively stable characteristics of the developing person and the changing nature of the environment. Thus, even as the changing environment is expected to affect psychological functioning, the model incorporates the potential for relevant aspects of the person to affect their experiences in and perceptions of the environment. The theory further posits that developmental outcomes are determined multiply and influenced on a number of differing levels. Particularly relevant to the present study is the mesosystem level. At this level, differing role senders in early adolescents' lives communicate with each other to improve and bring consistency to their personal interactions with the developing adolescent. When teachers and parents of early adolescents in transition make this type of contact, it appears that they can strengthen the development of the early adolescents involved.

### Implications, Limitations, and Future Directions

The findings of this research indicate that early interventions that focus on interpersonal skill development have the potential to help students at risk for transition difficulties both in the short term and the long term. For those students who are particularly lacking in these skills, therapy held in a social context such as in peer pairs can improve adolescents' social skills and foster growth of the self-concept (Youniss & Haynie, 1992). Other research (Asher,

1983) indicates that interventions first might address developing the skills of responding appropriately to social advances of peers and then focus on effective initiating of social contact. In accordance with such considerations, prevention research (Elias et al., 1986) has indicated that social skills training can enhance adjustment to school transitions during early adolescence.

With respect to the academic aspect of the school transition, results indicate the need for educators to address stressors specific to work load and relationships with teachers very early in the first year of middle school. Middle school teachers might focus on the demands of the academic environment directly, being careful not to overload the academic resources students bring with them to middle school, and they might remember also to provide academic experiences that fit well with the improving cognitive abilities the students do possess (see Eccles et al., 1993; Eccles & Midgley, 1989). The present results also indicate the potential value of teachers building up support networks for students through such efforts as getting to know students' parents, reaching out to students themselves, and structuring small-group activities (e.g., cooperative learning groups) in which students can interact in a relatively low-stress setting. Elementary school teachers also would do well to establish relationships with parents of students who have feelings of low self-worth and low-competence perceptions to devise strategies to prepare those youth for the social and academic challenges of middle school. A significant challenge for educators and mental health professionals is early identification of at-risk students, such as those who, according to the findings of this study, enter sixth grade with relatively low levels of social and scholastic competence.

Although the present study contributes to understanding the process of adjusting to the middle school transition, several limitations should be noted. First, results must be viewed with the understanding that all data were collected using self-report questionnaires, a procedure that might not capture fully the processes at work in the lives of participants (see Rowlinson & Felner, 1988). In addition, most participants in the present study were middle-class Caucasian children of well-educated parents who attended school in a relatively safe, small-city environment. Accordingly, results might not generalize to communities with a differing socioeconomic mix or where the transition is more stressful. With the cultural characteristics of society changing as they are, further research efforts might address the questions investigated herein with samples both in urban and in rural settings. In addition, the use of control groups and more than one ethnic or socioeconomic group within a given school community would serve to enhance understanding of the effects of school transitions on early adolescents.

Finally, the patterns and processes identified in the present study should be viewed in the context of research (Harter, 1987, 1993) that shows that poor relationships with peers and self-worth deficits can lead to psychological symptoms in adolescence. Further research, including studies of several years' duration, is needed to explore the processes by which school strain, peer relations, self-worth perceptions, psychological symptoms, and academic disengagement are related for early and middle adolescents, and to inform intervention strategies to help ensure mental health and school success during this period of development.

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