The Journal of Early Adolescence

http://jea.sagepub.com

The Effects of Service-Learning on Middle School Students' Social Responsibility and Academic Success

Peter C. Scales, Dale A. Blyth, Thomas H. Berkas and James C. Kielsmeier

The Journal of Early Adolescence 2000; 20; 332
DOI: 10.1177/0272431600020003004

The Effects of Service-Learning on Middle School Students' Social Responsibility and Academic Success

Peter C. Scales
Search Institute
Dale A. Blyth
University of Minnesota
Thomas H. Berkas
Search Institute
James C. Kielsmeier
National Youth Leadership Council

The effects of service-learning on social responsibility and academic success were investigated among a large, racially and socioeconomically diverse sample of students in Grades 6 through 8 in three middle schools. Over the school year, service-learning students maintained their concern for others' social welfare, whereas control students declined on those concerns. Service-learning students, especially girls, also declined significantly less than did controls in their frequency of talking with parents about school. Compared with other students, students with substantial hours of service-learning, a lot of reflection, and a high degree of motivation attributed to service-learning, significantly increased their belief in the efficacy of their helping behaviors, maintained their pursuit of better grades and their perception that school provided personal development opportunities, and decreased less in their commitment to classwork. The results indicate that service-learning can positively affect students' social responsibility and academic success.

Service-learning has been defined as "an educational activity, program or curriculum that seeks to promote students' learning through experiences associated with volunteerism and community service" (Sheckley & Keeton,

The Middle School Service-Learning Impact Study (MISLIS) was conducted in partnership with the National Youth Leadership Council, with funding from the W. K. Kellogg Foundation. The contributions of Candyce Kroenke; Nancy Leffert, Ph.D.; Ravinder Manku; Karen Pladsen; and Rick Trierweiler from Search Institute were invaluable in conducting the study.

Journal of Early Adolescence, Vol. 20 No. 3, August 2000 332-358

1997, p. 32). Carter (1997) noted that the components of service-learning include promotion of citizenship, an underlying value of caring, the opportunity for students to help build their communities, and a pedagogy that involves the learner actively. Service-learning is distinguished from simple community service by the intentional connecting of helping activities with curriculum concepts. For example, students learning about earth science might have the opportunity to help collect data on water contamination and design a communication plan to inform the public about maintaining a clean water supply. As part of a social studies or history class, students might develop a project to obtain oral histories from elderly residents, put those recollections together in a book, and distribute it to senior citizens and new residents. In a language arts class, students might read to older adults or tutor younger children and then write a paper about their experience. Service-learning is seen as a way of helping students connect what they learn in school to the "real world" and as a means both of restructuring schools and "re-engaging youth" (Carter, 1997, p. 70) in their schools and communities.

In recent years, service-learning has been viewed as an especially attractive pedagogy for use with young adolescents, for two reasons. First, service-learning is considered to respond well to the developmental needs of young adolescents to assume meaningful roles that help build in them a sense of being valuable, competent, and connected to others. Second, for many young adolescents, the transition to middle school is problematic, with the potential for significant declines in self-esteem (Simmons & Blyth, 1987), positive attitudes toward school, and students' perceptions of their academic competencies (Wigfield & Eccles, 1994). To the extent that service-learning might fit well with the developmental needs of young adolescents, it might be a potential means of maintaining or enhancing students' engagement and confidence. In summary, service-learning is seen as a potentially important vehicle for promoting students' social responsibility and academic success.

Theoretical and Conceptual Framework

Why should service-learning have those impacts? Tenets of both social learning theory (Bandura, 1986) and experiential education theory (Scheckley & Keeton, 1997) are relevant. Social learning theory holds that young people acquire their attitudinal and behavioral repertoires in part through their relationships with others, particularly through the modeling and expectations communicated by significant others. Being enabled by adults to provide help to others, watching adults do the same, and communicating about the meaning of those experiences, as common features of ser-

vice-learning programs, might facilitate the acquisition by young people of socially responsible attitudes and behaviors. Scheckley and Keeton (1997) have observed that learners participate in an experiential education activity with preformed expectations for the experience and that service-learning either might confirm or disconfirm their expectations. Those researchers have argued that disconfirmation actually produces the potential for more significant learning, wherein learners might "tend to rethink, reconceptualize, and even transform the ways in which they view the world" (Sheckley & Keeton, 1997, p. 39).

Student engagement in helping and caring behaviors, as an integral part of their school experience, might affect young people's self-perceptions and perceptions about school. It might engender in young people a sense that their teachers and/or schools are caring. Student perceptions that teachers and/or schools are caring have been associated with students' positive beliefs about their own academic competence (Patrick, Hicks, & Ryan, 1997). Those more confident students have been shown to try harder, attend more carefully, and be more committed to, and engaged in, school (Eccles & Midgely, 1990; Wentzel, 1993). Students might try hard because of enjoyment of learning something (mastery beliefs) or because they want to be evaluated well (evaluation or performance beliefs). Mastery beliefs are associated with better scholastic performance (Wentzel, 1989). Academic success, in turn, is likely to reinforce engagement, encouraging young adolescents to become even more "intellectually responsible" for themselves (Crandall, Katkovsky, & Crandall, 1965). Moreover, perceptions of school as a caring place might encourage in students a sense of group membership in school. The sense of belonging has been associated with better adjustment to school and greater motivation to succeed, especially among girls (Goodenow, 1992).

Academic success also might be influenced by increased social responsibility, a hypothesized effect of service-learning. For example, Wentzel (1991) reported that students who are seen by peers and teachers as being socially responsible get better grades than do other students. Sharing, cooperating, and helping others are social competencies that, Wentzel concluded, are "powerful predictors of academic performance" (1991, p. 1077).

Good service-learning programs also might promote personal development opportunities that contribute to academic success. Previous research has reported that both high-achieving and underachieving students, but especially vulnerable and underachieving students, benefit from restructured, more authentic curricula that, among other goals, attempt to connect students' school experience more with the real world, a key attribute of service-learning programs (Kraft & Krug, 1994; Melchior, 1997; Newmann,

Secada, & Wehlage, 1995; Yogev & Ronen, 1982). Studies have indicated that service-learning might provide greater autonomy than students, especially marginal students, typically enjoy (D. E. Conrad & Hedin, 1981), and might prove especially helpful in validating students' sense of both their general value and their academic competence (Dewsbury-White, 1993).

To a lesser degree, service-learning programs might increase parental involvement in young adolescents' schooling. Parent involvement, particularly the behaviors parents do at home to support school learning, is an important correlate of student achievement, and yet parent involvement tends to decline over the middle and high school years (Benson, Scales, Leffert, & Roehlkepartain, 1999; Chavkin & Gonzalez, 1995; Finn, 1993). The concrete, real world activity of service-learning might be easier for many parents to talk about with their young adolescents than are the more abstract academic experiences at school.

Review of the Literature

The extant research presents a mixed conclusion about how well service-learning programs seem to accomplish the aims of increasing social responsibility and academic success. Nevertheless, there are five studies that had (a) adequate samples, (b) a focus on middle school students, and (c) control groups (Blyth, Saito, & Berkas, 1997; D. E. Conrad & Hedin, 1981; Dewsbury-White, 1993; Melchior, 1997; Switzer, Simmons, Dew, Regalski, & Wang, 1995). In addition, there have been but a few studies of high school students, or with smaller sample sizes of middle school students, that are relevant to understanding the correlates of service-learning on middle school students (Allen, Philliber, Herrling, & Kuperminc, 1997; Hecht & Fusco, 1995; Krug, 1991; Luchs, 1981; Newmann & Rutter, 1983; Williams, 1993). Finally, there are several thorough reviews of the research that substantiate the conclusions reached through the present literature review (Alt & Medrich, 1994; P. A. Cohen, Kulik, & Kulik, 1982; D. Conrad & Hedin, 1991; Kraft & Krug, 1994; Yates & Youniss, 1996).

The positive effects of service-learning have been documented on students' social responsibility, including concern for others' welfare (D. E. Conrad & Hedin, 1981; Melchior, 1997), sense of duty to help others (Williams, 1993), civic involvement (Blyth et al., 1997), and responsible attitudes toward others (Luchs, 1981; Newmann & Rutter, 1983). Several studies also have reported positive effects of service-learning on variables related to academic success, including commitment to school and community (Switzer et al., 1995), school engagement (Melchior, 1997), school provision of devel-

opmental opportunities (Newmann & Rutter, 1983), nondisruptive school conduct (Luchs, 1981), subject matter test scores (Dewsbury-White, 1993), and grade point average (GPA) (Melchior, 1997; Shumer, 1994). However, for the great majority of programs that have been studied, the expressed intent was improvement of students' social responsibility more than improvement of their academic success.

In addition, in a service-learning program, the degree of student reflection (reading, writing, and discussion in preparation for service, and following the service experience), as well as the length of the service-learning program, appear to have an impact on observed effects. Krug (1991) found that only programs that incorporated more than average levels of student reflection about their service experience had a positive impact on social responsibility. Blyth and colleagues (1997) also reported that reflection appeared to be a key component in contributing to increased civic involvement. The degree of exposure to service-learning programs also appears to have an important effect on impact, with various studies indicating that an average exposure of more than 50 hours (Melchior, 1997), 30 hours (Allen et al., 1997; Luchs, 1981), or 10 hours (Williams, 1993) might be necessary to produce positive effects on social responsibility and academic success.

Moreover, the literature indicates there might be differing effects of service-learning for boys and for girls, and for older and for younger students, although only a few studies have reported differences by gender and age or grade. Several studies have indicated that girls especially might benefit from service-learning (e.g., Calabrese & Shumer, 1986; Hamilton & Fenzel, 1988; Patterson, 1987), whereas one study reported that boys had the greater positive benefits (Switzer et al., 1995). Another study reported a mixed result, with boys experiencing some positive effects more than did girls, and girls experiencing some positive effects more than did boys (Melchior, 1997). Research on age or grade differences in the effects of service-learning is uncommon. Allen and colleagues (1997) reported that an adolescent pregnancy and school failure prevention program with a service component was more effective with girls in high school than with girls in middle school. In addition, Melchior (1997) reported that most of the differences between older (high school) and younger (middle school) students were not significant statistically. Significant differences tended to favor high school students on most civic responsibility, personal development, and educational outcomes, but middle school students showed larger gains on some educational measures, including GPA in core academic subjects.

Purpose of the Study

The present study was designed to investigate the effects of service-learning on a large sample of young adolescents experiencing service-learning programs of sufficient intensity and quality to be likely to have positive effects on social responsibility and academic success and to compare those students with a large number of control group students. Specifically, in the present study, the following questions were investigated:

1. Does service-learning have a positive impact on middle school students' social responsibility, as measured by students' concern for others' welfare, felt duty to help others, and perceived efficacy in doing so?
2. Does service-learning have a positive impact on middle school students' academic success, as measured by direct outcome variables such as grades and conduct at school, and by indirect measures such as parental involvement in schooling, developmental opportunities perceived at school, commitment to classwork, school engagement, perceived scholastic competence, intellectual achievement responsibility, and evaluation and mastery goal orientations?
3. How do the duration of service-learning (a measure of exposure) and the use of reflection (a measure of scope) affect students' social responsibility and academic success?
4. Are there differing effects from participation in service-learning programs depending on students' gender and/or grade level?

METHOD

Recruitment and Selection of Schools

Extensive efforts were made nationally to find schools with quality service-learning programs. A total of 29 out of 70 recommended schools (41%) completed and returned a screening checklist that typically was completed by the service-learning coordinator or lead teacher at each school. Service-learning coordinators were asked whether (a) the schools had substantial proportions of students engaged in service-learning programs (at least one-half of the students in at least one grade level); (b) the schools had at least 2 and preferably 3 years of experience with service-learning (so that the "growing pains" of a new program would not confound the results of the study); (c) the schools' administrators and teachers were enthusiastic about being partners in this research; (d) the service-learning programs were part of a required class that met for at least one-half of the year, intended to improve students' academic success, and included substantial preparation and reflection activities; (e) the school could provide an adequate control group; and (f)

the schools were implementing most of the practices that indicate that middle schools are responsive developmentally (use of interdisciplinary teacher teams, advisor-advisee or teacher-based guidance programs, exploratory programs for the students, use of cooperative learning strategies, and a relative absence of ability grouping or "tracking" [Carnegie Council on Adolescent Development, 1989; National Middle School Association, 1997]). The latter criterion was intended to minimize variation in the schools' overall quality as an explanation for findings. Checklists were followed by telephone interviews with the service-learning coordinators and site visits to the final three schools, one each located in Kentucky, Massachusetts, and Missouri.

School configuration was controlled by studying only middle schools with a Grades 6 through 8 building configuration. However, there was not an expectation that all schools necessarily would include all Grades 6 through 8 in service-learning programs. Although the building configurations of all three schools were Grades 6 through 8, the Kentucky school included all Grades 6 through 8 in the study, the Massachusetts school included Grades 7 and 8, and the Missouri school included Grade 6. The differing participation by grade resulted for two reasons. Service-learning was used in only some grades in one school, and in the other, teachers using service-learning in some grades were unwilling to forgo its use so that the school could supply an adequate control group for that grade.

Description of the Schools' Service-Learning Programs

Students in the studied schools did a broad mix of activities, with direct human service and school service most common, followed by environmental activities and by career exploration. Students represented a broad mix of high-achieving, at-risk, and average students. Young adolescents themselves were involved in choosing the service activities in more than 80% of the service-learning classes, either alone, in groups, or with their teachers. Although the programs depicted in Table 1 varied in content and length, all included performing service for the school or broader community, from students building a nature trail that all community residents could use to students developing a puppet show and songs about war-torn countries and presenting the show to younger children as part of a charity drive.

Sample

A team structure was employed in all three schools. In all schools, students were assigned randomly to teams to achieve a balance of gender, academic performance, and ethnicity. Thus, there was no apparent bias on those

TABLE 1: Description of Schools' Service-Learning Programs

School	*Types of Projects*	*Duration*	*Classes*
Kentucky sixth grade	Buddies at nursing home, daycare for homeless shelter children, kindergarten class, preschool class	5 hours/month for school year	Language arts, science
Kentucky seventh grade	Buddies at senior center, preschool, kindergarten class; creating an outdoor classroom	5 hours/month for school year	Language arts
Kentucky eighth grade	Interdisciplinary study of the Louisville community	Spring	Science, social studies
Massachusetts seventh grade	Develop and deliver lesson on children's charity for fifth graders	2 weeks in the fall	Language arts, social studies, science, mathematics
	Work on nature trail	Throughout spring	Language arts social studies, science, mathematics
Massachusetts eighth grade	Tape oral histories of retired tool industry employees for local heritage museum	About 1 month	Social studies, language arts
	Celebrate Women's' History Month by quilting lap robes/pillows to give to elderly or to abused children	About 1 month	Social studies, mathematics
Missouri sixth grade	Build furniture for, and care for aviary and aquarium in the student center	2 hours/week in fall	Language arts, mathematics, science

variables in the selection of students for teams. Schools then determined which of their teams would be service-learning teams and which would be control teams. The control teams had to agree not to use service-learning. Some teams were more comfortable forgoing service-learning, and in most cases they became the control teams. Some control teams included very experienced service-learning teachers who believed the research was important enough to forgo service-learning for a semester or a year, whereas some service-learning teams included novice service-learning teachers who were eager to use this approach and did not want to sacrifice a year of service-learning.

Schools informed students and their parents about the study through means selected by each school, either through the principal's newsletter or a special mailing to parents. Parents and students were informed that participation in the study was entirely voluntary, and neither participation nor lack of participation would affect students' grades. Either students or parents could refuse participation.

A total of 1,153 sixth- through eighth-grade students (97% of those eligible) participated in the study, about one-half taking service-learning classes and one-half not, with roughly equal proportions from each grade, and somewhat more girls (53%) than boys (47%). The average age of the sample was a little more than 12 years of age (only 6% of the sample was 14 years of age or older). Seventy percent were White students, 15% African American students, 4% American Indian students, and the remaining 11% were biracial, Hispanic, Asian, or Other students. Approximately 25% of students in the sample were from low-income families eligible for the federal free or reduced lunch programs. Geographically, this was a stable sample, with nearly one-half of the students (47%) having lived in their current community all their lives and 77% having lived there for at least 5 years. Seventy-one percent lived with two parents. Parental education was used as a proxy for socioeconomic status, and the parents of students in this sample were highly educated: 56% of mothers and 56% of fathers had completed college or graduate/professional school. Three-fourths of the sample had participated previously in some service-learning with a reflection component, either in school programs or in programs sponsored by other organizations. Chi-square tests revealed that there were no significant differences between service-learning and control groups on any of those background variables.

Despite the lack of demographic differences between the service-learning and control groups, and despite the sample's racial/ethnic and socioeconomic diversity, this sample clearly was not representative: More than one-half both of mothers and fathers had completed college or graduate school, more than

twice the national proportion (24%) of adults 25 years of age or older with at least a college degree (U.S. Department of Commerce, 1997), and 75% of the students had participated previously, in or out of school, in service-learning programs that had some reflection component. This is a substantially higher figure than the roughly 35% of students covered by service-learning requirements in the nation's largest 130 school districts (Goldsmith, 1996), or the roughly 40% of ninth-grade students in a recent panel study who participated in any kind of volunteer experience in the subsequent 4 years of the study (Johnson, Beebe, Mortimer, & Snyder, 1998). However, as noted previously, although the sample was not representative, there were no statistically significant differences between service-learning and control groups on socioeconomic or other variables, and therefore no confounding of the results with those variables.

Instruments

Social responsibility. Three subscales from the Conrad and Hedin (1981) Social and Personal Responsibility Scale were used: the 4-item Social Welfare subscale (concern for other's welfare), the 4-item Duty subscale (felt responsibility to help others), and the 4-item Efficacy subscale (perceived ability to be effective helping others). The original reliability for the total scale was .83 at the seventh-grade reading level. A sample efficacy item was "Some kids think they are able to help solve problems in their community. Are you like those kids?" Responses were 1 = *Yes*, 2 = *Sort of*, and 3 = *No*.

Personal development opportunities. Students completed the Newmann and Rutter (1983) Developmental Opportunities Scale. The scale contains items on the personal development opportunities youth experience in both their schools and families. Eleven of the 17 items that asked about school developmental opportunities were included because 6 of the items were responded to similarly by the great majority (more than 75%) of students in the Newmann and Rutter study, thereby limiting their value as differentiating items. The full scale had an original reliability of .88 for high-school age samples. The 11-item scale used in this study had an alpha reliability of .84. Students were asked how often statements were true of "last" school year (the phrasing used at the first administration of the survey) and "this" school year (second administration). Items included "I felt I made a contribution," "I tried my hardest, gave my best effort," and "I accomplished things I never thought I could do." On a 5-point scale, responses ranged from 1 = *Never true* through 5 = *Almost always true*.

Parent involvement. To measure parent involvement in schooling, a single item was used from the Search Institute Profiles of Student Life: Attitudes and Behavior Survey (1996). Students were asked how often one of their parents talked to them about what they were doing in school. On a 5-point scale, responses ranged from 1 = *Very often* through 5 = *Never.*

Commitment to classwork. Students' commitment to getting their classwork done was measured by the Commitment to Classwork subscale from the Epstein and Mac Partland (1978) Quality of School Life Scale. The 11-item subscale had an original reliability of .80 for Grades 5 through 7, 9, and 12. Commitment to classwork includes items such as "School work is boring and dull to me" (on a 5-point scale, responses ranged from 1 = *Never true* through 5 = *Almost always true*), "In class, I often count the minutes till it ends" (1 = True, 2 = False), and "This school year, I am eager to get to . . ." (on a 5-point scale, responses ranged from 1 = *All my classes* through 5 = *None of my classes*). Responses were scored as one point for each false answer among the true/false items, and one point for either the most positive response (one item) or the two most positive responses (six items) on the remaining items. The subscale score is a simple sum of those points.

Engagement with school. To measure school engagement, the 4-item academic engagement scale developed by Lee and Smith (1993) using National Educational Longitudinal Study data was used. Students were asked how often they come to class with appropriate supplies, books, and homework, and how often they feel bored in school (1 = *Never*, 2 = *Sometimes*, 3 = *Usually*). The scale had an original reliability of .64.

Perceived scholastic competence. The 10-item Harter Scholastic Competence Scale from the Self-Perception Profile for Children was used (Harter, 1985) to measure students' perceived scholastic competence. This scale had an original a reliability of .80 through .85 with sixth- through eighth-grade students. In the original format, students are presented with a statement, flanked by two boxes on the left and right sides, and accompanying responses. The responses represent their degree of agreement or disagreement that the statement is true for them. Teachers at each of the three schools in the present study strongly opposed using that format, believing it would be confusing to their students. Thus, the response format of the measure was changed. A sample item now read "Some kids feel they are very good at their schoolwork. Are you like those kids?" Students could then choose 1 = *Yes*, 2 = *Sort of*, or 3 = *No*. Given the extensive changes made in the response format, the alpha reliability was recomputed for this sample and found to be an acceptable .75.

Intellectual achievement responsibility. To assess whether students felt personally responsible for their academic success or failure (internal responsibility) or felt others were responsible (external responsibility), the Crandall Intellectual Achievement Responsibility Scale (11-item short form) was used (Crandall, Katkovsky, & Crandall, 1965). Test-retest reliability for the short form is .65 for academic success items. A sample item is, "When you remember something you heard in class, is it usually 1 = Because you tried hard to remember, or 2 = Because the teacher explained it well?"

Evaluation and mastery goals. The 4-item Mastery Goals Scale and 4-item Evaluation Goals Scale developed by Wentzel (1989) were used to measure students' goal orientations. Students are asked how often they try to do specific things in school. Sample items include "learn something new even when you don't have to for a school assignment" (mastery goal) and "learn things only because you want to get a good grade" (evaluation goal). For both scales, responses ranged from 1 = *Almost never* through 5 = *Almost always*. The Mastery Goals and Evaluation Goals scales had original reliabilities of .77 and .78, respectively, for samples of sixth and seventh graders.

Academic success. GPAs including all subjects were computed for each student for each marking period in the 1996-1997 school year. Schools had differing grading systems, and so to make all grades comparable, grades were recalculated on a 13-point scale, with 13 points given for an A+, 12 points for an A, 11 points for an A-, and so on. Total grade points were divided by the number of a student's subject-matter classes to derive GPAs.

Conduct. Each school assigned conduct scores to students at each marking period (covering behaviors such as fighting, being late to school, having unexcused absences, etc.). Students varied in the number of courses in which they were assigned conduct grades; therefore, the total number of misconducts for each student during each marking period was tallied and divided by the number of courses in which a conduct grade was given, to get a comparable mean conduct score for each student in each marking period.

Procedure

All measures described previously were included in a single instrument, the Survey of Middle School Student Life. The instrument was administered in a single class period at the beginning (the pretest) and end of the school year (the posttest). Classroom teachers, who had been trained by the service-learning coordinators in the administration procedure, distributed envelopes

with the students' name on the outside. Inside the envelope were the survey, with only a student identification number on it, and a blank envelope. Students were asked to complete the confidential survey, place it in the unmarked envelope, seal the envelope, and throw away the outer envelope on which their name had been printed. In that way, no one could link their name and identification number. Teachers collected the unmarked envelopes and mailed them to Search Institute for processing and analysis.

Analysis Strategy

A series of ANCOVAs were conducted to compare service-learning students with control students on the following dependent variables, with pretest scores on those dependent variables as the covariates: (a) duty to help others, (b) concern for other's social welfare, (c) efficacy in helping others, (d) personal development opportunities, (e) talking with parents about school, (f) commitment to classwork, (g) school engagement, (h) perceived scholastic competence, (i) intellectual achievement responsibility, (j) evaluation goals, (k) mastery goals, (l) GPA, and (m) school conduct. In addition, ANCOVAs were conducted on the same variables, using their pretest scores as covariates, by five groups formed on the basis of student degree of exposure to service-learning, amount of reflection reported, and extent of motivational value students reported service-learning to have for them. For the five-group analyses, Tukey post hoc comparisons were computed on all significant F statistics.

Initial data analysis revealed a problem in the composition of the total service-learning and control groups. Because some service-learning students had not experienced service, and some control students had experienced service, an "uncontaminated" sample was constructed of only service-learning students who had experienced service and control students who had not experienced service. That sample was used for total service-learning as compared with control group comparisons. The full sample was used in the five-group analyses.[1]

Analyses of variance also were conducted on change scores for each dependent variable. Change scores have been criticized on the basis of low reliability and negative correlation with pretest scores (Gardner & Neufeld, 1987; Hauser-Cram & Krauss, 1991). However, they are still the analysis of change strategy that focuses most closely on the nature of the change itself (as contrasted with the ANCOVAs, which focus on the posttest scores as the dependent variables, that is, an outcome focus, or residualized scores, which focus on the degree to which posttest scores vary from what pretest scores would have predicted). Thus, although the primary analysis procedure was

a series of ANCOVAs, change score analyses also were computed to illuminate the processes involved in the posttest differences observed between service-learning and control groups.

RESULTS

Reported Characteristics of the Service-Learning Programs

In only one school had service-learning been a fixture for more than 3 years. All the programs were supposed to be part of required courses, but teachers reported that some were neither required nor graded. Further, teachers said that they gave the least emphasis, among six potential goals for service-learning, to increasing student academic achievement, and the most emphasis to increasing student altruism.

In addition, teacher and student survey responses indicated that the mean for student exposure to service-learning was brief, and that extensive preparation for and/or reflection about the service experience was uncommon: 43% of the service-learning teachers said service-learning lasted for a few hours a month for just 2 months. Students agreed: Nearly one-half of the service-learning students (46%) said they spent 10 hours or less total time on service-learning. That is consistent with the findings from the reports of Blyth and colleagues (1997) and of Melchior and Orr (1995) that middle school service-learning programs tend to be briefer than high school programs, typically lasting just a few weeks. Only 31% of the service-learning students said they spent "a lot" of time reading, writing, or discussing as preparation for their service, and only 14% said they spent "a lot" of reflection time reading, writing, or talking about their experiences afterwards. One-third had only a little or no preparation time, and nearly one-half (47%) had only a little or no reflection time.

Service-Learning Students as Compared With Control Students

Overall, limited, but consistent posttest differences among groups in the "uncontaminated" control as compared with service-learning ANCOVAs were found, as were more numerous posttest differences in the five-group ANCOVAs based on differential exposure to service-learning and self-reported levels of reflection and motivation. Only differences significant at $p < .05$ are reported.

TABLE 2: Analysis of Covariance: Uncontaminated Service-Learning as Compared With Control Students (*N* = 561)

Variable	*Least Square Means*[a]	*Standard Error*	F *Values*
Concern for others' welfare			
Service-learning	9.53	.08	5.13*
Control	9.21	.10	
Talking with parents about school			
Service-learning	2.37[b]	.08	5.50*
Control	2.59	.07	

a. Least square means are posttest means adjusted for the pretest score entered as a covariate (SAS Institute, 1989).
b. Lower score signifies more frequent talking.
*$p < .01$. Only results significant at $p < .05$ are reported.

With the ANCOVAs controlling for pretest differences, two significant posttest differences were found between the uncontaminated service-learning and control groups (see Table 2). Service-learning students were more concerned than were control students with the welfare of others, $F(1, 558) = 5.73$, $p < .01$). Change score analysis showed that service-learning students maintained their concern for others' welfare (going from a pretest mean of 9.59 to a posttest mean of 9.57), whereas control group students declined in their concern for others (9.57 on the pretest and 9.17 on the posttest). In addition, service-learning students said they talked more frequently with their parents about school than the control students said they talked with their parents about school, $F(1, 551) = 5.50$, $p < .01$; service-learning students declined only a small amount on the frequency of their talking with parents about school, whereas the control group experienced a larger decline. No significant differences were found on any other dependent variables.

Differences Among Students Based on Exposure, Reflection, and Motivation Attributed to Service-Learning

By hours of service-learning. Students who had done 31 or more hours of service-learning had significantly higher posttest scores than all other students on their perceived efficacy in helping others, $F(4, 936) = 6.22$, $p < .0001$ (see Table 3).

By amount of reflection. Service-learning students who did "a lot" of reflection were more likely than all other students, except service-learning students with less reflection, to perceive their schools as places that offered

TABLE 3: Analysis of Covariance Among Five Groups, by Amount of Service-Learning (*N* = 936)

Variable	*Least Square Means*	*Standard Error*	F *Values*[a]
Efficacy			
Clean control	8.44	.09	6.22**
Control with service	8.13	.10	
Service without service	8.16	.11	
Service with less than 31 hours	8.52	.10	
Service with 31 or more hours	8.94	.15	

a. Tukey multiple comparisons available from authors on request.
**$p < .0001$.

personal development opportunities, $F(4, 932) = 7.62$, $p < .0001$. In addition, those students high in reflection also had more pronounced evaluation goals than did all other students, $F(4, 932) = 6.76$, $p < .0001$, and were more committed to doing their classwork than were all other students, except control students who had done service, $F(4, 930) = 6.67$, $p < .0001$ (see Table 4).

By motivational impact of service-learning. Service-learning students who agreed that participation in service-learning had made them more interested in their other classes (26% of the sample) scored higher than all other students, except service-learning students with less motivation, on their concern for others' welfare, $F(4, 939) = 6.40$, $p < .0001$, and their perceived efficacy in helping others, $F(4, 931) = 6.49$, $p < .0001$. Those students who "strongly agreed" or "agreed" that service-learning made them more interested in their other classes were higher in their commitment to classwork than were all the other student groups, $F(4, 931) = 10.47$, $p < .0001$. Change scores indicated that those students with high motivation attributed to service- learning declined less in their commitment to classwork than did all the other student groups, $F(4,927) = 3.15$, $p < .01$ (see Table 5).

Effects of previous exposure to service-learning with reflection. Additional Group × Previous Exposure to Service-Learning ANCOVAs were run on the uncontaminated sample to determine differential impact based on students' previous exposure to service-learning with a reflection component. As in all other ANCOVAs, pretest scores on the dependent variables were used as covariates. Those students who said they had any previous exposure to service-learning with a reflection component, on the posttest, were significantly higher in their engagement with school, $F(1, 532) = 5.83$, $p < .01$, and in their taking personal responsibility for intellectual achievement, $F(1, 537) =$

TABLE 4: Analysis of Covariance Among Five Groups, by Reported Amount of Reflection (*N* = 972)

Variable	*Least Square Means*	*Standard Error*	F *Values*
Personal development opportunities			
Clean control	38.11	.46	7.62**
Control with service	37.96	.50	
Service without service	35.63	.54	
Service with little or no reflection	38.56	.43	
Service with a lot of reflection	41.60	1.10	
Evaluation goals			
Clean controls	15.14	.22	6.76**
Control with service	14.81	.23	
Service without service	14.09	.25	
Service with little or no reflection	15.26	.20	
Service with a lot of reflection	16.79	.52	
Commitment to classwork			
Clean controls	4.67	.17	6.67**
Control with service	4.85	.19	
Service without service	3.79	.20	
Service with little or no reflection	4.53	.16	
Service with a lot of reflection	5.97	.42	

**$p < .0001$.

4.35, $p < .03$, than students who had not experienced service-learning with a reflection component. Service-learning and control students did not differ on those variables, as there were no other significant main or interaction effects involving previous exposure to service-learning.

Effects of gender and grade. Group × Gender × Grade ANCOVAs were computed on the uncontaminated sample, which showed some significant grade and gender main and interaction effects that consistently favored girls and sixth-grade students.[2] Girls scored slightly higher than boys on their perception of personal development opportunities at school, $F(1, 538) = 4.15$, $p < .04$, and scored substantially higher on their sense of duty to help others, $F(1, 541) = 15.77$, $p < .0001$, and concern for others' welfare, $F(1, 540) = 8.26$, $p < .004$.

Sixth-grade students were significantly higher than seventh-grade students, but not eighth-grade students, on school engagement, $F(2, 530) = 3.85$, $p < .02$, and GPA, $F(2, 526) = 4.68$, $p < .01$, and were higher than either seventh-grade or eighth-grade students on intellectual achievement responsibility, $F(2, 535) = 4.32$, $p < .01$, conduct, $F(2, 526) = 4.66$, $p < .01$, and frequency of talking with parents about school, $F(2, 533) = 5.53$, $p < .004$. There

TABLE 5: Analysis of Covariance Among Five Groups, by Reported Motivation Attributed to Service-Learning (*N* = 972)

Variable	*Least Square Means*	*Standard Error*	F *Values*
Concern for others' welfare			
Clean controls	9.16	.10	6.40**
Control with service	9.06	.11	
Service without service	8.77	.12	
Service without motivation	9.37	.10	
Service with motivation	9.80	.18	
Efficacy			
Clean controls	8.44	.09	6.49**
Control with service	8.12	.10	
Service without service	8.15	.11	
Service without motivation	8.52	.09	
Service with motivation	9.00	.16	
Commitment to classwork			
Clean controls	4.67	.17	10.47**
Control with service	4.85	.19	
Service without service	3.78	.20	
Service without motivation	4.25	.18	
Service with motivation	6.02	.30	

**$p < .0001$.

were no significant interactions of grade by service-learning groups as compared with control student groups, however, indicating that student grade level had similar effects for both service-learning and control students.

There were only two significant Group × Gender or Grade interactions. Sixth-grade girls, in both service-learning and control groups, and sixth-grade control group boys scored higher than did other students on intellectual achievement responsibility, $F(2, 535) = 4.44$, $p < .01$. In addition, girls in the service-learning group were more likely to talk frequently with their parents about school than were boys in the service-learning group or control students of either gender, $F(1, 533) = 5.09$, $p < .02$.

In summary, service-learning students maintained their sense of concern for others' welfare and decreased less in their talking with parents about school, as compared with control group students. Students with more than 30 hours of service-learning additionally improved their sense of efficacy in helping others. Students who reported doing high levels of reflection additionally improved in their pursuit of good grades, maintained their perception that school provides personal development opportunities, and decreased less than did other students in their commitment to classwork. Finally, students

who felt highly motivated by service-learning additionally improved in their sense of efficacy with regard to helping others and decreased less than did others on their commitment to classwork. No significant effects of service-learning were observed on school engagement, perceived scholastic competence, intellectual achievement responsibility, GPA, or conduct at school.

DISCUSSION

Social Responsibility

A number of important implications can be drawn from this study. First, even service-learning programs of limited average duration and scope can have positive effects on students' concern for others' welfare, a concern that in the absence of service-learning declined over the school year. That impact is important in its own right and also is related to academic success. Researchers have shown that schooling is, to a substantial degree, a social process as much as it is a cognitive process (Elmen, 1991; Ryan, Stiller, & Lynch, 1994). Strategies that improve students' social awareness, concerns, and skills thus have a valuable role in laying the groundwork for the cognitive activity that ultimately leads to learning.

Second, if students have substantial amounts of service-learning in general, and of reflection about their service in particular, and if they feel service-learning motivates them to be more interested in other classes, they not only can maintain their sense of concern for others but they also can improve their sense of how effective they can be in helping others. Feeling concern, and having a belief that their help can make a difference, might be effects that together can promote more active citizenship.

Academic Success

The finding of more limited declines in talking with parents about school among service-learning students as compared with control students is unique in the literature and potentially is important. Parent interest in students' school activities, and parent communication of both support and nurturance, as well as high expectations, repeatedly have been shown to be important correlates of academic success (Finn, 1993; Palmer, Dakof, & Liddle, 1993). In the present study, however, parental involvement was measured with only one item, and no other studies have investigated the impact of service-learning on parental involvement with schooling. Therefore, although this

finding is provocative, further research will be helpful, and caution is necessary in interpreting these results.

The finding that service-learning students, with a lot of reflection or motivation attributed to service-learning, decreased significantly less than did other students in their commitment to classwork indicates that service-learning might help some students maintain their interest in school. The data also indicate that service-learning might help maintain some students' perception that school provides opportunities for independence and growth, even as other students with no service-learning, or less reflection or motivation attributed to service-learning, are declining, sometimes dramatically, in those positive perceptions about school. Eccles and Midgely (1990), for example, showed how declines in young adolescents' interest in school and expectancies for success were not an inevitable result of normal adolescent development, but rather were due to a mismatch or lack of fit between the developmental needs of young people and the ways in which schools are organized and the curriculum is taught. The effect of service-learning on those students' sense of developmental opportunities is consistent with the results of studies by D. E. Conrad and Hedin (1981) and Hecht and Fusco (1995).

Students with a high degree of exposure to service-learning and a high amount of reflection increased somewhat in their pursuit of evaluation goals (i.e., learning primarily to get good grades). Although research shows that middle school students especially ultimately might have lower academic performance if their primary motivation for learning is the pursuit of good grades (Nolen & Haladyna, 1990; Roeser & Eccles, 1998; Urdan & Maehr, 1995; Wentzel, 1993), a desire to work hard for better grades also might be considered evidence of achievement motivation and certainly indicates that service-learning programs do not compromise high academic standards. Further studies are needed to determine what it is about the service-learning experience that might motivate students to pursue better grades.

A caution for the results of the data is that there were a number of significant grade and gender effects. Girls in this study reported more frequent talking about school with parents. This finding is consistent with research that has shown that young adolescent girls and their parents generally report closer relationships with each other than do boys and their parents (Clark-Lempers, Lempers, & Ho, 1991; Eccles, Early, Fraser, Belansky, & McCarthy, 1997). Moreover, the helping behavior encouraged by service-learning is consistent with traditional gender socialization patterns: Girls are expected to, and do, behave more prosocially than do boys (Benson et al., 1999; Beutel & Marini, 1995; Roberts & Strayer, 1996). In this study too, girls reported a greater sense of duty and a more pronounced concern for others' welfare.

However, service-learning might have affected boys and girls differently. Controlling for pretest scores, girls taking service-learning classes talked with their parents significantly more about school than did control group girls or boys in either service-learning or control groups. For girls taking service-learning, perhaps the reinforcement of gender-linked norms and expectations about helping behavior might strengthen their identification with parents' values and parents' satisfaction with their parenting, which might then positively affect mutual feelings of support and communication (Bogenschneider, Small, & Tasy, 1997; Peterson & Leigh, 1990). It is also possible that the nature of the service activities in which students engaged could have contributed to differing experiences for boys and for girls. Many of the activities, such as quilting blankets for Women's History Month, being friends with the elderly and with young children (and then writing about the experience), and collecting the oral histories of town residents, involved language and relationship skills, or particular interests, more common among girls than boys. Being already more adept and interested in those activities, girls might have reacted more positively to the service-learning experience. Those positive perceptions might have contributed to more positive perceptions about school, and a greater willingness to discuss school with their parents than was shown either by boys or control group students.

After controlling for pretest scores, sixth-grade students had higher scores than all other students on taking responsibility for their own intellectual achievement, and higher scores than seventh-grade students, but not eighth-grade students, on school engagement. They also had higher scores than other students on talking with parents about school. All those differences are consistent with the extant literature, which shows that sixth-grade students generally do have more frequent and positive communication with parents and feel more connected and engaged with school (Benson et al., 1999; Huang & Waxman, 1995; Patrick et al., 1997). However, there were no interactions with service-learning or control group status in those analyses, indicating that the service-learning programs in this study differentially did not affect younger and older middle school students.

In some respects, that result was not surprising. The few studies that have reported differing age or grade effects of service-learning have compared high school students in general with middle school students in general; they have not compared eleventh-grade students with ninth-grade students, or eighth-grade students with sixth-grade students. It is possible that service-learning programs might not have easily detected differing effects when comparing students who, though of different chronological ages, were still within same broad developmental stage of early adolescence. It also is possible that the developmental processes that led to sixth-grade students talking

more with parents about school, being more intellectually responsible, and more engaged in school than other middle-grade students were simply more influential than the effects of the service-learning programs studied, because service-learning and control students alike in the sixth grade scored higher on those measures than seventh-grade or eighth-grade students. Longer lasting and more comprehensive service-learning experiences in general might be necessary to observe a greater number of significant effects than reported in this study and might be especially necessary to observe grade effects within young adolescent populations, in addition to sharper focusing of service activities to respond to the developmental differences among students in the sixth, seventh, and eighth grades.

Limitations of the Study

This study had a number of features that contribute advancements to much of the previous research, including a focus on middle school students, use of relatively large samples of service-learning and control group students, use of instruments with mostly known and acceptable reliabilities, a focus on programs that attempt explicitly to connect experiential education with classroom learning, and a comprehensive screening process to identify service-learning programs that would meet acceptable minimum standards of quality. However, the findings also are limited in a number of important ways.

For several reasons, the service-learning programs studied appeared to be somewhat better than average but not decidedly high quality. The research aim had been to study programs that had operated for at least several years, were a required course or part of a required course, and placed a high emphasis on using service-learning as a means of increasing students' academic achievement. It was reasoned that those features (being an established program, being required, and emphasizing academic achievement) would indicate that service-learning programs were taken seriously by administrators and teachers and considered an important means of fulfilling the missions of schools, as compared with being considered "extras" in the curriculum. It also was reasoned that such programs would be more likely to be extensive in duration and comprehensive in scope, thereby raising the likelihood of having positive effects on students. In particular, considerable reflection activities would provide a means for students to discover both deep personal meaning from their service experiences and a way in which they could use that concrete experience to make more comprehensible and relevant the subject matter content they study. Although the results of the screening process indicated those criteria had been met, teacher and student descriptions of

the service-learning programs indicated the criteria substantially had not been met. The service-learning programs in this study were neither as extensive nor as academically rigorous as desired, and relatively little reflection was offered. Thus, the chances were diminished that those service-learning programs would have numerous significant effects.

In addition, the students in this study were far from typical. Their parents had higher-than-average levels of education (the proxy indicator of socioeconomic status), and the students had higher-than-average levels of previous participation in service-learning. Because there were no differences between service-learning and control groups on those variables, findings of significant differences between service-learning and control group students were not confounded with differences in socioeconomic status or previous exposure to service-learning. Nevertheless, it is uncertain whether those same differences would be found in a sample with less parental education or exposure to service-learning.

Moreover, the service-learning programs were varied in content. Students did differing kinds of service activities and varied kinds of exercises to link that learning with classroom subject matter. Thus, apart from the duration and reflection variables measured, it is difficult to know exactly what else might have accounted for observed differences. Further studies are needed with more representative samples of young adolescents, research designs that address better the possible cumulative or ceiling effects of previous exposure to service-learning, and program selection strategies that yield more consistency across service-learning program content and experiences. Nevertheless, the present study has confirmed some previous research findings about the effects of service-learning on students' social responsibility and academic success and revealed some new findings that provide potentially fruitful directions for research and program development.

NOTES

1. A total of 86 control students, or 20% of that group, said they had experienced service. Equally troubling, 99 service-learning students, or 20% of that group, said they had not experienced service (an additional 20% of the total sample were not sure whether they had done service). Thus, the degree of "control" in the control group was questionable; that is, they had experienced enough service that any differences that might have been caused by participation in service-learning programs could be mitigated or even washed out. Neither differential attrition from pretest to posttest nor differences among the schools accounted for those patterns.

Because the full sample was compromised seriously, the data were analyzed in two ways. First, uncontaminated service-learning and control groups were created by comparing the 329 students in the service-learning group who on the posttest said they had done service this school

year (65% of the original service-learning group) with the 247 students in the control group who said they had not done service (56% of the original control group). Excluded from the ANCOVAs were students who did not know whether they had experienced service or not, service-learning students who said they had not done service, and control students who said they had done service.

Second, because there was no way of knowing whether controls who said they had done service actually had, or whether service-learning students who said they had not done service actually had not, ANCOVAs also were conducted by dividing the full sample into five groups based on their self-reported exposure to service-learning: uncontaminated controls, controls who did service, service-learning students who did not do service, service-learning students who had 30 or fewer hours of service-learning, and service-learning students who had more than 30 hours of service-learning. The fourth and fifth groups also were defined for the additional ANCOVAs as, respectively, service-learning students with none, some, or a little reflection, and students with a lot of reflection; and as students who did not think service-learning made them more interested in their other classes and students who did think service-learning made them more interested in their other classes.

2. There were roughly comparable proportions of students in each of Grades 6 through 8 in the total sample. However, when the uncontaminated sample was defined, students in the sixth and seventh grades became overrepresented, accounting for 78% of the uncontaminated sample. Those younger students made up 67% of the control group and 85% of the service-learning group, because 127 eighth-grade students—42% of that grade level—were "service-learning" students who said they did not do service, and were thus dropped when the uncontaminated sample was defined. However, no significant grade level by service-learning or control group interactions were found on any of the ANCOVAs for variables that showed differences by service-learning or control status, hours of service-learning, amount of reflection, or motivation attributed to service-learning, indicating that differential patterns of grade representation did not exert a statistically significant influence on the findings.

REFERENCES

Allen, J. P., Philliber, S., Herrling, S., & Kuperminc, G. P. (1997). Preventing teen pregnancy and academic failure: Experimental evaluation of a developmentally based approach. *Child Development*, *64*, 729-742.

Alt, N., & Medrich, E. A. (1994). *Student outcomes from participation in community service.* Washington, DC: U.S. Department of Education, Office of Educational Research and Improvement (prepared by MPR Associates, Berkeley, CA).

Bandura, A. (1986). *Social foundations of thought and action.* Englewood Cliffs, NJ: Prentice Hall.

Benson, P. L., Scales, P. C., Leffert, N., & Roehlkepartain, E. C. (1999). *A fragile foundation: The state of developmental assets among American youth.* Minneapolis, MN: Search Institute.

Beutel, A., & Marini, M. M. (1995). Gender and values. *American Sociological Review, 60,* 436-448.

Blyth, D. A., Saito, R., & Berkas, T. (1997). A quantitative study of the impact of service-learning programs. In A. S. Waterman (Ed.), *Service-learning: Applications from the research* (pp. 39-56). Mahwah, NJ: Lawrence Erlbaum.

Bogenschneider, K., Small, S. A., & Tasy, J. L. (1997). Child, parent, and contextual influences on perceived parenting competence among parents of adolescents. *Journal of Marriage and the Family, 59,* 345-362.

Calabrese, R. L., & Shumer, R. (1986). The effects of service activities on adolescent alienation. *Adolescence, 21,* 675-687.

Carnegie Council on Adolescent Development. (1989). *Turning points: Preparing America's youth for the 21st century.* New York: Carnegie Corporation.

Carter, G. R. (1997). Service-learning in curriculum reform. In J. Schine (Ed.), *Service learning: Ninety-sixth yearbook of the National Society for the Study of Education, Part I* (pp. 69-78). Chicago: University of Chicago Press.

Chavkin, N. F., & Gonzalez, D. L. (1995). *Forging partnerships between Mexican American parents and the schools*. Charleston, WV: ERIC Clearinghouse on Rural Education and Small Schools. (ERIC Document Reproduction Service No. ED 388 489)

Clark-Lempers, D. S., Lempers, J. D., & Ho, C. (1991). Early, middle, and late adolescents' perceptions of their relationships with significant others. *Journal of Adolescent Research, 6,* 296-315.

Cohen, P. A., Kulik, J. A., & Kulik, C. C. (1982). Educational outcomes of tutoring: A meta-analysis of findings. *American Educational Research Journal, 19,* 237-248.

Conrad, D., & Hedin, D. (1991). School-based community service: What we know from research and theory. *Phi Delta Kappan, 72,* 743-749.

Conrad, D. E. , & Hedin, D. (1981). National assessment of experiential education: Summary and implications. *Journal of Experiential Education, 4,* 6-20.

Crandall, V. C., Katkovsky, W., & Crandall, V. J. (1965). Children's beliefs in their own control of reinforcements in intellectual-academic achievement situations. *Child Development, 36,* 91-109.

Dewsbury-White, K. E. (1993). The relationship of service-learning project models to subject-matter achievement of middle school students (Doctoral dissertation, Michigan State University, 1993). *Dissertation Abstracts International, 54-10A,* 3662.

Eccles, J. S., Early, D., Fraser, K., Belansky, E., & McCarthy, K. (1997). The relation of connection, regulation, and support for autonomy to adolescents' functioning. *Journal of Adolescent Research, 12,* 263-286.

Eccles, J. S., & Midgely, C. (1990). Changes in academic motivation and self-perception during early adolescence. In R. Montemayor, G. R. Adams, & T. P. Gullotta (Eds.), *From childhood to adolescence: A transitional period* (pp. 134-155). Newbury Park, CA: Sage.

Elmen, J. (1991). Achievement orientation in early adolescence: Developmental patterns and social correlates. *Journal of Early Adolescence, 10,* 125-151.

Epstein, J. L., & Mac Partland, J. M. (1978). *Administration and technical manual: The quality of school life scale.* Chicago: Riverside.

Finn, J. D. (1993). *School engagement and students at risk.* Washington, DC: National Center for Education Statistics.

Gardner, R. C., & Neufeld, R.W.J. (1987). Use of the simple change score in correlational analysis. *Educational and Psychological Measurement, 47,* 849-864.

Goldsmith, S. (1996). *RE: Rights and responsibilities*. Washington, DC: American Alliance for Rights and Responsibilities.

Goodenow, C. (1992, April). *School motivation, engagement, and sense of belonging among urban adolescent students*. Paper presented at the annual meeting of the American Educational Research Association, San Francisco.

Hamilton, S. F., & Fenzel, L. M. (1988). The impact of volunteer experience on adolescent social development: Evidence of program effects. *Journal of Adolescent Research, 3,* 65-80.

Harter, S. (1985). *Manual for the self-perception profile for children.* Denver, CO: University of Denver, Department of Psychology.

Hauser-Cram, P., & Krauss, M. W. (1991). Measuring change in children and families. *Journal of Early Intervention, 15,* 288-297.

Hecht, D., & Fusco, D. (1995). *The effects of participation in the Helper Model of service learning in early adolescence* (Final report to DeWitt Wallace-Readers' Digest Fund). New York: City University of New York, Center for Advanced Study in Education.

Huang, S. L., & Waxman, H. C. (1995). Motivation and learning-environment differences between Asian-American and White middle school students in mathematics. *Journal of Research and Development in Education, 28*, 208-219.

Johnson, M. K., Beebe, T., Mortimer, J. T., & Snyder, M. (1998). Volunteerism in adolescence: A process perspective. *Journal of Research on Adolescence, 8*, 309-332.

Kraft, R. J., & Krug, J. (1994). Review of research and evaluation on service-learning in public and higher education. In R. J. Kraft & M. Swadener (Eds.), *Building community: Service-learning in the academic disciplines* (pp. 199-213). Denver: Colorado Campus Compact.

Krug, J. L. (1991). Select changes in high school students' self-esteem and attitudes toward their school and community by participation in service learning activities at a Rocky Mountain high school (Doctoral dissertation, University of Colorado, 1991). *Dissertation Abstracts International, 54*, 757.

Lee, V. E., & Smith, J. B. (1993). Effects of school restructuring on the achievement and engagement of middle-grade students. *Sociology of Education, 66*, 164-187.

Luchs, K. P. (1981). Selected changes in urban high school students after participation in community based learning and service activities (Doctoral dissertation, University of Maryland, 1981). *Dissertation Abstracts International, 42*, 3371.

Melchior, A. (1997). *Interim report: National evaluation of Learn and Serve America school and community-based programs.* Washington, DC: Corporation for National Service.

Melchior, A., & Orr, L. (1995). *Final report: National evaluation of Serve America*. Washington, DC: Corporation for National and Community Service.

National Middle School Association. (1997). *This we believe.* Columbus, OH: Author.

Newmann, F. M., & Rutter, R. A. (1983). *The effects of high school community service programs on students' social development* (Final report to the National Institute of Education, Washington, DC). Madison: Wisconsin Center for Education Research.

Newmann, F. M., Secada, W. G., & Wehlage, G. G. (1995). *A guide to authentic instruction and assessment: Vision, standards, and scoring.* Madison, WI: Center on Organization and Restructuring of Schools.

Nolen, S. B., & Haladyna, T. M. (1990). Motivation and studying in high school science. *Journal of Research in Science Teaching, 27*, 115-126.

Palmer, R. B., Dakof, G. A., & Liddle, H. A. (1993). Family processes, family interventions, and adolescent school problems: A critical review and analysis. In K. L. Alves-Zervos & J. R. Shafer (Eds.), *Synthesis of research and practice: Implications for achieving schooling success for children at risk* (pp. 101-136). Philadelphia: Temple University, National Education Center on Education in the Inner Cities.

Patrick, H., Hicks, L., & Ryan, A. M. (1997). Relations of perceived social efficacy and social goal pursuit to self-efficacy for academic work. *Journal of Early Adolescence, 17*, 109-128.

Patterson, E. W. (1987). The effects of participation in required and not required community service programs on the process of self-actualization in high school students (Doctoral dissertation, University of Florida, 1987). (University Microfilms No. 8724949)

Peterson, G. W., & Leigh, G. K. (1990). The family and social competence in adolescence. In T. P. Gullotta, G. R. Adams, & R. Montemayor (Eds.), *Advances in adolescent development: Vol. 3. Developing social competency in adolescence* (pp. 97-138). Newbury Park, CA: Sage.

Roberts, W., & Strayer, J. (1996). Empathy, emotional expressiveness, and prosocial behavior. *Child Development, 67*, 449-470.

Roeser, R. W., & Eccles, J. S. (1998). Adolescents' perceptions of middle school: Relation to longitudinal changes in academic and psychological adjustment. *Journal of Research on Adolescence, 8,* 123-158.

Ryan, R. M., Stiller, J. D., & Lynch, J. H. (1994). Representations of relationships to teachers, parents, and friends as predictors of academic motivation and self-esteem. *Journal of Early Adolescence, 14,* 226-249.

SAS Institute, Inc. (1989). *SAS/STAT* user's guide, version 6* (4th ed., Vol. 2). Cary, NC: Author.

Scheckley, B. G., & Keeton, M. T. (1997). Service learning: A theoretical model. In J. Schine (Ed.), *Service learning: Ninety-sixth yearbook of the National Society for the Study of Education, Part I* (pp. 32-55). Chicago: University of Chicago Press.

Shumer, R. (1994). Community-based learning: Humanizing education. *Journal of Adolescence, 17,* 357-367.

Switzer, G. E., Simmons, R. G., Dew, M. A., Regalski, J. M., & Wang, C. (1995). The effect of a school-based Helper program on adolescent self-image, attitudes, and behavior. *Journal of Early Adolescence, 15,* 429-455.

Urdan, T. C., & Maehr, M. L. (1995). Beyond a two-goal theory of motivation and achievement: A case for social goals. *Review of Educational Research,* 65, 213-243.

U.S. Department of Commerce, Bureau of the Census, Current Population Survey. (1997). *Digest of education statistics 1997 (table 9).* Washington, DC: Author.

Wentzel, K. R. (1989). Adolescent classroom goals, standards for performance, and academic achievement: An interactionist perspective. *Journal of Educational Psychology, 81,* 131-142.

Wentzel, K. R. (1991). Relations between social competence and academic achievement in early adolescence. *Child Development, 62,* 1066-1078.

Wentzel, K. R. (1993). Motivation and achievement in early adolescence: The role of multiple classroom goals. *Journal of Early Adolescence, 13,* 4-20.

Wigfield, A., & Eccles, J. S. (1994). Children's competency beliefs, achievement values, and general self-esteem. *Journal of Early Adolescence, 14,* 107-138.

Williams, R. M. (1993). The effects of required community service on the process of developing personal responsibility in suburban youth (Doctoral dissertation, University of Nebraska, 1993). *Dissertation Abstracts International, 54-07A,* 2473.

Yates, M., & Youniss, J. (1996). A developmental perspective on community service in adolescence. *Social Development, 5,* 85-111.

Yogev, A., & Ronen, R. (1982). Cross-age tutoring: Effects of tutors' attributes. *Journal of Educational Research, 75,* 261-268.

Reprint requests should be addressed to Peter C. Scales, Ph.D., Senior Fellow, Search Institute, c/o 940 Chestnut Ridge Road, Manchester, MO 63021; e-mail: scalespc@search-institute.org.