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Alexander W. Astin
University of California - Los Angeles

Linda J. Sax
University of California - Los Angeles

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Based on entering freshman and follow-up data collected from 3,450 students (2,287 women and 1,163 men) attending 42 institutions with federally funded community service programs, the impact of community service participation on undergraduate student development was examined. Even after regression analyses controlled for individual student characteristics at the time of college entry, including the propensity to engage in service, results indicate that participating in service during the undergraduate years substantially enhances the student's academic development, life skill development, and sense of civic responsibility.

The fundamental question to be asked of any educational program or intervention is how students are affected. The effects of participation in volunteer service programs have important implications not only for the students, but also for long-range institutional policy. Before deciding to strengthen or expand volunteer service programs—especially expansion of classroom-based service learning or the introduction of a service requirement into the curriculum, an institution's officials must ask an important question: How will the student's educational and personal development be affected?

To date, empirical studies on the impact of service are quite scarce. Although recent studies provide some evidence that service is associated with civic and cognitive gains, such research is generally limited by relying on small student samples from a single institution (Batchelder & Root, 1994; Giles & Eyler, 1994; Markus, Howard, & King, 1993). Such studies have provided a useful framework for the study of service, but a consensus has emerged over the urgency of collecting longitudinal, multi-institutional data on how students are affected by the service experience (Batchelder & Root; Giles & Eyler; Giles, Honnet, & Migliore, 1991; Markus et al.; American Council on Education, 1993).

An opportunity to expand this research area was provided by a recent evaluation of the Corporation for National Service's Learn and Serve America Higher Education (LSAHE) program conducted jointly by the University of California at Los Angeles (UCLA) and the RAND Corporation. In particular, UCLA's national survey data from the Cooperative Institutional Research Program (CIRP) afforded an excellent opportunity to assess the LSAHE program's effects on student development. The current findings were obtained by following up a large sample of service participants and comparing their development with that of a sample of nonparticipants attending the same institutions.

METHOD

Participants

Data used in this study, collected as part of the Cooperative Institutional Research Program (CIRP), were drawn from five consecutive administrations of the CIRP Freshman Survey (1990–1994) and through a follow-up survey, the 1995 College Student Survey (CSS), which was sent to selected students from all five cohorts. Additional data included Scholastic Aptitude Test scores, American College Testing Program scores, and enrollment information from the U.S. Department of Education, as well as information on LSAHE programs collected by the RAND Corporation.

Alexander W. Astin is the Allan M. Cartter Professor and Director of the Higher Education Research Institute at the University of California at Los Angeles. Linda J. Sax is a Visiting Assistant Professor and Director of the Cooperative Institutional Research Program at the University of California at Los Angeles.

Because the follow-up survey was to be sent to students enrolled in college during the 1994-95 academic year, we limited our study to those 42 undergraduate institutions receiving LSAHE grants that had also participated in the CIRP Freshman Survey between 1990 and 1994. Through voluntary mail surveys, we were eventually able to obtain entering-freshman and follow-up data from 3,450 students (2,287 women and 1,163 men) at these 42 institutions, including 2,309 students who were service participants during the 1994-95 academic year and 1,141 nonparticipants who constituted the control group. The 21% response rate to the original mailout is not surprising given the trend toward lower mail survey response rates in recent decades (Dey, 1997; Groves, 1989; Steeh, 1981). In fact, Dey (1997) reported that national mail-out survey response rates, which were as high as 65% in the 1960s, declined steadily to 21% by the 1990s.

Research on nonresponse to mail follow-up studies indicated that the principal effect of nonresponse bias was on the marginal distributions of certain variables. However, this evaluation was not designed primarily to estimate marginal distributions of variables, but to estimate relationships among variables (i.e., the relationships between service participation and the 35 outcomes). Methodological studies (e.g., Astin & Panos, 1969; Dey, 1997) showed that nonresponse bias has little, if any, effect on such relationships. However, wherever marginal distributions are presented, the data have been weighted to estimate the results if all surveys had been completed. This weighting procedure was possible because we had extensive freshman survey data on both respondents and nonrespondents. For any systematic bias in the characteristics of students who did and who did not respond (e.g., by race, sex, ability, family background, and predisposition to volunteer), we were able to compensate for these biases by using multivariate weighting procedures which, in effect, gave greatest weight to those respondents who most resembled the nonrespondents in their personal characteristics. Further details concerning the mail survey, sampling, and research methods can be obtained in Sax, Astin, & Astin (1996).

Procedure

Multivariate analyses of the longitudinal survey results employed a conceptual framework used in previous longitudinal impact studies—the input-environment-outcome (or I-E-O) model (see Astin 1970a, 1970b, 1977, 1991, 1993). The I-E-O model was designed to address the basic methodological problem with all nonexperimental studies in the social sciences, namely the nonrandom assignment of people (inputs) to programs (environments). Because some students will be more inclined (inputs) to participate in service (the environment) than will other students, the outcomes associated with this participation may not reflect the impact of service participation, but may simply represent differences in the characteristics of students who are likely to get involved in service. We therefore examined the effects of service participation only after controlling for the effects of student input characteristics.

Another issue of concern was the fact that the independent variable of central interest in this study—service participation—may also be partially confounded with college environmental variables: Some individual colleges, or certain types of colleges (e.g., highly selective), may operate service programs that are more or less effective than the typical program. To identify the "pure" effects of service participation independent of any effect of the larger college environment, we elected to control for the effects of the college environmental characteristics before examining the possible service participation effects.

The most versatile method for implementing the I-E-O model is blocked stepwise regression analysis, otherwise known as hierarchical regression (Astin & Dey, 1997). The basic procedure is to control for input and college environmental variable effects, and then to determine if service participation measures add anything to the prediction of the dependent variable. Sets of independent variables are entered sequentially (blocked) according to their presumed temporal order of occurrence. Variables within each block are entered in a stepwise fashion until no additional variable within that block is capable of producing a significant

reduction in the residual sum of squares of the dependent variable. After all the predictive power of the variables within a given block is exhausted, the analysis moves to the next block to find if additional variance in the outcome measure can be accounted for based on information contained in that block's variables.

Outcome (Dependent) Variables

Because the Corporation for National Service has identified three domains in which LSAHE is expected to promote student development, the 35 dependent variables analyzed in this study were classified into these three domains of development: (a) civic responsibility (12 measures), (b) educational attainment (referred to as *academic development*) (10 measures), and (c) life skills (13 measures).

Independent Variables

Independent variables were organized into six temporal blocks. The first block, input characteristics, included available freshman year pretests for each outcome variable; demographic variables (e.g., race and ethnicity, sex); and a set of service propensity variables from the freshman survey that were found (through preliminary analyses) to predict college service participation. By controlling for the individual characteristics that lead students to become involved in service, we were better able to estimate the independent effects of participation.

Environmental measures comprised the next five blocks of variables. First, the analyses controlled for the student's major as well as structural characteristics of institutions (e.g., size, type, selectivity) that might relate to a student's score on an outcome measure or might influence the student's likelihood of service participation. Second, 41 dichotomous (yes or no) variables, each representing a single LSAHE institution, accounted for aspects of student development that might be uniquely attributable to the specific institution attended (i.e., not accounted for by institutional characteristics included in the previous block). The primary focus of this study was on the final three blocks of variables measuring service participation. We considered these a special class of environmental variables, *intermediate outcomes* (i.e., environmental experiences that occur only after the student has been enrolled at the college; see Astin, 1993). The first of these blocks consisted of a generic service variable indicating whether the student engaged in service. The second block included a set of six interaction terms to test for possible interactions between either service and sex or service and race and ethnicity. The final block included 20 additional measures of service participation, such as the type (4), duration (1), sponsorship (3), and location of service involvement (12). These service variables were included to test whether the specific type, location, sponsorship, and duration of service have an impact on student development above and beyond the effects of the generic service participation variable. Although all independent variables were included in each of the 35 regression analyses, the presentation of results is focused mainly on the effects of service participation variables.

RESULTS AND DISCUSSION

Who Participates in Service?

Before addressing the question of program impact, knowing something about those undergraduate students who eventually participated in some form of volunteer service is useful. As might be expected, the most important predisposing factor was whether the student volunteered during high school. Other predisposing factors included leadership ability, involvement in religious activities, commitment to participating in community action programs, tutoring other students during high school, being a guest in a teacher's home, and being a woman. One of the more interesting self-selection factors was the importance that the student gave to making more money as a reason for attending college, which was the only negative predictor of becoming a volunteer during college. In other words, those entering freshmen who were most likely to become service participants during college tended to be less materialistic (i.e., materialistic values predicted *non*participation).

Through the use of multivariate analyses, we were able in the first block to control statistically

TABLE 1.
Service Participation by Location of Service ($N = 2,309$)

Location of service	%
College or university	51.8
Elementary or secondary school	38.5
Church or other religious organization	36.7
Social or welfare organization	28.8
Hospital or other health organization	25.9
Community center	22.5
Park or other outdoor area	20.3
Other private organization	17.0
Sport or recreational organization	14.1
Other public organization	12.8
Local service center	12.0
Political organization[a]	5.6

Note. Percentages exceed 100 because many respondents marked more than one category.

[a] Learn and Serve America Higher Education students citing involvement in political organizations also cited involvement in other service locations. These results do not suggest that Corporation for National Service funds were used to support participation in political organizations.

for these predisposing factors and other input variables before attempting to assess service participation effects on each of the 35 outcome measures. This approach, in effect, matched participants and nonparticipants statistically regarding their relevant entering freshman characteristics.

What Do the Volunteers Do?

The LSAHE program was designed to encourage undergraduate involvement of in four types of service: education, human needs, environment, and public safety. The percentage of the 2,309 service participants involved in each service type was: education (73.1%), human needs (64.5%), environment (53.3%), and public safety (22.1%). (These percentages exceed 100 because many students performed more than one kind of service.)

Table 1 shows a more specific breakdown of service participation by service activity location. The most common location or venue for the service was a college or university (52%), followed by an elementary or secondary school (39%), church (37%), social or welfare organization (29%), hospital or clinic (26%), community center (23%), and park (20%). (These percentages exceed 100 because many students performed service in more than one location.) The elementary or secondary school was the second most common location probably because 75% of LSAHE programs involve partnerships with elementary or secondary schools.

Other findings suggested that the bulk of undergraduate service work was performed under the auspices of student activities or student affairs. Thus, although less than a third of the students (29%) performed their service work as part of a class or course (i.e., service learning), fully 70% performed service as part of some other collegiate-sponsored activity (probably under the auspices of student affairs). Nearly half of the students (48%) performed service independently through a noncollegiate organization.

Students showed much variability in how long they were involved in the service activity. Nearly one student in five (18%) completed the service work in less than 1 month, but more than one-fourth (28%) were involved for more than 12 months. The median service period was approximately 6 months.

Why Do They Participate?

Table 2 shows the reasons given by students for engaging in service. By far the most common reason was "to help other people," which was endorsed as a "very important" reason by 91% of the service participants. Next in importance was "to feel personal satisfaction" (67%), "to improve my community" (53%), and "to improve society as a whole" (61%). In other words, three of the top four reasons concerned civic responsibility and service to others. Each of the following four reasons for participation was cited by fewer than half of the service participants: "to

develop new skills" (43%), "to work with people different from me" (38%), "to enhance my academic learning" (38%), and "to fulfill my civic/social responsibility" (30%). The reason checked least often for service participation was "to enhance my résumé" (13%).

Examining the correlations among these nine reasons reveals that the two strongest correlations were between "to improve my community" and "to improve society as a whole" ($r = .64$) and between "to develop new skills" and "to enhance my academic learning" ($r = .70$). The correlations also show that "to enhance my résumé" had little in common with the other reasons. People giving this reason were most likely to cite the other two reasons dealing with instrumental benefits: "to enhance my academic learning" and "to develop new skills." "To enhance my résumé" actually showed a negative correlation with "to help other people."

Effects of Service Participation

The most remarkable finding of this longitudinal study was that all 35 student outcome measures were favorably influenced by service participation. In other words, participation in volunteer service during the undergraduate years enhanced the student's academic development, civic responsibility, and life skills.

Civic Responsibility. The 12 student outcomes related to civic responsibility are shown in the rows of Table 3. The columns in the table represent each of the four types of service participation. The coefficients shown in the body of the table represent the *non*standard regression coefficients (b) associated with each of the types of service participation. These coefficients were obtained after all significant student input and college environmental characteristics were controlled in the hierarchical regression. Because each of the participation variables is a dummy variable, any coefficient can be interpreted as showing the absolute change in the outcome measure associated with a particular type of participation, and comparison of coefficients in any row can be made. However, because the standard deviations in the 12 outcome measures are not equivalent, the reader should not attempt to compare coefficients down the columns.

Most striking about the results shown in Table 3 is that all 12 civic responsibility outcomes were positively influenced by service participation. In fact, of the 48 possible effects portrayed in Table 3, all but one were statistically significant, and moreover, 42 of the 47 significant coefficients exceeded the $p = .001$ level of confidence.

Perhaps the strongest evidence for positive effects of service participation on civic responsibility came from the seven items that were pretested when the students entered college as freshmen. For these items, data measuring differential change from freshman to follow-up became possible. As expected, people who later became service participants scored higher at the point of freshman entry on each of these seven items than did the future service nonparticipants, suggesting a certain amount of self-selection. Even so, the service participants also showed greater change between pretest and posttest than did the nonparticipants. The largest differential change favoring service participation occurred with the values, "promoting racial under-

TABLE 2.
Why Students Participate in Service
($N = 2,309$)

Reason	% Noting Reason as "Very Important"
To help other people	91.2
To feel personal satisfaction	66.9
To improve my community	62.5
To improve society as a whole	60.6
To develop new skills	43.2
To work with people different from me	38.1
To enhance my academic learning	37.6
To fulfill my civic or social responsibility	29.6
To enhance my résumé	13.3

Note. Percentages exceed 100 because many respondents marked more than one category.

TABLE 3.
Effects of Service Participation on the Development of Civic Responsibility[a]

Civic Responsibility Outcomes	Type of Service			
	Education	Human Needs	Public Safety	Environment
Students' Commitment to:				
Participate in a community action program	.32**	.33**	.24**	.30**
Help others who are in difficulty	.17**	.24**	.16**	.13**
Help promote racial understanding	.18**	.21**	.18**	.20**
Become involved in programs to help clean-up the environment	.07*	.07*	.04	.26**
Influence social values	.13**	.16**	.15**	.13**
Influence the political structure	.09*	.10**	.19**	.09**
Serve community[b]	.41**	.41**	.32**	.28**
Plans for fall 1995:				
Do volunteer work	.17**	.16**	.10**	.13**
Work for a nonprofit organization	.04**	.04**	.03*	.03**
Participate in a community service organization	.06**	.05**	.06**	.06**
Students' Opinions:				
Disagree: "Realistically an individual can do little to bring about changes in our society"	.14**	.14**	.17**	.19**
Satisfied with college opportunities for community service	.70**	.57**	.40**	.51**

[a] Shows nonstandard regression coefficient that variable would receive if entered at the next step (after controlling for inputs and environments).

[b] Self-estimate of change during college.

*$p < .01$, **$p < .001$.

standing," "participating in community action programs," and "influencing social values." This latter value question is especially interesting because service participants increased their commitment after entering college but nonparticipants decreased theirs.

Clearly, these results provide powerful proof that participation in service activities during the undergraduate years has positive effects on students' sense of civic responsibility. As a consequence of service participation, students become more strongly committed to helping others, serving their communities, promoting racial understanding, doing volunteer work, and working for nonprofit organizations. They also become less inclined to feel that individuals have little power to change society.

Academic Development. Perhaps the most common objection to volunteer participation during the undergraduate years is that volunteering consumes time and energy that the student might otherwise devote to academic pursuits.

This argument has effectively been refuted by the results of our longitudinal analyses, which revealed positive effects of service on all 10 academic outcomes. As shown in Table 4, each of the outcome measures was positively influenced by at least one type of student participation. Seven of the 10 outcomes were positively influenced by at least two different types of service participation, and all but 4 outcomes were positively influenced by three or more types of service participation. Clearly, undergraduate service participation serves to enhance academic development.

Providing education-related service had positive effects ($p < .001$) on more academic outcomes (9 of the 10) than any other type of service had, and, with one exception, showed stronger effects than the other three types of service. This result is not surprising because tutoring and teaching are by far the most common forms of education-related service. More specifically, participation in education-related service enhances the student's college grade point average (GPA), general knowledge, knowledge of a field or discipline, and aspirations for advanced degrees and is also associated with increased time devoted to homework and studying and increased contact with faculty. These findings could also be interpreted as strong evidence for the efficacy of cooperative learning: Students become better students by helping to teach others.

Generally, the results for service activities in the areas of human needs and public safety most closely parallel the results for education-related service: Both types showed significant effects on 7 of the 10 cognitive outcomes. Service in the environmental area showed the fewest

TABLE 4.
Effects of Service Participation on Students' Academic Development[a]

Academic Outcomes	Type of Service			
	Education	Human Needs	Public Safety	Environment
College grade point average	.20**	.10*	.03	.03
Persistence in college (retention)	.01	.01	.03*	.00
Aspirations for educational degrees	.20**	.21**	.19**	.10*
Increase in general knowledge[b]	.08**	.07**	.08**	.05
Increase in field or discipline knowledge[b]	.10**	.03	.09**	.06*
Preparation for graduate or professional school[b]	.17**	.11**	.16**	.10**
Academic self-concept[c]	.45**	.18	.25	.11
Time devoted to studying or homework	.21**	.13	.08	.11
Extra work done for courses	.12**	.09**	.08*	.05
Amount of contact with faculty	.37**	.22**	.32**	.25**

[a] Shows nonstandard regression coefficient that variable would receive if entered at the next step (after controlling for inputs and environments).

[b] Self-estimate of change during college.

[c] Composite of five self-rating measures: academic ability, drive to achieve, mathematical ability, intellectual self-confidence, and writing ability.

*$p < .01$ **$p < .001$.

TABLE 5.
Effects of Service Participation on the Development of Life Skills[a]

Life Skills Outcomes	Type of Service			
	Education	Human Needs	Public Safety	Environment
Leadership ability[b]	.18**	.16**	.25**	.17**
Social self-confidence[b]	.10**	.09**	.15**	.09*
Change[c] during college in:				
Ability to think critically	.14**	.09**	.15**	.03
Interpersonal skills	.12**	.12**	.20**	.09**
Conflict resolution skills	.14**	.15**	.28**	.12**
Ability to work cooperatively	.14**	.10**	.21**	.09**
Knowledge of people of different races and cultures	.17**	.15**	.23**	.09*
Ability to get along with people of different races and cultures	.17**	.14**	.22**	.10*
Understanding of problems facing community	.22**	.22**	.18**	.15**
Understanding of problems facing nation	.17**	.17**	.13**	.11**
Satisfaction with college's:				
Leadership opportunities	.40**	.30**	.42**	.32**
Preparation for future career	.16**	.11**	.14**	.10**
Relevance of coursework to everyday life	.17**	.11**	.13*	.09**

[a] Shows nonstandard regression coefficient that variable would receive if entered at the next step (after controlling for inputs and environments).

[b] Self-rating.

[c] Self-estimate of change during college.

*$p < .01$. **$p < .001$.

significant effects (4 out of 10 academic outcomes). The only type of service showing a significant effect ($p < .001$) on college retention, however, was the area of public safety. The reasons for this effect are not immediately clear.

That the absolute size of these positive effects on academic outcomes was generally smaller than in either civic or life skills outcomes should be stressed. Although the regression results revealed that the net benefit to the student's GPA attributable to service participation was especially small—about .1 grade points for the typical student, the effect was indeed positive and statistically significant. Among students who had at least a B+ average in high school, 69% of the service participants (compared to 56% of the nonparticipants) were able to maintain at least a B+ average in college. Among students who entered college with a B or lower average, 27% of the service participants (compared to 19% of the nonparticipants) were able to improve to at least a B+ average in college.

More substantial effects can be observed with several of the other academic outcomes. Perhaps the strongest effect occurred in the case of interaction with faculty: Service participants, compared to nonparticipants, were nearly 50% more likely to spend at least an hour per week interacting with faculty (48% vs. 33% for participants and nonparticipants, respectively). Despite the additional time required for service participation, students who engaged in volunteer service actually spent more time with studies and homework than did nonparticipants. Thus, participants were substantially more likely than nonparticipants (19% vs. 12%) to spend more than 20 hours per week studying or doing homework, whereas nonparticipants were more than twice as likely to spend less than 3 hours per week doing homework or studying (13% vs. 5%). These results may help to explain the positive effect of service participation on the student's GPA.

Life Skills. The effects of the four types of service participation on the development of life skills are summarized in Table 5. All 13 life skills measures were significantly ($p < .001$) enhanced by participation in service activities during the undergraduate years. All but 1 of the life skills measures were positively affected by all four types of service participation, and that outcome (ability to think critically) was significantly affected by the first three forms of service participation. Thus, of the 52 possible effects shown in Table 5, 51 were statistically significant and 46 were significant at the .001 level of confidence.

Eight of the life skill outcomes showing significant effects of service participation come from the list of questions in the follow-up questionnaire in which students were asked to indicate how much they had changed since entering college. Perhaps more than any of the outcomes, these 8 were clearly consistent with the rationale most often given by advocates of volunteerism and service learning—that service participation enhances students' awareness and understanding of the world around them. Service participants showed greater positive change than did nonparticipants on all 8 items, with the largest differences occurring in understanding community problems, knowledge of different races and cultures, acceptance of different races/cultures, and interpersonal skills. Other significant differences favoring service participants included understanding of the nation's social problems, ability to work cooperatively, conflict resolution skills, and ability to think critically.

The practical value of service participation is further revealed in the positive effects observed for three areas of student satisfaction: leadership opportunities, relevance of course work to everyday life, and preparation for future career. These particular findings are highly consistent with a recent long-term study of volunteer participation on the postcollege life of students, which revealed significant positive effects on how much students felt that their undergraduate education had prepared them for work (Astin, Sax, & Avalos, in press).

The final two outcomes in this area deal with the student's self-concept: Service participation, compared to nonparticipation, was associated with greater increases in social self-confidence and leadership ability. Although service participants showed increases during college in their self-rated leadership abilities, nonparticipants actually showed slight decreases in theirs.

These findings constitute compelling evidence of the beneficial effects of service participation on life skills during the undergraduate years. Participation enhances students' leadership ability and social self-confidence and is positively associated with self-perceived increases in a variety of other specific skills: critical thinking, interpersonal skills (including the ability to resolve conflicts, to work cooperatively, and to get along with people from different races or cultures); knowledge of people from different races and cultures; and the understanding of problems facing the community and the nation. Participating in service activities during the undergraduate years is also positively associated with the student's satisfaction with the opportunities provided by the college for developing leadership skills and with the relevance of undergraduate course work to everyday life.

Duration, Sponsorship, and Location of Service

The follow-up questionnaire also afforded us an opportunity to determine whether certain other aspects of the student's service experience had any significant effects on the 35 outcome measures. These other features included the duration or length of time that the student participated in the service activity, the sponsorship or auspices under which the service was carried out, and the site where the service was performed. A brief review of the findings in each of these areas follows.

Duration of Service. Duration of service was measured in terms of the number of months that the student devoted to service participation during the prior year. Given the uniformly positive effects of specific types of service previously summarized, we were not surprised that the amount of time (from 0 to 12 months) showed significant effects on 34 of the 35 outcome measures. All but one of these effects was significant at the .001 level of confidence. The substantive question to be explored, however, is whether the amount of time devoted to service contributed anything to these outcomes over and above the effects of participation per se (i.e., participation as reflected in the four dichotomous variables representing type of service). In other words, did the duration measure enter the regression with a significant weight after the four types of service had been controlled? Duration of service did have significant ($p < .001$) positive effects on 12 of the 35 outcomes, effects that cannot be attributed simply to the type of participation. Most of these effects occurred in the areas of civic responsibility (5 outcomes) and life skills (5 outcomes). In the area of academic development, duration of service contributed significantly to the prediction of increased knowledge of a field or discipline and amount of contact with faculty. These latter results suggest that longer periods of service may occur in conjunction with course work in the major.

In short, these results suggest that the amount of *time* devoted to providing service carries additional benefits beyond those benefits associated with the type of service performed, especially in the areas of civic responsibility and life skill development. That duration of service would not contribute to most measures of academic development was perhaps to be expected, because a trade-off is necessarily involved: The academic benefits normally associated with providing service may be counterbalanced by the reduction of time available for strictly academic pursuits. Devoting much time to service activities does not necessarily impede academic development, but a heavy involvement in service activities may frequently reduce the time available for students to devote specifically to formal academic pursuits. The direct academic benefit of service is thus offset by the loss of time.

Sponsorship of Service. The student's service work could be performed under three possible auspices: independently through a noncollegiate group or organization, in connection with a collegiate organization (usually student affairs), and as part of a course. Regression results show that once accounting for the effects of type and duration of participation, the type of sponsorship contributed to only a few outcomes. These scattered positive findings, however, are of some interest. For example, service work performed under the auspices of an independent (noncollegiate) group or organization added significantly to the likelihood that the student was planning to do volunteer work in the fall of 1995. This effect suggests that noncollegiate sponsorship may often involve the kinds of service opportunities that either get students "hooked" on service or that involve longer term projects.

Service performed through collegiate (nonacademic) sponsorship added significantly to the prediction of satisfaction with collegiate opportunities for community service and satisfaction with collegiate opportunities for leadership development. In the latter outcome, other collegiate sponsorship produced a stronger effect than either type or duration of service. Among other things, this result lends proof that the area of student affairs is a fertile ground for the development of student leadership abilities. Such a result is consistent not only with recent research on college student development (Astin, 1993) but

also with recent advancements in the area of programs for leadership development at the undergraduate level (Working Ensemble, 1995).

Finally, service provided as part of a course is associated with increased understanding of problems facing the nation. In fact, course-sponsored service had a stronger positive effect on this latter outcome measure than did either type or duration of service. This finding probably demonstrates that the content of many service-learning courses is often focused on contemporary social problems.

Although course-based service entered only this one regression after the effects of service type and duration were controlled, the effects of course-based service were possibly eroded by the entry of the duration variable because performing service as course work might lead students to spend longer time periods doing service. Examining whether course-based service adds significantly to the prediction of any outcome measures before the effects of duration are controlled is important. Indeed, course-based service does relate positively to the following nine outcome measures: leadership ability, commitment to serving the community, planning to do volunteer work in the future, planning to work in a community service organization, commitment to influencing social values, commitment to participating in a community action program, understanding of problems facing the community, and satisfaction with college opportunities for community service, and understanding of problems facing the nation.

Service Site. There were scattered significant effects involving 10 of the 12 possible sites (all except church or religious organization and school). The most extensive and interesting patterns were associated with working at a community center or with a political organization. For example, doing service work for a community center was associated with strengthened commitment to participating in community action programs, self-reported increases both in understanding of problems facing the community and in commitment to serving the community, and increased likelihood of working in a community service agency in the fall of 1995. Working in a community center also was a predictor of satisfaction with college opportunities for leadership development and personal commitment to promoting racial understanding.

Performing service for a political organization was positively associated with increased understanding of national problems, commitment to influencing the political structure, plans to work for a nonprofit agency in the fall of 1995, and increases in leadership ability. Working in a political organization was also associated with increased faculty-student interaction but was negatively associated with commitment to helping others.

Another interesting pattern of effects was associated with performing volunteer service at a park or other outdoor area. Unsurprisingly, working at such a site increased the student's commitment to participating in programs to help clean up the environment, but the work also had a negative effect on college GPA. This last effect may reflect the considerable time that can be required to perform volunteer service work far from campus. As expected, performing volunteer service at a college or university increased faculty-student contact. Similarly, working at a local service center was positively associated with commitment to helping others and to promoting racial understanding. Finally, performing service at a social or welfare organization contributed positively to the student's commitment to participating in community action programs and increased the likelihood that the student would plan to participate in volunteer service and to work for a nonprofit organization in the fall of 1995.

LIMITATIONS

Although most of these findings are highly significant statistically, the absolute effect sizes are generally quite small—especially in the case of academic outcomes, where most effects account for less than 1 of the variance in the dependent variable. Because this study was largely exploratory—we wanted to examine the possible effects of service participation on a wide range of student developmental outcomes, many outcomes are measured using simple single-item scales with only three or four response alter-

natives. As a consequence, our dependent variables doubtless contain a good deal of measurement error. We would almost certainly find larger effects for some outcome measures if in future studies we were to use more reliable, multiitem scales.

Another cautionary note concerns the relatively low response rate to the follow-up survey. Although response bias may have only minimal effect on observed relationships among variables as reported in Tables 3 - 5 (e.g., Astin & Panos, 1969), a much greater possibility exists that such biases will distort the observed means of certain variables. We were in the unique position of being able to compensate for some of these biases because of extensive freshman input data on all of the nonrespondents (see Tables 1 and 2), but the possibility remains that we have not completely adjusted for all of those biases.

CONCLUSION

The findings reported show clearly that participating in service activities during the undergraduate years substantially enhances the student's academic development, life skill development, and sense of civic responsibility. The pattern of findings is striking: every one of the 35 outcome measures was favorably influenced by engagement in some form of service work. These beneficial effects occur for all types of service, whether the activities are concerned with education, human needs, public safety, or the environment. And, generally, the more time devoted to service, the stronger the positive effect. (Our data did not permit us to determine whether a point of diminishing returns exists beyond which service ceases to be associated with positive outcomes; this is clearly a topic for future research.) Service learning represents a powerful vehicle for enhancing student development during the undergraduate years while simultaneously fulfilling a basic institutional mission of providing service to the community. In future studies we plan to explore some of these effects in greater depth, with special emphasis on the effects of course-based service learning.

Correspondence concerning this article should be addressed to Alexander W. Astin, Higher Education Research Institute, UCLA, 3005 Moore Hall, Los Angeles, CA 90095-1521; aastin@gseis.ucla.edu

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