



Long-Term Effects of Volunteerism During the Undergraduate Years

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[Tables](#)

A growing number of colleges and universities in the United States have become actively engaged in encouraging their undergraduate students to participate in some form of volunteer service (Cohen & Kinsey, 1994; Levine, 1994; Markus, Howard, & King, 1993; O'Brien, 1993). Further, service is increasingly being incorporated into the curriculums of major and general education courses (Cohen & Kinsey, 1994; Levine, 1994). While relatively few colleges include service learning or volunteer service as a curricular requirement, the number is growing and such a requirement has become an increasingly frequent topic of debate (Markus, Howard, & King, 1993). That the top leadership in higher education has become increasingly supportive of service as part of the [End Page 187] undergraduate experience is reflected in the phenomenal growth of the Campus Compact, a consortium of colleges and universities dedicated to promoting service among students and faculty. The Campus Compact now numbers well over 500 institutions.

One of the issues frequently raised by faculty and others who might be skeptical about the value of a service or volunteer experience is the one of efficacy: How is the student's educational and personal development affected by service participation? To date, empirical studies on the impact of service are quite scarce although evidence of the benefits of "involvement" in college is certainly abundant (Astin, 1993; Pascarella & Terenzini, 1991). While recent studies provide some evidence that service is associated with civic involvement and cognitive development, such research is generally limited because it relies on small samples of students from a single institution (Batchelder & Root, 1994; Giles & Eyler, 1994; Markus, Howard, & King, 1993). Although such studies have opened the door by providing a useful framework for the study of service, a consensus has indeed emerged about the urgency of collecting longitudinal, multi-institutional data on how students are affected by the service experience (Batchelder & Root, 1994; Cohen & Kinsey, 1994; Giles & Eyler, 1994; Giles, Honnet, & Migliore, 1991; Markus, Howard, & King, 1993; O'Brien, 1993).

Recently, the Higher Education Research Institute at UCLA completed a national study of the effects of President Bill Clinton's Learn and Serve America Higher Education Program, an activity of the Corporation for National Service, which is designed to facilitate the development of volunteer service programs for college students. This longitudinal multi-institutional study allowed for the examination of the effects of service participation *after* controlling for students' precollege propensity to engage in service. Findings suggested that

service participation is positively associated with a number of short-term cognitive and affective outcomes during the undergraduate years (Astin & Sax, 1998). Among other things, the study found that service participation positively affects students' commitment to their communities, to helping others in difficulty, to promoting racial understanding, and to influencing social values. In addition, service participation directly influences the development of important life skills, such as leadership ability, social self-confidence, critical thinking skills, and conflict resolution skills. Service participation also has unique positive effects on academic development, including knowledge gained, grades earned, degrees sought after, and time devoted to academic endeavors.

While the Astin and Sax (1998) study examined the short-term effects of service participation, the purpose of the study reported here is **[End Page 188]** to determine whether service participation during the undergraduate years has any *lasting* effects on students once they leave college. Among the questions to be explored are: Does undergraduate service participation continue to affect the student's educational development after college? How are other postcollege behaviors influenced? Do the value changes that have been associated with service participation during college persist after the student leaves college?

Context for the Study

The long-term effects of college can be looked at from two different perspectives: First, how students in general develop once they leave college (the generic "impact of college"); and second, how postcollege development is affected by particular college *experiences*. The study reported here is of the latter type. While most studies of the long-term impact of college tend to focus on whether college attendance or degree attainment makes a difference (see Pascarella & Terenzini, 1991), few studies have been carried out to assess the long-term impact of particular college experiences such as community service.

To place this study in the larger context of the higher education research literature, we propose that our principal independent variable--participating in community service during the undergraduate years--be regarded as a form of student *involvement* (Astin, 1975, 1984, 1985). Briefly stated, the theory of involvement postulates that the benefits (i.e., "value-added") that students enjoy as a result of the college experience will be directly proportional to the time and effort that they invest in that experience. A large body of research shows that diverse forms of involvement are associated with a wide variety of positive student outcomes (Astin, 1977, 1993; Pascarella & Terenzini, 1991). The most potent forms of student involvement appear to be academic involvement (e.g., time spent studying and carrying out class assignments), interaction with peers, and interaction with faculty. While community service has so far received relatively little attention in student development research, it clearly qualifies as a substantial "investment of time and energy," and it ordinarily involves interaction with peers. In the case of course-based service, it would also be likely to increase both student-faculty interaction as well as the amount of time and energy that the students devote to the course.

Method

An opportunity to explore this topic was afforded by the availability of a national sample of former college students that included longitudinal **[End Page 189]** data collected at three time points: at the time of initial entry to college in the fall of 1985, four years later in 1989, and nine years after college entry during 1994-1995. These data were collected as part of the Cooperative Institutional Research Program (CIRP), which is sponsored by the American

Council on Education and the Higher Education Research Institute (HERI) at the University of California, Los Angeles. The CIRP annually collects a broad array of student background information using the Student Information Form (SIF), and is designed to serve as a pretest for longitudinal assessments of the impact of college on students.

The Survey

The Student Information Form. The SIF was mailed to campuses in the spring and summer of 1985 for distribution to first-year college students during orientation programs and in the first few weeks of fall classes. The 1985 SIF includes information on students' personal and demographic characteristics, high school experiences, and expectations about college, as well as values, life goals, self-concepts, and career aspirations. A total of 279,985 students at 546 participating colleges and universities completed the SIF.

The 1989 Follow-up Survey. In 1989, HERI conducted a four-year longitudinal follow-up of students at four-year institutions who had completed the first-year survey in 1985. The 1989 follow-up survey includes information on students' college experience, their perceptions of college, and post-tests of many of the items that appeared on the 1985 freshman student survey. The follow-up sample of 93,463 of the original 279,985 first-year students was selected in three different ways. A initial sample of 16,658 students from 309 institutions was selected through stratified random sampling. This procedure was designed to best reflect the national distribution of students across different institutional types. A second follow-up sample of 34,323 students at 52 institutions was afforded through a grant from the Exxon Education Foundation for the purpose of studying general education outcomes. Finally, we surveyed an additional 42,482 students at 100 institutions through a grant from the National Science Foundation designed to study undergraduate science education. Ultimately, we had responses from 27,064 students from 388 colleges and universities, resulting in an overall response rate of 29.0 percent. (See Astin, 1993, for more details on this sample.)

The Nine-Year Follow-up Survey. We conducted a second longitudinal follow-up survey in 1994-1995. This nine-year follow-up survey provides information on graduate school and early career experiences, [End Page 190] as well as post-test data on many of the attitudinal and behavioral items appearing on the 1985 and 1989 surveys. This survey was sent to a sample of 24,057 students who had completed both the 1985 first-year and the 1989 follow-up surveys. A response rate of 51.4 percent was obtained, yielding a final sample of 12,376 from 209 institutions that had data at all three time points. ¹

Primary Independent Variable

The principal independent variable used in this study comes from the first (1989) longitudinal follow-up survey conducted four years after the student entered college. Students were asked, "During your last year in college, how much time did you spend during a typical week in volunteer work?" Students could respond along an eight-point continuum ranging from "none" to "over 20." After inspecting the distribution of responses to this question, we decided to collapse the top categories to create a five-category measure: (1) none, (2) less than 1 hour per week, (3) 1-2 hours per week, (4) 3-5 hours per week, and (5) 6 or more hours per week. The weighted percentage distribution of students' responses on this collapsed scale are as follows: 61.3, 13.3, 13.3, 7.0, 5.1. Thus, more than three students in five reported no involvement in volunteer service work during their last year of college, whereas only about one in twenty reported volunteering for six or more hours per week.

Dependent Variables

The nine-year follow-up survey (1994-1995) provided a number of opportunities to assess the impact of volunteer service participation during college on postcollege outcomes. Our selection of dependent variables was guided by two considerations: First, the short-term outcomes (e.g., satisfaction, academic performance, interest in graduate school, and sense of personal empowerment) that recent research has shown to be affected by service participation (Sax, Astin, & Astin, 1996); and second, the theory underlying the concepts of volunteerism and [End Page 191] service learning, which argues, among other things, that service participation deepens students' understanding of social problems such as environmental degradation, poverty, and racial tension, and strengthens their commitment to civic values. (See, for example, Barber, 1993; Newman, 1985). We were also interested in testing the argument, sometimes advanced by opponents of service-learning, that participation in community service "politicizes" students. Finally, although no previous research or theory suggests that service participation should enhance the student's earnings, preparation for graduate school, or sense of commitment or loyalty to the alma mater, we included such outcomes on a purely exploratory basis.

With these guidelines in mind, we selected 18 outcome measures comprising a diverse array of academic and nonacademic behaviors, attitudes, and goals. The majority of these items had been pretested when the students entered college and post-tested four years later in the first follow-up conducted in 1989. Dependent variables include: five *behavioral* outcomes (attended graduate school, highest degree earned, donated money to the undergraduate college, frequency of socializing with persons from other racial/ethnic groups, and hours per week spent in volunteer/community service work during the past year); five measures of *values* (the student's degree of commitment to participate in community action programs, help others in difficulty, participate in programs to clean up the environment, promote racial understanding, and develop a meaningful philosophy of life); two *ratings of the undergraduate college* (adequacy of preparation for graduate work and for job); and two *satisfaction* measures (with graduate school, with job). Additional dependent measures included: political leaning (five-point scale from far right to far left), degree aspirations, income, and agreement with the statement, "Realistically, an individual person can do little to bring about changes in our society." This last measure is included as a "negative" outcome measure; that is, one would expect that involvement in service work would tend to empower students with the conviction that they can indeed make a difference in the society.

Additional Independent Variables

Following the CAMBRA approach to causal modeling (Astin & Dey, 1996), we included a number of first-year student "input" variables as control variables. These included pretests on 12 of the 18 dependent variables. Such pretests were available on all outcomes except the two satisfaction measures, the two undergraduate college ratings, income, and donating money to the undergraduate college. Input variables also included a set of 13 variables that we found through exploratory analyses [End Page 192] to predict students' precollege propensity to engage in service. These include: four *behavioral* measures (performed volunteer work, tutored another student, attended religious services, and smoked cigarettes); three measures of *values* (the student's degree of commitment to participate in community action programs, help others in difficulty, and be very well off financially); two *reasons for attending college* (to make more money and improve reading and study skills); self rating on leadership ability, and measures of racial background and religious preference. Student's gender, socio-economic

status, and high school grades are additional inputs included in this study.

Analysis Design

The principal purpose of the data analysis was to estimate the effects of volunteer participation during the undergraduate years on each of the eighteen postcollege outcomes. For this purpose, we employed the CAMBRA method of causal modeling, which utilizes blocked, stepwise linear multiple regression analysis to focus on changes in the partial regression coefficients for all variables at each step in the analysis (Astin & Dey, 1996). CAMBRA provides a powerful means of decomposing and comprehending multicollinearity in a complex multivariate data set.

The basic approach in CAMBRA is to view each step (or block) in stepwise regression as a new model, differentiated from the model defined by the previous step (or block) by the newly added variable (or block of variables). The power of CAMBRA resides in its ability to demonstrate how the addition of a new variable (or block of variables) affects the relationship between *every other* variable--both in *and* out of the model--and the dependent variable. Identifying changes in the "effect" of variables that are not part of the variables currently defining the model is possible because of a novel feature of SPSS regression that computes the "beta in" for each such variable. "Beta in" shows what the standardized regression coefficient for a nonentered variable would be if it were the one entered on the *next step*. By following step-by-step changes in betas (for variables in the model) and "beta ins" (for variables not yet in the model), the investigator can get a comprehensive picture of how multicollinearity is affecting the entire data set.

CAMBRA also allows the investigator to conduct a series of path analyses by observing how the coefficients for variables already entered are changed when later variables are entered. When an entering variable significantly diminishes the coefficient for an earlier variable, an "indirect" path has been identified. When an earlier variable's coefficient remains significant through the final step, a "direct" path has been identified. The unique situation that occurs when an entering variable *strengthens* the coefficient [End Page 193] for an earlier variable (a condition not covered in most writings on path analysis) is called a "suppressor effect" (i.e., the entering variable has been "suppressing" the observed effect of the earlier variable on the dependent variable) (Astin, 1991; Astin & Dey, 1996).

Each CAMBRA analysis had four blocks: (a) entering first-year student (input) variables; (b) hours spent volunteering during the last year in college (the principal independent variable); (c) the first (1989) posttest; and (d) hours spent in volunteer/community service work during the past year (i.e., 1994-1995). We included all entering first-year student or input variables in the first block, not only to control for initial differences in the students' pretest performance on each outcome measure, but also to control for possible self-selection bias (i.e., the student's predisposition to engage in volunteer service work during college).

We included the third block--the initial (1989) posttest on the dependent variable--to determine the extent to which the long-term effects of undergraduate service participation could be explained by its short-term effect on the first posttest measure obtained four years after entering college. In other words, does undergraduate service participation have any effect on the student nine years after college entry (1994), above and beyond its short-term effect as assessed only four years after entering college (1989)?

We included hours per week spent in volunteer or community service work in 1994 as the

fourth and final block to determine if the effects of volunteering during college could be explained by its effect on volunteering after college. In other words, do students develop a "habit" of volunteering which persists after college, and can this continuing involvement help to explain the effect of undergraduate service participation on other long-term outcomes?

In short, we included these final two blocks of variables to learn something about the factors that *mediate* the long-term effects of service participation during the undergraduate years. (Note that the fourth block obviously had to be excluded from the one regression in which hours per week spent in volunteer/community service work was the dependent variable.)

We conducted a separate CAMBRA analysis for each of the 18 dependent variables. We confined regressions involving income and job satisfaction to students who were employed full-time at the time of the follow-up. Similarly, we limited the two regressions involving graduate school to students who had either completed their graduate work or were enrolled in graduate work at the time of the follow-up. We also excluded subjects who were missing data on either the dependent variable or the principal independent variable (volunteer participation during the undergraduate years) [End Page 194] from any analysis. The sample sizes thus ranged between 5,604 cases (the student's rating of how well the undergraduate college prepared him or her for graduate work) to 11,478 (the frequency with which students socialized with persons from other racial/ethnic groups). Because of these very large sample sizes, we used a very stringent confidence level ($p < .001$) to select input variables into each regression. However, to provide as comprehensive a picture of the findings as possible, we report all results that show effects of service participation (after controlling for inputs) at the $p < .05$ level.

Results

Before discussing the results of the multivariate analyses, it is useful to examine our principal independent variable in somewhat more detail. [Table 1](#) shows a simple cross-tabulation between this variable and its counterpart, hours per week spent in volunteer/community service work at the time of the second follow-up in 1994-1995. Although the simple correlation between these two variables is quite modest ($r = .22$), how much a student volunteers during college can clearly have a substantial effect on how much that student volunteers after college. Thus, spending six or more hours per week in volunteer work during the last year of college, as compared to not participating in volunteer work, nearly doubles the student's chances of being engaged in volunteer work in the years after college, and more than doubles his or her chances of spending either one, three, or six plus hours per week in postcollege volunteer/community service work. For example, 44 percent of those who spent six or more hours per week volunteering during their last year in college were spending at least one hour per week volunteering after college, contrasted to only 19 percent of those who did not volunteer during their last year of college.

To what extent does the student's engagement in service during high school relate to involvement during college and in the years after college? To explore this question we have performed a three-way cross-tabulation using the "pretest" measure of volunteer engagement, which comes from an item in the 1985 first-year student questionnaire that reads: "Performed volunteer work" (students were asked to indicate whether, during the past year, they had performed this activity "frequently," "occasionally," or "not at all"). Though this first-year student input variable showed very modest correlations with hours spent volunteering during college ($r = .18$) and five years after college ($r = .16$), it is associated with substantial

differences on the other two measures. (See [Table 2](#).) Of particular interest is the fact that, even after controlling for hours per week spent volunteering during college, the frequency of volunteer participation during high school *still* **[End Page 195]** correlates with hours spent volunteering nine years later. This is especially true among students who engaged in volunteer work for less than one hour per week during college: Those who volunteered "frequently" in high school were more than twice as likely to devote at least some time to volunteer/community service work nine years later than those who did no volunteer work during high school (64% versus 30%). [Table 2](#) thus shows that the "habit" of volunteering persists over a relatively long period of time. For example, among those who did no volunteer work during either high school or college, only 13 percent were spending one hour or more per week in volunteer work nine years after entering college. This figure more than triples, to 49 percent, among those who volunteered frequently during high school *and* averaged one or more hours of volunteer work during college.

Despite these consistencies, [Table 2](#) also indicates that a good deal of volunteer engagement is situationally determined. Thus, among those students who were frequent volunteers in high school and who devoted one or more hours per week to volunteer work during college, fully one-third (33 percent) were not engaged in *any* volunteer or community service work nine years after entering college. At the same time, among those who did no volunteer work in either high school or college, nearly one-third (31 percent) devoted at least some time to volunteer or community service work nine years after entering college.

Thirteen of the 18 dependent variables showed significant effects from service participation during the undergraduate years. These findings are **[End Page 196]** summarized in [Table 3](#). The first column of coefficients indicates the effect of volunteering during college on each long-term outcome after all significant input variables have been controlled. All of the effects are in the expected direction, including the expected negative effect on the "disempowerment" measure, "Realistically, an individual person can do little to bring about changes in our society." Being a volunteer during college, in other words, is associated with a greater sense of empowerment in the years after college.

In the behavioral realm, participating in volunteer service during college is associated with attending graduate school, earning higher degrees, donating money to one's alma mater, socializing with persons from different racial/ethnic groups, and participating in volunteer/community service work in the years after college. In the value realm, volunteering during college is positively associated with five values measured in the postcollege years: helping others in difficulty, participating in community action programs, participating in environmental cleanup programs, promoting racial understanding, and developing a meaningful philosophy of life. Clearly, the positive short-term effects of volunteering during college on civic and social values observed in earlier studies (Markus, Howard, & King, 1993; Sax, Astin, & Astin, 1996) persist beyond college. Volunteering during college is also associated with higher degree aspirations as measured nine years after college entry and with the student's perception that his or her undergraduate **[End Page 197]** college provided good preparation for work. This latter finding is consistent with the notion that participating in service work gives the student important practical experience in the "real world."

The second column of coefficients in [Table 3](#) shows the effects of undergraduate service participation after controlling for the immediate postcollege measures obtained in 1989. What these coefficients tell **[End Page 198]** us is whether undergraduate service participation continues to affect the nine-year outcome measures (the second posttest) once its effects on the immediate postcollege outcomes (the first posttest) are controlled. The fact that every single

partial beta coefficient shown in the second column is smaller than its corresponding coefficient shown in the first column suggests that most of the effects of undergraduate service participation are at least *partially* mediated by its short-term effects on the four-year outcomes. One of these effects appears to be entirely mediated in this fashion--the belief that individuals can do little to change society. Thus, in the regression, the highly significant ($p < .0001$) partial beta shown in column 1 is reduced to nonsignificance ($p > .05$) after controlling for the immediate postcollege outcomes. Not surprisingly, the largest reductions occur with value outcomes, all of which were posttested immediately after college as well as nine years after entering college.

The last column of coefficients in [Table 3](#) shows the long-term effects of undergraduate service participation after controlling for involvement in volunteer work nine years after college. Controlling for the last variable has little effect, suggesting that few of the long-term effects of volunteerism during college can be explained by volunteerism after college. Only three additional outcomes--donating money to one's alma mater, participating in environmental cleanup, and developing a meaningful philosophy of life--are reduced to nonsignificance by controlling for postcollege volunteerism; and in all three instances, the changes in the coefficients are trivial. Indeed, these three outcome measures had beta coefficients that were only marginally significant ($p < .05$) after controlling for immediate postcollege outcomes. In short, these findings show that the long-term effects of undergraduate service participation cannot be explained simply in terms of its effects on postcollege volunteer engagement. This finding was perhaps to be expected, given that the simple correlation between undergraduate and postcollege volunteerism is only .22. Once again, these results suggest that the "habit" of volunteering is not the main determinant of who will get involved at any point in time but rather that much engagement in volunteerism is situationally determined.

Discussion

This study makes it clear that the short-term effects of volunteer service participation during the undergraduate years persist beyond college and are not simply short-term artifacts. While it is true that these longer-term effects are indeed mediated to some extent by the short-term **[End Page 199]** effects measured at the time of college completion (especially in the area of values and attitudes), undergraduate service participation continues to have direct effects at least through the first five years following the completion of college. In the parlance of path analysis, we would say that undergraduate service participation has both "direct" and "indirect" effects on postcollege outcomes. Of equal importance is the finding that undergraduate volunteer participation affects students in both the affective and cognitive realms, including direct effects on educational outcomes, such as attendance at graduate school and the acquisition of higher degrees.

While service participation during the undergraduate years did not result in any significant effects on satisfaction with graduate school or on the student's perception of how well the undergraduate college prepared him or her for graduate work, it did show a significant positive effect on the student's perception of how well the undergraduate college prepared the student for work. And, while undergraduate service participation showed no measurable effect on either income or overall job satisfaction, it did show a significant positive effect on the student's aspiration for advanced degrees.

That undergraduate service participation should increase the likelihood that the student will actually donate money to the alma mater should be of particular interest to college officials and

trustees. Most of the debate about including a "service requirement" in the undergraduate curriculum has focused on the *educational* efficacy of volunteer participation or service learning. While our earlier work shows clearly that service participation does indeed have beneficial effects in the academic area (Astin & Sax, 1998), this study suggests that there may be a considerable institutional self-interest in encouraging more students to participate in service work.

It is also important to point out that the long-term effects of undergraduate service participation are very consistent with the rationale underlying many service learning and volunteer programs in academia. Volunteering encourages students to become more socially responsible, more committed to serving their communities, more empowered, and more committed to education. That volunteering encourages socialization across racial lines and increases commitment to promoting racial understanding in the years after college is consistent with our recent short-term study (Astin & Sax, 1998) showing that undergraduate service participation strengthens the student's interest in issues relating to multiculturalism and diversity.

Although service had favorable effects on 13 of 18 outcome measures, it is important to address those five outcomes which appear to be [End Page 200] unaffected by service work during college. First, the fact that service participation does *not* appear to affect the student's political leanings seems to refute the argument that service participation "politicizes" students. Second, although we expected that participation in service during college might have a positive effect on satisfaction with graduate school and employment, even if only indirectly through its positive effects on satisfaction with college (Astin & Sax, 1998), service in fact had no effect on these two outcomes. It may be that job satisfaction and satisfaction with graduate school are both heavily dependent on situational factors such as pay and working conditions (in the case of employment), or financial aid and accessibility of faculty (in the case of graduate school). Finally, the two remaining outcomes with nonsignificant effects (income and preparation for graduate school) were included solely on an exploratory basis, with no previous research suggesting that they should be affected by service participation.

Several limitations of the current study should be noted. First, although the results are highly significant statistically, the coefficients shown in [Table 3](#) are quite small. This is perhaps to be expected, given that our measures were relatively simple self-report questionnaire items and given that we were dealing with longitudinal changes over a relatively long span of time. Even so, it is important to recognize that even small coefficients such as these can be associated with important practical differences, especially when one looks at effects over the entire range of the variable. (See, for example, [Tables 1](#) and [2](#), which are based on relatively weak correlations between the variables displayed.)

A potentially more important limitation is the nature of our independent variable, which is simply a generic assessment of the amount of time that students devoted to volunteer service work during the last year in college. We did not obtain specific information, for example, on service learning experiences (as opposed to simple volunteer work) or on the *type* of service performed or the location of the service. All of these issues are being addressed in studies of volunteer service we are currently conducting.

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Note

1. We made successive reductions in the institutional sample to conserve costs and to have faculty survey data available. While the final sample of 12,376 includes students from all types of institutions at all selectivity levels, it overrepresents students who completed the bachelor's degree and students at the more selective institutions. An elaborate system of weights was used to partially correct for these biases using freshman data for students who did and did not return questionnaires. (For more on this weighting procedure, see Astin & Molm, 1972; Dey, 1997.) We conducted cross-tabular analyses using weighted data (Tables 1 and 2); however, since weighted regressions produced much the same results as the unweighted regressions (Dey, 1997), and because weighted regressions may be highly sensitive to outliers, regression results (Table 3) include only the unweighted results.

References

- Astin, A. W. (1975). *Preventing students from dropping out*. San Francisco: Jossey-Bass.
- Astin, A. W. (1977). *Four critical years*. San Francisco: Jossey-Bass.
- Astin, A. W. (1984). Student involvement: A developmental theory for higher education. *Journal of College Student Personnel*, 25, 297-308.
- Astin, A. W. (1985). *Achieving educational excellence*. San Francisco: Jossey-Bass.
- Astin, A. W. (1991). *Assessment for excellence*. New York: Macmillan Publishing Company.
- Astin, A. W. (1993). *What matters in college? Four critical years revisited*. San Francisco: Jossey-Bass.
- Astin, A. W., & Dey, E. L. (1996). *Causal analytical modeling via blocked regression analysis (CAMBRA): An introduction with examples*. Los Angeles: Higher Education Research Institute, UCLA.
- Astin, A. W., & Molm, L. D. (1972). *Correcting for nonresponse bias in followup surveys*. Unpublished manuscript, Office of Research, American Council on Education, Washington, DC.
- Astin, A. W., & Sax, L. J. (1998). How undergraduates are affected by service participation. *Journal of College Student Development*, 39(3): 251-263.
- Barber, B. R. (1993). *An aristocracy of everyone*. New York: Ballantine Books.
- Batchelder, T. H., & Root, S. (1994). Effects of an undergraduate program to integrate academic learning and service: Cognitive, prosocial cognitive, and identity outcomes. *Journal of Adolescence*, 17, 341-355.

Cohen, J., & Kinsey, D. (1994). "Doing good" and scholarship: A service-learning study. *Journalism Educator*, 48, 4-14.

Dey, E. L. (1997). Working with low survey response rates: The efficacy of weighting adjustments. *Research in Higher Education*, 38, 215-227.

Giles, D. E., & Eyler, J. (1994). The impact of a college community service laboratory on students' personal, social, and cognitive outcomes. *Journal of Adolescence*, 17, 327-339.

Giles, D. E., Honnet, E., & Migliore, S. (Eds.). (1991). *Research agenda for combining service and learning in the 1990s*. Raleigh, NC: National Society for Internships and Experiential Education.

Levine, A. (1994, July/August). Service on campus. *Change*, 26, 4-5.

Markus, G. B., Howard, J. P. F., & King, D. C. (1993). Integrating community service and classroom instruction enhances learning: Results from an experiment. *Educational Evaluation and Policy Analysis*, 15, 410-419.

Newman, F. (1985). *Higher Education and the American Resurgence*, 31. Princeton, NJ: Carnegie Foundation for the Advancement of Teaching.

O'Brien, E. M. (1993). Outside the classroom: Students as employees, volunteers and interns. *Research Briefs*, 4. Washington, DC: American Council on Education.

Pascarella, E. T., & Terenzini, P. T. (1991). *How college affects students*. San Francisco: Jossey-Bass.

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