Modeling the Influence of Service-Learning on Academic and Sociocultural Gains: Findings from a Multi-institutional Study

Andrew Furco, Daniel Jones-White, Ronald Huesman Jr., and Laura Segrue Gorny

Over the past 20 years, there has been a national movement to encourage higher education institutions to deepen students' community involvement and civic development. The passage of the *National and Community Service Trust Act* in 1993 established the Learn and Serve America program, which set into motion a national agenda to integrate civic- and community-engaged service initiatives into the academic curriculum of the country's primary, secondary, and higher education institutions. The federally sponsored funding, support, and visibility for this work catalyzed the development of a strong community of service-learning practitioners as well as the formation of campus-wide service-learning and civic engagement centers and units. While many colleges and universities enthusiastically embraced this agenda, research universities generally took a more critical stance, casting service-learning and the broader national service agenda as just another educational fad. At the time, Ward (1996) wrote: "For service-learning to transcend its critics' cynicism as merely another fad for educational reform, then it must be integrated into campus cultures and become central to organizational mission. Institutionalization is essential

if service-learning is to survive on college campuses" (p. 3). Although several prominent research universities did embrace service-learning and the furthering of student civic development, the deepest programming and institutionalization of student civic engagement efforts were found in non-research intensive universities (Furco 2001).

As student service-learning programming continued to expand and flourish throughout the 1990s and 2000s, as the call for more university civic involvement strengthened following several national tragedies (e.g., 9/11, Hurricane Katrina), and as empirical evidence of the potential power and impact of these experiences on students' civic development began to emerge, more research universities adopted community engagement agendas and made greater investments in programs focused on enhancing student community involvement and civic development. Indeed, during the 2000s, service-learning and other academically connected community-based learning strategies had finally found their place as recognized, legitimate, and valued pedagogical approaches to fostering students' civic development across all types of higher education institutions (Kuh 2008). Grounded in experiential and authentic learning theories, these community-engaged approaches also began to be linked to enhancements in students' academic learning and social development (Kolb et al. 2000; Kuh 2008; Slavkin 2004).

Over the last 30 years, more than 600 published studies have examined issues concerning undergraduate students' involvement in various types of community-engaged learning experiences. With the rise of the federal national service agenda during this time, most of these studies have focused on the practice of service-learning and its impact on students (Eyler et al. 2003). Overall, the findings from studies of service-learning can be categorized as having potentially positive student impacts in six areas: *academic* learning and educational success; *personal* development (e.g., self-esteem, empowerment); *civic* development (e.g., citizenship, civic capacity); *social* development (e.g., sociocultural development, interpersonal development); *ethical/moral* development; and *career* awareness and preparation. The majority of service-learning studies point to generally positive findings within and across these outcome domains.

Because service-learning engages students in community service experiences that both are situated in diverse community contexts and are integrated with students' academic work, the call for more evidence that supports the impact of service-learning on students' academic achievement, civic behaviors (Sherrod et al. 2010), and sociocultural development has

been especially strong (Celio et al. 2011; Simons and Cleary 2006; Steinke and Buresh 2002; Yorio and Ye 2012). In regard to academic outcomes, findings from several studies reveal that students' participation in service-learning can promote higher outcomes in students' course-content knowledge (Mpofu 2007), cognitive skills (Eyler and Giles 1999; Steinke and Buresh 2002), grade point averages (Astin et al. 2000), and re-enrollment and retention (Bringle et al. 2010; Gallini and Moely 2003).

However, when comparing service-learning students to students in control and comparison groups, the findings regarding the academic benefits of service-learning for participating students have been generally mixed. Even among the studies that have shown a positive relationship between service-learning and academic achievement, the effect sizes are generally small. Similarly, service-learning studies that have explored outcomes in the areas of civic (or citizenship) development, career development, and ethical (or moral) development have also revealed mixed results (Conway et al. 2009).

However, the most positive and consistent findings of service-learning participation across different types of educational settings, student populations, and community settings are found primarily in the personal and social development domains. These service-learning studies reveal the largest effect sizes when compared to findings in the other domains. The personal development outcomes most correlated with service-learning are enhanced student sense of empowerment (McBride and Sherraden 2007; Morgan and Streb 2003), sense of belonging (Kezar 1998; Litke 2002), self-authorship (Jones and Abes 2004), self-esteem (Blyth et al. 1997; Furco 2006; Miller and Neese 1997), personal insight (Yorio and Ye 2012), motivation for learning (Covitt 2006; Steinke and Buresh 2002), and engagement in tasks (Feldman et al. 2006; Morgan and Streb 2003; Mpofu 2007). In the social development domain, the most consistent positive outcomes appear to be in the areas of enhancing students' appreciation of diversity (Boyle-Baise 2002), interactions and relationships with peers and mentors (Gallini and Moely 2003), capacity for social responsibility (Batchelder and Root 1994; Celio et al. 2011; Eccles and Gootman 2002; Eyler and Giles 1999), and intercultural interactions (Borden 2007).

An enhanced understanding of the role that service-learning and related community-based learning practices play in advancing educational outcomes is important, given the current rise of community-engaged pedagogies in higher education (Butin 2010). While the extant literature on community-engaged pedagogies suggests that students' involvement

in service-learning experiences can have positive impacts on a variety of student development areas, persistent limitations in the research call for more advanced and multi-site analyses (Howard 2003; Waterman 2003).

Most service-learning studies have focused on assessing the *direct* relationship between students' participation in service-learning and outcomes across the various aforementioned domains. Critiques of the research on service-learning have pointed to the need for more studies that include larger sample sizes, multi-site investigations, and more comprehensive designs that incorporate multi-level and multi-variate analyses (Waterman 2003). Findings from several recent studies have revealed how more advanced design models can help explain the ways in which intermediary, moderating, and mediating variables influence the outcomes students experience from service-learning participation (Bringle et al. 2010; Conway et al. 2009; Lester et al. 2005).

For our investigation, we sought to use the robust data from the Student Experience in the Research University (SERU) survey to hypothesize and test structural equation models that would examine more fully the direct and indirect impacts of service-learning on a set of key student outcome variables. We constructed the model by first identifying constructs from the survey that might best match and are most relevant to the outcome domains cited in the service-learning literature. Through this process, we selected items from four categories:

1. *Service-learning participation and involvement*: Composed of three items, this variable assesses the extent of students' service-learning participation, such as number of times students enrolled in a service-learning course, average number of hours students engaged in service-learning, and so on.
2. *Citizenship/civic behaviors*: Composed of six items, this variable assesses students' perceptions of their capacity to interact with others who hold different points of view to deal with controversial issues and to reflect on and implement solutions to address challenges and societal issues. In service-learning, students engage in both classroom-based and community-based civic-oriented experiences; therefore, we assessed students' perceptions of their operationalization of citizenship behaviors both in-class and out-of-class.
3. *Academic gains*: Composed of three items, this variable assesses students' perceptions of gains in their analytical and critical thinking, writing effectiveness, and comprehension of academic materials.

4. *Sociocultural gains*: Composed of three items, this variable assesses students' perceptions of gains in their capacity and ability to understand racial and ethnic diversity, to appreciate cultural and global diversity, and to understand the importance of personal social responsibility.

We applied these constructs to two structural equation models to examine whether participation in service-learning opportunities contributes directly to students' civic/citizenship development and either directly or indirectly to improving students' academic and sociocultural gains. Through these models, we sought to assess if students' civic capacity is an intermediary outcome, which, when achieved, promotes students' academic and/or sociocultural gains.

Conceptual Model

Through the two latent variable structural equation models, we posit that students' perceptions of their academic and/or sociocultural gains in higher education are a direct function of their academic background (*parent education, ACT score, year in school*), experiences in higher education (*faculty interaction, critical thinking, service-learning*), and in-class and out-of-class civic-focused or citizenship-oriented experiences. Our models also examine the importance of the respondents' campus environment in affecting their perceptions of academic and sociocultural gains. In addition to these direct relationships, we also hypothesize two relevant indirect relationships. The first is associated with curriculum-based (or *in-class*) opportunities to engage in civic-focused and citizenship-oriented behaviors; the second is associated with students' propensity to engage in civic-focused and citizenship-oriented behaviors *outside of the classroom*. Based on previous service-learning studies, it is our hypothesis that both of these are likely to influence students' gains in academic and sociocultural development (Knapp et al. 2010; Parker-Gwin and Mabry 1998).

In developing our models to assess gains over time, we considered and adapted Astin's (1993) Input-Environment-Outcome (I-E-O) framework, which focuses on *inputs* (e.g., student background characteristics) at the start of higher education, the *environment* (e.g., the programs, people, and/or educational experiences encountered while in higher education), and *outcomes* (e.g., state of student characteristics upon leaving higher education). Figure 8.1 maps our hypothesized model to the I-E-O framework.
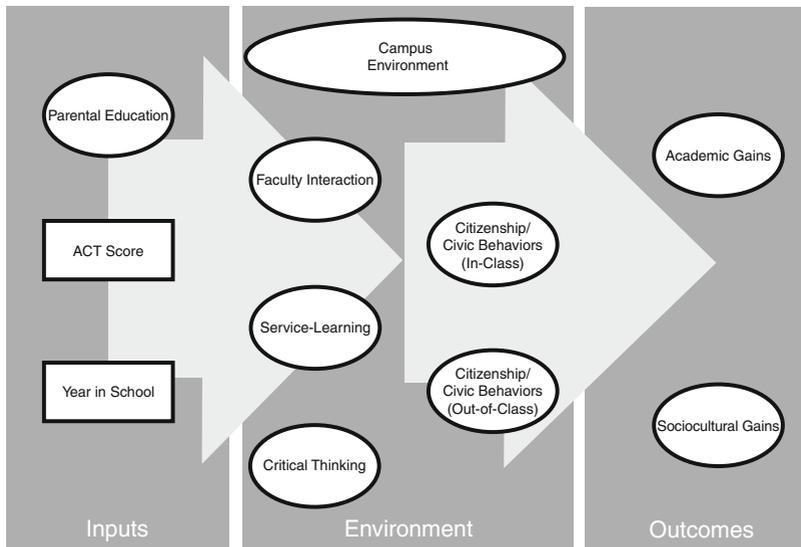
Fig. 8.1 Conceptual model

Utilizing results from the SERU survey plus central records, we secured the necessary data elements needed to build the structural equation models using the I-E-O conceptual framework.

Methods Instrument and Sample

We used data collected from the 2010 annual administration of the SERU survey. The SERU survey was administered at 12 large public research universities during this administration year. We analyzed the selected items from the community and civic engagement (CCE) module of the survey, which is randomly assigned to approximately 10–30 % of the respondents at participating institutions.

We used the data for all students who responded to the CCE module *and* who responded in the affirmative to the module's introductory question: "During this academic year, have you done community service either on or off campus?" The SERU survey asks all students who respond affirmatively to this introductory question to then respond to a series of additional items that explore the nature of students' service-learning and

other community engagement experience(s). Among the questions asked are: "During this academic year, how many times have you enrolled in a course that had a service-learning component?" and "What was the average number of total service hours for the service-learning courses you took?" Through the questions in this module, we were able to create an indicator of the number of semesters over the past academic year each student enrolled in service-learning courses. We assumed that the students who responded affirmatively to the introductory question about community-service involvement and who responded to the follow-up items participated in some form of community engagement, and therefore their SERU data were eligible for inclusion in our study.

Our study sample included undergraduate students at the 12 public research universities that administer the CCE module. Individual institutional response rates for overall SERU survey (all modules) varied from 24 to 55 %, with an overall response survey response rate approximately 35 % ($n = 114,124$). The CCE module of the SERU survey produced a sample size of 20,426 (17.89 % of all SERU respondents).

The large-scale nature of the SERU survey provides methodological flexibility. For the analyses of our structural equation models, we used listwise deletion to handle missing data, and then we divided the study population into random halves prior to data analysis (Maruyama 1997). The first random half sample ($n = 5746$) was used for exploratory analysis and model refinement, and the second random sample ($n = 5793$) was used to cross-validate our perceived findings.

Measures

In total, we applied 37 items from CCE module to assess the direct and indirect effects of service-learning on students' perceived academic and sociocultural gains. These items produced eight latent variables and two manifest variables. We also selected four items from another module of the 2010 SERU survey (academic module), which formed the exogenous portion of our model.

The exogenous portion included one latent variable (*parental education*) and two manifest variables (*ACT score* and *year in school*) that controlled for possible individual differences in students' educational backgrounds. The latent variable (*parental education*) included two survey items that assessed the highest level of education for both the respondents' mother and father based on an ordinal scale ranging from "no formal education" to PhD

completion. The respondents' *ACT score* approximated students' educational ability. We converted students' SAT scores to ACT scores when ACT scores were not present. To control for the life-cycle effects associated with the different stages of undergraduate education, we classified respondents on an interval scale (1–4) as freshman, sophomore, junior, or senior (*year in school*).

Table 8.1 provides the means, standard deviations, and standardized factor loadings associated with each of our latent constructs across random half samples as well as the associated internal consistency of the proposed latent constructs for the endogenous part of our structural equation model. As mentioned previously, we used 11 items from the survey to construct three latent variables to assess students' academic experiences on campus during the year measuring the amount of *faculty interaction, critical thinking,* and *service-learning* that the student may have encountered during the academic year. We applied a set of seven items to create each of two latent variables (*out-of-class civic/citizenship behaviors* and *in-class civic/citizenship behaviors*) that measure students' experience in operationalizing civic-oriented behaviors inside or outside the classroom (Table 8.1).

Students' campus environment influences and contributes to student learning (Astin 1993); therefore, we incorporated into our model a latent variable (*campus* environment) composed of seven survey items that ask about students' perceptions of the respect they are proffered regardless of their economic or social class, gender, race or ethnicity, religious beliefs, sexual orientation, or disabilities. The final two latent variables are outcome variables (*academic gains* and *sociocultural gains*), which are composed of six survey items that measure students' self-perceptions of their academic and sociocultural skills at the time of arrival at their institution and at present.

Analysis

To assess the potential relationship between service-learning and academic and sociocultural gains, we utilized LISREL 8.80, which allowed us to apply our theoretical model to observed data (Hahs-Vaughn 2004; Joreskog and Sorbom 2007). Specifically, the latent variable structural equation model allowed us to confirm the proposed factor analytic model (or measurement model) as well as to assess our hypotheses about the potential direct and indirect effects of service-learning on students' perceptions of gains in their academic and sociocultural development (or structural model).

Table 8.1 Means, standard deviations, and standardized factor loadings of latent constructs—random half samples

	Mean	Standard deviation	Factor loading	Mean	Standard deviation	Factor loading
Faculty interaction			$\alpha 1 = 0.808$			$\alpha 2 = 0.808$
Communicated with faculty member by e-mail/in person	3.83	1.29	0.71	3.79	1.31	0.77
Talked with the instructor outside of class about class issues	2.79	1.4	0.82	2.76	1.41	0.83
Interacted with faculty during lecture class sessions	3.01	1.44	0.69	2.98	1.42	0.69
Critical thinking			$\alpha 1 = 0.861$			$\alpha 2 = 0.886$
Judge the value of information…based on the soundness of sources	4.4	1.31	0.71	4.41	1.31	0.71
Create or generate new ideas, products, or ways of understanding	4.17	1.38	0.7	4.14	1.39	0.69
Incorporated ideas…from different courses when completing assignments	4.39	1.26	0.74	4.4	1.25	0.72
Examined how others gathered and interpreted data and assessed their conclusions	4.06	1.33	0.83	4.05	1.35	0.82
Reconsidered your own position on a topic after assessing the arguments of others	4.06	1.29	0.74	4.08	1.28	0.76
Service-learning			$\alpha 1 = 0.820$			$\alpha 2 = 0.842$
How many times have you enrolled in a course that had a service-learning component?	0.1	0.41	0.93	0.1	0.4	0.88
Average number of hours for the service-learning courses you took	0.16	0.63	0.89	0.17	0.65	0.93
Course-based service-learning	0.09	0.35	0.71	0.09	0.33	0.66
Campus environment			$\alpha 1 = 0.913$			$\alpha 2 = 0.915$
Students are respected here regardless of their economic or social class	4.59	1.08	0.77	4.59	1.09	0.77

Table 8.1   (continued)

	Mean	Standard deviation	Factor loading	Mean	Standard deviation	Factor loading
Students are respected here regardless of their gender	4.91	0.95	0.78	4.9	0.96	0.78
Students are respected here regardless of their race or ethnicity	4.63	1.09	0.83	4.61	1.09	0.84
Students are respected here regardless of their religious beliefs	4.62	1.05	0.8	4.6	1.09	0.8
Students are respected here regardless of their political beliefs	4.51	1.14	0.7	4.53	1.12	0.7
Students are respected here regardless of their sexual orientation	4.68	1.03	0.76	4.66	1.04	0.77
Students are respected here regardless of their disabilities	4.76	0.98	0.74	4.74	0.99	0.74
Citizenship/civic behaviors (in class)			α1=0.921			α2=0.923
Interact with someone with views that are different from your own	4.23	1.26	0.73	4.19	1.28	0.73
Discuss and navigate controversial issues	3.91	1.32	0.84	3.89	1.33	0.84
Define an issue or challenge and identify possible solutions	3.99	1.31	0.91	3.99	1.31	0.91
Implement a solution to an issue or challenge	3.72	1.38	0.85	3.72	1.38	0.84
Reflect upon the solution of an issue or challenge	3.88	1.32	0.92	3.88	1.31	0.91
Reflect on your responsibility for community or social issues	3.61	1.38	0.82	3.59	1.38	0.8
Citizenship/civic behaviors (out of class)			α1=0.934			α2=0.934
Interact with someone with views that are different from your own	4.59	1.15	0.66	4.58	1.17	0.37
Discuss and navigate controversial issues	4.14	1.23	0.84	4.14	1.24	0.84

Table 8.1   (continued)

	Mean	Standard deviation	Factor loading	Mean	Standard deviation	Factor loading
Define an issue or challenge and identify possible solutions	4.08	1.26	0.93	4.08	1.26	0.93
Implement a solution to an issue or challenge	3.84	1.35	0.85	3.85	1.34	0.84
Reflect upon the solution of an issue or challenge	4.04	1.28	0.92	4.03	1.28	0.91
Reflect on your individual responsibility for community or social issues	3.98	1.32	0.81	3.96	1.33	0.81
Perceived academic gains			$\alpha 1 = 0.767$			$\alpha 2 = 0.781$
Gains in analytical and critical thinking	0.73	0.81	0.77	0.72	0.81	0.77
Gains in clear and effective writing	0.68	0.89	0.7	0.66	0.9	0.69
Gains in reading and comprehending academic material	0.72	0.87	0.72	0.72	0.86	0.68
Perceived sociocultural gains			$\alpha 1 = 0.771$			$\alpha 2 = 0.784$
Gains in ability to appreciate, tolerate, and understand racial and ethnic diversity	0.48	0.89	0.74	0.48	0.87	0.73
Gains in ability to appreciate cultural and global diversity	0.5	0.82	0.87	0.5	0.81	0.83
Gains in understanding the importance of personal social responsibility	0.6	0.88	0.63	0.6	0.89	0.61

We discuss each of these associated pieces separately, as they provide different information about the relationship between our hypothesized models to the underlying data.

The construct validity of our hypothesized model is presented in Table 8.2, which lists the absolute and comparative fit indicators from maximum likelihood confirmatory factor analysis of the full measurement model. We evaluated the following fit indicators for the associated measurement models using Schreiber et al.'s (2006) associated cutoffs including a ratio of chi-square to degrees of freedom ≤ 3, a SRMR ≤ 0.08, CFI ≥ 0.95, TLI ≥ 0.95, RMSEA ≤ 0.06–0.08.

Table 8.2   Model fit statistics

Model	χ^2	df	χ^2/df	SRMR	CFI	TLI	RMSEA
Measurement model: 1st half	14585.68	734	19.87	0.11	0.95	0.95	0.057
Measurement model: 2nd half	15016.84	734	20.45	0.11	0.95	0.95	0.058
Structural model: 1st half	11120.58	692	16.07	0.03	0.97	0.96	0.051
Structural model: 2nd half	11812.93	692	17.07	0.04	0.96	0.96	0.05

The information in Table 8.2 generally confirms that our theoretical constructs fit the observed data; however, the ratio of chi-squared to degrees (χ^2/df) and the standardized root mean square residual (SRMR) exceed the suggested thresholds. This value inflation may be due to the large sample size of the study (Bryant et al. 2012).

Results

Given our interest in examining the impact of service-learning activities on the students' perceptions of academic and sociocultural gains, while in higher education, we evaluated the following absolute and relative fit indicators for these latent variables to determine the fit of the hypothesized structural model. Specifically, we assessed the ratio of chi-squared to degrees of freedom (χ^2/df), standardized root mean squared residual (SRMR), comparative fit index (CFI), the Tucker-Lewis index (TLI), and the root mean square error of approximation (RMSEA). Given that all of the fit indicators fall outside the cutoff criteria (except, once again the χ^2/df), we concluded that the proposed structural models fit the underlying data reasonably well.

Academic Gains

Figure 8.2 provides a partial representation of the full structural equation model illustrating the direct and indirect paths associated with self-reported academic gains and service-learning. While other latent variables were estimated, their effects are omitted from this graphical display to allow for greater focus on the outcome variables and to reduce confusion for the reader.

Across the two random half samples, the hypothesized model explains just less than one-fifth of the variance associated with students' self-reported gains in academic skills. In terms of direct relationships, the standardized parameter estimates provided in Fig. 8.2 illustrate that our latent construct
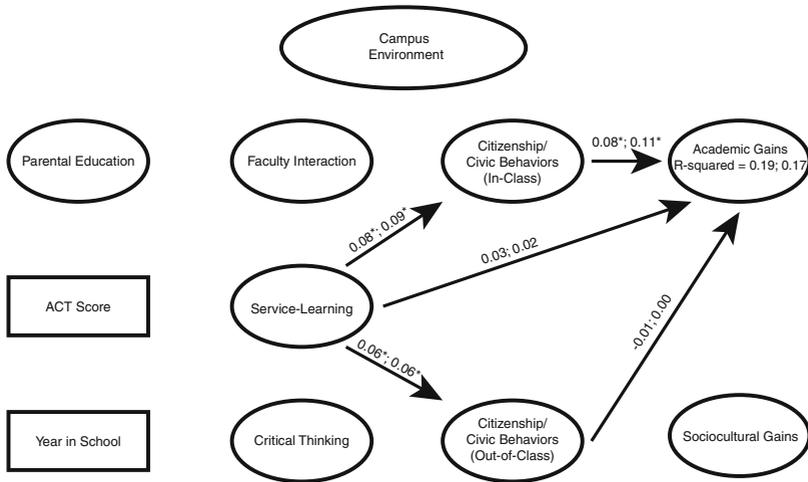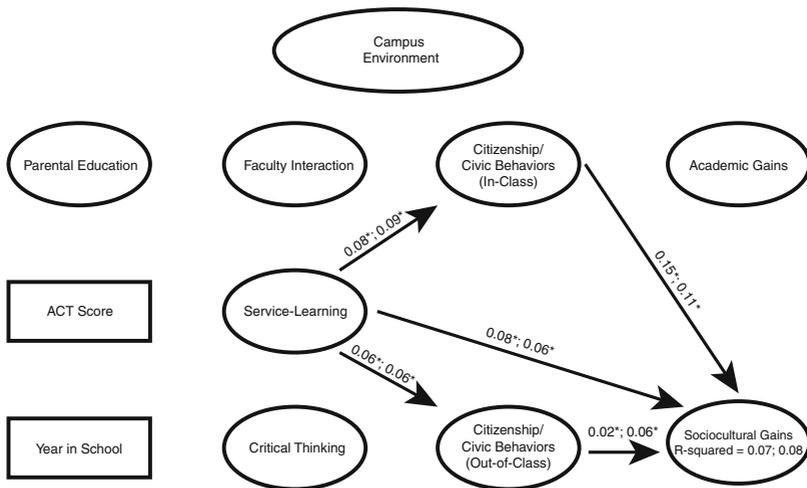
Fig. 8.2 Representation of the direct and indirect pathways of service-learning on academic gains from the proposed structural equation model

of service-learning has a small positive, but *statistically insignificant*, effect on students' self-reported gains in academic skills. This suggests that there is no evidence of a direct causal relationship between service-learning participation and students' perception of academic skills gains. This finding is consistent with other service-learning research, which suggests that academic outcomes from service-learning participation are mixed, and that perhaps they are mediated and/or moderated by variables such as students' citizenship capacity and civic behaviors (Sherrod et al. 2010), sense of self-efficacy (Knapp et al. 2010), and motivation for learning (Covitt 2006; Steinke and Buresh 2002).

We did find, however, that service-learning is positively associated with students' capacity to operationalize citizenship/civic behaviors, both in- and out-of-class ($p < 0.05$). Additionally, the evidence from Fig. 8.2 suggests that civic-oriented in-class behavior is also positively associated with students' perceptions of academic gains ($p < 0.05$), while civic-oriented out-of-class behavior is unrelated to academic gains. In line with findings from Levine (2011), Sherrod et al. (2010), and others, we conclude that in-class civic-oriented behavior plays a significant, albeit small, role in mediating the relationship between service-learning and students' perceptions of academic gains.

Sociocultural Gains

Figure 8.3 highlights the standardized path coefficients of service-learning as it directly and indirectly affects students' self-reported socio-cultural gains. Across both samples, the hypothesized model explains less than one-tenth of the variance associated with self-reported socio-cultural gains. This suggests that a significant amount of variation associated with gains in cultural competencies remains unexplained by our model. In contrast to the findings related to perceived academic gains, Fig. 8.3 provides evidence of a positive direct relationship between service-learning and student perceptions of sociocultural gains as well as with students' civic-oriented behaviors both inside and outside the classroom ($p < 0.05$). Additionally, as Fig. 8.3 illustrates, there are also positive direct relationships between civic-oriented behaviors inside and outside the classroom and students' perceptions of sociocultural gains ($p < 0.05$), suggesting that both the in-class and out-of-class *citizenship/ civic behaviors* latent variables play a mediating role between service-learning and sociocultural outcomes. This finding reveals that in addition to the observed direct gains in sociocultural outcomes associated

Fig. 8.3 Representation of the direct and indirect pathways of service-learning on sociocultural gains from the proposed structural equation model

with service-learning, students' sociocultural gains can benefit from opportunities to operationalize civic-focused and citizenship-oriented behaviors in and out of the classroom.

Limitations

Limitations of our study include those associated with many survey-based research studies: non-response bias, student self-reporting, and potential measurement error associated with items in the survey. Of these limitations, we conclude that issues related to measurement error were the most problematic to our research plans. Not all of the items in the SERU survey (a standardized measure) are as clearly worded or phrased as we would have liked.

Another limitation relates to the small effects sizes associated with this study. Although the large sample size of the SERU provides sufficient power to identify small effects, the consistency of the small effect sizes in this study raises questions about utilizing difference scores constructed from the self-assessment of skills items in the SERU survey. The average difference (across both samples) on the items used to construct our latent variable for academic gains ranged from 0.64 (SD = 0.89) to 0.74 (SD = 0.82). For the items used to construct the latent variable for sociocultural gains, the differences across both samples ranged from 0.47 (SD = 0.81) to 0.61 (SD = 0.89). Put another way, the average reported gain on any of these items is statistically insignificant from zero. Consequently, this makes it extremely difficult for statistical models to pick up any significant relationships or correlation between variables. A final limitation concerns the nominalistic fallacy. We sought to take great care, both in theory and in measurement, to identify appropriate latent constructs for our hypothesized model. However, as Cliff (1983) has suggested, naming something does not necessarily mean one fully understands it.

Discussion

While our study found direct, positive relationships between service-learning and the civic/citizenship in-class behaviors, as well as between in-class civic-oriented behavior and students' perceptions of academic gains, no direct, statistically significant relationship was found between service-learning and students' perceptions of academic gains. However, a statistically significant, positive direct relationship was found between

service-learning and students' perceptions of sociocultural gains. The findings also revealed direct, positive relationships between service-learning and their civic-oriented behaviors (both inside and outside the classroom) as well as between civic-oriented behaviors (both inside and outside the classroom) and students' perceptions of sociocultural gains. These findings suggest that both the in-class and out-of-class *citizenship/civic behaviors* latent variables serve as mediators between service-learning and sociocultural outcomes.

Through our analyses, we found that the direct effect of service-learning on self-reported academic gains represented the smallest of students' gains. Such findings are not completely unexpected, as the extant literature on service-learning has pointed to mixed effects in this outcome area (Celio et al. 2011; Eyler et al. 2003). While our research did not confirm a positive direct effect between service-learning and students' perceptions of academic gains, we did find that participation in service-learning enhanced civic-oriented and citizenship behaviors operationalized both inside and outside of the classroom, and that these enhanced behaviors have the potential to lead to greater academic and sociocultural gains (Kuh and Schneider 2008).

The SERU is administered at large public research universities that are funded, in part, by their states. One of the goals of state-funded education is to produce graduates who will take what they learned in school and put it to use for the betterment of society. Our measures of civic-oriented and citizenship behaviors reflect this goal: through this study, we were able to assess students' ability to interact with diverse individuals, navigate controversy, and identify and implement solutions to problems. Also in this domain are the civic-oriented and citizenship behaviors of acting upon community and societal issues as well as reflecting on personal responsibility for addressing them.

One of the most interesting findings of this study is the direct effect we observed between service-learning and students' perceptions of sociocultural gains. We included measures that tapped students' perceptions of their cultural understanding, such as their ability to appreciate, tolerate, and understand racial, ethnic, cultural, and global diversity, and their understanding of the importance of personal social responsibility. Many colleges and universities have indicated a need for graduates who can effectively interact within a diverse, multi-cultural global society—especially amid a widespread perception by employers that recent college graduates lack global knowledge (Hovland 2009).

Additionally, the workforce literature has repeatedly emphasized the need for graduates who not only possess skills related to doing their jobs, but who also possess well-developed social skills. Given the increasing diversity in the workforce, the ability to interact with individuals from different ethnic backgrounds and cultures is of vital importance. Referring to some survey work conducted by Peter D. Hart Research Associates, Inc (2007), 76 % of business leaders indicate that they want higher education institutions to emphasize "intercultural competence" and "teamwork skills in diverse groups" (p. 3). It is worth noting that the direct effect of service-learning on sociocultural gains was larger than any of the other latent constructs of academic experiences utilized in our model.

Overall, the findings from this study help extend our understanding of some of the factors that contribute to key outcomes of service-learning. In particular, through analyses of both direct and indirect effects, this research furthers understanding of the relationship among student participation in service-learning, citizenship/civic behaviors, and perceived academic and sociocultural gains. Additional investigations that explore the direct and indirect effects of service-learning and community engagement should seek to apply more extended models of direct and indirect impacts, and should aim to use data that incorporate more defined constructs in order to ascertain the full effects of service-learning and other community-based learning pedagogies on student learning and development.

Conclusion

Through our study, we hoped to contribute to the service-learning literature by extending and deepening our understanding of the ways that particular factors contribute to key outcomes of service-learning. We proposed and tested a structural equation model to provide a deeper examination of both the potential direct and indirect effects of service-learning on students' academic and sociocultural development. Consistent with findings from previous studies, our investigation found no direct causal relationship between service-learning and students' perception of academic skills gains. However, the study did find service-learning to have a direct, positive, and statistically significant impact on students' capacity to operationalize citizenship/civic behaviors, both in- and out-of-class. While *in-class* civic-oriented behavior was found to be positively associated with students' perceptions of academic gains, *out-of-class* civic-oriented behavior was not. The study also found a direct, statistically significant, positive

relationship between service-learning and students' perceptions of socio-cultural gains, as well as between service-learning and their civic-oriented behaviors, both inside and outside the classroom. The study also revealed direct, statistically significant, positive relationships between civic-oriented behaviors (both in- and out-of-class) and students' perceptions of socio-cultural gains, suggesting that both the in-class and out-of-class *citizen-ship/civic behaviors* play a mediating role between service-learning and sociocultural outcomes. In this regard, students' sociocultural gains can benefit from opportunities to operationalize civic-focused and citizenship-oriented behaviors in and out of the classroom.

References

Astin, A. (1993). *Assessment for excellence: The philosophy and practice of assessment and evaluation in higher education*. Phoenix, AZ: Oryx Press.

Astin, A., Vogelgesang, L., Ikeda, E., & Yee, J. (2000). *How service learning affects students (executive summary)*. Los Angeles, CA: University of California Los Angeles, Higher Education Research Institute.

Batchelder, T., & Root, S. (1994). Effects of an undergraduate program to integrate academic learning and service: Cognitive, prosocial cognitive, and identity outcomes. *Journal of Adolescence, 17*(4), 341–355.

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

Borden, A. W. (2007). The impact of service-learning on ethnocentrism in an intercultural communication course. *Journal of Experiential Education, 30*(2), 171–183.

Boyle-Baise, M. (2002). *Multicultural service-learning: Educating teachers in diverse communities*. New York, NY: Teachers College Press.

Bringle, R. G., Hatcher, J. A., & Muthiah, R. (2010). The role of service-learning on retention of first-year students to second year. *Michigan Journal of Community Service Learning, 16*(2), 38–49.

Bryant, A., Gayles, J., & Davis, H. (2012). The relationship between civic behavior and civic values: A conceptual model. *Research in Higher Education, 53*(1), 76–93.

Butin, D. (2010). Can I major in service-learning? An empirical analysis of certificates, minors, and majors. *Journal of College and Character, 11*(2), 1–19.

Celio, C. I., Durlak, J., & Dymnicki, A. (2011). A meta-analysis of the impact of service-learning on students. *Journal of Experiential Education, 34*(2), 164–181.

Cliff, N. (1983). Some cautions concerning the application of causal modeling methods. *Multivariate Behavioral Research, 18*(1), 115–126.

Conway, J. M., Amel, E. L., & Gerwien, D. P. (2009). Teaching and learning in the social context: A meta-analysis of service learning's effects on academic, personal, social, and citizenship outcomes. *Teaching of Psychology, 36*(4), 233–245.

Covitt, B. (2006). Self-determination and student perceptions in environmental service-learning. *Applied Environmental Education & Communication, 5*(3), 171–181.

Eccles, J., & Gootman, J. (2002). *Community programs to promote youth development.* Washington, DC: National Academy Press.

Eyler, J., & Giles, D. (1999). *Where's the learning in service-learning?* San Francisco, CA: Jossey-Bass.

Eyler, J., Giles, D. E., Jr., Stenson, C. M., & Gray, C. J. (2003). *At a glance: What we know about the effects of service-learning on college students, faculty, institutions and communities, 1993–2003.* Nashville, TN: Vanderbilt University.

Feldman, M., Khademian, A., Ingram, H., & Schneider, A. (2006). Ways of knowing and inclusive management practices. *Public Administration Review, 66*(s1), 89–99.

Furco, A. (2001). Advancing service-learning at research universities. In M. Canada & B. Speck (Eds.), Service learning: Practical advice and models. *New Directions in Higher Education Series 114,* 67–78.

Furco, A. (2006). Is service-learning really better than community service? In A. Sliwka, M. Diedrich, & M. Hofer (Eds.), *Citizenship education* (pp. 155–181). Berlin: Waxmann.

Gallini, S., & Moely, B. (2003). Service-learning and engagement, academic challenge, and retention. *Michigan Journal of Community Service Learning, 10*(1), 5–14.

Hahs-Vaughn, D. (2004). The impact of parents' education level on college students: An analysis using the beginning post-secondary students longitudinal study 1990-92/94. *Journal of College Student Development, 45*(5), 483–500.

Hovland, K. (2009). Global learning: What is it? Who is responsible for it? *Peer Review, 11*(4), 4–7.

Howard, J. (2003). Service-learning research: Foundational issues. In A. Waterman & S. Billig (Eds.), *Studying service-learning: Innovations in education research methodology* (pp. 1–12). Mahwah, NJ: Lawrence Erlbaum.

Jones, S. R., & Abes, E. S. (2004). Enduring influences of service-learning on college students' identity development. *Journal of College Student Development, 45*(2), 149–166.

Joreskog, K., & Sorbom, D. (2007). Lisrel 8.8. Scientific Software.

Kezar, A. (1998). Community service-learning movement. In J. A. Craig (Ed.), *Advances in education research* (Vol. 3, pp. 1–5). Washington, DC: The National Library of Education.

Knapp, T., Fisher, B., & Levesque-Bristol, C. (2010). Service-learning's impact on college students' commitment to future civic engagement, self-efficacy, and social empowerment. *Journal of Community Practice, 18*(2–3), 233–251.

Kolb, D. A., Boyatzis, R. E., & Mainemelis, C. (2000). Experiential learning theory: Previous research and new directions. In R. J. Sternberg & L. F. Zhang (Eds.), *Perspectives on cognitive, learning, and thinking styles*. Mahwah, NJ: Lawrence Erlbaum.

Kuh, G. (2008). *High-impact educational practices: What they are, who has access to them, and why they matter*. Washington, DC: Association of American Colleges and Universities.

Lester, S. W., Tomkovick, C., Wells, T., Flunker, L., & Kickul, J. (2005). Does service-learning add value? Examining the perspectives of multiple stakeholders. *Academy of Management Learning & Education, 4*(3), 278–294.

Levine, P. (2011). What do we know about civic engagement? *Liberal Education, 97*(2), 12–19.

Litke, R. A. (2002). Do all students "get it?": Comparing students' reflections to course performance. *Michigan Journal of Community Service Learning, 8*(2), 27–34.

Maruyama, G. (1997). *Basics of structural equation modeling*. Thousand Oaks, CA: Sage Publications, Inc.

McBride, A., & Sherraden, M. (2007). *Civic service worldwide: Impacts and inquiry*. Armonk, NY: M.E. Sharpe.

Miller, G., & Neese, L. (1997). Self-esteem and reaching out: Implications for service learning. *Professional School Counseling, 1*(2), 29–32.

Morgan, W., & Streb, M. (2003). First, do no harm: Student ownership and service-learning. *Metropolitan Universities, 14*(3), 36–52.

Mpofu, E. (2007). Service-learning effects on the academic learning of rehabilitation services students. *Michigan Journal of Community Service Learning, 14*(1), 37–49.

Parker-Gwin, R., & Mabry, J. B. (1998). Service learning as pedagogy and civic education: Comparing outcomes for three models. *Teaching Sociology, 26*(4), 276–291.

Peter D. Hart Research Associates, Inc. (2007). *How should colleges prepare students to succeed in today's global economy?* Washington, DC: Peter D. Hart Research Associates, Inc.

Schreiber, J., Nora, A., Stage, F., Barlow, E., & King, J. (2006). Reporting structural equation modeling and confirmatory factor analysis results: A review. *The Journal of Educational Research, 99*(6), 323–338.

Sherrod, L. R., Torney-Purta, J., & Flanagan, C. A. (2010). *Handbook of research on civic engagement in youth* (p. 2010). Hoboken, NJ: Wiley.

Simons, L., & Cleary, B. (2006). The influence of service learning on students' personal and social development. *College Teaching, 54*(4), 307–319.

Slavkin, M. L. (2004). *Authentic learning: How learning about the brain can shape the development of students*. Lanham, MD: Roman & Littlefield Education.

Steinke, P., & Buresh, S. (2002). Cognitive outcomes of service-learning: Reviewing the past and glimpsing the future. *Michigan Journal of Community Service Learning, 8*(2), 5–14.

Ward, K. (1996). *Service-learning and student volunteerism*: *Reflections on institutional commitment.* Paper presented at the annual meeting of the American Educational Research Association, New York, NY.

Waterman, A. (2003). Issues regarding the selection of variables for study in the context of the diversity of possible student outcomes of service-learning. In A. Waterman & S. Billig (Eds.), *Studying service-learning: Innovations in education research methodology* (pp. 72–90). Mahwah, NJ: Lawrence Erlbaum.

Yorio, P. L., & Ye, F. (2012). A meta-analysis on the effects of service-learning on the social, personal, and cognitive outcomes of learning. *Academy of Management Learning & Education, 11*(1), 9–27.