OPTIMIZING SERVICE-LEARNING FOR SELF-EFFICACY AND LEARNER EMPOWERMENT

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Abstract

A framework widely used in the field of industrial-organizational psychology, the Job Characteristics Model (JCM) (Hackman & Oldham, 1976), was applied in the current study to measure the quality of students' service-learning experiences as they relate to student outcomes. It was hypothesized that service-learning projects with higher motivating potential, in terms of characteristics underlying job satisfaction according to the JCM, would lead to greater increases in learner motivation and general self-efficacy. Study participants were 228 students engaged in service-learning courses at five community colleges and one state university in the Northeastern United States. The results showed that changes in students' self-efficacy scores were moderated by the motivating potential of service-learning courses. Furthermore, learner empowerment appeared to be a partial mediator of this relationship. The study provides support for the application of the JCM in designing service-learning experiences to strengthen students' course motivation and self-efficacy.

Introduction

Within the higher education literature, service-learning has been investigated as a practice for increasing students' self-efficacy, including general efficacy for problem-solving (Eyler, Giles, & Braxton, 1997) and domain-specific perceptions about ability to achieve success within academic settings (Williams, King, & Koob, 2002) and to make a positive impact within community settings (Simons & Cleary, 2006). Bandura (1977) introduced the concept of self-efficacy as a motivator of behavior to approach a task, where he defined an *efficacy expectation* as "a conviction that one can successfully execute the behavior required to produce outcomes" (p. 193). Efficacy expectations affect an individual's confidence that he/she has the skills and ability to complete tasks with positive consequences. Self-efficacy, the environment, and behavior all influence one another in a triadic relationship that Bandura (1978) coins "reciprocal determinism." Through repeated personal mastery

of a task, a person will have more confidence in his/her abilities and in turn will be more likely to approach a task and persevere through similar challenges. Favorable outcomes produced by perseverance further increase confidence and strengthen efficacy expectations. Within this framework, students with high self-efficacy for service-learning should be more likely to seek out these experiences, have more confidence in their skills, persevere through challenges, and make a greater impact with their service (Reeb, 2006).

Favorable outcomes can extend beyond the specific context of service-learning. Increasing students' self-efficacy through service-learning could improve general learner motivation and college persistence (Bean & Eaton, 2001; Yeh, 2010) as well as increase the likelihood of future community-engagement (Reeb, Katsuyama, Sammon, & Yoder, 1998).

Whereas some studies have demonstrated that service-learning increases self-efficacy scores (Eyler et al., 1997; Simons & Cleary, 2006; Williams et al., 2002), others report no change or even declines. Both Stewart and Alrutz (2014) and Miller (1997) found decreases in students' self-efficacy after a service-learning experience. Stewart and Alrutz (2014) propose that decreases in self-efficacy can be explained by students' exposure to social issues and inequalities that cannot be readily addressed through service. Certainly some service-learning experiences could be frustrating for students and reduce self-efficacy. Further research is needed in this area to understand the structure of service-learning experiences that can more consistently produce increases in self-efficacy. Thus, the present study aims to determine how service-learning can be optimally designed to boost college students' self-efficacy.

Service-Learning Quality and Application of the Job Characteristics Model

Research within the field has examined aspects of service-learning project quality in relation to differential student outcomes. The most documented element of transformative service-learning experiences is the inclusion of structured reflection (Conway, Amel, and Gerwien, 2009; Eyler, 2002; Hatcher, Bringle, & Muthiah, 2004; Maddux & Donnett, 2015). For example, Sanders, Van Oss, and McGreary (2016) found that service-learning students who participated in structured reflection with feedback showed a substantial increase in both community service self-efficacy and general self-efficacy, compared to service-learners in a non-structured-reflection control group. With respect to other important variables, earlier studies found duration and intensity of service-learning were positively correlated with psychological and social development and academic gains (Astin & Sax, 1998; Mabry, 1998). More recently, Bringle, Hatcher, and Muthiah (2010) measured the perceived quality of the course learning environment within first-year courses and found that quality ratings mediated the relationship between course type (service-learning versus traditional courses) and students' intent to reenroll. Their *Quality of the Learning Environment* survey provides a composite measure of attributes common to high-impact practices such as active learning, course satisfaction, and peer and faculty interaction (Kuh, 2008). They found service-learning courses, on average, had higher quality scores when compared with other first-year courses.

A potentially useful paradigm to capture moderators of service-learning outcomes is the Job Characteristics Model (JCM), developed by Hackman and Oldham (1976). This model is widely used in the field of industrial-organizational psychology to design jobs with high motivational properties. Within this model there are five work dimensions (skill variety, task significance, task identity, autonomy, and feedback from the job) that produce three critical psychological states (meaningfulness of tasks, responsibility for outcomes, and knowledge of results). A single motivating potential score (MPS) for a given job can be calculated from ratings of these five work dimensions to predict worker behavior and attitudes, such as job satisfaction, absenteeism, and employee retention (see Fried & Ferris, 1987, for a review of findings).

Blanz (2017) describes the work dimensions and mediating psychological states in terms of job satisfaction, using a sample of German social workers: *Skill variety* refers to multiple abilities that are required for the successful execution of the job, which increases its complexity and interest level. *Task significance* is the extent to which the job enhances the lives of others or the employee. *Task identity* is the degree to which workers are involved in the entire sequence of steps comprising a job and not just a subset of tasks. These three dimensions relate especially to the perceived meaningfulness of the work. *Autonomy* refers to the extent to which the worker has a choice about the scheduling and choice of work procedures. Employees who give high ratings on this dimension feel more of a sense of responsibility for the results of their work. Finally, *feedback* about job performance increases employees' knowledge of the impact of their work tasks. These five dimensions directly influence the degree to which workers experience psychological states of task meaningfulness, personal responsibility for the results of the work, and perceived job success.

The JCM has been applied successfully in a wide variety of contexts, including college coursework (Bloom, Yorges, & Ruhl, 2000; Kass, Vodanovich, & Khosravi, 2011). For example, a study reported by Kass et al. (2011) found that the model predicted ratings of course meaningfulness, reported boredom, and class absences in a sample of 293 undergraduates.

Cantanzaro (1997) and Debnath, Tandon, and Pointer (2007) present detailed theoretical descriptions of how increasing each dimension of this model can be used to improve students' motivation and performance within psychology and business courses respectively. Skill variety can be incorporated with assignments that utilize a range of techniques such as class debates, case analysis, group work, and oral presentations. To support the task identity dimension, the emphasis within a course would be on the development of a final product or achieving a larger goal through a sequence of assigned tasks. Psychology students could be assigned to conceptualize a research problem, conduct a literature review, select a research method, collect and analyze data, and present the findings. In a business course, the final product might take the form of a case analysis, a marketing plan, or a management simulation game. Task significance in the classroom context means explicitly linking success in the course activities to the students' own interests and needs or to real-world problem-solving, rather than only the final grade. Autonomy can be accomplished through course components or assignments that are self-paced or involve a considerable degree of discretion in how they are completed. Examples of the latter include assignments in which the student selects the topic of interest or the approach that he/she considers to have the best chance for success. Finally, in terms of feedback, it should be timely and frequent, as well as com-

prehensive and constructive, and the feedback should enable the student to improve on later drafts of the same assignment or on other assignments.

With regard to service-learning contexts, findings from previous studies support the relevance of certain components of the JCM (Schnitzer, 2005). The most impactful service-learning projects include experiences that utilize and develop students' skills (Deeley, 2014; Eyler & Giles, 1999); substantially impact the organization or people in need (Billig, Root, & Jesse, 2005; Eyler & Giles, 1999); are well integrated with the students' learning, professional, or civic goals (Billig et al., 2005); provide choice/autonomy during the service-learning project (Eyler & Giles, 1999; Werner & McVaugh, 2000); and offer positive feedback to the service-learner (Eyler & Giles, 1999; Greene & Diehm, 1995; McKay & Estrella, 2008). However, previous research has not empirically tested the JCM in a single analysis to account for variability in service-learning outcomes. The closest treatment is a thoughtful discussion by Schnitzer (2005) of the application of the JCM for service-learning research and theory. In reviewing Eyler and Giles's (1999) seminal research, Schnitzer argued that many survey items found to correlate with positive learning and civic outcomes relate to JCM dimensions. Indeed, this analysis influenced the current authors to investigate the motivating potential of service-learning courses.

Rationale for the Current Study

This study examines changes in self-efficacy for service-learners engaged in a variety of community service contexts and across disciplines. It includes potential moderating variables that are malleable—those which result from decisions that instructors, institutions, and agencies make in designing and implementing a service-learning program. Specifically, we test the hypothesis that service-learning experiences receiving higher motivating potential scores, in terms of the JCM, would lead to larger increases in general self-efficacy.

Learner empowerment is included in the study as a hypothesized mediator between service-learning experiences and change in general self-efficacy. Learner empowerment is a multi-dimensional psychological construct that captures a student's motivation to succeed in a particular course. Frymier, Shulman, and Houser (1996), drawing on earlier work by Thomas and Velthouse (1990), found three empowerment dimensions derived from their own factor analyses: meaningfulness (the extent to which coursework is meaningful); competence (feeling competent to perform course tasks); and impact (feeling that one's efforts make a difference toward course learning and grades). The construct of learner empowerment relates particularly well to the psychological states identified within the JCM and that are presumed to mediate outcomes predicted by the model.

Frymier et al. found correlational evidence supporting a link between empowerment and learning outcomes, which they suggest is a feedback loop: the more empowered the learner feels, the more that he/she actually learns and vice versa. Designed in an optimal way, service-learning might offer a dynamic context for developing learner empowerment by providing students meaningful tasks to choose from, the time and support to become competent in performing such tasks, and an opportunity to make an impact. In the framework of this study, we propose that increases in learner empowerment within the context of a service-learning course will boost students' general self-efficacy.

Finally, this study also examines student characteristics (age, year in college, first-generation college status, race/ethnicity, and gender) that prior research has highlighted as moderators of outcomes related to service-learning. Figure 1 summarizes the components of the proposed model, including study variables.
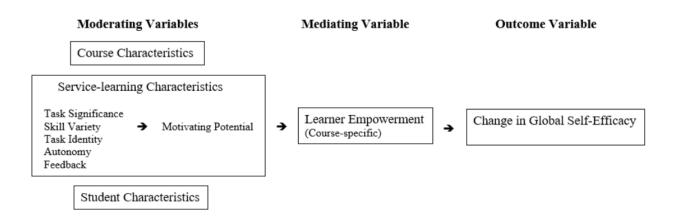

Figure 1. Proposed moderators and mediator of the relationship between service-learning and change in self-efficacy.

Methods

Design

This study employed a pretest-posttest design with a sample of students recruited from 19 service-learning courses (27 sections in total) that met Bringle and Hatcher's (1995) definition of service-learning: "Service-learning is a course-based, credit-bearing educational experience in which students participate in an organized service activity that meets identified community needs and reflect on the service activity in such a way as to gain further understanding of course content, a broader appreciation of the discipline, and an enhanced sense of civic responsibility" (p. 12).

Excluded from consideration were courses that assign field visits, natural observations, practicums, action research, and volunteer activities unrelated to course objectives. Within the scope of this operational definition of service-learning, there was much variation in projects and the academic disciplines involved (five humanities courses, three STEM courses, three social science courses, two first-year seminars, four human service courses, and two business courses). Consistent with the exploratory goals of this study, we measured potential key variables under an instructor's control in designing and selecting service opportunities that might influence study outcomes. These moderating variables and their measurement are described below.

Participants

The sample included 228 college students who completed service-learning courses at four community colleges (n = 119) and one state university (n = 109) in the greater Boston area that had formed a consortium for this project. Three of the campuses in the consortium were at a high developmental level in terms of their institutionalization and support offered for service-learning, including centers staffed with full-time administrative personnel who assist faculty incorporating this teaching approach in their courses. The community colleges included two urban institutions with especially high minority student enrollment as well as other public colleges whose student enrollment reflects the varied ethnic and socioeconomic composition of the greater Boston population. Table 1 provides student demographics for participating institutions reported within the Integrated Postsecondary Education Data System (U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, 2012–2016 datasets).

Students were recruited during the 2012–2016 academic years. Of the 480 participants who completed a pre-survey, 254 completed a post-survey, and the data for 228 cases were successfully linked. The sample demographics are as follows: 73% of participants were female, 47% were first generation college students, 32% were first-year students, 15% were second-year students, 30% were third-year students, and 23% had been attending college for four or more years.

Regarding race and ethnicity, 2% of participants identified as Asian, 13% as black or African American, 58% as Caucasian or white, 12% as Hispanic or Latino, and 15% as multiracial or race unknown. There were no students in the sample who self-identified as Native American, Alaskan, or Pacific Islanders. Our sample is representative of the constituent populations except it was over-represented by females by about 10%. This may reflect a tendency for more females to engage in service-learning (e.g., Fredericksen, 2000).

Table 1
Student Demographics by Participating Institution Averaged Across Study Period

		Salem State U	Bunker Hill CC	Middlesex CC	North Shore CC	Northern Essex CC	Roxbury CC
Enrollment		7,570	13,830	9,241	7,270	6,846	2,378
Gender	Female	60.2%	56.7%	57.6%	60.6%	61.4%	68.8%
	Male	38.8%	43.1%	42.4%	39.4%	38.6%	31.2%
Race/ethnicity	Native American/ Alaskan	0.3%	0.3%	0.4%	0.2%	0.2%	0.5%
	Asian	3.2%	10.2%	11.4%	4.2%	1.8%	2.0%
	Black/African American	9.0%	25.6%	7.0%	9.2%	4.0%	60.6%
	Caucasian/White	69.0%	26.2%	60.0%	59.6%	52.4%	6.8%
	Pacific Islander	0.1%	0.3%	0.0%	0.1%	0.5%	0.0%
	2+ races	2.2%	3.8%	1.8%	2.2%	1.0%	0.9%
	Unknown	1.0%	6.0%	0.4%	2.2%	2.4%	12.2%
	Non-res alien	3.8%	5.4%	1.2%	0.1%	12.5%	1.0%
	Hispanic/Latino	11.6%	22.4%	17.4%	21.8%	36.8%	16.6%
Pell Grant recipients		36.2%	58.2%	38.7%	51.9%	58.8%	78.5%

Procedures

Approval was obtained from institutional review boards (IRB) on three campuses and from the chief academic officers of the two institutions without IRBs. Participants completed the pre-survey during the first two weeks of the semester and a post-survey during the last two weeks of the semester. There was both a paper and online version of the survey that allowed for flexibility in data collection (e.g., the online survey was frequently used to follow up with participants who were absent during the in-class administration of the paper survey). The first page of the pre-survey and the post-survey included a disclosure statement that indicated the purpose and voluntary nature of the study and what participants were being asked to do.

Study Instruments

Both the pre- and post-surveys measured self-efficacy and learner empowerment. The post-survey included

demographic items and measures of potential moderating variables (course motivating potential, number of hours of service-learning participation, number of direct contact hours with community members, and whether there was one placement/project in the class or multiple community placement/project options within a class).

Self-efficacy. The General Self-Efficacy Scale (a ten-item, five-point Likert scale survey) developed by Schwarzer and Jerusalem (1995) was used to measure respondent confidence in coping with novel or difficult tasks across situations. The measure is reliable with Cronbach's alphas ranging from .76 to .90 (Schwarzer, 1992). It yields a single score ranging from 0–50.

Learner empowerment. A shortened version of the Learner Empowerment Scale (Frymier et al., 1996) was used to measure aspects of students' state motivation for the course under investigation. A total of 18 items on a five-point Likert scale measure the degree to which students feel they have control over learning outcomes (Impact subscale), the degree to which learning experiences and coursework are perceived as meaningful (Meaningfulness subscale), and the degree to which students feel confident in their ability to manage course tasks and succeed in the class (Confidence subscale). To produce a single-learner empowerment score, the average subscale ratings were summed for each participant.

A principle-components factor analysis of the shortened version of the instrument yielded four factors explaining 61.44% of the variance (Impact, Meaningfulness, Confidence, and Choice). Items had primary loadings over .5 except one ("I felt intimidated by what is required of me in this class"; the item extraction was .476). In our analysis, Impact subscale items selected from Frymier et al. conflate two factors (impact on course success and choice in course tasks).

Both self-assessment instruments described above have been used by two of the current authors in an earlier investigation of service-learning outcomes (Gonsalves, Metchik, & Clausnitzer, 2008). The study found significant increases from the beginning to the end of the semester in general self-efficacy and the competence subscale of learner empowerment. This pilot work suggests that both instruments can be used to detect change over the course of a single semester.

Motivating potential score. Another set of 19 Likert-scale items on the post-survey measured variations in service-learning project quality (see Appendix). Thirteen of these were compiled from Eyler and Giles (1999) and corresponded to components of the JCM (Schnitzer, 2005). Six new items were added to capture more fully the JCM components. In Schnitzer's (2005) discussion, Task Identity was theoretically linked to volunteer placement goals. By contrast, in this study we looked at Task Identity through the lenses of service-learning project goals and students' career goals.

Following Hackman and Oldham's (1976) procedures, MPS was calculated for each participant, based on component ratings, to create an index of a service-learning project's potential for producing positive outcomes: MPS = (Skill Variety + Task Identity + Task Significance)/3 + Autonomy + Feedback.

Thus, MPS is used in the current study as a measure of perceived service-learning project quality, whereas learner empowerment is a measure of a student's belief about his/her ability to be successful in a given course, to have control over the course outcomes, and to judge the course as meaningful.

Participant variables. Basic demographic data (age, gender, ethnicity/race, and year in college) were collected from each participant on the post-course survey instrument using categories from the Integrated Postsecondary Education Data System (U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, 2012). First-generation college status was determined by participants' self-reports of their parent(s)' highest degree completion.

Results

Between Group Analysis of Variance revealed no significant differences between state university students' and community college students' motivating potential scores and no difference in change scores for self-efficacy and learner empowerment. Therefore, data from all campuses were combined for subsequent analyses.

Change in Self-Efficacy

A paired samples t test showed a significant increase in participants' self-efficacy scores from the beginning of the semester ($M = 39.6$, $SD = 6.9$) to the end of the semester ($M = 40.6$, $SD = 5.1$), $t(226) = 2.41$, $p = .016$). To investigate moderators of this change in efficacy, hierarchical regression was performed. Prior to the analysis a number of tests were conducted on the data set to confirm that key assumptions underlying linear regression were met: tests for multicollinearity yielded low levels of collinearity for all continuous variables entered into the analysis with variance inflation factors between 1.0186 and 1.142. Assumptions for linearity and normality were also verified with inspection of scatter plots and probability plots for continuous study variables.

The first stage of the hierarchical regression analysis included student characteristics (age, gender, race/ethnicity, year in college, and first-generation college status), which were entered as a single block. The proposed key predictor, MPS was entered at the second stage. Because the results of an initial regression suggested the presence of a strong interaction between MPS and Hispanic/Latino identification, this interaction term was included at stage 2 for exploratory purposes. Stage 3 included course-level variables (academic discipline, duration of service-learning project, and one vs. multiple community placements within a class). Learner empowerment, a proposed mediating variable, was added at the final stage.

The hierarchical regression yielded models were significant at stage 1, stage 2, and stage 3, $F(8, 214) = 2.02$, $p = .045$; $F(10, 212) = 4.81$, $p < .001$; $F(17, 203) = 3.85$, $p < .001$, respectively. Table 2 displays the coefficients of determination for each of these models. The first model with student characteristics only explained 7% of the variability in self-efficacy change scores. Introducing MPS in the second model along with the MSP × Hispanic/Latino term accounted for an additional 11.5% of variability. The change in R-square from Model 1 to Model 2 was significant, $F(2, 212) = 14.93$, $p < .001$. Adding course-level variables at stage 3 did not significantly improve the next model. Lastly, the full model (Model 4) accounts for 24.2% of the variability in par-

ticipants' change scores for self-efficacy. The addition of learner empowerment at this final stage increased the R-square by 4.1%, $F(1, 205) = 10.96$, $p = .001$.

Table 2
Hierarchical Regression for Change in Self-Efficacy

Models	R	R^2	$R^2 \Delta$	Sig. $F \Delta$
1 Predictors: student characteristics	.265	.070	.070	.045*
2 Predictors: student characteristics, motivating potential score, MPS × Hispanic/Latino identification	.430	.185	.115	< .001*
3 Predictors: student characteristics, motivating potential score, MPS × Hispanic/Latino identification, course-level variables	.449	.201	.017	.642
4 Predictors: student characteristics, motivating potential score, MPS × Hispanic/Latino identification, course-level variables, Δ learner empowerment	.492	.242	.041	.001*

Table 3 shows that the significant predictors (beta coefficients) in the full model were motivating potential score ($\beta = .246$), learner empowerment ($\beta = .213$), gender ($\beta = .153$), year in college ($\beta = -.166$), and Hispanic/Latino identification ($\beta = -.173$), as well as its related interaction with MPS ($\beta = .191$). Thus, increases in self-efficacy were related to service-learning experiences rated higher in motivating potential, to improvements in learner empowerment, and to a few student group characteristics.

Motivating potential score as a moderating variable. As reported above, higher motivating potential scores predicted greater positive change in self-efficacy in the full model. Table 4 provides the correlations between self-efficacy and MPS, as well as the subscales that comprise this calculated variable. As can be seen, the correlation coefficient for the composite score is higher than any of its components, suggesting that MPS is a better tool in this research context than any of the components considered alone.

Table 3
Coefficients Within the Full Regression Model: Change in Self-Efficacy

	β	T	Sig.	
Constant (B = -.652, SE = .288)		-2.26	.025	
Age	.94	1.38	.170	
Gender	.153	2.39	.018	*
Race/ethnicity [a]				
Hispanic/Latino	-.173	-2.64	.009	*
Black/African American	-.013	-.17	.860	
Asian	-.011	.18	.858	
Multiracial/other/unknown	-.134	-1.86	.063	
Year in college	-.166	-2.07	.040	*
First-gen college status	.079	1.20	.231	
Motivating potential score (MPS)	.246	3.33	.001	*
MPS × Hispanic/Latino [b]	.191	2.81	.006	*
Course discipline [a]				
Humanities	.128	1.45	.141	
Social science	.122	1.64	.103	
STEM	.073	.937	.350	
Business	.055	.84	.402	
Duration of S-L project	.032	.42	.673	
One vs. multisite projects	.072	1.04	.299	
Change in learner empowerment	.213	3.31	.001	*

a. *k*-1 dummy codes were created for polytomous variables to avoid redundancy in the regression. Caucasian/white and social science codes were excluded.

b. Motivating potential scores were centered before computing this interaction term.

Table 4
Correlations Between Change in Self-Efficacy and Motivating Potential Score

	r	N	Sig.	
Motivating potential score	.285	226	< .001	*
Motivating potential score components				
Task significance	.235	226	< .001	*
Skill variety	.234	226	< .001	*
Task identity	.209	226	< .001	*
Autonomy	.227	226	< .001	*
Feedback	.231	226	< .001	*

The hierarchical regression shows that change in efficacy was not related to course-level variables such as duration of service-learning project, course discipline, or placement options (single placement/project vs. multiple community placements/project options). Rather, it appears that MPS captures qualities more relevant to the identification of successful service-learning from a student growth perspective. It should be noted that motivating potential in the regression was calculated for individual students and represent judgments about their particular service-learning experiences. The mean MPS was 60.08 (out of 125 maximum), and there was much variability across participants (SD = 31.55). Course-section statistics were calculated for MPS to explore trends but were not used in the regression. Service-learning sections had an MPS mean of 59.88 (SD = 31.71, Min = 33.80, Max = 79.62). It is interesting to note that the top three sections were all introductory-level courses in the professions (Social Work, M = 79.62; Business, M = 70.02; and Education, M = 68.83) offered by different community colleges in our consortium.

Learner empowerment as a mediator. On average, learner empowerment scores decreased from the beginning of the semester to the end of the semester, M = 12.39, SD = 1.58 at pretest and M = 11.90, SD = 2.016 at posttest (t = 4.325, p <.001.), but not for all students. As expected, gains in learner empowerment positively correlated with motivating potential score, $r(227)$ = .273, p <.001, as well as increases in self-efficacy, $r(227)$ = .292, p <.001. Further inspection showed that change in learner empowerment can be characterized as a partial, rather than full, mediator of change in self-efficacy. Step 1 of this mediation analysis found the regression of MPS on change in self-efficacy (disregarding change in learner empowerment) to be significant, β = .268, < .001. In step 2, the regression of MPS on learner empowerment was also significant, β = .273, p < .001. Controlling for learner empowerment in step 3 reduced the beta value for MPS as a predictor of self-efficacy, β

= .205, $p < .001$. A Sobel test confirmed this partial mediation effect for learner empowerment on self-efficacy ($z = 3.123$, $p = .002$).

Table 5
Mean Self-Efficacy Scores at Pretest and Posttest by Student Characteristics

	Pre-survey mean (*SD*)	Post-survey mean (*SD*)	Δ in Self-efficacy (within subject)
Gender			
Males	41.25 (5.08)	41.00 (7.74)	− .13
Females	39.08 (5.12)	40.51 (6.56)	1.51
Race/ethnicity			
Hispanic/Latino	39.88 (5.93)	39.48 (8.54)	− .92
Black/African American	39.14 (4.93)	41.45 (5.88)	2.31
White	39.53 (5.17)	40.77 (6.97)	1.48
Asian	37.67 (6.03)	39.00 (6.64)	1.33
Multiracial/unknown	40.58 (4.96)	40.44 (6.04)	− .14
Year in college			
First-year students	38.96 (5.31)	40.51 (6.99)	1.27
Second-year students	40.85 (4.94)	41.82 (5.13)	0.97
Third-year students	39.08 (5.00)	39.69 (7.29)	0.61
Fourth-year+ students	40.94 (5.13)	41.43 (6.88)	0.49

Student characteristics. Examination of student variables revealed the following patterns: females on average had a larger gain in self-efficacy than males, as did students with the fewest years in college. The latter predictor reached significance in the regression only after motivating potential score was considered at stage 2. Table 5 displays the means and standard deviations for change in efficacy by student group.

As can be seen in Table 5, Hispanic/Latino students had, on average, a minor decline in self-efficacy; however, the posttest standard deviation is quite large. The inclusion of the MPS × Hispanic/Latino interaction in the regression model confirmed the significance of this factor. Prior inspection of the data revealed that this participant group exhibited the strongest relationship between MPS and change in self-efficacy, $R^2(28) = .575$, $p < .001$. In our sample, it appears that change in self-efficacy for students identifying as Hispanic/Latino was more closely linked to the motivating potential of a service-learning course than it was for other students.

Discussion

Aspects of the model presented in Figure 1 received empirical support in the current study. The results suggest that the quality of service-learning experiences moderate the effect that service-learning has on self-efficacy. Specifically, students who gave their service-learning projects higher motivating potential scores showed larger gains in self-efficacy. This is the first study to operationally define service-learning project quality with a single index delineated by the JCM. Hierarchical regression for change in service-learners' self-efficacy revealed that motivating potential scores accounted for more variability in participants' change scores than any other course-level variable or student characteristic.

Learner empowerment was hypothesized to mediate the relationship between service-learning and change in self-efficacy, and the data provide evidence for partial mediation. In our sample, only 41% of students in the sample had positive change in learner empowerment. Perhaps initial optimism experienced in the beginning weeks of a class waned as coursework became more challenging or tedious. Important though, observed increases and decreases in learner empowerment were related in a linear fashion to motivating potential score.

Taken together, the results of the hierarchical regression and mediator analysis suggest that well-designed service-learning experiences, defined in terms of the characteristics underlying job satisfaction in the work world, increase learner empowerment (course-specific motivation), which in turn is related to increases in general self-efficacy. Although the findings are consistent with this interpretation, the study did not test the directionality of these relationships nor utilize quasi-experimental methods, therefore causal claims cannot be asserted.

A limitation of the current study is that it did not include course sections without service-learning to serve as a point of comparison. The inclusion of a comparison group would be helpful in further interpreting mediator and moderator effects described in this study and would boost the internal validity of the design. A second limitation regards the timing of the administration of the MPS instrument. In the current study, students' assessment of the motivating potential of their service-learning projects occurred in the final two weeks of the

semester. If indeed MPS is a moderator of learning empowerment and/or self-efficacy, then temporal precedence should be established by measuring MPS soon after the project begins or even at multiple points across the semester.

Student Characteristics

Trends with the participant groups were also observed. In our sample of community college and state university service-learners, the regression findings were strongest for females, consistent with previous research (e.g., Vogelgesang, Ikeda, Gilmartin, & Keup, 2002). Year in college was also a significant predictor. The finding that freshmen had the most to gain with respect to self-efficacy is consistent with recent studies that demonstrate service-learning is an effective strategy to support first-year student success (e.g., Bringle et al., 2010). An additional finding in this study is the observed interaction between motivating potential score and Hispanic/Latino identification. It appears that the motivating potential of a service-learning course affected Hispanic, Latino, and Latina students' self-efficacy more than it did other students. This finding is consistent with NSSE reports that high-impact learning experiences yield a larger boost for minority student development (Finley & McNair, 2013). Certainly, further study, both quantitative and qualitative, is needed to capture the conditions under which service-learning is supportive of academic and personal development for underserved student populations. Furthermore, we acknowledge that the Hispanic/Latino student identifier is not a homogenous category as it conflates a range of diverse identities and attributions (ethnicity, race, language, minority status, and immigration status).

Implications

Implications for practice suggest that service-learning experiences should be selected/constructed to maximize motivating potential. This includes designing service-learning projects that use a variety of students' talents and skills (skill variety), that are perceived by students to be important and have the potential to impact the lives of others (task significance), and that connect students engagement in service-learning tasks to larger articulated goals, whether project, course, or professional goals (task identity). According to the JCM, these characteristics should contribute to students' judgments about the meaningfulness of their service-learning experiences. Structured reflection, which was not investigated in this study, could be used as a tool to help students explore and heighten service-learning project characteristics, such as task significance and task identity.

The remaining two components of the motivating potential score are feedback and autonomy, and these are highly weighted in the score equation. Constructive and iterative feedback from the course instructor and/or community partner staff should address students' performance on assigned service-learning tasks and how the students' engagement (individually or collectively) impacted the community in discernable ways. Very little research in the service-learning literature has established autonomy as an important component of a suc-

cessful service-learning experience (Richards & Levesque-Bristol, 2016; Werner & McVaugh, 2000), though it was a factor in the current study. Further exploration is needed to determine the optimal degree of autonomy within a service-learning project (for project selection, task selection, and/or level of oversight). It is possible that greater levels of autonomy would be desirable in later stages of a student's program of study.

Directions for Future Research on Motivating Potential

The purposeful design of service-learning courses offers tremendous potential for increasing their student impact. Major contributions toward this goal will come from successive studies that build on the empirical analysis of the JCM framework for predicting service-learning outcomes. Several research questions should be addressed. First, and most important, as mentioned above, additional research is needed to determine whether service-learning experiences, in general, receive higher motivating potential scores than experiences in traditionally taught courses. Second, which aspects of student growth development might be linked to the motivating potential of service-learning experiences? This study focused on two constructs, self-efficacy and learner empowerment; however, it is equally important to consider students' community engagement efficacy (Reeb et al., 2006).

Behavioral outcomes should be considered too. The JCM model not only predicts worker beliefs but has been successful in predicting outcomes such as employee performance and retention (Fried & Ferris, 1987). Hence, a third question is whether the motivating potential of service-learning experiences predict academic performance (e.g., service-learning course grade and GPA) and reenrollment trends.

Another line of questioning concerns the MPS construct. Further research could compare the predictive validity of MPS with other measures of service-learning quality (e.g., Quality of the Learning Environment, as in Bringle, Hatcher, and Muthiah, 2010) to evaluate its relative value for research and practice. A final, theoretical question is whether MPS should be considered as a student-level or course-level unit in models of change. In formulating the current study, we recognized that there was variability in what service-learners on our campuses were being asked to do (i.e., the specific "job characteristics"). This was especially likely when students in the same class were working with different community partners and within different community settings (this was the experience of 58% of our study participants). Even within classes in which students worked together with a single community partner, it is possible students selected or were assigned to different roles or chose to contribute to the success of the project in different ways. Within this context, a student-unit of analysis was preferred for the regression of MPS on change in self-efficacy. However, in bridging research with practice, we believe it is more useful for instructors and community partners to think about MPS as a course-level construct, thereby shaping service-learning course goals, structures, supports, and activities to maximize the motivating potential of the experience for student growth and impact.

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Appendix

Service-Learning Motivating Potential Score

During this service-learning project, I

Autonomy items
* did things myself instead of observing
* had freedom to choose the tasks and responsibilities related to the project
* made important decisions
* was free to develop and use my ideas

Feedback items
* had discussions with a professional/supervisor during the project
* had professionals in the community take an interest in me
received feedback regularly from my instructor and/or supervisor
* was appreciated when I do a good job

Skill variety items
* had a variety of tasks to do
* had challenging tasks
used my skills and talents during the project

Task identity
Items related to course project goals
* applied what I learned in class during my project
carried out a project from the beginning to the end

Items related to career goals
had experiences that challenged me to think about my career goals
performed tasks directly related to my career goals

Task significance items
* had important responsibilities
* felt that I made a real contribution

* had a substantial impact on the lives of other people
* did something that was interesting

  * items from Eyler and Giles (1999)