Exposure to Effective Instruction and College Student Persistence: A Multi-Institutional Replication and Extension*

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The body of correlational and experimental evidence demonstrating the positive, and perhaps causal, link between various dimensions of effective college classroom instruction and both course-specific learning and more general measures of cognitive growth is extensive (see Pascarella & Terenzini, 1991, 2005, for a summary of this evidence). In this paper we analyze a longitudinal and multi-institutional database to test the robustness of a previous finding from a single institution sample which suggested that exposure to organized and clear classroom instruction may have a positive net impact on first-year student persistence—operationally defined as the probability of returning to an institution for the second year of postsecondary education (Pascarella, Seifert, & Whitt, 2008). This may be of some considerable importance for institutional policy since it would mean that classroom instructional practices stemming from learnable faculty skills may contribute to an institution's ability to retain students. Our results generally replicate this previous finding and suggest that the net effect on persistence of exposure to organized and clear instruction is the same across institutional type (research universities, regional institutions, community colleges, and liberal arts colleges) and the same for students with different levels of tested precollege academic preparation.

Effective Classroom Instruction

Literally hundreds of correlational studies have linked student perceptions of teacher behaviors such as course organization and preparation, instructional clarity, teacher expressiveness, and feedback to students to various measures of course-level knowledge acquisition and content mastery. A number of comprehensive narrative or meta-analytic reviews of this extensive body of research have been conducted (e.g., Braskamp & Ory 1994; Cashin,

1999; d'Apollonia & Abrami, 1997; Feldman, 1997; Greenwald and Gillmore, 1997; Marsh & Dunkin, 1997; McKeachie, 1997). A distillation of these syntheses by Pascarella and Terenzini (2005) suggests three general conclusions about student perceptions of teacher behaviors and instructional practices: (1) these perceptions are multidimensional, (2) they are reasonably reliable and stable, and (3) they have moderate positive correlations (e.g., .30 to .50) with various measures of course-level learning such as course grade and course final examination.

The predictive validity of student perceptions of teaching is not limited to correlational evidence. Three of the dimensions of student perceptions of teaching with the strongest links to course achievement in correlational research—organization/preparation (use of course objectives, effective use of class time), instructional clarity (clear explanations, effective use of samples), and teacher expressiveness (eye contact, speaking emphatically)—have been demonstrated with randomized experiments (Hines, Cruickshank, & Kennedy, 1985; Schonwetter, Menec, & Perry, 1995; Schonwetter, Perry, & Struthers, 1994; Wood & Murray, 1999).

Not all the research on student perceptions of teaching focuses on specific course-level outcomes. Although they constitute a much smaller body of evidence, a few studies have indicated that instructional organization, or a combination of instructional organization and instructional clarity, may have positive net impacts on more general academic competencies and skills not directly tied to a specific course. Researchers affiliated with the 1992-95 National Study of Student Learning (Pascarella, Edison, Nora, Hagedorn, & Braxton, 1996) developed two 5-item scales termed instructional organization/preparation and instructional skill/clarity, that appropriated specific items appearing in previous research (Cohen, 1981; Feldman, 1989, 1994). Constituent items for the organization/preparation scale included such things as

"presentation of material is well organized" and "class time is used effectively." The scale had an alpha, internal consistency, reliability of .87. The skill/clarity scale had constituent items such as "instructors give clear presentations" and "instructors make good use of examples and illustrations to explain difficult points," with an alpha reliability of .86. In a series of multi-institutional studies that controlled for an extensive array of confounding influences, including a pretest, it was found that the more students reported that the overall instruction they received in college was high on the organization/preparation scale, the larger their gains were on standardized measures of critical thinking, reading comprehension, and mathematics (Pascarella et al., 1996; Edison, Doyle, & Pascarella, 1998; Whitt, Pascarella, Elkins Nesheim, Marth, & Pierson, 2003). Most recently, Bray, Pascarella, and Pierson (2004) combined the two 5-item scales into a composite, 10-item measure of organization and clarity (alpha reliability = .89). They found that, net of extensive confounding influences, the resultant composite scale had a positive influence on gains in reading comprehension over three years of college.

Exposure to Effective Instruction and College Persistence

Several scholars have hypothesized that the nature and quality of classroom instruction may not only influence student learning, but might also play a significant role in student persistence or departure from a particular postsecondary institution (Braxton, Hirschy, & McClendon, 2004; Braxton & McClendon, 2001-2002; Braxton & Mundy, 2001-2002; Tinto, 2006-2007). A small body of evidence supports this hypothesis (Braxton, Bray, & Berger, 2000; Braxton, Milem, & Sullivan, 2000; Braxton, Jones, Hirschy, & Hartley, 2008; Nelson Laird, Chen, & Kuh, 2008; Nora, Cabrera, Hagedorn, & Pascarella, 1996; Tinto, 1997). Although most of this research has estimated the effects of different classroom pedagogical approaches such as active or cooperative learning, the study by Braxton, Bray, and Berger (2000) most directly

considered the impacts of specific teacher behaviors. Using Tinto's (1975, 1993) conceptual model as a framework for their investigation, Braxton et al. hypothesized that students exposed to faculty who frequently exhibit organization and clarity in their classroom instruction might be more confident and relaxed about their academic achievement. Consequently, they might perceive that they have more time "to invest the psychological energy necessary to establish membership in the social communities of their college or university" (Braxton et al., 2000, p. 216). Increased social integration, in turn, would enhance institutional commitment and intent to persist at the institution. Employing measures of overall instructional organization and clarity essentially identical with those used by Pascarella et al. (1996), their findings were quite consistent with their hypotheses. With important confounding influences controlled statistically, overall exposure to organized and clear instruction enhanced both a measure of student social integration and intent to reenroll at a single institution for the second year of college.

It could be argued, of course, that intent to reenroll as a criterion measure does not have the same predictive validity as the actual decision to reenroll. Accordingly, a recent study by Pascarella, Seifert, and Whitt (2008) took the Braxton et al. (2000) findings to the next logical step. Analyzing longitudinal data from a single large research university, and controlling for an extensive battery of confounding influences, they found that the same measure of overall exposure to organized and clear instruction employed by Braxton and his colleagues had a significant positive total effect on actual reenrollment at the institution for the second year of college. They further found that the positive impact of exposure to organized and clear instruction on persistence into the second year of college was largely mediated through increased levels of student satisfaction with the education they were receiving.

The findings of Pascarella et al. (2008) are intriguing and potentially important to the extent that they suggest the significant role of learnable faculty instructional behaviors in student persistence. However, their study is limited to a single institution sample, and the generalizability of their findings is yet to be established. The purpose of the present study was to test the robustness of the Pascarella et al. findings on a multi-institution sample of first-year students attending research universities, regional institutions, liberal arts colleges, and community colleges. It also sought to extend their work by determining if the effects on persistence of overall exposure to organized and clear instruction are the same for students attending different types of institutions or for students who enter postsecondary education with different levels of tested academic preparation.

RESEARCH METHODS

Conceptual Model

The conceptual model guiding the investigation was based on an extensive body of research evidence and is illustrated in Figures 1 and 2. (For a synthesis of this body of evidence, see sources such as Braxton, Hirschy, & McClendon, 2004; Pascarella & Terenzini, 1983, 1991, 2005; and Tinto, 1993.) These are essentially the same conceptual models guiding the Pascarella et al. (2008) study, and draw largely on research guided by Tinto's (1975, 1993) theoretical model of the student persistence/withdrawal process. Tinto's major theoretical contribution was that he shifted the explanatory focus of persistence/withdrawal research and scholarship from a reliance on student pre-college characteristics (e.g., academic ability, degree aspirations, family background) to a concern with measuring a student's level of integration in the academic and social systems of a college or university (Pascarella & Terenzini, 2005). While a student enters postsecondary education with certain pre-college characteristics that may influence retention

(e.g., academic ability, educational aspirations, family background), it is levels of social and academic integration (e.g., academic performance, extracurricular involvement) that are the major determinants of whether or not one persists at the institution. We conceptualized the influence of exposure to effective instruction on persistence as functioning within a theoretical model that included most of Tinto's major constructs. We took into account not only a student's precollege characteristics, but also, because of the multi-institutional nature of the sample, the type of institution attended. In addition, we considered not only measures of academic and social integration (e.g., college grades and extracurricular involvement), but also factors such as work responsibilities and place of residence during college which shape social and academic integration.

Figure 1 models the hypothesized total effect of exposure to effective classroom instruction (defined as instructional organization and clarity) on persistence into the second year of postsecondary education (i.e., the student reenrolled for the second year of postsecondary education at the same participating institution). The model assumes that persistence is a function not only of exposure to effective classroom instruction, but also of student background characteristics (sex, race, tested pre-college academic preparation, pre-college educational degree plans, and parental education), the type of institution attended (research university, regional institution, community college, or liberal arts college), and other college experiences (work responsibilities during college, place of residence during college, and involvement in co-curricular activities). According to the conceptual model shown in Figure 1, we anticipated that in the presence of statistical controls for student background characteristics, precollege test scores, the type of institution attended, and other college experiences, overall exposure to organized and clear instruction during the first year of postsecondary education would have a

significant positive total effect on the probability of enrolling for the second year of college at that institution (Alwin & Hauser, 1975).

Figure 1 about here

The hypothesized direct and indirect effects of exposure to organized and clear classroom instruction on persistence are modeled in Figure 2. According to this conceptual model, we anticipated that when measures of college grades and educational satisfaction were added to the total effects model (Figure 1), two things would happen. First, net of all other influences, grades and satisfaction with college would have a positive direct influence on persistence; and second, the positive influence of exposure to organized and clear instruction in the total effects model would become small and statistically nonsignificant. This would indicate a positive indirect effect of overall exposure to organized and clear instruction on persistence, mediated through the positive effects of organized and clear instruction on grades and satisfaction with the education being received (Alwin & Hauser, 1975; Pascarella, 2006). We reasoned (as did Pascarella et al., 2008) that if organized and clear instruction at the course level improved course-level learning, then overall exposure to clear and organized instruction during the first year of college would enhance collegiate academic achievement. Also consistent with Pascarella et al. (2008), we hypothesized that overall exposure to organized and clear instruction would have an affective dimension manifest in higher levels of student satisfaction with their overall educational experience.

Figure 2 about here

Samples

Institutional Sample. The sample in the study consisted of incoming first-year students at 19 four-year and two-year colleges and universities located in 11 different states from 4 general

regions of the United States: Northeast, Southeast, Midwest, and Pacific Coast. The 19 institutions did not include the research university at which the Pascarella et al. (2008) study was conducted. Institutions were selected from more than 60 colleges and universities responding to a national invitation to participate in the Wabash National Study of Liberal Arts Education (WNSLAE). Funded by the Center of Inquiry in the Liberal Arts at Wabash College, the WNSLAE is a large, longitudinal investigation of the effects of liberal arts colleges and liberal arts experiences on the cognitive and personal outcomes theoretically associated with a liberal arts education. The institutions were selected to represent differences in college and universities nationwide on a variety of characteristics including institutional type and control, size, location, and patterns of student residence. However, because the study was primarily concerned with the impacts of liberal arts colleges and liberal arts experiences, liberal arts colleges were purposefully over-represented.

Our selection technique produced a sample with a wide range of academic selectivity, from some of the most selective institutions in the country to some that were essentially open admissions. There was also substantial variability in undergraduate enrollment, from institutions with entering classes between 3,000 and 6,000, to institutions with entering classes between 250 and 500. According to the 2007 Carnegie Classification of Institutions, 3 of the participating institutions were considered research universities, 3 were regional universities that did not grant the doctorate, 2 were two-year community colleges, and 11 were liberal arts colleges.

Student Sample. The individuals in the sample were first-year, full-time undergraduate students participating in the WNSLAE at each of the 19 institutions in the study. The initial sample was selected in either of two ways. First, for larger institutions, it was selected randomly from the incoming first-year class at each institution. The only exception to this was at the

largest participating institution in the study, where the sample was selected randomly from the incoming class in the College of Arts and Sciences. Second, for a number of the smallest institutions in the study—all liberal arts colleges—the sample was the entire incoming first-year class. The students in the sample were invited to participate in a national longitudinal study examining how a college education affects students, with the goal of improving the undergraduate experience. They were informed that they would receive a monetary stipend for their participation in each data collection, and were also assured in writing that any information they provided would be kept in the strictest confidence and never become part of their institutional records.

Data Collection

Initial Data Collection. The initial data collection was conducted in the early fall of 2006 with 4,501 students from the 19 institutions. This first data collection lasted between 90-100 minutes and students were paid a stipend of $50 each for their participation. The data collected included a WNSLAE precollege survey that sought information on student demographic characteristics, family background, high school experiences, political orientation, educational degree plans, and the like. Students also completed a series of instruments that measured dimensions of intellectual and personal development theoretically associated with a liberal arts education.

Follow-up Data Collection. The follow-up data collection was conducted in spring 2007. This data collection took about two hours and participating students were paid an additional stipend of $50 each. Two types of data were collected. The first was based on questionnaire instruments that collected extensive information on students' experience of college. Two complementary instruments were used: the National Survey of Student Engagement (NSSE)

(Kuh, 2001) and the WNSLAE Student Experiences Survey (WSES). These instruments were designed to capture student involvement in a broad variety of different activities during college (e.g., coursework, clubs, study, interactions with other students, involvement in cultural/social activities, and the like). The second type of data collected consisted of follow-up (or posttest) measures of instruments measuring dimensions of intellectual and personal development, that were first completed in the initial data collection. Both the initial and follow-up data collections were administered and conducted by ACT (formerly the American College Testing Program).

Of the original sample of 4,501 students who participated in the fall 2006 testing, 3,081 participated in the spring 2007 follow-up data collection, for a response rate of 68.5%. These 3,081 students represented 16.2% of the total population of incoming first-year students at the 19 participating institutions. To provide at least some adjustment for potential response bias by sex, race, academic ability, and institution in the sample of students, a weighting algorithm was developed. Using information provided by each institution on sex, race, and ACT score (or appropriate SAT equivalent or COMPASS score equivalent for community college students), follow-up participants were weighted up to each institution's first-year undergraduate population by sex (male or female), race (Caucasian, African American/Black, Hispanic/Latino, Asian/Pacific Islander, or other), and ACT (or equivalent score) quartile. While applying weights in this manner has the effect of making the overall sample at each institution more similar to the population from which it was drawn, it does not totally adjust for the potential responses of those who dropped out of the study (Sudman, 1976).

A second follow up was conducted in the fall of 2007. At that time, each participating institution indicated whether or not each student who completed the first follow up (Spring 2007)

reenrolled for the second year of college at that institution. This institutional data became the basis for the dependent variable in the study.

Variables

Dependent Variable. The dependent variable was whether or not the student reenrolled at a participating institution for the second year of postsecondary education. The variable was coded 1 = reenrolled, 0 = did not reenroll. Approximately 90% of the sample reenrolled for the second year of college while 10% did not. The data for this variable came from the official records at each of the 19 participating institutions.

Independent Variable: Exposure to Effective Classroom Instruction. Overall exposure to effective classroom instruction was defined operationally as exposure to organized and clear instruction. Information on student perceptions of overall exposure to organized and clear instruction was gathered by means of a 10-item scale in the first follow-up data collection (Spring 2007). The questionnaire presented students with the following stem: "Below are statements about teacher skill/clarity as well as preparation and organization in teaching. For the most part, taking into consideration all of the teachers with whom you've interacted with at [institution name], how often have you experienced each?" We employed the same 10-item scale of vetted reliability and validity used by Pascarella et al. (2008), as well as by many of the studies described previously (Braxton, Bray, & Berger, 2000; Bray, Pascarella, & Pierson, 2004; Edison, Doyle, & Pascarella, 1998; Pascarella et al., 1996; Whitt et al., 2003). The 10-item instructional organization and clarity scale has alpha reliabilities ranging from .88 to .91. Constituent items and response options are shown in Table 1.

Table 1 about here

Background Characteristics and Tested Academic Preparation. Student background characteristics consisted of sex, race/ethnicity, precollege educational plans, and parental educational level. Sex was coded 1 = male, 0 = female, while race was coded 1 = white, 0 = person of color. Precollege educational plans were coded 1 = graduate degree, 0 = less than a graduate degree. Parental education was the sum of mother's and father's formal education. There were eight response options for each ranging from "less than high school diploma" to "Doctoral degree." Tested precollege academic preparation was an ACT composite score, SAT equivalent, or COMPASS equivalent score for community college students. Information on sex, race, educational plans, and parental education was gathered on the WNSLAE precollege questionnaire. Tested precollege academic preparation scores were provided by each participating institution.

Institutional Type. Institutional type consisted of three dummy (1, 0) variables. They were research university (vs. liberal arts college), regional institution (vs. liberal arts college), and community college (vs. liberal arts college).

Other College Experiences. Other college experiences consisted of three variables: hours of on- and off-campus work per week, whether or not one lived on campus, and hours of co-curricular involvement per week. Hours of on- and off-campus work consisted of the total number of hours of remunerated on- and off-campus work typical per week. There were eight response options from "0 hours" to "more than 30 hours." Living on campus was coded: 1 = lived on campus, 0 = did not live on campus. Hours of co-curricular involvement was a student's reported number of hours in a typical week involved in co-curricular activities (campus organizations, campus publications, student government, fraternity or sorority, intercollegiate or intramural sports, etc.). There were eight response options ranging from "0 hours" to "more than

30 hours." Information on work on- or off-campus residence, and co-curricular involvement was collected on the first (Spring 2007) follow up.

College Grades and Educational Satisfaction. College grades were based on student self-reports to the question "What have most of your grades been up to now at this institution?" There were eight response options, ranging from "C- or lower" to "A." While it would have been preferable to have actual first-year grades, there is evidence indicating substantial proximity (correlations from .74 to .96) between actual and reported grades (Baird, 1976; Flowers, Osterlind, Pascarella, & Pierson, 2001). Moreover, as we report below reported grades had a relatively strong net impact on persistence. Satisfaction with the overall experience of college was based on student responses to the question "How would you evaluate your entire educational experience at this institution?" There were four response options: 1 = "poor," 2 = "fair," 3 = "good," and 4 = "excellent." Information on grades and educational satisfaction was collected on the WNSLAE first follow up in Spring 2007.

Data Analyses

Because this study focused only on the total, direct, and indirect effects of exposure to effective instruction on persistence into the second year of college, we did not use structural equation modeling to estimate the validity of the overall model shown in Figure 2. Such omnibus tests of models based on Tinto's constructs have already been conducted with considerable frequency (Braxton, Hirchy,& McClendon, 2004; Pascarella & Terenzini, 2005). Rather, we limited our analyses to estimating the various net effects of exposure to effective instruction on persistence.

The first step in the data analyses was to estimate the total effect of overall exposure to organized and clear instruction during the first year of postsecondary education on persistence

into the second year of college. To accomplish this, we used reduced form regression specifications (Alwin & Hauser, 1975), and because the dependent variable was binomial (1 = reenrolled, 0 = did not reenroll) rather than continuous, logistic rather than linear regression. Persistence was regressed on the measure of overall exposure to organized and clear instruction and all student background characteristics, ACT (or equivalent) score, institutional type, and other college experiences (see Figure 1). The second step in the analyses sought to determine the direct and indirect (or mediated) effects of overall exposure to organized and clear instruction. For this analysis, we added first-year college grades and educational satisfaction to the reduced-form (total effects) specification described above (see Figure 2). According to our conceptual model, we expected that college grades and educational satisfaction would have a positive net influence on persistence and that the positive total effect of exposure to organized and clear instruction on persistence would be reduced to nonsignificance. Thus, the enhancement of grades and satisfaction would mediate (or account for) the positive impact of exposure to organized and clear instruction on persistence. To isolate which, if any, of the two mediating variables transmitted most of the indirect effect of organized and clear instruction on persistence, we tested several models. Grades and satisfaction were added to the total effects equation in different combinations to determine if the addition either single mediating variable reduced the net effect of organized and clear instruction to non-significance.

The third stage of the data analysis sought to determine if the total effect of overall exposure to organized and clear instruction on second-year persistence differed by institutional type or for students who entered postsecondary education with different levels of tested academic preparation. To do this, we added cross-products of organized and clear instruction with the three dummy variables representing institutional type and with precollege academic

preparation to the total effects equation. Examination of the statistical significance of these cross-product terms would indicate the presence or absence of conditional effects.

Because we were analyzing multi-institutional data, it was important to take into account the nesting or clustering effect. This was particularly the case because of the wide variations in first-year persistence among the different institutions. The nesting or clustering effect assumes that students within each of the 19 participating institutions would tend to behave in a more similar manner than students across institutions. Thus, the error terms for the prediction model are correlated, which results in underestimated standard errors in regression estimates (Ethington, 1997; Raudenbush & Bryk, 2001). Therefore, in all analyses, we accounted for the nested nature of our data by using appropriate regression procedures (svy) in the STATA statistical routines that adjust for this clustering (Groves et al., 2004).

Complete data on all variables was available for 2,934 of the 3,081 students who participated in the follow-up data collection. Of these 2,934 students, 299 did not reenroll for the second year of college, while 2,635 did reenroll for the second year of college. All analyses we report are based on weighted sample estimates for the 2,934 students, adjusted to the actual sample size to obtain correct standard errors for significance tests.

RESULTS

The descriptive statistics for all variables in the analyses are shown in Table 2, while the matrix of intercorrelations is available from the first author on request. The estimated total and direct effects of overall exposure to organized and clear instruction during the first year of postsecondary education on persistence into the second year of college at each institution are summarized in Table 3. Columns 1 and 2 in Table 3 show the total effect estimate. As shown in columns 1 and 2, overall exposure to organized and clear instruction significantly ($p < .001$)

increased the probability of a student reenrolling for the second year of college at particular institutions he or she was attending. This significant total effect persisted even in the presence of statistical controls for student background characteristics and tested academic preparation (i.e., sex, race, educational plans, parental education, and ACT, or equivalent, score), type of institution attended (i.e., research university, regional university, community college, or liberal arts college), and other college experiences (i.e., work responsibilities, on- or off-campus residence, and co-curricular involvement). The odds ratio in column 2 indicates that, net of the influence of all other variables in the total effect equation, a one-point increase in the instructional organization and clarity scale increased the odds of reenrolling from even (1.00/1.00) to 1.40/1. This can be thought of as a 40% improvement in the odds of reenrolling. Since it is somewhat difficult to interpret what this means, we converted this to delta-p, or the percent increase in the probability of reenrolling. Our findings indicate that a one-point increase in the exposure to organized and clear instruction led to a 2.2% increase in the net likelihood of reenrolling. While this could be considered a rather small improvement, it should be remembered that nearly 90% of our sample reenrolled for the second year of college. This means that the upper-bounds limit of improvement is only 10%.

Tables 2 and 3 about here

Columns 3 and 4 in Table 3 (direct effect, model I) summarize the estimated direct causal effect of overall exposure to organized and clear instruction on persistence when first-year college grades were added to the total effect equation (summarized in columns 1 and 2). Not surprisingly, first-year grades had a substantial and statistically significant, net positive effect on the probability of reenrolling for the second year of college. More interestingly, even with an additional control introduced for college grades, exposure to organized and clear instruction

continued to exert a significant, positive effect on second-year persistence—although the magnitude of the effect was reduced by 24.3% (from .334 to .253). This suggests that only a modest part of the effect of organized and clear instruction on persistence was mediated through college grades.

Columns 5 and 6 in Table 3 (direct effect, model II) summarize the estimated direct causal effect of overall exposure to organized and clear instruction on persistence when satisfaction with the overall college experience is added to the total effect equation. Net of other influences, educational satisfaction had a strong positive influence on second-year persistence and the net impact of organized and clear instruction was reduced by 65.6% (from .334 to .115) and became statistically nonsignificant. This suggests that a major part of the impact of exposure to organized and clear instruction on persistence was mediated by, or transmitted through, educational satisfaction.

Columns 7 and 8 in Table 3 (direct effect, model III) summarize the estimated direct causal effect of overall exposure to organized and clear instruction on persistence when college grades and educational satisfaction are both added to the total effect equation. Net of other influences, educational satisfaction still exerted a significant positive effect on persistence, but the net impact of organized and clear instruction was reduced by 76.6% (from .334 to .078) and was nonsignificant. Thus, more than 75% of the positive influence of exposure to organized and clear instruction on second-year persistence was mediated through enhanced grades and satisfaction with the college experience. We tested the statistical significance of the indirect effects of overall exposure to organized and clear instruction through both grades and educational satisfaction using Sobel's procedure for the significance of mediated effects (Preacher & Leonardelli, 2001). The indirect effect on persistence through college grades was

.077 ($t = 1.53$, $p > .10$), which was not statistically significant. However, the indirect effect through educational satisfaction was .179, which was statistically significant ($t = 2.21$, $p < .05$). Thus, it would appear that the underlying causal mechanism explaining the positive impact of overall exposure to organized and clear instruction on second-year persistence is largely as follows: exposure to organized and clear instruction enhances student satisfaction with the overall college experience which, in turn increases the likelihood of reenrolling for the second year of college. This is quite similar to the earlier findings of Pascarella et al. (2008).

Finally, our tests for the presence of conditional effects of exposure to organized and clear instruction on second-year persistence were nonsignificant. When they were added to the total effect equation, none of the cross-product terms involving organized and clear instruction with institutional type or with ACT (or equivalent) score even approached statistical significance. This suggests that the positive total effect on second-year persistence of exposure to organized and clear instruction is not only homogeneous in magnitude across institutional type (i.e., research university, regional university, community college, liberal arts college), but is also similar in magnitude for students who enter postsecondary education with different levels of tested precollege academic preparation.

CONCLUSIONS

This study analyzed a longitudinal, 19-institution sample to replicate and extend a single-institution finding that overall exposure to organized and clear classroom instruction during the first year of college has a net positive influence on the probability of reenrolling at an institution for the second year of college (Pascarella et al., 2008). Such a finding is of considerable consequence in that it suggests the importance of classroom instructional practices and teacher behaviors in student persistence at an institution. As with previous research, we employed a 10-

item scale of demonstrated reliability and validity that measured a student's reported overall exposure to organized and clear instruction across all of their first-year courses and teachers. Controlling for student background characteristics, ACT (or equivalent) score, institutional type, other college experiences and involvements, and the clustering effects, overall exposure to organized and clear instruction had a significant ($p < .001$) positive total effect on a student's probability of reenrolling at an institution for the second year of college. Exposure to organized and clear instruction continued to exert a significant, if reduced, impact on second-year persistence even after college grades were taken into account. In short, our finding from a multi-institutional sample essentially replicates the work of Pascarella et al. (2008) and support the robustness of their results at a single intitution.

We also found that significant total estimated effect of organized and clear instruction on persistence tended to be general rather than conditional. Specifically, the effect tended to be consistent in magnitude irrespective of the type of institution attended—research university, regional institution, community college, or liberal arts college. Similarly, our findings suggest, consistent with those of Pascarella et al. (2008), that the positive impact of exposure to organized and clear instruction was similar in magnitude for students who entered postsecondary education with different levels of precollege academic preparation.

It appears to be the case that the causal mechanism underlying the net impact of overall exposure to organized and clear classroom instruction on second-year persistence is indirect or mediated rather than direct. Specifically, exposure to organized and clear instruction enhances student satisfaction with the overall college experience which, in turn, increases the probability of a student reenrolling at an institution for the second year of college. In the present study, as in the Pascarella et al. (2008) investigation, there was a statistically significant indirect effect of

organized and clear instruction on second-year persistence that was mediated through a student's satisfaction with the overall experience of college.

Replicated findings in the large body of research on college impact are rare (Pascarella, 2006). At the same time, robust findings based on independent replication give administrators and policy makers greater confidence in the expenditure of resources on programs and interventions. Taken in consort with the single-institution findings of Pascarella et al. (2008), our results, based on a multi-institutional sample, underscore the importance that faculty play in the student retention process. A convincing body of evidence indicates that the frequency and quality of faculty nonclassroom interactions have a significant role in students' decisions to persist at a particular college or university (Pascarella & Terenzini, 1991, 2005). Our findings underscore the probability that it is not just faculty nonclassroom interactions with students that contribute to persistence. Rather, faculty in-class instructional behaviors that contribute to learning also appear to contribute to student persistence by enhancing one's overall satisfaction with the education being received. What is particularly important for administrators and policy makers, however, is that improving a faculty member's skills in delivering organized and clear classroom instruction may not be totally circumscribed by innate pedagogical skills or personal propensities. As Weimer and Lenze (1997) have suggested, faculty members can actually learn many of the constituent skills and behaviors required to implement organized and clear instruction in their courses.

From this perspective, our findings, in replicating those of Pascarella et al. (2008), lend substantial support to the potential institutional benefits derived from the investment of resources in faculty development programs designed to enhance teaching or instructional effectiveness. This is particularly so to the extent that such programs assist faculty in honing sound pedagogical

skills such as instructional organization and clarity. Furthermore, although our study sample cannot be considered as nationally representative, we did find that the positive influence of exposure to organized and clear instruction on persistence held for different kinds of institutions (research universities, regional institutions, community colleges, and liberal arts colleges). This at least suggests that investing resources in improving faculty classroom instructional skills may return significant dividends in terms of increased student persistence at a range of different institutional types. In this context, these findings also suggest the importance of implementing instructional training as a part of doctoral preparation to increase the likelihood that the contributions of future faculty will go beyond extending the boundaries of their discipline and include the educational success of their students.

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Table 1

Constituent Items for the Instructional Organization and Clarity Scale[a]

- Presentation of material is well organized.
- Teachers are well prepared for class.
- Class time is used effectively.
- Course goals and requirements are clearly explained.
- Teachers have a good command of what they are teaching.
- Teachers give clear explanations.
- Teachers make good use of examples and illustrations to explain difficult points.
- Teachers effectively review and summarize the material.
- Teachers interpret abstract ideas and theories clearly.
- Teachers give assignments that help in learning the course material.

[a]Scale stem: "Below are statements about teacher skill/clarity as well as preparation and organization in teaching. For the most part, taking into consideration all of the teachers with whom you've interacted at [institution name], how often have you experienced each?" Response options: 5 = "very often"; 4 = "often"; 3 = "sometimes"; 2 = "rarely"; 1 = "never." The scale was standardized across items for the entire sample. Scale alpha reliability (based on all 10 items) ranges from .88 to.91.

Table 2

Means and Standard Deviations for All Variables

Variable	Mean	Standard Deviation
Persistence (Reenrolled at the institution for the second year of college)	.898	.302
Male (coded 1), Female (coded 0)	.454	.498
White (coded 1), Person of color (coded 0)	.801	.383
Precollege tested academic preparation (ACT or ACT equivalent)	24.890	4.831
Plan to obtain a graduate degree	.701	.458
Parental education	15.191	2.214
Attended a research university (vs. a liberal arts college	.348	.476
Attended a regional university (vs. a liberal arts college)	.257	.437
Attended a community college (vs. a liberal arts college)	.151	.358
Hours of on- and off-campus work per week	7.023	9.501
Live on campus (coded 1), live off campus and commute (coded 0)	.761	.426
Hours of co-curricular involvement per week	2.344	1.516
College grades	6.031	1.603
Satisfaction with overall educational experience	3.362	.651
Instructional organization and clarity scale (standardized across entire sample)	-.035	.708

Table 3

Estimated Total and Direct Effects of Exposure to Organized and Clear Instruction on Persistence into the Second Year of College

	Total Effect[a]		Direct Effect[a] Model I		Direct Effect[a] Model II		Direct Effect[a] Model III	
Variable	(1) Regression Coefficient (Standard Error)	(2) Odds Ratio	(3) Regression Coefficient (Standard Error)	(4) Odds Ratio	(5) Regression Coefficient (Standard Error)	(6) Odds Ratio	(7) Regression Coefficient (Standard Error)	(8) Odds Ratio
Instructional organization and clarity scale	.334*** (.085)	1.396	.253* (.106)	1.288	.115 (.112)	1.122	.078 (.113)	1.081
First-year college grades			.336*** (.109)	1.399			.266 (.141)	1.305
Satisfaction with the overall college experience					.486*** (.116)	1.625	.428* (.191)	1.534

[a]Logistic regression equations also include controls for sex, race (white vs. person of color), precollege tested academic preparation (ACT or ACT equivalent), precollege educational plans (graduate degree vs. less than a graduate degree), parental education, type of institution attended (research university, regional university, or community college vs. liberal arts college), hours of on- and off-campus work per week, residence (on campus vs. off campus), hours of co-curricular involvement per week, and the clustering effect.
*p < .05. **p < .01. ***p < .001.

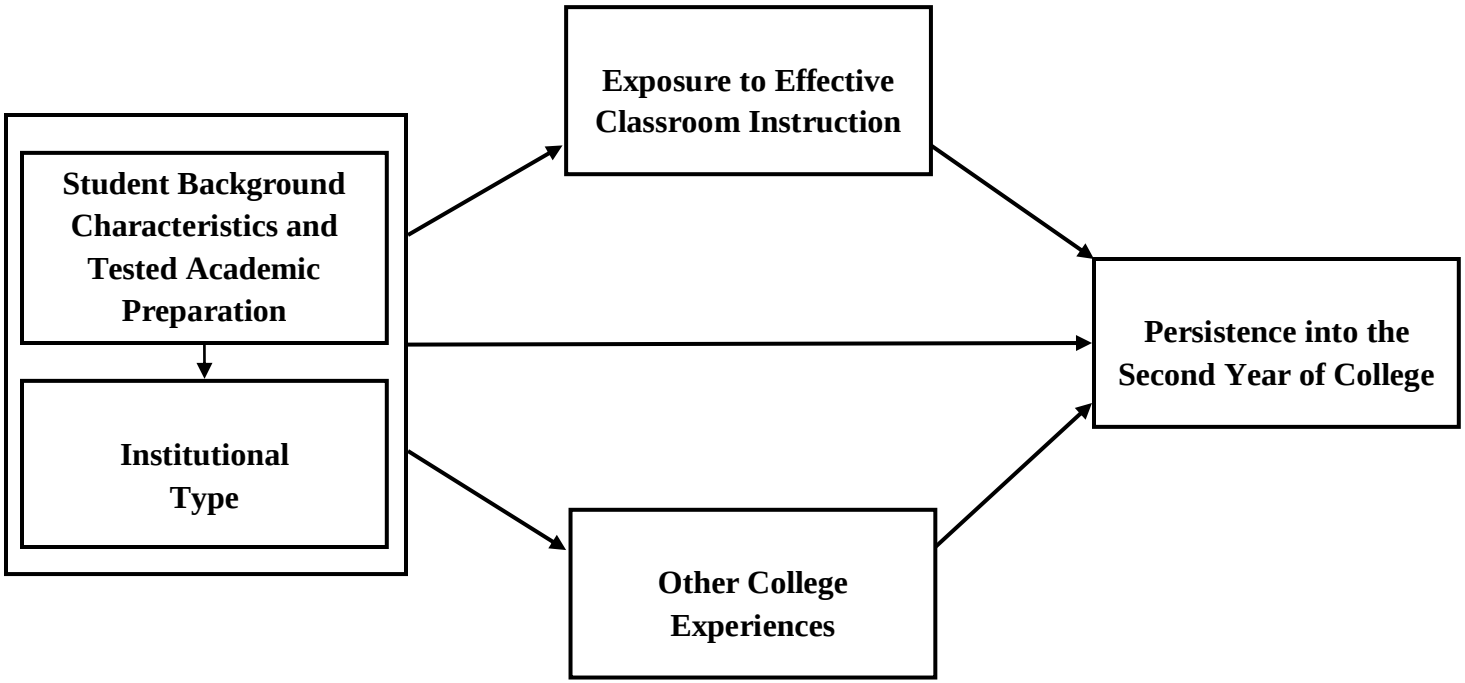

Figure 1. Total Effects Model

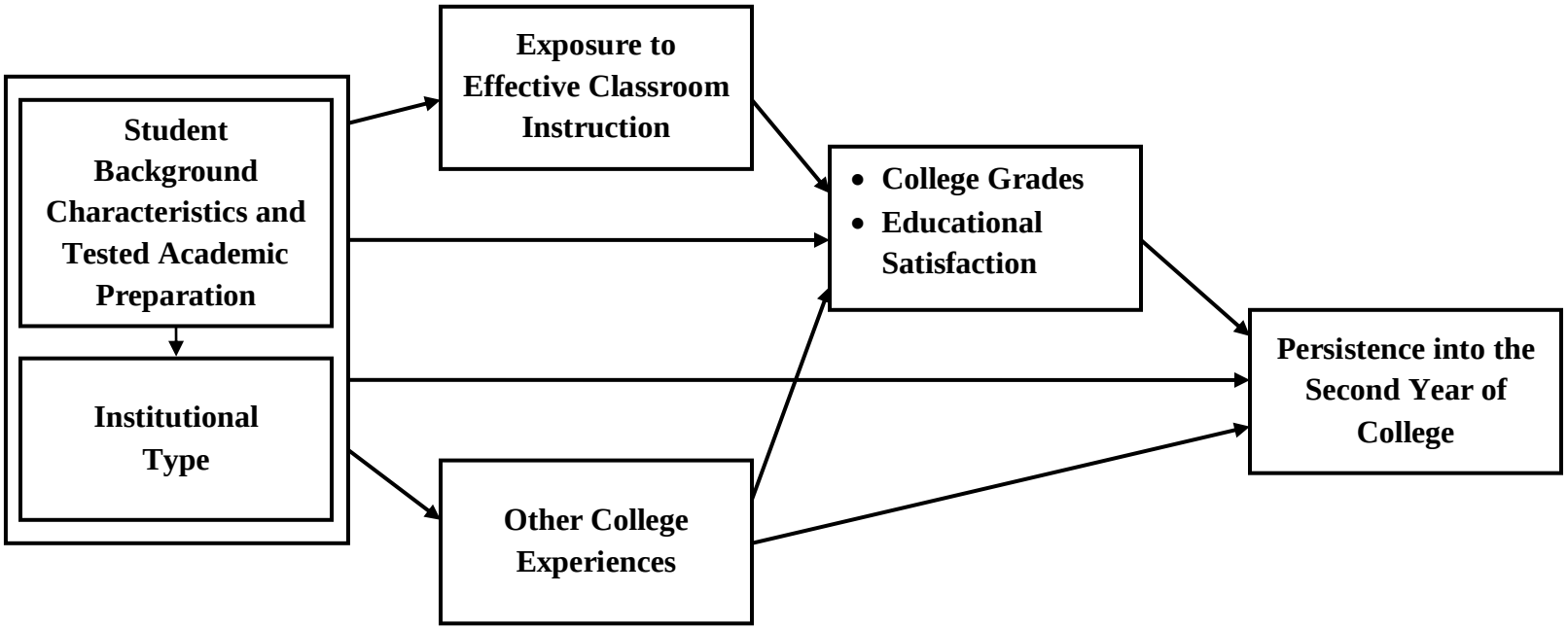

Figure 2. Direct and Indirect Effects Model