

# HOW COLLEGE AFFECTS STUDENTS

**VOLUME 3**

21<sup>ST</sup> CENTURY EVIDENCE THAT  
HIGHER EDUCATION WORKS

**MATTHEW J. MAYHEW**

**ALYSSA N. ROCKENBACH**

**NICHOLAS A. BOWMAN**

**TRICIA A. SEIFERT**

**GREGORY C. WOLNIAK**

**WITH ERNEST T. PASCARELLA AND PATRICK T. TERENCEZINI**

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# How College Affects Students

*Volume 3: 21st Century Evidence That Higher  
Education Works*





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*To our loved ones.*







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## ABOUT THE AUTHORS

**Matthew J. Mayhew** is the William Ray and Marie Adamson Flesher Professor of Educational Administration with a focus on Higher Education and Student Affairs at The Ohio State University. He received his BA from Wheaton College, Illinois, his master's degree from Brandeis University, and his PhD from the University of Michigan. Before coming to OSU, he served as an associate professor at New York University and an administrator at Fisher College and the University of North Carolina at Wilmington.

He has focused his research on examining the relationship between college and its influence on student learning and democratic outcomes. To support the study of college and its impact on student development and learning, he has been awarded over \$14 million in funding from sources including the U.S. Department of Education, the Ewing Marion Kauffman Foundation, the Merrifield Family Trust, and an anonymous non-religiously affiliated organization with interests in social cooperation. He has been on the editorial boards of the *Journal of Higher Education*, *Research in Higher Education*, and the *Journal of College Student Development*. He recently received the American Educational Research Association Religion and Education SIG Emerging Scholar Award.

**Alyssa N. Rockenbach** is professor of higher education at North Carolina State University. She received her BA in psychology from California State University, Long Beach, and her master's degree and PhD in higher education from the University of California, Los Angeles.

Her research focuses on the impact of college on students, with particular attention to spiritual development, religious and worldview diversity in colleges

and universities, campus climate, and gendered dimensions of the college student experience. Her current work includes a multimillion-dollar initiative, *Cooperation in a Pluralistic World: A National Study of College Students' Engagement with Religious Diversity*, in partnership with the Interfaith Youth Core and Matthew Mayhew. She serves on the editorial boards of *Research in Higher Education* and *Journal of Higher Education*, and has been honored with national awards, including the American College Personnel Association Emerging Scholar Award, and the American Educational Research Association Religion and Education SIG Emerging Scholar Award.

**Nicholas A. Bowman** is an associate professor of higher education and student affairs as well as the director of the Center for Research on Undergraduate Education at the University of Iowa. He received his BA from the University of California, Los Angeles, as well as two master's degrees and a PhD from the University of Michigan. Before working at the University of Iowa, he was a postdoctoral research associate at the University of Notre Dame and an assistant professor at Bowling Green State University.

His research has examined issues of college diversity, religion/worldview, outcome assessment, college rankings and prestige, and student success. He serves on the editorial boards of *Review of Educational Research*, *Research in Higher Education*, *Journal of Higher Education*, and *Journal of College Student Development*. He has had over 50 peer-reviewed journal articles published since 2008, and he received the Promising Scholar/Early Career Award from the Association for the Study of Higher Education in 2012.

**Tricia A. Seifert** is an associate professor of adult and higher education at Montana State University and has a faculty appointment at the Ontario Institute for Studies in Education at the University of Toronto. She received her BA in sociology and political science from Illinois Wesleyan University, her master's degree in college student services administration from Oregon State University, and her PhD in counseling, rehabilitation, and student development (student affairs administration and research emphasis) from the University of Iowa.

Her research examines postsecondary organizational cultures and structures, as well as student experiences associated with learning and success. She serves as the *Journal of College Student Development's* associate editor for international research and scholarship and is past associate editor for *New Directions for Institutional Research* and Faculty in Residence for ACPA's Commission for Global Dimensions of Student Development. She received the Award of Honour from the Canadian Association of College and University Student Services in 2015 and the Emerging Scholar Award from ACPA in 2010.

**Gregory C. Wolniak** is director of the Center for Research on Higher Education Outcomes and associate professor of higher education at New York University. He received his BS in economics from Iowa State University, MA in economics from University of Illinois at Chicago, and PhD in social foundations of



education from the University of Iowa. Before coming to NYU, he was senior research scientist at NORC at the University of Chicago.

His research centers on examining the socioeconomic effect of college, with a focus on the factors that influence students' pathways into college and the career and economic effects of college. He serves on the editorial boards of *Research in Higher Education*, *Journal of Higher Education*, and *Sociology of Education* and has occupied primary roles on numerous privately and publicly funded higher education studies, including the Spencer Foundation, the National Science Foundation, and the U.S. Department of Education.

**Ernest T. Pascarella** is professor and the Mary Louise Petersen Chair in Higher Education at the University of Iowa. He received his AB degree from Princeton University, his master's degree from the University of Pennsylvania, and his PhD from Syracuse University. Before coming to Iowa in 1997 he spent 20 years as a faculty member at the University of Illinois at Chicago.

He has focused his research and writing for the past 35 years on the impact of college on students and student persistence in higher education. He is consulting editor for the *Journal of Higher Education* and has been on the editorial boards of the *Review of Higher Education* and the *Journal of College Student Development*. He has received a number of awards from national associations for his research. These include the research awards of the Association for Institutional Research, Division J of the American Educational Research Association, the Association for the Study of Higher Education, the American College Personnel Association, the National Association of Student Personnel Administrators, and the Council of Independent Colleges. In 1990, he served as president of the Association for the Study of Higher Education and in 2003 received the Howard R. Bowen Distinguished Career Award from ASHE.

**Patrick T. Terenzini** is distinguished professor and senior scientist emeritus in the Center for the Study of Higher Education at Pennsylvania State University. He received his AB degree in English from Dartmouth College, his MAT degree in English education from Harvard University, and his PhD in higher education from Syracuse University. Before coming to Penn State, he served as a faculty member and administrator at Dean College (Massachusetts); Syracuse University; the University at Albany, SUNY; and the University of Georgia.

For more than 40 years, he has studied the effects of college on student learning and development, persistence, and educational attainment, and low-income and first-generation students. He has published more than 140 articles in refereed journals and made more than 200 presentations at national and international scholarly and professional conferences. The Exxon Foundation, U.S. Office of Education, National Science Foundation, College Board, Lumina Foundation, Spencer Foundation, and Alfred P. Sloane Foundation have provided financial support for his research. He has been a consulting editor for *Research in Higher Education* for more than thirty-five years and served as editor in chief of *New Directions for Institutional Research* for over a decade. He

has also been associate editor of *Higher Education: Handbook of Theory and Research* and an editorial board member for *Review of Higher Education*. He has received research awards from the Association for the Study of Higher Education, the Association for Institutional Research, American Society for Engineering Education, American College Personnel Association, and National Association of Student Personnel Administrators. He received the Outstanding Service Award and the Distinguished Career Award from the Association for Institutional Research. He is a past president of the Association for the Study of Higher Education.



## CHAPTER ONE

# Studying College Outcomes in the 2000s

## *Overview and Organization of the Research*

The purpose and value of higher education are under fire. As national confidence in the aims of higher education and the subsequent value of degree attainment erode (see Arum & Roksa, 2011, 2014), scholars interested in college and its influence on students are faced with a series of emergent challenges, ranging from the decoupling of the once tightly held belief that participation in higher education was the primary means for learning and thus social mobility to ontological questions about learning itself: Is learning about making money? Why is learning important if it does not lead to financial gain? Indeed, some students are paid to forgo college-going for pursuing entrepreneurial start-ups. Peter Thiel, founder of the Thiel Foundation, an organization that pays up-and-coming entrepreneurs to leave formal education, noted, “University administrators are the equivalent of mortgage brokers, selling you a story that you should go into debt massively, that it’s not a consumption decision, it’s an investment decision. Actually, no, it’s a bad consumption decision. Most colleges are four-year parties” (Jenkins, 2010, p. A.13). This comment exemplifies the emergent American learning conundrum: How utilitarian and pragmatic does learning need to be in order to hold value in and to American society? Is higher education an investment in one’s future or a consumable good of questionable value?

In light of these questions and challenges, educators from across disciplines are designing and executing rigorous college impact studies that draw on the scholarly work of generations past to further develop a robust understanding of college as critical to not only the learning enterprise but to other

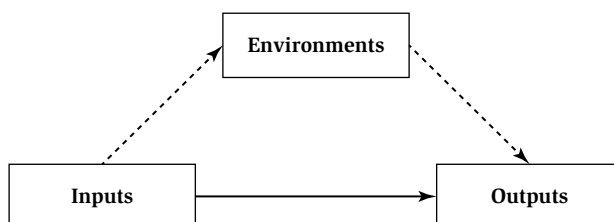
social and economic factors as well. Rather than shy away from the difficulties of studying outcomes that many think are ineffable and even irrelevant, these scholars are approaching the study of college impact with the thoroughness needed to appraise historic claims regarding the roles and purposes of higher education and the innovation needed to tackle questions once believed too challenging to address. Our aim in this volume is not to provide silver-bullet answers to these pressing and difficult questions but to review carefully the evidence for helping educators make claims about college and its impact on students.

Conceptually, this volume is based on Astin's (1984) framework for understanding how college affects students. Put simply, this framework deconstructs the college experiences into three discrete categories: inputs, environments, and outcomes. Inputs include demographic characteristics, academic preparedness, and predispositions that students bring with them to campus (e.g., race, high school grade point average, SAT scores, degree aspirations, and academic motivation, to name a few). Environments include, but are not limited to, institutional cultures and climates and specific educational experiences designed to shape students in some meaningful way. Outcomes relate to the attitudes (e.g., student satisfaction), aptitudes (e.g., critical thinking), and behaviors (e.g., departure) that students exhibit as a result of going to college.

Of critical importance to this review is how these categories work together to explain college and its effects on students. When organizing studies, we based our review on two relationships: that which we call "general" to describe the relationship between environments and outcomes (i.e., how exposure to and participation in college generally affect all college students) and that which we call "conditional" to underscore the relationship between environments and outcomes as it relates to student inputs (i.e., how exposure to and participation in college experiences affect students differentially based on students' input characteristics).

Figure 1.1 is a graphic representation of Astin's model. These relationships are represented by the dotted arrows in the figure. Note that the relationship between inputs and outcomes is displayed with a solid arrow to reflect that the review did not focus on studies that examined this relationship.

**Figure 1.1** Astin's Framework (1984) for Understanding College and Its Influence on Students



With this conceptual map as our guide, we used the organizational framework developed by Ernest Pascarella and Patrick Terenzini (1991, 2005) to synthesize the many thousands of empirically based articles designed to better understand college and its relationship to student outcomes. Building on the generous work of many scholars and employing the organizational framework used in the previous two volumes of this work, we addressed each of these six issues for each set of outcomes: the development of verbal, quantitative, and subject matter competence; cognitive skills and intellectual growth; psychosocial change; attitudes and values; moral development; educational attainment and persistence; career and economic impacts of college; and quality of life after college. Specifically, we adopted Pascarella and Terenzini's six-question framework for organizing the literature within each chapter. This framework, which developed out of previous work by G. Gurin (1971), Nucci and Pascarella (1987), and Pascarella (1985), asks six basic questions that serve as the organizing feature for each chapter:

1. What evidence is there that individuals change during the time in which they are attending college?
2. What evidence is there that change or development during college is the result of college attendance?
3. What evidence is there that attending different kinds of postsecondary institutions have a differential influence on student change and development during college?
4. What evidence exists that engaging in different experiences in the same institution are associated with student change and development during college?
5. What evidence is there that the collegiate experience produces conditional, as opposed to general, effects on student change or development?
6. What are the long-term effects of college?

Question 1, which we sometimes refer to by the shorter phrasing of "change during college," refers to whether change occurred while students were exposed to postsecondary education. Question 2, regarding the net effects of college, focuses on whether the change is attributed to postsecondary exposure, as opposed to precollege characteristics, maturation, or other noncollege experiences. Question 3, between-college effects, explores the degree to which institutional conditions (e.g., size, control, geographic location) or organizational characteristics (e.g., average level of peer cognitive development, whether the school is bureaucratic or collegial, structural diversity of the faculty) have an influence on the learning and development of the student. Question 4, within-college effects, summarizes the articles that address student change as a function of exposure to or participation in specific collegiate

experiences. Question 5, conditional effects of college, gauges the extent to which the relationship between student change and any given college experience differs based on student characteristics, such as race, gender, or academic major. Question 6, long-term effects of college, addresses the duration or permanence of the college influence based on student’s postcollege activities, attitudes, beliefs, and behaviors. Table 1.1 summarizes the framework used to guide this review.

Table 1.1 Overview of Review Framework

|            | <i>Conceptual<br/>Orientation</i> | <i>Shorthand</i>        | <i>Description</i>                                                                                                         | <i>Example<br/>Research Question</i>                                                                                  |
|------------|-----------------------------------|-------------------------|----------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------|
| Question 1 | General                           | Change during college   | Whether change occurred while in college                                                                                   | Do college students demonstrate gains in moral development during college?                                            |
| Question 2 | General                           | Net effects of college  | Whether the change can be attributed to college-going, as opposed to maturation, for example                               | Does moral development occur as a result of college-going, accounting for a host of potential confounding influences? |
| Question 3 | General                           | Between-college effects | Whether the change can be explained by institutional conditions, organizational characteristics, and/or peer socialization | What role does institutional type and public (versus private) control play in shaping students’ moral development?    |
| Question 4 | General                           | Within-college effects  | Whether the change can be explained by exposure to and participation in specific educational experiences                   | How does participation in a service-learning experience influence moral development?                                  |

(continued)

Table 1.1 Overview of Review Framework (continued)

|            | <i>Conceptual<br/>Orientation</i> | <i>Shorthand</i>               | <i>Description</i>                                                                                                                                              | <i>Example<br/>Research Question</i>                                                                                                                 |
|------------|-----------------------------------|--------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------|
| Question 5 | Conditional                       | Conditional effects of college | Whether the change that occurs as a result of participation in any given college experience differs based on student inputs such as race, gender, living status | Does the relationship between participating in a service-learning experience and moral development differ between residential and commuter students? |
| Question 6 | General                           | Long-term college effects      | If the changes due to college are sustained after graduation                                                                                                    | Are the moral development gains made during college sustained beyond graduation?                                                                     |

Building on these six questions used to frame the literature, we organized studies within each question based on themes emerging from the articles reviewed for each chapter. This decision came from our collective value to review articles in the spirit in which they were written. We wanted to stay as close to the authors' intentions as possible. Of course, this decision produced a distinctive set of challenges regarding structural continuity across chapters. For example, for the within-college effects section of each chapter, some authors studied honors colleges while others did not; some articles discussed interactional diversity while others examined quality of diversity interaction or non-classroom-based diversity peer interaction; some studies investigated work on campus while others reflected interest in part-time employment. Given these and the many more examples of themes that emerged from the studies themselves, we chose not to try to force articles into categories for the sake of consistency across chapters; rather, we let the literature base specific to the chapter's focus inform the organization of that chapter, at least to some degree. Similarly, a number of outcomes examined in the literature do not fit neatly and discretely into one chapter or another. For example, one could argue that a self-reported gain in general education is a measure of the general skills, like

verbal and quantitative competence, that students develop in college; a parallel argument could advance that this is a reflection of students' academic and intellectual self-concept. We shaped our review with the authors' intentions in mind while recognizing the potential overlap between researchers' definitions of outcomes and the conceptual outcome framework used in the book.

## HOW THE LITERATURE HAS CHANGED

Since the first volume of this book was published (Pascarella & Terenzini, 1991), terms and definitions continue to change at a remarkable pace. Words like *how*, *college*, *affect*, and *students* have taken different meanings in the higher education research context since the beginning of the century. For example, with the advent and momentum of computer-mediated distance education, for-profit institutions, and massive open online courses (MOOCs), "college," as we know it today, has moved beyond chartered boundaries to be more inclusive than ever before. As the college experience extends its reach, its "effects" are more difficult than ever to ascertain; indeed, new methods are continuously being offered and refined to manage issues with studying students in their natural, albeit nonrandom, learning environments. Finally, there are many definitions of *student*: Is a student someone enrolled in one MOOC? A degree program? A certification program? A GRE course offered at an institution? Since these words—*how*, *college*, *affects*, *students*—underlie the syntheses provided in this volume, we consider the meaning of each to discuss trends in the literature since the previously published volume (Pascarella & Terenzini, 2005) and to note where this volume departs from those previously written.

### How: Changes in the Ways College May Have Influenced Students

Based on the rich 30-plus years of research linking college-going to development and change across a variety of domains, scholars have moved from empiricism to assumption: rather than question if college-going has an influence on students, scholars assume that the relationship exists and subsequently focus on investigating the specific practices and psychological mechanisms responsible for student change. In other words, since the previous volume, scholars are asking more questions about *why* college affects students than *if* college affects students. Such a trend presented a particular set of challenges for this review, including how to speak to change over time with very few longitudinal designs that tracked students over multiple time points, address the net effects of college-going as so few studies compared students to their peers who did not attend college, and evaluate and summarize the theoretical claims across the empirical studies.

Another disruption in our understanding of the "how" comes in the form of the many competing approaches designed to interrogate college and its effects on students. Clearly, the frameworks researchers use to position their inquiries



into college and its effects on students play a role in the questions researchers ask and their subsequent choices regarding data and methods of analysis. Like previous volumes, we overrepresented studies that adopted a positivist or post-positivist paradigm for asking questions about college and its effects on students. Perhaps this overrepresentation is an artifact of the types of studies that are published in most peer-reviewed journals. Alternatively, the overrepresentation may result from our decision to review only the studies that measured the relationship between college and its effects on students. Either way, we own that our collective perspective also informed our approach to this review from its conceptualization to its organization.

Like its predecessors, this review theoretically draws from many disciplines for studies and explanations of the relationship between college and students. Each chapter tended to rely on certain disciplinary perspectives based on the material published on the chapter's subject; for example, chapters focused on outcomes with developmental dimensions often drew from psychology, while those that emphasized earnings were based largely in economic studies. Due to the distinctiveness that each theoretical perspective offered for making meaning of empirical findings, we decided to discuss the theoretical underpinnings of each outcome within its related chapter and to provide a review of only the theories that this volume's researchers most often used to frame their inquiries. To be clear, *this volume is not intended to cover, or even mention, all theories, conceptualizations, and frameworks that have informed higher education scholarship since its inception*. Instead, we provided brief overviews of these elements as contextual support for conclusions offered by the authors of the articles reviewed in this volume. Placing the theoretical overview section within each chapter marks a departure from previous efforts where an overview of guiding theory for all chapters was offered in Chapter 2.

Turning to our approach to the literature review, we gave greater weight to issues of design over analysis when making decisions about article inclusion and subsequent exposition (see Rubin, 2008). When compared to articles that used cross-sectional designs, articles that included research designs that were longitudinal and included a pretest and a comparison group, or that were quasi-experimental (e.g., propensity score or regression discontinuity) were relied on more heavily as evidence of particular empirical trends. Due to our collective commitment to help readers understand the criteria we used for reviewing and ultimately including articles in this volume and marking a departure from previous volumes, we included a detailed methodological overview as a methodological appendix in this review.

Of course, the issue of survey fatigue also has made making claims about college and its effect on students more problematic. Technological advances in data collection and control have equipped scholars and institutional researchers with the infrastructure needed to support more institution-specific data collection efforts. Although we encourage these practices as they lead to data-driven decisions administrators can use to ameliorate institutional practices, we also

recognize that the proliferation of these data collection efforts makes multi-institutional research efforts more challenging. Survey fatigue presented another issue that complicated the “how” with regard to understanding college and its effects on students.

## College

What is college? Since its inception, higher education in the United States has been in constant evolution. The particular sociohistoric and political location in which this volume was drafted marks no exception to this trend. However, in the 10 years since the previous volume was published, a number of developments have changed the way that many understand and relate to college and student experiences therein.

The term *college* is complicated. For example, in the United States, *college* could refer to higher education in general, a single institution within the higher education system (e.g., Pomona College), or a subunit within a larger university system (e.g., College of Business within the University of Iowa). In other countries, the term *college* carries different meanings, often reflecting each nation’s interest in, values concerning, and organization of higher/postsecondary/tertiary education (Jones, 2012). Despite the challenges that accompany different interpretations of college, especially across national borders, we broadened the scope of this review to include relevant college impact research executed in Australia, New Zealand, the United Kingdom, and Canada. Marking a departure from previous efforts, the inclusion of studies from these countries as part of an expanded scope of the review reflects an acknowledgment that higher education has become much more internationalized since the previous volume’s publication (Altbach & McGill Peterson, 2007; Guruz, 2008; Knight, 2008) and that much could be learned from understanding student experiences outside the United States. Acknowledging and appreciating the differences in these countries’ respective approaches to higher education, we selected these nations based on their use of English as the primary language for instruction and research dissemination, as well as their historic grounding in the Oxford-Cambridge residential colleges model.

The technological movement has advanced the notion of college from being a context bound by geographic borders to one that is essentially borderless, with many individuals claiming student status without having set foot on a college campus (Selino, 2013). Indeed, even President Obama has enacted policies that challenge the notion of equating college with a degree, as involvement in at least one year has taken federal priority over four-year degree completion (e.g., Complete College America, 2011, 2012, 2013). With the increasingly widespread and mobile nature of Internet technologies and social media shifting the landscape for educational delivery, technology has complicated research on college and its effects on students by challenging assumptions that any scholar could ever isolate the effects of any measured experience on any student outcome.

The movement toward integration of the college experience has changed the research landscape, as evidence-based best practices (e.g., service-learning,

living-learning communities; see Kuh, 2008) often reflect integrated educational delivery models designed in an effort to educate the whole student. What is service-learning? What is a living-learning community? Are these academic, social, or functional experiences (see Milem & Berger, 1997)? To date, despite a robust research base on these topics, few practices have attained definitional consensus. As a result, the college experience itself has become harder to define, making the study of a presumed best practice for its influence on college student learning more challenging.

The changing nature of the peer environment has rendered historic higher education vernacular increasingly difficult to understand. For example, what do we mean by *college major*? A series of courses tightly threaded together by a common academic interest? A means for generating a pseudo-academic cohort effect by engaging students with common interests around a set of ideas presented sequentially in the curriculum? Another way of grouping students, similar to identity patterns based on social identity group organization or residence hall participation? Again, these questions provided some conceptual challenges to researchers interested in unpacking college experiences as a set of embedded peer networks and to us as we confronted some organizational obstacles in deciding where to discuss peer effects in each chapter.

Similar challenges emerged from studies that linked faculty practice to student outcomes. Who are the faculty who have the greatest impact on students? Are these adjunct faculty? Faculty who teach more courses? Faculty who engage students in undergraduate research opportunity programs? To complicate matters further, faculty practice sometimes is mediated fully through a particular delivery mechanism: authors may study an educational context (e.g., diversity course) for its association with a particular outcome without specifically examining the practice within that context. Given these and the many other issues that remain unmentioned, it is often difficult to draw conclusions about the potential impact of faculty behaviors on students.

## Affects

Given the explosion of research on college and its effects on students over the past decade, the use of causal language has been increasingly scrutinized in making claims about college and its relationship to college student learning and development. In tandem with criticism about causal language, questioning such verbs as *affects* and, to some degree, *influences* (Swanson, 2010, 2012), many scientists have also questioned the use of the term *quasi-experimental*, even for research that uses longitudinal designs with control or comparison groups. Unless researchers can randomly assign students into a certain educational experience (i.e., experimental) or methodologically make adjustments to samples through the use of propensity scores or regression discontinuity (i.e., quasi-experimental), causal claims about college and its relationship to students must be made cautiously or, in some cases, not at all. The disruption concerning what constitutes a quasi-experimental design marks a point of departure in our synthesis of the literature when juxtaposed against

previous reviews. In addition to being more thoughtful in our use of terms like *affects* and *influences*, we were equally careful to use the term *quasi-experimental* only in studies with adjusted sample designs.

As with previous volumes, *affects* is a term reserved for studies that measure the relationship between college experiences and outcomes, not necessarily for studies that use college students as samples of convenience for examining relationships between certain phenomena or for scholars only interested in how outcomes differed among certain student characteristics, like race or high school achievement. In short, all of the studies reviewed for this volume involved researchers' empirical attempt to link educational experiences to student outcomes.

What do we mean by a college experience *affecting* students? Most of the studies reviewed for this volume used developmental language for making meaning of college and its impact on students: we use phrases like "helping students make cognitive gains," "more likely to demonstrate gains in pluralism orientations," and "make moral gains" as communicative proxies for college's impact on students. When the studies depart from developmental frames, we aimed to use the authors' voices to describe the kind of learning or achievement, if any, that occurs and its relationship to college-going. Examples include "helping students achieve outcomes related to critical thinking" to "outcomes with moral dimensions."

## Students

Who a college student was, is, and is becoming plays a central role in framing this review. As stated in previous volumes, the demographic characteristics of college-going students continue to rapidly change, forcing us to reconsider the ways we have traditionally defined the college student. According to the U.S. National Center for Educational Statistics, the percentage of undergraduates of color has risen from 29.2% in 2000 to 39.7% in 2012 (U.S. Department of Education, National Center for Education Statistics, 2015). Given these shifting characteristics, especially as they relate to students' racial identities, comparisons between studies conducted in the 1990s with those reviewed in this volume must be interpreted cautiously.

Similarly, more international students are enrolling in U.S. higher education institutions than ever before (Institute of International Education, 2012). Institutions continue to expand their reach into international markets through strategic partnerships with global partners and increase revenue streams through recruiting more international students to campus in order to remain globally relevant and economically viable (Altbach & McGill Peterson, 2007; American University Office of Institutional Research and Assessment, 2014; Guruz, 2008; University of California Office of the President, 2015; University of Notre Dame, 2013). Given this increase of international students, college impact researchers are beginning to be more attentive to other variables (e.g., English

as a second language) that may exert influence on either the college experience or the student outcome.

Related to these complications are notions of multiple, intersecting identities for college students. With a greater number of students coming to college more cognizant of their multiple identities and/or more familiar with the lexicon used to describe intersecting identities, it is important to understand that the effects of “race” or “worldview” or “sexual orientation” may involve intersections across these characteristics. Moreover, we were cautious in our use of terms that sidestep these intersecting realities and tried to shy away from using terms like “controlling for race” because they, although technically correct, probably do not provide the most accurate picture of student experience. How can anyone really control for race? In addition, because the research reviewed was broadened to include studies outside the United States, it is necessary to be cognizant of how perceptions of identity are deeply rooted in the unique history, culture, and systemic social structure of the various international postsecondary contexts reviewed.

Another complication arises when trying to capture the experience of the traditional college student. Traditional-aged college students are now a minority of undergraduates in U.S. postsecondary education, as Pascarella and Terenzini (2005) predicted in the previous volume. In short, we attempted to include studies that spoke to the undergraduate experience of all students, regardless of age, college choice, degree aspiration, or preferred mode of educational delivery (e.g., online). In doing so, we hope to extend the reach of this volume to any person interested in undergraduate postsecondary education.

## VOLUME 3: RESEARCH FROM THE 21ST CENTURY

This volume adheres closely to the guidelines provided in previous iterations of *How College Affects Students* (1991 and 2005). As such, we echo the sentiments expressed in 1991 and 2005, respectively. This book is an attempt to synthesize the college impact research evidence that has accumulated since the review period of the 2005 publication. At times, we relied on articles from previous decades to frame arguments made by the authors whose work is reviewed in this volume. This review covered articles written between 2002 and 2013. In addition, we included some articles published from 2014, depending on the time that the chapter was written. This approach was consistent with the previous volumes’ presentation of the evidence.

In terms of focus, this book collected information from over 10,000 sources of literature. Of those pieces, 1,848 peer-reviewed articles served as the foundation for this synthesis. Unlike previous volumes, we chose not to include conference papers or dissertations due to the overwhelming number of quality-controlled research published over the past decade. Articles were

located in journals representing an array of audiences. Every article identified as relevant (i.e., it addressed some aspect of “college effects” on students) was initially reviewed and flagged for potential use for this review. In addition to this approach, we located articles through the use of search engines such as Google Scholar, ERIC, and PsycInfo, among others. In addition, we conducted a hand-search of general higher education journals (e.g., *Journal of Higher Education*, *Research in Higher Education*, *Review of Higher Education*, along with some other journals (e.g., *Journal of College Student Development*, *Review of Educational Research*, *Journal of College Student Retention*). Also, we conducted forward searches in Google Scholar to see who cited eligible articles. After articles were identified as relevant, we scoured that article’s references as a means for tracking down other cited works germane for this review. Once the articles were compiled, they were then organized based on chapter focus. On completion of this step, articles were then systematically coded based on their fit within (and often across) the six-question framework offered by Pascarella and Terenzini (1991, 2005) as part of their syntheses and methodological quality.

Exemplary studies of college impact received greater weight in our review of the literature. Specifically, we placed an emphasis on studies that used research designs that permitted stronger causal conclusions (i.e., experimental, quasi-experimental, and nonexperimental with rigorous analytical controls), obtained multi-institutional samples, conducted multilevel analyses (when appropriate), explored direct and indirect effects (when appropriate), employed a longitudinal design, and used well-validated measures of outcomes and experiences. In subsequent chapters, we cite studies that contain a variety of methodological characteristics, but we generally describe the findings of stronger research in greater detail, and we use considerable caution when evaluating the results of studies that meet few of these criteria.

To provide readers context for understanding our approach to weighing the evidence provided in this volume, we offer some points about measuring and modeling the student outcomes represented and reviewed in Chapters 2 through 9 of this book. Although technical in some regards, this strategy enables readers to make meaning of the research designs and numbers derived for this volume. We begin with a brief discussion of the complexities involved with measuring student change as a result of exposure to and participation in post-secondary education. We then discuss issues of whether and when effects are practically meaningful, and we provide guidelines for making these decisions.

## Measuring and Modeling Student Outcomes

The measurement of changes in student outcomes is more complicated than one might expect. Direct measures of change necessarily involve collecting data on the same students (or institutions) on two or more occasions in time and then comparing the outcomes at these different time points. However, longitudinal data collection (with or without random assignment) presents some logistical difficulties: (1) students’ data from the pretest must be linked to their responses