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Abstract

Using both quantitative and qualitative analyses, we examine the role of a college access intervention in the enrollment and persistence outcomes of low-income students in Chile modeled partially after a Texas admissions program. We find that, although students from the program have a mean cumulative GPA significantly lower than that of their peers who entered college through the regular admissions system, most program students nevertheless meet the institution's academic requirements. Qualitative evidence collected through student interviews presents some of the personal challenges and struggles that these students face when making the transition from high school to university while also highlighting the role of the program in student decisions to persist in college through the end of the first year.

Keywords

college access, low-income students, testing, inequality

Chile has gone through a significant period of development over the past two decades. On the one hand, thanks to accelerated economic growth, the country's socioeconomic indicators have shown important improvement in areas such as unemployment and per capita income, and in 2010, Chile was accepted into the "rich countries' club," the Organization for Economic Cooperation and Development ([OECD], 2009; Ocampo, 2008). On the other hand, the country has failed to achieve the level of a developed country on one important indicator, namely, social equality. Chile stands out negatively for its social gap between rich and poor, which is aggravated by an education system characterized by inequities in access, educational quality, and opportunities (González, 2008; OECD, 2009). This combination of social inequality and lack of equal opportunity is thought to explain Chile's low score on international social mobility indexes (Sapelli, 2011).

One widely hypothesized reason for Chile's low rate of social mobility is its college admissions system, which is based on a standardized national test, the College Selection Test

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(*Prueba de Selección Universitaria* [PSU]; Koljatic & Silva, 2007). The PSU essentially reflects the unequal opportunities available to students from different socioeconomic backgrounds, as students from private, nonsubsidized high schools are greatly overrepresented at the more selective colleges.¹ To counteract the exclusive effects of the current system, several Chilean universities have adopted alternative admissions programs to give talented but economically disadvantaged students a chance to enter a selective university. One of these programs is the college-preparatory program called *Propedéutico UNESCO: Nueva Esperanza, Mejor Futuro* (New Hope, Better Future), which was initiated in 2007 by one of Chile's biggest public universities, the University of Santiago de Chile (USACH), in conjunction with UNESCO and the Equitas Foundation.² The *Propedéutico* program was inspired by the Texas Top Ten Percent Plan, an admissions policy that allows the top 10% of a high school graduating class automatic admission to any public university in the state. While their legal motivations differ, at their core the two programs are based on the same selection principle, that is, students who are at the top of their graduating class should be granted the opportunity to access a university education. This means that, instead of admitting students based primarily on their standardized test scores, they are selected based on their high school rank (Horn & Flores, 2012; Long & Tienda, 2008). While research on the percent plans has yielded mixed results, the idea of an admissions system that is based on factors other than test scores has caught the attention of countries outside the United States that are interested in programs that could increase college access for traditionally underrepresented students (Alon, 2011).

The key question we explore, using a mixed methods approach, is whether special admissions systems supplemented by a college access support program increase the representation and persistence of low-income students in higher education in Chile. While debates about student body representation in the United States often revolve around issues of race, ethnicity, and income, we focus on one of Chilean education's largest, most vulnerable groups—low-income students. We offer some of the first evidence on an intervention in Chile to increase college access and persistence for a select group of low-income students, who otherwise would not be likely to enroll and persist in college.

Of particular importance is the mixed methods approach we incorporate in this analysis. The unique institutional data we use provide a critical glimpse into the persistence patterns of students not likely to have been accepted to and enroll in college based on their grade point averages, test scores, coursework, and level of economic disadvantage. Access to such data is rare, and information gleaned from this analysis in itself might be considered a contribution to the literature. However, this would only answer part of our research question and only provide a part of the larger story of college access for low-income students in Chile. While quantitative data is highly valuable, on its own, it is insufficient to understand the larger causes and structures of social and economic disadvantage (Mertens, 2011). For example, the reasons for student persistence, or lack thereof, is equally compelling information that often is not available through quantitative data analysis. Therefore, we present students' personal narratives to illuminate the story of college access this intervention facilitated. Thus, while efforts to evaluate the program represent new contributions to the larger global educational equity story as it pertains to higher education, integrating quantitative and qualitative methodologies to conduct these analyses is an equally important contribution. This combined approach sets the stage for a larger national study across multiple institutions in Chile, which is forthcoming.

A College Access Intervention: The Propedéutico Program

The *Propedéutico* Program invites students from low-performing schools in disadvantaged neighborhoods who rank in the top 10% of their class to participate in an intensive tutoring and

enrichment program that includes three courses—mathematics, language, and personal management—after which a second selection takes place. Only students who placed in the top 5% of their class based on their grades from all 4 years of high school and from the *Propedéutico* program who had 100% program attendance and passed all the program courses are admitted to the 2-year *bachillerato*, a specialized curriculum program in sciences and humanities. Some are offered a scholarship (Figueroa & González, 2011).

Data and Method³

Research that employs a mixed methods design to evaluate the effectiveness of the *Propedéutico* program or other inclusive education policies in Chile is scarce; thus, this study makes a significant contribution to the literature. Only two other studies that we know of—Koljatic and Silva (2011) and Román Pérez (2013)—use this approach. Koljatic and Silva (2011) use a quantitative analysis to evaluate the USACH program, which they complement with some qualitative techniques. Román Pérez (2013) uses both quantitative and qualitative data to analyze the characteristics and experiences of first-year students at the Silva Henríquez Catholic University who enrolled through the *Propedéutico* program.

For this study we opted for a mixed methods approach that combines student interviews with quantitative analysis of academic achievement (Engel, 2012). The quantitative analysis was performed with secondary data (e.g., test scores, cumulative GPA) provided by the USACH. We assert that this research design offers a more complete and contextualized basis for understanding the impact of college-preparatory programs, as it considers both learning outcomes and, through the interviews, students' college experiences, including the academic and cultural challenges they face (Harvill, Maynard, Nguyen, Robertson-Kraft, & Tognatta, 2012).

Our mixed methods design followed theories of college impact (Astin, 1993; Feldman, Smart, & Ethington, 2008; Pascarella & Terenzini, 2005), which suggest that students' pre-college characteristics, attitudes, and expectations must be taken into account to measure college outcomes more precisely than if one only relied on administrative student-level data. From this perspective, student learning in college can also be influenced by two key factors: the amount of time students spend on curricular and extracurricular activities and the educationally purposeful services and support programs institutions provide to meet the needs of a diverse student population (Erwin, 1991).

Using this theoretical framework as a guide, we developed an integrated research design that combined quantitative and qualitative techniques to collect, integrate, and interpret data on the college outcomes and experiences of students who participated in the *Propedéutico* program. We focused on three aspects of the students experience: (a) student characteristics as they entered college (e.g., high school experience, family support, expectations), (b) students' college experiences and interpretation of them (e.g., interactions with faculty and peers, having a sense of belonging), and (c) development of skills and behaviors associated with a college education (Seifert, Goodman, King, & Baxter Magolda, 2010). We used semi-structured one-on-one interviews to help us gain a complete picture of each student's academic trajectory. This method provides rich data in the form of respondents' answers, which tend to be more elaborate and personal when given verbally and encouraged by the interviewer (Wimmer & Dominick, 1997), particularly since some students feel insecure about their written communication skills or sensitive personal issues (Riquelme, Serrano, Fuentes, & Riquelme, 2011).

Ethical Considerations: Studying Students From Vulnerable Social Backgrounds

Our research design was influenced by a number of ethical considerations. All participants were assured of confidentiality and anonymity, we obtained permission from the students to record interviews, and we did not seek parental consent for the interviews since all the students were of age. In addition, we did not pay the USACH or students for their participation in the study. We made the study findings available to the USACH as our contribution to the evaluation and improvement of the program.

Implementation of the Study

We employed a sequential mixed methods approach in this study. In Part 1, we requested information from the USACH on the learning outcomes and persistence of different student cohorts from both the *Propedéutico* program and the regular-enrollment students in the *bachillerato* program. We performed a quantitative descriptive analysis to compare *Propedéutico* students' academic achievement to that of their peers who enrolled through the regular admissions system. In Part 2, we conducted semistructured one-on-one interviews with a sample of students from the *Propedéutico* program to hear the stories behind the achievement results found in the quantitative study. Using the student interviews, we constructed narrative profiles that contained key information on each student's background and his or her learning behaviors, experiences, and self-perception both prior to and while in college and contributed to the comprehension of each student's social and educational context. In the final part we integrated the data from the quantitative and qualitative analyses to achieve a broad and deep understanding of the effects of the *Propedéutico* program. The students' personal stories added meaning and individuality to the academic achievement statistics, whereas the quantitative results contributed information on generalized and measurable outcomes.

Quantitative Study

To assess the academic performance of students from the *Propedéutico* program, we selected two random samples: one from students who entered the USACH *bachillerato* program through *Propedéutico* and one from students who enrolled through the regular admissions system. Both groups were enrolled in 2010. We first compared the high school grade point average (GPA) of students who entered via *Propedéutico* with that of their peers who enrolled through the regular system. We then compared the GPAs of both groups at the end of the second semester—that is, after their first year in college.

While our samples did not allow us to make causal inferences due to possible selection bias in terms of socioeconomic background, the quantitative analysis nevertheless provided valuable descriptive information about the program's effectiveness in preparing economically and educationally disadvantaged students for college as compared to students who entered through a regular admissions program.

Using data from the two samples, we then adjusted two different regressions to measure the achievement gap between the *Propedéutico* students and their regular admission peers at two points: after finishing high school and at the end of the first year of university. This enabled us to compare the GPA of students from the *Propedéutico* program with that of students enrolled through the regular admissions process.

The basic regression model is as follows:

$$GPA_i = \beta_0 + \beta_1 Propedeutico_i + \varepsilon_i$$

In this model we are measuring the GPA relative to how students enrolled, distinguishing between the *Propedéutico* (*Propedéutico* = 1) and regular admission students (*Propedéutico* = 0). Therefore, β_1 represents the difference in GPA between Propedéutico students and their regular enrollment peers.

By comparing students' β_1 when they graduated from high school to that at the end of the second semester, we were able to determine whether the achievement gap changed during their first year in college.

Qualitative Study

Sample. The sample for the qualitative analysis consisted of 15 students, including at least one for every enrollment year beginning in 2007. A disadvantage of this sample design was that we did not know if the students we interviewed were representative of the general student population or whether they were more committed to the program than others. However, since nearly 85% of those contacted agreed to participate, we considered the sample sufficiently representative for the qualitative part of the study. Unsurprisingly, schools in Chile are highly segregated by socioeconomic status; thus, the school context is a general indicator of student characteristics (see Brunner & Elacqua, 2004; Treviño, Salazar, & Donoso, 2011). Our sample showed similar differences recorded in previous research.

Interviews. We conducted 15 semistructured interviews of 15 to 25 minutes using an instrument that contained seven open-ended questions, which covered topics related to the program's effectiveness and students' experiences both during the college-preparatory program and once they were in college. The interviews were recorded and transcribed verbatim in Spanish and then translated into English.

Analysis. We read the full interview transcripts, looking for themes that stood out and possible patterns between students from different enrollment years and different types of high schools. We ordered the responses to create an overview of the topics discussed and identified five overarching themes that helped us determine the program's effectiveness. We collected and analyzed evidence on each topic from the students' responses. The interviews provided detailed information about how the various program elements contributed to students' college readiness and about the personal challenges they faced, both in the program and in college, thus revealing the individuals behind the data.

Triangulation and Interpretation of the Data

In the final stage of the study, we triangulated findings from the quantitative and qualitative components using a "convergence coding matrix" to list all findings in a single diagram. This technique allowed us to consider the analyses' agreement or convergence, complementarity, and discrepancy or dissonance (Farmer, Robinson, Elliott, & Eyles, 2006). As expected, most of the findings were complementary, although there was partial agreement in the findings for academic achievement.

Results

We present our quantitative and qualitative findings in two parts. The results of the triangulation process are shown at the end of this section.

Table 1. Linear Regressions Comparing the GPA of Students From the *Propedéutico* Program and Students Accessing the University via the Regular Process, at the End of High School and at the End of the First Year of University, 2010.

Dependent variable = Standardized GPA	Model for the end of high school (<i>n</i> = 183)	Model for the end of the first year of university (<i>n</i> = 74)
Independent variable		
<i>Propedéutico</i>	−0.170***	−0.577***
<i>R</i> ²	0.03	0.33

p* < 0.05, ** *p* < 0.01, * *p* < 0.001.

Source: Centro de Políticas Comparadas de Educación (CPCE).

Quantitative Results: Achievement Gap

The results of the regression analyses show that, at the end of high school, students in the *Propedéutico* program showed lower achievement than their counterparts who applied to the same university through the regular admission system. *Propedéutico* students' GPA was on average 0.17 standard deviations lower than that of their peers, a statistically significant difference, although it is only a 0.05-point difference on the Chilean grade scale (Table 1).

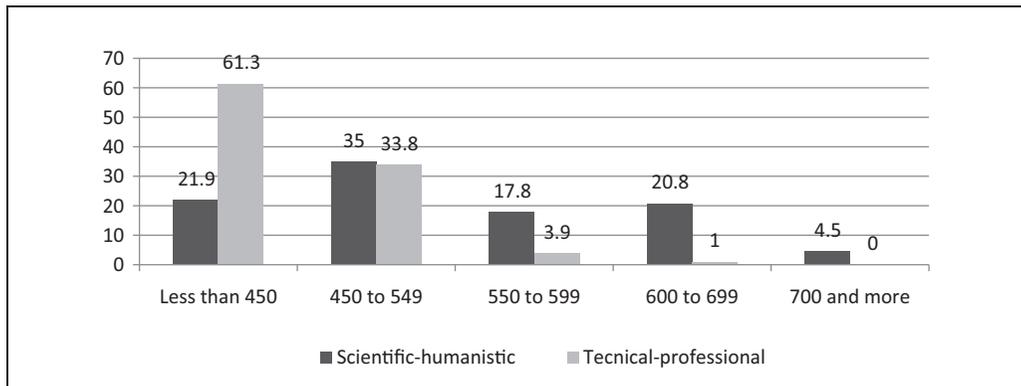
Statistical tests comparing the two groups' GPAs show the achievement gap increased in college, reaching 0.58 standard deviations after two semesters, which means that the regular admission students' GPA averaged 0.32 points higher than their peers' (6.19 vs. 5.87). However, all *Propedéutico* students in the sample were able to meet the university's academic requirements despite having lower grades than the students from more advantageous backgrounds".

Qualitative Results: Inside the *Propedéutico* Program

The interviews with students provided rich information about their experiences with the *Propedéutico* program and in college. They also showed that students from different high schools had different experiences. We present examples of the qualitative findings by theme based on topics that emerged in the interview results.

Knowing About the *Propedéutico* Program. The majority of the students interviewed said they had not anticipated participating in the *Propedéutico* program because their high schools provided little information about it. In fact, they did not know it existed until they learned about it from a teacher or relative, often not until their third or fourth year of high school, which may have affected their future opportunities as it was too late to improve their grades and class ranking. This meant that some of the spots available in the program, after a review of eligibility requirements, were not filled, as one student points out,

[Teachers] would say, for instance, to us—those who had the best grades—they would tell us to study. But I think that a more effective method would have been to tell the whole school about [the *Propedéutico* program], for . . . something was going wrong, and it still is because, for example, this year there were 20 [places] and only 4 were occupied. This is where the school is failing. (Female, *Propedéutico* 2011, first-year chemistry and pharmacy student)

Figure 1. PSU test scores* by type of high school curriculum, 2011, in percentage.

Source. Centro de Políticas Comparadas de Educación (CPCE).

*PSU = college selection test. Scores are for language and mathematics.

Access to Higher Education. Most students interviewed said they had high educational expectations even before participating in the *Propedéutico* program and expected to pursue higher education. However, most also admitted that the program was their only path to college, the main reason being that the college admissions system is based on the PSU, and due to their disadvantaged socioeconomic background most had scores below 600, the minimum needed to apply to most selective universities. Many of the interviewees said they would have opted for a less selective, less expensive professional institute or technical training center had they not been accepted into the *Propedéutico* program:

Like I said, I think that I would have taken the PSU like every normal kid of that age, but I would have probably ended up in a technical training center or some lower quality university, I mean, a professional institute or university where [required PSU] scores are not that high. (Male, *Propedéutico* 2010, second-year civil and electrical engineering student)

The *Propedéutico* Program as a Tool for Leveling Competencies. The type of high school students attended, scientific-humanistic or technical-professional, seems to have influenced their view about the efficacy of the *Propedéutico* program. Those on an academic track (scientific-humanistic) were more likely to minimize the program's impact than their counterparts from the technical-professional schools, one of whom described the program as a necessary step between his school and university:

I think it is [effective], because I went to a technical-professional school, so I did not have a lot of academic skills. I studied administration [in high school] so my knowledge of math was really basic, but the *Propedéutico* program, it provided a solid base for those that entered through the program, you know, as it helped us level our skills. . . . In my view, it provides a solid base as to make the transition from high school to university. (Male, *Propedéutico* 2009, third-year architecture student)

The students also said they valued the personal support and encouragement the teachers and program director provided. This type of support seemed crucial in helping the students overcome the cultural discontinuities between their home environment and the university, as well as the higher level of academic performance expected of them.

I think what most helped me was the encouragement from the teachers. There was this teacher that would always encourage us, that would [tell us] we had to study and that we would do great [in college] because we were an example. (Male, *Propedéutico* 2010, second-year civil and electrical engineering)

Obstacles and Personal Challenges to Succeeding in the Propedéutico Program. The students recalled an array of obstacles that stood between them and their success in the *Propedéutico* program. The first involved the family, such as a lack of parental support. Some of the parents did not understand what the program was about or what was expected from them, especially in terms of a financial contribution. As one student describes,

I had many [obstacles to confront]. At first my dad did not want me to take this option because I have two older sisters and they did not have the chance to go to college. And there was a problem of understanding. My dad told me that he could not make the difference [between my sisters and me] paying for college for me, because he did not understand what the program was about. (Male, *Propedéutico* 2010, second-year advertising student)

Adapting to University Life. The students faced particular challenges when they left the protected environment of the *Propedéutico* program to make the transition to college. Some found it difficult to interact with classmates who enrolled through the regular admissions process and came from different backgrounds. They felt that they were at an academic disadvantage, which sometimes made it difficult to engage with their peers, although many seemed to overcome this situation as they advanced in their university career:

I have had conflicts with some of my fellow students because we have different perspectives. In general, the student profile here in advertising is really different from who I am. . . . Well, first of all I come from a different background, but it is not only that, they [the other students] have delusions of grandeur, like they feel superior and I do not like that. (Male, *Propedéutico* 2010, second-year advertising student)

Despite the difficulties the students faced in the *Propedéutico* program and their doubts about having the capacity to pursue a college degree, most of them rapidly overcame that stage as their abilities improved and with it their self-esteem. All the students felt they were as likely to finish college as their regular-admission peers, and they were confident of their capacity to survive or even excel in college. This self-confidence increased with every semester they completed successfully.

Integration of Quantitative and Qualitative Findings

Most of our findings are complementary, since the qualitative analysis was designed to gain a more complete picture of the effects of the *Propedéutico* program in addition to general learning outcomes as measured by GPA. The triangulation of data allowed us to consider other aspects, such as motivation, personal challenges, and adaptation to college life, in the context of the achievement gap that exists between students from the program and their regular-admission peers.

We found a certain level of convergence between the quantitative and qualitative findings with respect to academic achievement. The quantitative analysis showed that students from the *Propedéutico* program have a lower average GPA than their regular-admission peers, both on

entering college and after two semesters; in fact, our results show that the achievement gap increases over time. The qualitative analysis confirms this difference in academic performance, as most students from the *Propedéutico* program indicated that their GPA dropped significantly in college and that they felt they were at a great educational disadvantage to their peers. However, some students did not perceive any difference between their performance and that of their regular-admission classmates.

Ultimately, however, the qualitative data reveal that the *Propedéutico* program students, on average, persisted in college despite the deep levels of disadvantage and demands for adaptation they were asked to meet. While GPAs in high school and college were lower than nonprogram college enrollees, the data also reveal that program students still met university requirements to stay in college. This leads us to ask what the results might look like if program students were compared to nonprogram students who had similar test scores or at least more similar income levels and who also were admitted to a selective university using techniques such as propensity score matching (Doyle, 2009; Melguizo, 2010). That is, would program students exhibit more positive achievement outcomes with a more comparable control group? What if program participants had learned of the program in the 9th grade with enough time to change study habits and expectations? Advances in data availability not yet provided would be the only way to further test these more complex questions. The mixed methods analysis provides insights into research design methodology to be employed in future research studies with such interventions.

Conclusion

Creating educational opportunities for underprivileged youth is a challenge that goes beyond simply opening up their access to a university. We have seen the cultural discontinuity between students' social origins and university life, which can create significant barriers to their educational success, as they carry the burden of years of low-quality education, an unstimulating environment, and very limited financial resources.

This mixed methods study confirms that, due to these obstacles, students who entered the USACH through the *Propedéutico* college-preparatory program had lower achievement outcomes than their peers who enrolled through the regular admissions system and, in general, are from higher socioeconomic backgrounds. However, we also found that the *Propedéutico* students who were part of the study resisted the high odds of dropping out of college. In fact, after 1 or 2 years in college, most were convinced that they would finish their studies. They generally felt that the *Propedéutico* program had given them tools that eased their difficult transition to university life, although it often took more than 1 year to adjust.

Understanding the factors that influence the college experiences and outcomes of low-income students as well as the institutional and governmental responses to academic achievement gaps are of growing global concern. While Chile's *Propedéutico* program has provided exciting new evidence on the potential overall positive effects of this intervention, additional analysis is required to identify the program's most effective mechanisms. In the end, expecting one program to remedy generations of educational exclusion and social marginalization—a circumstance that is certainly not unique to Chile—may be too much to ask. However, it could certainly be an innovative and thoughtful experiment in the right direction.

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Declaration of Conflicting Interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

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Notes

1. The landscape of Chilean universities is generally as follows: (a) the traditional, selective universities that comprise the Presidential Board of Chilean Universities (CRUCH), which work with a common application and selection system based primarily on national test (PSU) scores; (b) newer private colleges, which use a different admission processes and vary in selectivity; (c) the professional institutes and the centers for technical education, also nonselective.
2. The program was adopted in subsequent years by 12 other universities.
3. An expanded version of this article is available on request from the authors.

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