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Students' Perceptions of Academic Efficacy and School Supports: A Mismatch with School Demographics

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Abstract:
This exploratory study aimed to (a) identify students' beliefs about their abilities and the contributions of their school environments toward achieving their college and career aspirations, (b) group schools by students' perceptions, and (c) contrast this grouping with grouping by school-level demographics. This secondary analysis examined items from the *County Youth Survey* administered to 11th-graders (N = 3,751) at 17 local schools. School size, racial, and socioeconomic statistics comprised the publicly available data. Principal components analysis identified 17 college and career readiness items representing two dimensions of student perceptions: School Supports and Academic Efficacy. Cluster analysis revealed that schools grouped by these dimensions differed substantially from the schools' demographic groupings.

Keywords: college and career readiness, academic efficacy, school supports, high school

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A high priority among educators and policymakers is support of a public education system in which all graduates are prepared to enter a postsecondary experience leading to a productive career. In past decades, many educators, scholars, and policymakers have met this challenge through program development and research focused on providing various kinds of supports to individual students (Gándara & Bial, 2001). Missing from this literature are students' perceptions of what supports schools provide. Understanding students' perspectives on what in their high school experience supports post-secondary aspirations is essential for policy makers and educators to assess and develop interventions to support successful post-secondary plans and transitions.

The purpose of this exploratory study is to examine how high school students perceive the academic environments of their schools and the quality of their own academic preparation to pursue postsecondary aspirations. Our research questions are twofold: (a) What underlying dimensions of a school's academic environment may be measured by this survey of students'

perceptions? and (b) How do students' perceptions about their schools and themselves map onto the actual demographic characteristics of the schools they attend?

Postsecondary education is a critical step on the path to making important career decisions. One framework for understanding the career development process is found in Social Cognitive Career Theory (SCCT; Lent, Brown, & Hackett, 1994, 2000, 2002). SCCT attributes causality for career interests, choices and performance to the interaction of personal attributes, external environmental factors, and overt behavior of individuals. According to the theory, intermediate and ultimate career outcomes are co-determined by individuals' self-efficacy expectations and outcome expectations – constructs that rely heavily on personal perception and are continually in flux as they are influenced by ongoing learning experiences. The theory further posits that individuals' learning experiences are shaped by the interactions between environmental (contextual inputs) and individual characteristics (person inputs), which include dispositions, gender, ethnicity, social supports, and perceived barriers. Lent and colleagues envisioned SCCT to include academic pursuits within the career development process; hence, the importance of examining the relevance of SCCT as a foundation for studying characteristics of a school's supports for academics and college going and the student perceptions of these supports.

SCCT posits that the interactions between environmental and individual characteristics (e.g., gender, ethnicity, social supports, perceived barriers) influence the career aspirations and decisions of young people (Lent, Brown, & Hackett, 1994, 2000). Thus, the public school environment can have a substantial influence on students as they prepare to graduate and consider postsecondary options. However, the features of a public high school environment that prepare students for postsecondary experiences are rarely spotlighted. Research is lacking on specific school-based contextual variables that influence students' likelihood of continuing their education past high school graduation.

Profiles of students who do and do not matriculate into postsecondary education have led to certain assumptions about the type of schools each group attends. Because low-income students, students of color, and students in urban settings are on average less likely to make the postsecondary transition (Dyce, Albold & Long, 2013; Louie, 2007; Perna et al., 2008), another common assumption is that students in such populations are largely uninterested in postsecondary opportunities (Hamrick & Stage, 2004). Much research has focused on adult perceptions of adult-organized activities geared toward improving the quality of educational opportunities and supports to increase student engagement in postsecondary education and training. Thus, some of these assumptions may originate in the adult voices that are most vocal in examining issues of access to postsecondary education. The opinions and aspirations of the students themselves are less frequently heard in the literature, particularly in terms of students' perceptions of the high school environment and support systems.

Literature Review

Given the consistency in the pattern of college graduates reaping higher economic returns than high school graduates (Bureau of Labor Statistics & U.S. Department of Labor, 2010, 2012; U.S. Census Bureau, 2012), increasing students' interest in and readiness for postsecondary education has been a prominent concern among educators and educational researchers. Over the past several decades, many programs and strategies to increase postsecondary enrollment have targeted underrepresented minority groups and low-SES students generally. In that time, some progress has been noted, particularly among Latina/o and African American students. Since the 1970s, the percentage of African American and Latina/o high school graduates entering college has increased by a third (U.S. Department of Education, 2010; Yun et al., 2008).

However, even with these increases in college enrollment, sizeable gaps in enrollment rates between African Americans and Latinas/os versus non-Hispanic Whites still remain, and degree attainment has not improved. Research clearly documents that low-income students and students of color are at a disadvantage in the college choice process and face significant barriers in their pursuit of postsecondary degrees (Cabrera & La Nasa, 2000; Haycock, 2001; Terenzini, Cabrera, & Bernal, 2001).

Despite numerous programs and policies targeting underrepresented minority and low-income students before and in the transition into college (e.g., GEAR UP and TRIO), gaps in college enrollment and attainment endure. Based on prior research, we know quite a bit about which demographic and other individual characteristics correlate with reduced college prospects and, therefore, much of the emphasis in these programs is on "fixing" the students, their families, and their peer groups (Tierney, Corwin, & Colyar, 2004; Tierney & Hagedorn, 2002). Such an approach can reinforce common stereotypes of the students these programs are meant to serve. Meanwhile, gaps in college enrollment and attainment continue. However, much existing research contradicts these stereotypes. The first set of studies explores Latino family orientations to college to find that Latino families and communities do support college-going. For Latino students, relationships with family, relatives, peers, and other close social associates play a supportive role in shaping college academic preparation, planning, enrollment decisions, and trajectories (Auerbach, 2002, 2007; Ceja, 2004, 2006; Gándara, 1995; González, Stone & Jovel, 2003; Pérez & McDonough, 2008; Person & Rosenbaum, 2006; Turley, 2006).

The second set of studies analyzes differences in aspirations between racial groups and challenges the stereotype of anti-school attitudes and non-college aspirations. It has been well documented that African American and Latino students do value education and are more likely than Whites to report college expectations once differences in SES are controlled (Cheng & Starks, 2002; Harris, 2008; Kao & Tienda, 1998; Qian & Blair, 1999; Reynolds & Johnson, 2011). In particular, Reynolds and Johnson (2011) found that, after controlling for family structure, parental education, and high school grades and curriculum, African American high school seniors were about three times as likely as Whites to report that they expected to complete a four-year college degree, and Hispanics were two and a half times as likely to hold those expectations compared to Whites. For decades, African Americans have also reported more pro-school attitudes and higher occupational expectations than Whites (Ainsworth-Darnell & Downey, 1998; Downey, 2008; Downey, Ainsworth & Qian, 2009; Coleman et al., 1966; Garrison, 1982; Mickelson, 1990) despite the fact that such aspirations and the eventual realization of those aspirations as measured by educational and occupational outcomes is not as tightly linked for Blacks and Latinos as it is for Whites and Asians (Reynolds & Johnson, 2011).

Goldsmith's (2004) work is consistent, and his analyses of national data point to the school context as a relevant component in shaping aspirations and attitudes. He begins by citing prior research confirming that, "Both blacks and Latinos have higher educational aspirations than do whites, especially when differences in family SES are taken into account" (Goldsmith, 2004, p. 121). This relationship between race/ethnicity and aspirations/pro-school attitudes has been strong and consistent over time, but Goldsmith (2004) is one of the only studies to also directly assess the relationship between college aspirations/school attitudes and school context. Using a multilevel analysis, he finds that black and Latino students have more optimistic and pro-school beliefs, and these beliefs are even more positive for minority students in minority-segregated schools. This study opens the door to a further examination of the role of high school context as an environmental contributor to student attitudes and beliefs.

As the above studies reveal, a simple deficit-oriented approach to college aspirations based on individual characteristics neglects the complex environmental component of the SCCT model, which posits the important contribution that conditions and structures of schooling might play in shaping outcomes. Rather, many researchers and educators alike too quickly assume that too many African Americans, Latinas/os, and poor students of all races do not value education in general and higher education in particular. The failure to value education and the low aspirations among students and their families are often presumed to drive their lower rates of postsecondary enrollment and success (Villalpando & Solorzano, 2004; Weidman, 1989). However, when examining contextual environmental factors, a more nuanced picture emerges. Ogbu and others posit that for African American youth, negative connection to schools or negative school experiences are associated with lower postsecondary expectations (Berzin, 2010; Mau, 1995; Ogbu, 1991). These negative "blocked opportunities" include both the quality of the schooling and perceptions of the educational environment (Berzin, 2010). Angela Valenzuela's book, *Subtractive Schooling* (1999), shows a similar dynamic for Latino students. She elaborates how the school environment can reinforce powerful norms that send Latino students negative messages about their school success that may contradict family encouragement.

As stated earlier, Social Cognitive Career Theory (SCCT) can provide an alternative to a deficit-oriented approach to college aspiration, because it posits the important contribution that conditions and structures of schooling can play in influencing outcomes such as college aspirations. Evolved from Bandura's (1986) general social cognitive theory, SCCT highlights the interplay between three constructs: (a) "person inputs", some of which, like native ability, are genetically heritable, and some of which, like gender and ethnicity, are socially constructed; (b) external environmental factors or "contextual affordances" that can either facilitate or limit positive outcomes directly or indirectly; and (c) overt individual behaviors such as personal goal formation, choice actions, expenditure of effort, and refinement of goals.

Additionally, the influences of environmental context and person inputs in the model are continually mediated through the co-determinants of self-efficacy, a person's sense of capability for completing various tasks; and outcome expectations, a person's beliefs about what will occur if tasks are successfully performed. Thus, in SCCT career and academic outcomes are not solely determined by personal traits operating in a vacuum nor are they determined solely by environmental context but rather as a complex interaction between environment and individuals (Lent et al., 2002).

Consistent with SCCT, recent studies suggest that the school's academic environment, institutional social capital, the ideology of college-going, and the patterned structures of support schools provide can have a strong influence on the postsecondary trajectories of students (González et al., 2003; Gregory & Huang, 2013; Hill, 2008; Jez, 2009; McDonough, 1997, 1998; Rosenbaum, 2001). Social supports for college going in a student's proximal environment (e.g., school) can enhance a student's self-efficacy and were seen as positively related to academic self-efficacy (Quimby & O'Brien, 2004). For example, in describing a school on the University of California's San Diego campus, Alvarez and Mehan (2006) claimed that "the first step in preparing underserved students for college eligibility was creating college-going-culture" (p. 84).

In a study of school reform in the Chicago Public Schools, researchers found that "the single most consistent predictor of whether students took steps toward college was whether their teachers reported that their high school had a strong college climate: that is, the teachers and their colleagues pushed students to go to college, worked to ensure that students would be prepared, and were involved in supporting students in completing their college applications"

(Roderick et al., 2008, p. 4). Such research has uncovered the powerful role of educators in schools and school programs, yet we know much less about how students themselves perceive their capacities and their future prospects within the context of their school settings (Holland & Farmer-Hinton, 2009).

With regard to student perceptions, Schneider and Stevenson (1999) detail the ambitions and future plans of high school students across the United States, but their study includes neither an assessment of particular school contexts nor a focus on racial/ethnic subgroups. Their pivotal book did, however, point out the misalignment between students' postsecondary and occupational ambitions and their odds of success. On the other hand, more recent qualitative research in five high-poverty high schools has illustrated the important role that the high school context plays in circumscribing the parameters within which students define their relative academic achievement and preparedness for college (Bosworth, Convertino, & Hurwitz, 2014).

The present study examines the concept of misalignment as well. However, our focus is not on alignment between student ambitions and their chances of realizing those ambitions. Rather, we focus on the alignment between what students perceive about their academic preparedness and what they perceive about their school context. This exploratory study further evaluates the alignment between the students' perceptions and the demographic features of the schools they attend.

Method

Participants

The primary data source is a subset of items and students from the *County Youth Survey* administered to eleventh-grade students in 2009. The present study concerns a secondary analysis of the data collected from 3,751 eleventh-grade students in 17 public high schools, which included 1 charter and 2 magnet schools. All 9 school districts within the county were eligible and invited to participate in this census survey, of which 2 declined (comprising three high schools). All participating schools enrolled grades 9–12. All eleventh-grade students at the participating schools were eligible and invited to take part in this census survey. Excluded from this analysis were alternative or continuing education high schools, and schools that enrolled fewer than 10 eleventh graders.

Measures

Student survey. This study concerns a secondary analysis of items from the *County Youth Survey.* Educational researchers at The University of Arizona, representatives from several local county school districts, and Voices for Education (a nonprofit educational reform advocacy organization) collaboratively developed the survey. They designed the survey to collect data on youth perspectives and self-reported practices on a variety of issues (e.g., education, violence, and health) to inform the policies and decisions of school administrators, educators, and advocacy groups. Survey items derived from input of focus groups with middle through high school students and teachers, and from issues of common interest to the collaborators. After pilot testing and further revision, the final version of the survey contained 232 items, including 4- and 5-point Likert scales, multiple-choice questions, and open-response formats. The survey organizes items into 11 sections: School Experiences, Student Motivation, Academic Achievement, Technology Use, Life Satisfaction, Well-Being, Peer Influence, Neighborhood, Parental Involvement, Aspirations and Expectations, and Demographics. Participating schools or districts determined their own procedures, times, and days to administer and proctor the survey during the spring semester of 2009.

School-wide demographics and performance. This analysis also incorporates publicly available school-level archival data for the 17 schools from the 2008–09 academic year (year of the survey). These data are the school-wide (all grades, 9–12) enrollments, proportions of racial/ethnic minority students and students eligible for free or reduced lunches (% FRL, a surrogate for socioeconomic status; U.S. Department of Education, 2010).

Data Analyses

Data preparation. Based on SCCT dimensions of person variables and environmental variables (Lent et al., 2002), authors first identified a potential subset of relevant survey items and prepared the secondary data for analysis. Specifically, the current investigation focused on a subset of survey items related to the following constructs: students' *postsecondary aspirations*, *academic behaviors*, and perceptions of their *school's academic supports and climate*. The first and second authors independently identified items from the *County Youth Survey* that, on their face, appeared to measure these constructs. The authors then met to discuss their selections and reach consensus on an initial list of 57 of the 232 survey items (25%).

Examples of *postsecondary aspiration* items included students' interest in attending college, occupations they wanted to pursue, and whether getting into a good college or getting a good job motivates them to study harder. *Academic behavior* included items like whether students usually do their homework, how many advanced placement (AP) courses they take, and what grades they receive in different subjects. *School's academic supports and climate* items concerned students' perceptions about how well their schools prepare them for the future, access to counseling for "college knowledge," and how safe they feel at school.

Some of the selected items – like four separate items about grades received in English, math, science, and social science – were combined into a single variable and renamed (i.e., "Perceived GPA"), resulting in 42 potential variables for analysis. Next, the variables (i.e., survey items) and cases (i.e., students) were checked for missing data. One student did not respond to any survey items and was excluded from the analyses. Nine of the 42 variables were missing on more than 10% of the surveys, and were subsequently excluded, leaving 33 variables for analysis.

Principal components analysis. Nonlinear (categorical) principal components analysis (CatPCA) was used to reduce the large number of selected survey items to a few dimensions (Linting, Meulman, Groenen, & van der Koojj, 2007; Meulman & Heiser 2010). This exploratory analysis helps to identify potential underlying dimensions – like constructs – measured by the items, as well as how strongly associated items are with the dimensions. This process also yields an "object score" – a single composite value that represents information from many items associated with a dimension – for each participant on each dimension. In this way, data from a large number of items compose only a few dimensions that can be used for further analysis. Unlike traditional PCA, CatPCA can process items with categorical values (e.g., yes/no, multiple choice) rather than continuous values (e.g., age, weight, income, test scores).

We first examined the scree plots to determine the number of dimensions and dropped variables with low average centroid coordinates (i.e., $\leq .10$), repeating this process six times until the model finally settled on a two-dimension solution with 18 variables. Next we assessed the reliability of the variables, dropping one additional variable that did not contribute to the overall reliability of its dimension (i.e., corrected item-total correlation less than .3 or a *Cronbach's alpha if item deleted* value greater than overall Cronbach's alpha). We revaluated the 17 variables through the CatPCA model, which resulted in retaining all 17 variables and a two-dimension solution.

The CatPCA process also yields "object scores" for each student on each of the two dimensions. Average object scores for each school were calculated to create a score profile of the two dimensions for each school. The average scores were then transformed to *z*-scores ($M = 0$, $SD = 1$) for relative comparison among the 17 schools and use in the cluster analysis.

Cluster analysis. The cluster analysis evaluated whether and how a single large group of data (i.e., 17 schools) can be meaningfully classified into a smaller number of groups (Everitt, Landau, Leese, & Stahl, 2011; Norušis, 2011). Algorithms identify those data that are most similar with each other and most dissimilar from the other groups. A hierarchical cluster analysis was appropriate given the exploratory nature of this analysis of a relatively small data set (17 schools) with continuous data (standardized dimension scores). The analysis further used the squared Euclidean method to measure distance between clusters (the smaller the distance, the more similar the cases) and the between-groups linkage method to link cases (distance between one pair of clusters is the average distance among all pairs). We specified and evaluated solutions showing three to six clusters. For comparison, we also separately conducted the same cluster analysis on the continuous school-level (grades 9–12) demographic variables (i.e., Enrollment, % FRL, and % Non-White [i.e., any racial/ethnic identity or combination of identities other than non-Hispanic White only]).

Overlap between both cluster analyses. We measured agreement between the two types of school clusters (i.e., one clustered by student perceptions and the other clustered by school demographics) by calculating the observed percentage agreement and the unweighted kappa statistic, which is appropriate for nominal ratings and accounts for chance agreement (Cohen, 1960; Fleiss, 1971). Kappa ranges from -1 to 1, where 0 indicates no agreement and 1 indicates perfect agreement (negative values, while mathematically possible, hold no practical meaning).

Results

The current analysis included secondary survey data from a county census sample of 3,751 eleventh grade students from 17 high schools. Most of these students self-identified as Hispanic/Latina/o (33%) or White (32%), whereas African American, Asian American, Native American, Multiple, and Other combined accounted for 19% of the sample, and the remainder did not self-identify. Females accounted for 42% of responses, males for 40%, and the remainder missing. The overall response rate to the census survey was 67% ($SD = 13.90$) on average across the 17 schools.

The combined total enrollments across all grades (9–12) at all 17 schools totaled 26,028 students. The majority of students were Non-White (62%), of which 82% were Hispanic/Latina/o. School-wide enrollments ranged widely among schools ($M = 1{,}531$, $SD = 687$, range = 2,805), as did the proportions of students eligible for FRL ($M = 36\%$, $SD = 24\%$, range = 71%).

Research Question 1: What Underlying Dimensions of a School's Academic Environment May Be Measured by this Survey of Students' Perceptions?

We originally selected 57 survey items considered related to one of three dimensions: (a) postsecondary aspirations, (b) academic behaviors, and (c) school's academic supports and climate. Ultimately, a nonlinear (categorical) principal components analysis (CatPCA) was conducted on the 17 variables. Rather than items grouping together by the three dimensions that we originally proposed, results from the scree plot of eigenvalues consistently showed an inflexion at Dimension 3, which justified retaining two dimensions in the model. Table 1 displays the component loadings for each item on each dimension. Authors considered the items that loaded more heavily on Dimension 1 to represent "School Supports," and items on

Dimension 2 to represent "Academic Efficacy." This final list of 17 items across two dimensions explains 36.32% of the variance. Cronbach's alpha for the 12 School Supports items and 5 Academic Efficacy items are .80 and .64, respectively. CatPCA also yields object scores for each student on each dimension.

Schools vary in the direction and magnitude of their scores on the School Supports and the Academic Efficacy dimensions. Table 2 summarizes for each school the average object scores on

Table 1

Component Loadings and Reliability of the County Youth Survey *Dimensions of Students' Perceptions (N = 3,751)*

	Survey Variables	Dimension	
		School Supports	Academic Efficacy
1	I would describe my school experience as…*[positive]*	**.637**	-.109
2	Please evaluate the quality of the school's...software, computers, curriculum, safe environment, welcoming culture, Internet, and library.	**.594**	-.418
3	My school is preparing me very well for the future.	**.578**	-.305
4	I am motivated to study hard in school.	**.576**	.010
5	To what extent...I see the importance of learning.	**.574**	.242
6	How much do...my teachers motivate me to learn.	**.567**	-.125
7	To what extent...I have all the resources I need to accomplish my goals.	**.523**	-.065
8	How safe I feel in my school.	**.508**	-.191
9	My school is preparing me for the type of job/occupation that I most want to have in the future.	**.493**	-.355
10	I would describe my school environment as caring/supportive.	**.461**	-.230
11	Most students in my school...are interested in learning, come to class prepared, plan to go to college, & work very hard.	**.441**	-.425
12	I have never considered dropping out of school.	**.408**	.285
13	To what extent...I will be more successful than my parents/guardians.	.220	**.515**
14	To what extent...I will be able to accomplish my dreams.	.390	**.510**
15	Sure that I will graduate from high school.	.473	**.501**
16	GPA (English, math, science, & social studies)	.414	**.446**
17	To what extent...I am intelligent.	.396	**.432**
	Eigenvalues	4.18	2.00
	% of variance	24.57	11.75
	α	0.80	0.64

Note. Variable principal normalization. The larger of the two component loadings is bolded, indicating the dimension each item belongs to. Thus, School Supports includes the first 12 items, Academic Efficacy the last 5 items.

both dimensions, which are then standardized and plotted in Figure 1 (all school names are pseudonyms). As illustrated in Figure 1, only Johnson has lower than average scores on both dimensions (southwest quadrant of the graph), whereas only Williams's scores are in the positive direction on both (northeast quadrant). The remaining 15 schools are split: 8 have high scores on the School Supports dimension and low scores on Academic Efficacy (northwest quadrant), whereas 7 schools have low scores on School Supports and high scores on Academic Efficacy (southeast quadrant).

Table 2

Average Object Scores on Both Dimensions of Student Perceptions by School and Cluster Membership

Student Perception Clusters	*n*	School Supports			Academic Efficacy		
		M	*SD*	*z*	*M*	*SD*	*z*
Perception Cluster 1							
Bautista	279	0.25	1.03	1.18	-0.24	0.96	-1.00
Brenly	240	0.12	1.20	0.56	-0.20	1.03	-0.79
Dellucci	160	0.15	1.03	0.70	-0.25	0.91	-1.03
Finley	239	0.22	1.03	0.99	-0.31	1.01	-1.31
Grace	315	0.05	0.92	0.22	-0.26	0.98	-1.07
Womack	34	0.33	1.16	1.55	-0.25	0.92	-1.03
Perception Cluster 2							
Schilling	377	0.05	0.93	0.21	-0.04	1.01	-0.10
Swindell	48	0.22	0.83	1.03	-0.11	0.84	-0.41
Williams	389	0.14	0.97	0.65	0.01	0.89	0.13
Perception Cluster 3							
Bell	258	-0.29	0.93	-1.44	0.23	1.06	1.09
Gonzalez	172	-0.18	1.00	-0.91	0.22	1.03	1.02
Miller	278	-0.19	1.02	-0.94	0.37	0.89	1.71
Sanders	217	-0.24	0.96	-1.21	0.27	0.90	1.28
Perception Cluster 4							
Anderson	169	-0.03	0.98	-0.19	0.13	1.00	0.62
Counsell	174	-0.05	0.88	-0.28	0.03	1.03	0.21
Kim	253	-0.05	0.93	-0.28	0.27	0.97	1.27
Perception Cluster 5							
Johnson	149	-0.37	0.98	-1.84	-0.15	1.09	-0.59

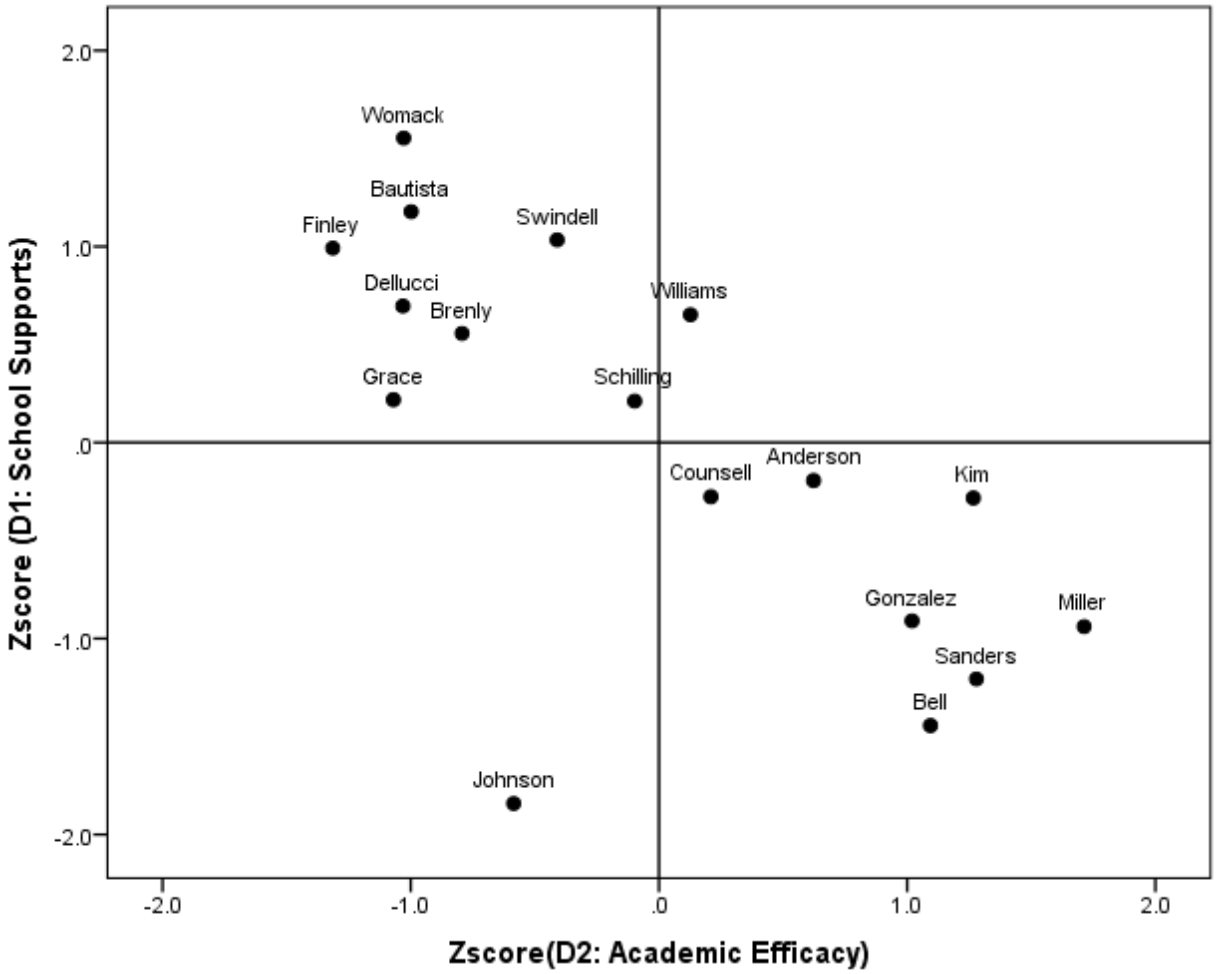

Figure 1. Scatterplot of schools by average standardized object scores on the two dimensions of students' perceptions.

Research Question 2: How do students' perceptions about their schools and themselves map onto the actual demographic characteristics of the schools they attend?

Schools clustered by student perceptions. A hierarchical cluster analysis identified how the schools group together on the two dimensions, based on the average and standardized object scores for each school. The authors reviewed the results and, by consensus, chose the five-cluster solution as the minimum number of meaningfully distinct groups (Romesburg, 2004). Table 2 also lists the schools by cluster, including individual schools' average (*M*) and standardized (*z*) scores. The dendrogram in Figure 2 illustrates how school clusters formed. Figure 3 displays the overall score profiles for each cluster.

Six schools comprise Student Perception Cluster 1: Bautista, Brenly, Dellucci, Finley, Grace, and Womack. Relative to the other clusters, Perception Cluster 1 schools appear to have higher than average scores for School Supports, but lower than average scores for Academic Efficacy. Overall, Perception Cluster 2 (i.e., Schilling, Williams, and Swindell) appears slightly above average on School Supports and average on Academic Efficacy. Perception Cluster 3 (i.e., Bell, Sanders, Gonzalez, and Miller), somewhat opposite of the first cluster, appears slightly

below average on School Supports but higher than average on Academic Efficacy. Perception Cluster 4 (i.e., Anderson, Counsell, and Kim), somewhat opposite of the second cluster, is average on School Supports and slightly above average on Academic Efficacy. Johnson's score profile is unlike those of any of the other schools, having low scores on both dimensions and constituting its own cluster (i.e., Perception Cluster 5).

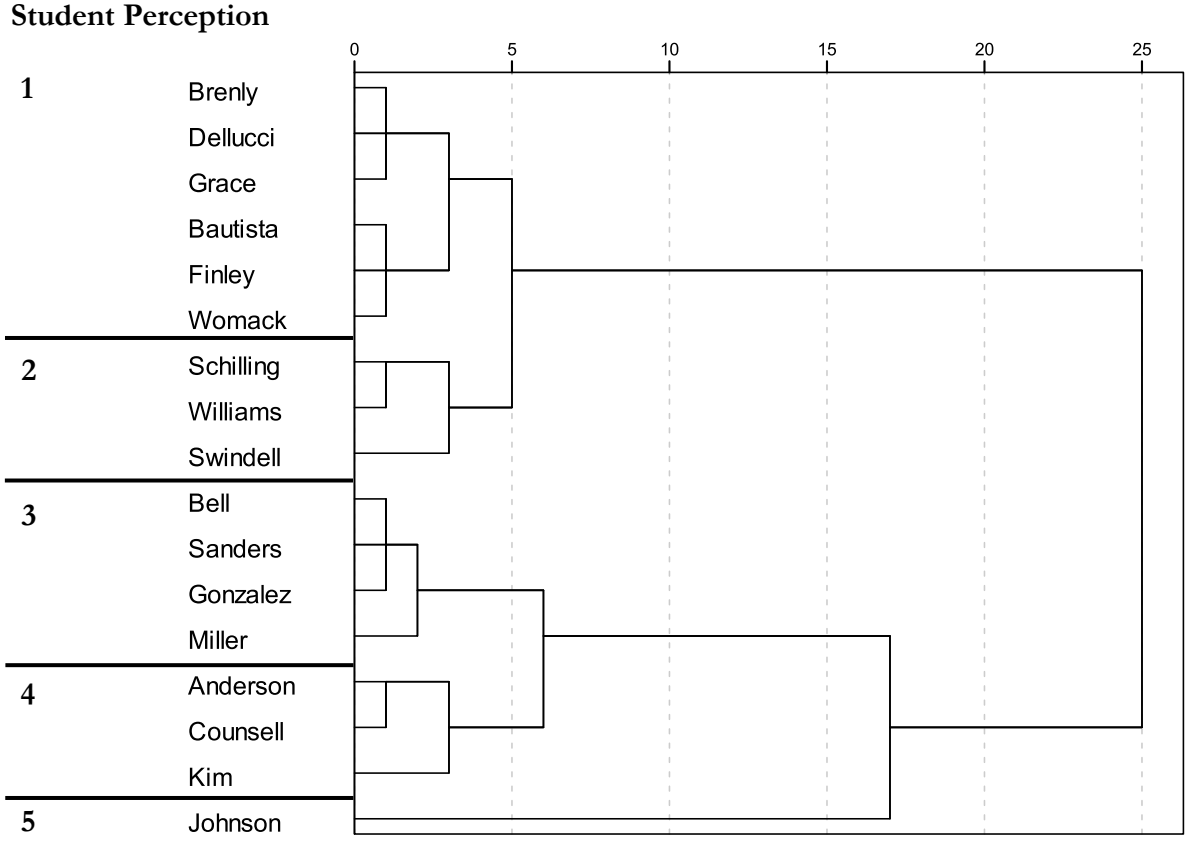

Figure 2. Dendrogram of school clusters based on students' perceptions of School Supports (Dimension 1) and Academic Efficacy (Dimension 2).

Schools clustered by school demographics. For comparison, we also separately evaluated how the same schools would cluster based on school-level demographics (i.e., Enrollment, % FRL, and % Non-White). To aid direct comparison, five clusters were specified to match the number of clusters resulting from the analysis of students' perceptions. Table 3 lists the schools clustered by school-level demographics (all students in grades 9-12), including individual schools' average and standardized (*z*) scores on the three continuous demographic variables. The dendrogram in Figure 4 indicates how the clusters formed. Figure 5 displays the overall score profiles for each demographic cluster.

When clustered by school-level demographic variables (all students in grades 9–12), Demographic Cluster 1 contains five schools: Anderson, Finley, Gonzalez, Johnson, and Sanders. This cluster appears average overall on enrollment size, percentage of students eligible for free or reduced lunch (% FRL), and percentage of students of color (% Non-White) relative to the other clusters. Demographic Cluster 2 consists of four schools (i.e., Counsell, Schilling,

Table 3

School-Level Demographic Characteristics by School and Cluster Membership

School Clusters	Enrollment[a]		FRL[a]		Non-White[a]	
	n	*z*	%	*z*	%	*z*
Demographic Cluster 1						
Anderson	1,400	-0.23	50	0.72	70	0.52
Finley	1,800	0.40	50	0.50	55	-0.02
Gonzalez	1,450	-0.11	45	0.42	60	0.27
Johnson	1,300	-0.30	45	0.46	65	0.34
Sanders	1,300	-0.37	30	-0.21	50	-0.24
Demographic Cluster 2						
Bell	1,700	0.27	55	0.76	85	1.10
Counsell	2,050	0.77	75	1.60	90	1.36
Grace	1,950	0.60	60	1.01	95	1.47
Schilling	2,250	1.04	75	1.73	95	1.54
Demographic Cluster 3						
Williams	2,950	2.06	40	0.17	75	0.70
Demographic Cluster 4						
Bautista	1,850	0.43	20	-0.72	30	-0.93
Brenly	1,750	0.33	10	-1.06	35	-0.75
Kim	1,350	-0.24	5	-1.27	25	-1.15
Miller	1,750	0.31	20	-0.76	35	-0.75
Demographic Cluster 5						
Dellucci	800	-1.08	10	-1.02	25	-1.04
Swindell	250	-1.87	10	-1.14	20	-1.36
Womack	150	-2.02	10	-1.19	25	-1.07

Note. AYP = Adequate Yearly Progress; FRL = Proportion of students at the school who are federally eligible for free or reduced-price lunches.

[a] Data from U.S. Department of Education, National Center for Education Statistics, Common Core of Data. 2010. *Public Elementary/Secondary School Universe Survey 2008-09, v.1b*. [Data file and code book]. Retrieved from http://nces.ed.gov/ccd/pubschuniv.asp. Values presented here are rounded to protect school identities. The *z*-scores and the cluster analysis are based on the actual values.

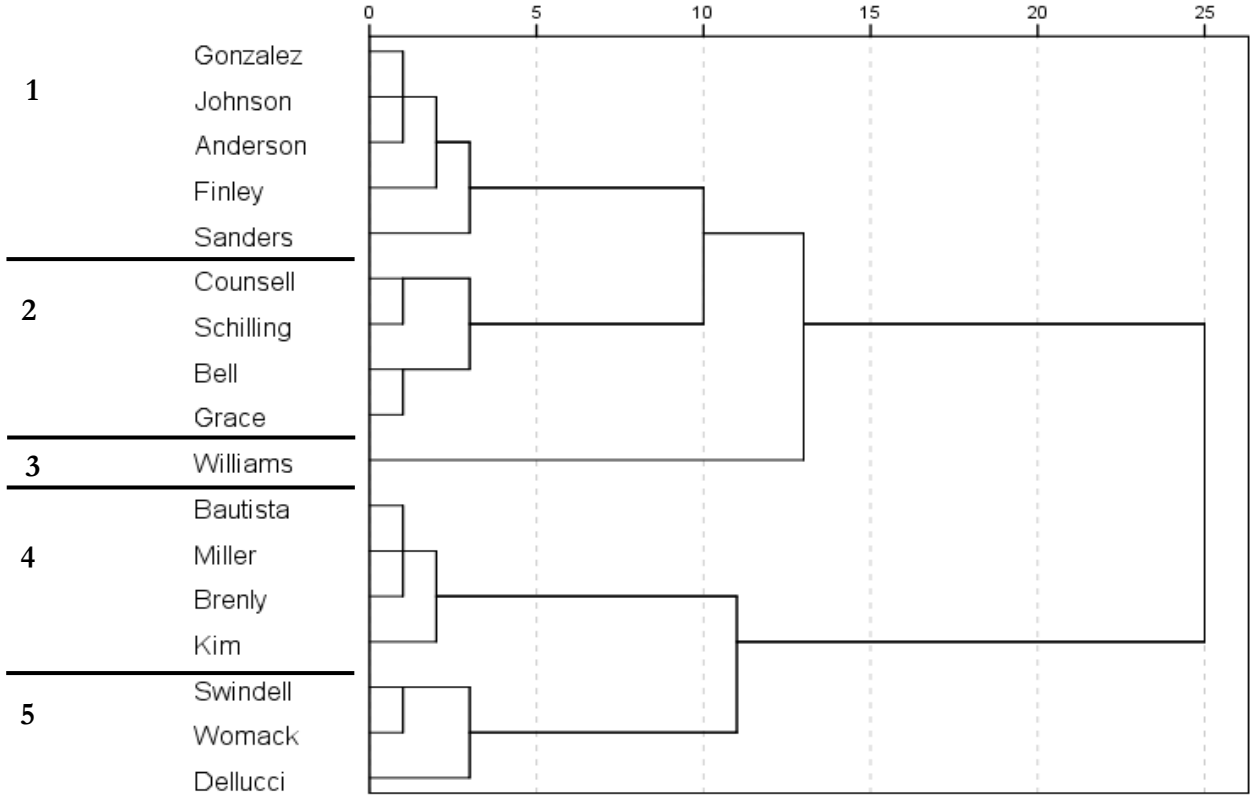

Figure 4. Dendrogram of school demographic clusters based on total school enrollment, proportions of students eligible for free or reduced lunch, and proportions of Non-White students.

Bell, and Grace); it appears average on enrollment size, with higher than average % FRL and % Non-White. Williams's demographic profile is unlike those of any of the other schools, constituting its own cluster (Demographic Cluster 3), which has higher than average enrollment, average % FRL, and slightly higher than average % Non-White. Four schools form Demographic Cluster 4 (i.e., Bautista, Miller, Brenly, and Kim), which has average enrollment, and slightly below average % FRL and % Non-White. Finally, the three schools in Demographic Cluster 5 (i.e., Swindell, Womack, and Dellucci) have lower than average enrollment, % FRL, and % Non-White. Next, we compare the grouping of schools by demographics to the grouping of schools by students' perceptions.

Comparison of schools clustered by student perceptions and by school demographics. The school clusters derived by demographic characteristics differ from the clusters based on students' perceptions of School Supports and Academic Efficacy. Both cluster analyses overlapped on the groupings of nine schools (three schools in one cluster, five in another, and one in the last), resulting in 53% observed agreement. This amount of overlap is not significant, and is likely due to chance (κ = 0.17, p = .17, 95%, CI = -0.10, 0.45; Fleiss, 1971; Landis & Koch, 1977). Thus, there is no evidence that how schools clustered by their demographic measures was systematically related to how schools clustered by the supports and academic efficacy perceived by their students.

Discussion

Social Cognitive Career Theory (SCCT) guides the exploration of two facets that support meeting postsecondary goals: the characteristics of the environment and the characteristics of the individual. The first research question concerned student perceptions regarding their school environments and their own self-efficacy, and how those perceptions were related. We found that perceptions varied by school. A principal components analysis identified two distinct constructs (School Supports and Academic Efficacy) underlying students' perceptions that differentiated the schools. By clustering the schools by the two constructs, we identified profiles for five groups of schools. Next, we took the same schools and clustered them by school-level demographics (Enrollment, % FRL, and % Non-White). We found no more than chance agreement between how schools grouped by student perceptions compared to school-level demographic factors. These findings generate questions regarding how school demographics affect a school culture that promotes and prepares students to attend college.

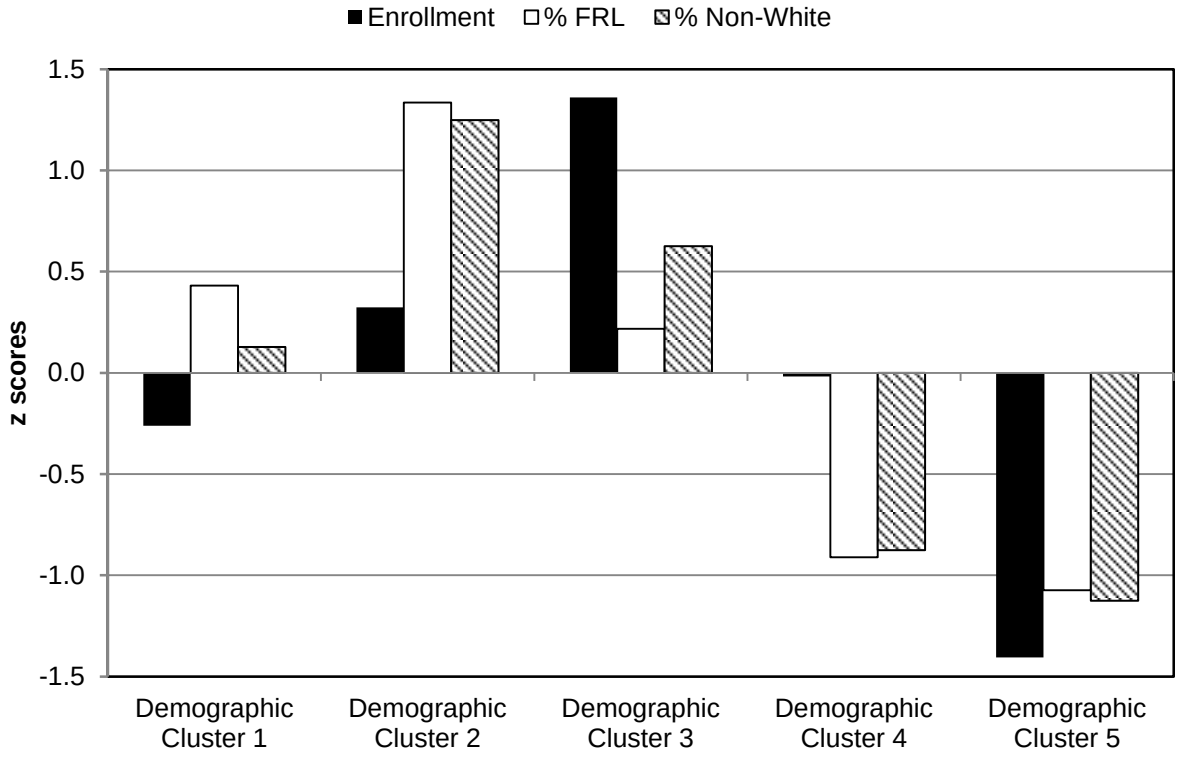

Figure 5. Characteristics of school demographic clusters based on total school enrollment, proportions of students eligible for free or reduced lunch, and proportions of Non-White students.

These findings raise several issues. One is a mismatch between the two dimensions of students' perceptions, leading to additional hypotheses for further research. We expected that students who rated School Supports as high would also rate Academic Efficacy as high, and vice versa. However, a negative relationship appeared between School Supports and Academic Efficacy in 15 of the 17 schools, and data from the *County Youth Survey* are insufficient to understand further this relationship. If such a relationship truly exists, one hypothesis may be that those schools students perceived as high in School Supports are academically more rigorous and demanding, which in turn challenges students' confidence in their ability to achieve

postsecondary success. Likewise, students in schools perceived as having fewer supports perceived higher Academic Efficacy, but their confidence may actually exceed their less rigorous academic preparation. It is notable that SCCT explicitly predicts problems in the career development process that can arise when individuals significantly underestimate or overestimate their self-efficacy, and it suggests interventions to correct these inaccuracies (Lent et al., 1994, 2000, 2002). Research should further test these relationships and the many hypotheses they generate.

While our study focused on dispositions within the SCCT dimension of individual inputs, future research should focus on how student perceptions vary according to other person inputs such as race/ethnicity, gender, and socioeconomic background, which contribute to the SCCT model. Additional research may also explore the extent of agreement between educators' perceptions (e.g., counselors, teachers, administrators) and students' perceptions of their schools' college-going cultures, and perhaps also the perceptions of parents and stakeholders in the community. Perhaps most important would be inquiry into how to create and maintain high levels of both School Supports and Academic Efficacy within school buildings.

Our exploration of the relative importance of school demographic characteristics and the contextual factors within a building in either supporting or hindering student aspirations to attend college formed the basis of our second research question. To answer that question, we took the same schools and clustered them by school-level demographics (Enrollment, % FRL, and % Non-White). We found no more than chance agreement between how schools grouped by student perceptions compared to those school-level demographic factors. In this study, the aggregate school demographic measures typically associated with underserved or underrepresented student populations do not predict student perceptions of School Supports or Academic Efficacy.

It may be that the data from this secondary analysis was not specific enough to capture an association between demographics and student perceptions. For example, some schools may offer supports to certain underrepresented sub-populations but not to the aggregate student body. Alternatively, our findings can be explained conceptually using SCCT. It may be that demographic factors, which are a part of the model, are overshadowed in their effects by other factors in the model such as personal dispositions, which we identify as Academic Efficacy, and contextual affordances, which we identify as School Supports.

Our findings further suggest that student perceptions of Academic Efficacy and School Supports can be influenced independently of the given demographic makeup of schools. This is a hopeful step toward dispelling stereotypes about those student populations' prospects for higher education. Further research is needed regarding how school demographics affect a school culture for promoting and preparing students to attend college.

SCCT guided the exploration of environmental characteristics and individual characteristics, two facets that support or hinder the attainment of postsecondary goals, two facets of the supports and barriers to meeting postsecondary goals. As previously noted our findings are consistent with SCCT regarding the first two research questions in that the theory allows for differential influence of environmental and experiential factors. In addition, our results support two facets of the SCCT framework: (a) contextual affordances, and (b) person inputs. Our analysis identified two significant dimensions of student perceptions which coincide with those elements and which we have designated as School Supports and Academic Efficacy, respectively.

Explanations for these results can be found in: (a) the survey design, which was not developed to explicitly separate personal and school perceptions; (b) the dual and ambiguous

nature of the items, which makes it difficult to separate the source of perceptions; and (c) SCCT theory itself. The authors of SCCT note that "Career development theorists need to reckon with both external and internal factors that affect choice behavior..." (Lent et al., 2002, p. 274). They designate external factors as "contextual affordances" and internal factors as "person inputs" and note that the two factors continually interact, creating a "structure of opportunity." SCCT places great importance on personal perceptions of the environment and on cognitive appraisal processes in guiding behavior. Such a view does not minimize the substantial impact of objective features of the environment, but it does highlight the person's active role in appraising and making meaning out of what the environment provides (Lent et al., 2002). The mixed loading of variables we observed on Academic Efficacy dimension is consistent with the interaction and interdependence between personal and environmental factors in the SCCT framework. More research is needed to describe these dimensions and their interactions.

Limitations

Findings from this secondary data analysis must be considered in light of limitations in the survey design and sample. One limitation is the nonstandard administration of the survey. Each of the 17 schools chose its own procedure, time, and day to administer and proctor the survey. The extent that administration procedures varied across schools is unknown, as no documentation is available. The extent that this may have affected outcomes is also unknown.

No additional data are available to assess characteristics of the participating schools (e.g., school observations, student report cards, postsecondary outcomes) and otherwise triangulate students' perceptions. Although student perceptions in this census sample are representative of eleventh graders at the participating schools, it is unclear whether those perceptions accurately reflect programs or activities that actually exist in the school to support academics and college readiness. For example, no independent evaluation of such programs offered by the schools, or of overall School Supports, is available for comparison to students' perceptions. School supports, in particular, may be available only to specific groups of students. Thus, when asking a large sample of students about services, the overall perception may not reflect the actual impact of the services on a smaller intended audience. For example, several schools supported an academic program targeting a small number of average-performing students. Students in that program may have perceived strong school supports, whereas those not in the program may have had a less favorable impression.

Another limitation concerns the dependence on a single measure of student perceptions. Although not possible in a retrospective analysis, the supplemental use of qualitative data – collected from focus groups or student interviews– with survey data would provide a richer understanding of findings. Qualitative information from accreditation reports or other archival documentation may also be helpful. Furthermore, no data are available on the postsecondary outcomes of these students, nor is it possible to link such data to the anonymous survey respondents. Further research is needed to assess the relationship between postsecondary outcomes and schools' environments defined by School Supports and Academic Efficacy.

Practice & Research Implications

Our findings identify Academic Efficacy and School Supports as dimensions in the perceptions of students and situate those dimensions within the SCCT framework, lending specificity to the model in the post-secondary decision making context. The results of the analysis indicate the difficulty of predicting students' perceptions based on school-level demographics. Thus, making assumptions about the presence of academic supports and students'

academic self-efficacy based on commonly measured demographic characteristics of their schools may not be warranted.

Student perceptions may be malleable to school practices and conditions that have not yet been clearly identified. Although clues to those practices and conditions are found in the survey items themselves (e.g., a safe environment, welcoming culture, teaching that motivates, goal-setting, and work ethic), further research is needed to inform educators and counselors about the specific practices they can implement to increase students' perceptions of their school's supports and their own self-efficacy. Additional research is needed to indicate whether enhancing student perceptions would actually improve students' postsecondary aspirations and plans. Findings also raise more questions regarding student perceptions about the degree to which the school environment provides academic and emotional support for their postsecondary aspirations.

Although future research is needed to answer these questions and identify helpful practices, educators need not wait. Educators can and should immediately begin to examine their own local practices by surveying both current students about their perceptions of the school's college-going culture, and also alumni about their actual postsecondary outcomes. Clearly, perceptions of both students and alumni can inform (a) educators about how their current practices impact college aspirations and readiness, and (b) policymakers about how to prioritize resources and supports for college readiness.

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