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Integrating Social Emotional Skill Development throughout College Access Program Activities: A Profile of the Princeton University Preparatory Program

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Cover Page Footnote

The contents of this report were developed under a grant from Princeton University to Educational Testing Service. However, the contents do not necessarily represent the policy or opinions of Princeton University, and the reader should not assume endorsement by Princeton University.

Integrating Social Emotional Skill Development throughout College Access Program Activities: A Profile of the Princeton University Preparatory Program



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ABSTRACT

In a prior study (Millett & Kevelson, 2018a), we demonstrated that college access program participants have positive views of the extent to which the program supports the development of their social and emotional skills and related college help-seeking behaviors in college. In this follow-up study, we explore the extent to which participant views vary by length of participation in the program in high school (i.e., dosage) and the extent to which alumni enrolled in college differ from college graduate alumni in their perceptions of the influences of the college access program. Results reveal that a multi-year college access program may influence different social and emotional skills over the course of the program, and dosage may matter. Moreover, alumni perceptions may differ depending on the stage of life they are in. Overall, the study findings reiterate that college access programs may help low income, high-achieving students develop social and emotional skills and prepare program alumni to successfully navigate college life.

Keywords: social and emotional skills, soft skills, non-cognitive skills, college access, college access programs, access to higher education, minority students college, low-income students college

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There is growing recognition that being college-ready requires more than just academic preparation. Social and emotional skills are increasingly viewed as essential for success in school and beyond (Denham & Brown, 2010; Heckman & Kautz, 2013), and in some cases

are seen as equally or even more important than academic skills (Gutman & Schoon, 2013). Also known as “noncognitive skills,” “21st century skills,” and “soft skills” (Duckworth & Yeager, 2015), social and emotional skills – such as persistence, motivation, engagement, time management, and collaboration – are seen as vital for success in colleges and in 21st century workplaces (Shechtman, DeBarger, Dornsife, Rosier, & Yarnall, 2013) and may actually predict academic and career achievement (Duckworth & Seligman, 2005). The social and emotional skills of teamwork and collaboration, and the cognitive skills of critical thinking and problem solving, are cited by employers as critical in the modern workplace (Casner-Lotto & Barrington, 2006). In fact, social and emotional skills are also viewed as intertwined with academic skills, and thus should be supported concurrently (Jones & Kahn, 2017).

Intervention programs are one way to support social and emotional learning (SEL) (Jones & Bouffard, 2012), and this study highlights the potential usefulness of an SEL intervention integrated into the Princeton University Preparatory Program (PUPP) college access program. In our prior study of PUPP, participants reported that PUPP



Integrating Social Emotional Skill Development

positively influenced their academic skills and SEL and helped them to gain admission to and successfully matriculate at selective colleges and universities (Millett & Kevelson, 2018a). This study explores the extent to which perceptions of the contributions of the PUPP intervention to participants' SEL and certain cognitive skills vary by length of time in the program. It also explores the extent to which college graduate PUPP alumni differ from PUPP alumni currently enrolled in college in their perceptions of PUPP's influence on SEL and related skills. Prior scholarship highlights the potential for intervention effects to vary by "dosage" (Diamond & Ling, 2016; Durlak, Weissberg, Dymnicki, Taylor, & Schellinger, 2011) and to persist or fade out over time (Bailey, Duncan, Odgers, & Yu, 2017).

Benefits of SEL Interventions

Many social and emotional skills are responsive to interventions designed to improve educational outcomes, which can result in long-term effects (Durlak, 2015; Taylor, Oberle, Durlak, & Weissberg, 2017). One review of more than 200 K-12 school-based SEL programs revealed that they can have significant impacts on social and emotional skills, behavior, attitudes, and academic performance, and reduce emotional distress and conduct problems (Durlak et al., 2011). A meta-analysis of 82 school-based SEL intervention studies found that program participants developed stronger social and emotional skills than control group members and had stronger indicators of well-being

(Taylor et al., 2017). These findings were the same regardless of student race, socioeconomic status or school location, and impacts were found from 1 to 3.75 years after program participation. Other studies have found stronger effects for racial minorities or lower-income individuals (Gutman & Schoon, 2013; Taylor et al., 2017), or for those with lower baseline social and emotional skill scores (Bierman et al., 2014; Gutman & Schoon, 2013).

Skills Associated with College and Career Readiness

Prior scholarship has established that students' decisions to enroll in and persist through college are associated with social and emotional skills (Heckman & Kautz, 2013; Heckman, Stixrud, & Urzua, 2006). As noted earlier, social and emotional skills may be inextricably linked to academic skills, (Jones & Kahn, 2017) and social and emotional skills, such as goal setting, perspective taking, interpersonal problem solving, conflict resolution, and decision making, along with cognitive skills, are the "means by which students master academic content and translate knowledge into action" (McGarrah, 2015, p. 1). In addition to academic ability, social and emotional skills—including academic self-confidence, motivation, and time management—are correlates of college persistence and performance (Lotkowski, Robbins, & Noeth, 2004). Colleges have been encouraged to adopt an integrated approach that "addresses the social, emotional, and academic needs of students" (Lotkowski et al.,

Integrating Social Emotional Skill Development

2004, p. 22).

Despite the evidence that suggests college students utilize social and emotional skills to persist in college, employers highlight a need for additional development of this skillset. Employers are concerned that college graduates have insufficient social and emotional skills to succeed in the workforce (Kyllonen, 2013). Some studies indicate that college graduates lack skills such as problem solving, communication, adaptability, and critical thinking (Casner-Lotto & Barrington, 2006).

PUPP aims to positively influence students' social and emotional skills associated with college and career readiness (Garcia, 2014; Nagaoka et al., 2013). These include communication, collaboration, leadership, "grit," time management, and academic self-efficacy (Nagaoka et al., 2013). First-generation college students are more likely to have lower levels of academic self-efficacy than students whose parents attended college (Smith, 2010). Academic self-efficacy has a positive relationship with student grade point average and number of credits earned in the first year of college, and predicts intent to persist to college graduation (Smith, 2010).

Behaviors Associated with College Success

Low-income¹, first-generation college students are less likely to be engaged in academic and social experiences that foster success in college, such as study groups, support services, extracurricular activities,

and even interacting with faculty and other students (Engle & Tinto, 2008). They are also less likely than more affluent students to engage in the help-seeking behaviors that support success in college (Phillips, Stephens, Townsend, & Goudeau, 2016). Whereas more affluent students tend to be comfortable accessing supports, low-income, first-generation college students may avoid seeking help because they believe that appearing to need it is an indicator of their own failings (Stephens, Fryberg, Markus, Johnson, & Covarrubias, 2012). In addition, low-income students are less likely to pursue relationships with faculty, teaching assistants, and administrators, but differences in high school experiences also shape the skills necessary to pursue these relationships (Jack, 2016). Both middle class and low-income students exposed to adequate opportunities to develop these skills were able to adjust to an elite college environment. In contrast, low-income students who had not been given similar opportunities struggled to adjust to the new environment (Jack, 2016). More affluent children are often trained to assert themselves and question authority, while poor and working class children are more often taught not to ask for help, question, or share opinions with authority, for fear of negative consequences (Lareau, 2011). Unfortunately, these different sets of beliefs

¹ Although exact income level cutoffs may vary by study, low-income generally refers to individuals and households with earnings in the lower third, fourth, or fifth of the income distribution, or to individuals and households with earnings below the federal poverty threshold (Czajka, 2010).

Integrating Social Emotional Skill Development

may lead low-income, first-generation students to be less successful in college and to withdraw from academic and social activities (Phillips et al., 2016). Academic and social engagement during college has been found to affect early career and labor market earnings, highlighting the lasting influence of college student engagement (Hu & Wolniak, 2013).

College Access Programs

College access programs vary in their format and specific foci, however, in general they exist to help high-achieving low-income students gain access to a college education by providing counseling and support for rigorous course taking as well as college application assistance (Gandara & Bial, 2001; Engle & Tinto, 2008). At their heart, college access programs focus on the academic and financial tools that students and their families need to access a college education (Gandara & Bial, 2001; Engle & Tinto, 2008). Some college access programs, such as the one that is the focus of this study, PUPP, provide supports not only for academic skill development but also for SEL. To address the importance of SEL for college readiness and success, PUPP was designed to ensure that participants have the social and emotional skills they need to engage fully in college academic and social experiences (Nagaoka et al., 2013). This study investigated the perceived SEL outcomes of PUPP.

The Princeton University Preparatory Program

PUPP is a time-intensive three-year program that exposes participants – known as “Scholars” – to the level of rigor students may experience in college, particularly in courses at more selective colleges (Millett & Kevelson, 2018a). Scholars participate during summers and academic years between the end of ninth grade and the summer after high school. Approximately 23-24 low-income rising tenth grade high school students are selected from local high schools each year through a competitive application process. Programming is consistent across the three years in its focus on key academic skills and subjects as well as social and emotional skills and arts and cultural activities; exposure to and support for the college application process increases as students progress through the program.

The program couples intensive academic preparation with arts and cultural activities, and all activities are infused with opportunities for social and emotional skill development. PUPP staff set high expectations for students not only to be successful academically but to have strong character and a sense of social responsibility (Millett & Kevelson, 2018a). They model and teach appropriate behaviors for various academic and cultural contexts and foster discussions around navigating new experiences and interacting with people from diverse backgrounds; such mentoring is shown to be effective (Bedsworth, Colby, &

Integrating Social Emotional Skill Development

Table 1.

PUPP Priority Skills (PPS)

Construct	Skills
Knowledge Acquisition	Study skills and other learning behaviors
Critical Thinking	Analysis, research, numeracy, and argumentation skills
Communication	Making presentations, sharing ideas, and listening
Internal Attitudes and Behaviors	Working independently, time management, and grit/perseverance
External Attitudes and Behaviors	Leadership and risk-taking

Source: PUPP (2015); for updated details on the PPS, see

Doctor, 2006). Small class sizes provide numerous ongoing opportunities for students to develop their communication, leadership, and presentation skills in a supportive environment, practices aligned with prior research (Gandara & Bial, 2001).

PUPP leaders select students with high potential for college success and integrate support for social and emotional skills into all program activities using the PUPP Priority Skills framework comprised of skills critical for college success (Millett & Kevelson, 2018a; see Table 1). While knowledge acquisition and critical thinking are cognitive skills, the remaining three PUPP Priority Skills are social and emotional skills (Jones & Kahn, 2017). All five Priority Skills are important for academic and career outcomes (Shechtman et al., 2013).

Scholars have reported that PUPP contributed to their SEL and helped them develop skills important for college and career success, including time management, communication skills, achievement motivation, intellectual

engagement, and sociability (Millett & Kevelson, 2018b). Alumni reported that their PUPP experiences supported social and emotional skills that helped them to be successful in college, such as communication skills, leadership, critical thinking, achievement motivation, and collaboration (Millett, & Saunders, & Kevelson, 2018). Program alumni also cited the importance of the program's support for their SEL, noting how the increased self-confidence and communication skills they developed enabled them to be successful in college. Program alumni also reported influences on their ability to seek help when they need it in college—a related skill important for college success (Phillips, et al., 2016). Not only do PUPP alumni enroll in selective colleges and universities at a high rate, the college completion rate of PUPP alumni, approximately 70% for the first 5 cohorts, is much higher than the 50% college completion rate of first-generation college students within 6 years (DeAngelo, Franke, Hurtado, Pryor, & Tran, 2011; Princeton University Preparatory Program, 2017).

Integrating Social Emotional Skill Development

Based on the literature on dosage effects and the persistence of program effects over time (Durlak et al., 2011; Taylor et al., 2017), we explore the extent to which Scholars' perceptions of their own use of social and emotional skills and of PUPP's contribution to their skill development varied by length of time in the program and the extent to which alumni had different perceptions of PUPP's influence on their SEL and related skills.

Among alumni, we were interested in whether there may be differences between the perceptions of those who were enrolled in college at the time of the survey and those who had already graduated and moved on to other activities. We theorized that those who had completed an undergraduate degree may have benefitted from additional experiences supportive of their SEL, and of their related help seeking behaviors, that may have influenced their perceptions of PUPP's support for these skills and behaviors. In short, our research was guided by three questions:

How do Scholars' ratings of their SEL vary by their tenure in PUPP?

How do Scholars' perceptions of PUPP's contributions to their SEL and cognitive skills vary by their tenure in the program?

How do PUPP alumni's perceptions of PUPP's contributions to their SEL and help-seeking behaviors vary by their college enrollment or completion status?

Data & Methods

Sample & Procedures

We analyzed data from the PUPP Scholar Survey and the PUPP Alumni Survey, developed and implemented during the evaluation of PUPP we conducted from June 2015 through July 2016. The data used in this study were drawn from the 71 Scholar Survey participants, the 52 Alumni Survey respondents currently enrolled in college, and the 66 Alumni Survey respondents that had already graduated from college, for a total of 189 participants (see Table 2). The overall Scholar Survey response rate was 100%, and we used data from all respondents. To study the effects of college, we limited our alumni participants to those who were in college or had graduated, thereby eliminating the six percent of alumni survey respondents not in either group. Therefore, while the overall Alumni Survey response rate was 51% of the 248 PUPP alumni graduating from the program between 2005 and 2013 (N=126), we used data from 118 Alumni Survey participants, or 48% of all surveyed alumni. PUPP participants as a whole are a racially diverse group (see Table 2). Just under half of the total sample identified as Hispanic, while just over one-third identified as Black. These proportions were similar among active Scholars; however, the majority of alumni currently enrolled in college were Black and the majority of college graduate alumni were Hispanic. Sixty-five percent of the sample was female; greater proportions of Alumni Survey respondents than Scholar Survey respondents (100% of active Scholars) were female.

Integrating Social Emotional Skill Development

Table 2.

PUPP Scholar Survey and PUPP Alumni Survey Respondent Profile

	Current Scholars (N=71)		College Enrollee Alumni (n=52)		College Graduate Alumni (n=66)		Total (n=189)	
	N	%	n	%	n	%	N	%
Gender								
Female	39	54.9	37	71.2	47	71.2	123	65.1
Male	32	45.1	15	28.8	19	28.8	66	34.9
Race/Ethnicity*								
Asian or Asian-American	†	†	†	†	†	†	†	†
Black or African-American	22	32.4	30	65.2	33	55.9	85	49.1
Hispanic/Latino	33	48.5	16	34.8	15	25.4	64	37.0
Native Hawaiian/ Other Pacific Islander	†	†	0	0.0	0	0.0	†	†
White	6	8.8	†	†	11	18.6	17	10.0
Other/Multi-racial	7	10.3	†	†	†	†	7	4.0
Cohort Year Group								
2004-2007	0	0.0	†	†	32	48.5	32	17.2
2008-2011	0	0.0	6	12.2	34	51.5	40	21.5
2012-2015	0	0.0	43	82.7	0	0.0	43	23.1
2016 (Seniors)	23	32.4	0	0.0	0	0.0	23	12.4
2017 (Juniors)	24	33.8	0	0.0	0	0.0	24	12.9
2018 (Sophomores)	24	33.8	0	0.0	0	0.0	24	12.9

* Note: Multiple responses were allowed on this question

† Cell counts of 5 or less are not reported to protect anonymity.

Integrating Social Emotional Skill Development

Instruments

All materials developed for the PUPP evaluation were approved by an Institutional Review Board. See Millett & Kevelson, 2018b and Millett, Saunders, & Kevelson, 2018 for additional details on the Scholar and Alumni Surveys, respectively.

Scholar Survey. The 27-item Scholar Survey addressed topics that included experiences in program activities and the perceived impacts of PUPP on Scholars and their families. Our analysis included data from 15 Scholar Survey items asking Scholars the extent of their agreement regarding their use of social and emotional skills related to achievement motivation, time management, intellectual engagement, working with others, sociability, and work ethic². These items were used to present a measure of Scholar's skill levels at the time of the survey, using response frequencies for those who selected "agree" or "strongly agree" in response to each SEL item. The next set of survey items included in the analysis, 14 items addressing SEL related to the PUPP Priority Skills, asked Scholars to rate the extent to which their PUPP experiences contributed to various skills on a five point scale from "not at all" to "very much." Our analysis presents response frequencies for those who selected "quite a bit" or "very much" regarding PUPP's contribution to each social and emotional skill, as well as means and standard deviations for the full set of responses³.

Response frequencies⁴ for both sets of survey items were calculated for the full group of 71 Scholars and for each of the three grade-level groups of Scholars participating in PUPP at the time of the survey: the PUPP graduating cohorts of 2016 (N=23), 2017 (N=24), and 2018 (N=24), who had participated in PUPP for one, two, or three years, respectively.

² These items were part of a broader set of SEL survey items developed during a prior evaluation of PUPP also conducted by Educational Testing Service. The items were piloted with a sample of high school age students and cognitive interviews were conducted regarding the meaning of the items.

³ Prior to the PUPP evaluation in 2016, the Scholar Survey was piloted with a subgroup of PUPP Scholars to obtain feedback on Scholars' understanding of the survey items. It was determined that items were interpreted as meaning what they were intended to mean.

⁴ Note that it was not possible to combine the items representing each construct using factor analysis, given the small sample size. Therefore, we opted to compare frequencies for items within each construct. Statistical tests could not be conducted due to the small sample size and the need to use individual survey items, rather than composites or scales.

Integrating Social Emotional Skill Development

Alumni Survey. The 90-question Alumni Survey⁵ was administered online to PUPP alumni who graduated from the program between 2005 and 2013⁶. Items used in our analysis included eight items assessing the extent to which alumni found college activities and behaviors easy or difficult (using a five point scale from “very difficult” to “very easy”), 11 items assessing alumni perceptions of how well PUPP prepared them for college (using a five point scale from “very poorly” to “very well”), and 10 items asking alumni to rate the extent to which their PUPP experiences contributed to various social and emotional skills and cognitive skills (on a five point scale from “not at all” to “very much”). For this study survey item response frequencies for those who selected the positive survey response options (“easy” or “very easy”; “quite a bit” or “very much”, respectively) were compared between alumni enrolled in college at the time of the study and alumni that had already graduated from a four-year college. Results tables also present means and standard deviations for the full set of responses.

⁵ PUPP Alumni Survey items were drawn from previously developed surveys, including the surveys administered previously to PUPP alumni as part of the prior evaluation and the Princeton University 2011 Graduate School Survey.

⁶ The evaluation team conducted two pilot tests of the PUPP Alumni Survey. The pilot sessions included three activities designed to elicit feedback from pilot participants: 1) participants responding to survey questions for approximately 30 minutes, the expected survey completion time; 2) participants sharing their own observations about the survey overall and on specific questions; and 3) participants reviewing particular questions for clarity and the appropriateness of the response options.

Results

Current Scholars’ Reports of their Social and Emotional Skills since Applying to PUPP

We used Scholar Survey data to address our first research question, on the extent to which Scholars’ ratings of their social and emotional skills vary by their tenure in the program. In general, PUPP Scholars tended to respond favorably regarding their achievement motivation, time management, intellectual engagement, collaboration skills, sociability, and work ethic (see Table 3). Ratings of these skills varied by length of PUPP participation for some of the underlying survey items, but not for others.

Notable differences by PUPP tenure included differences in time management skills, which may decrease over time or may simply be more challenging for older students because they are juggling more academic and college preparation activities and thus have less time to work ahead. Similarly, fewer older students agreed with items related to their work ethic, which may reveal a decrease over time, but may also be due to the less time and energy students have to devote to assignments as demands on their time increase during their junior and senior years of high school. Slightly fewer PUPP seniors agreed with statements regarding skills related to working with others; comfort with disagreements may vary by PUPP experience and by differences in personal characteristics and backgrounds, including differences in cultural norms, between grade-level cohort members. More

Integrating Social Emotional Skill Development

Table 3.
PUPP Scholar Survey SEL Items¹

	Mean	SD	Percent in Agreement			Total N=52 ^a
			Grade 10 n=16 ^a	Grade 11 n=16 ^a	Grade 12 n=20 ^a	
Time Management						
I am a very organized person.	3.77	0.97	66.7%	58.3%	73.9%	66.2%
I leave tasks until the last minute.	3.11	1.08	20.8%	33.3%	40.9%	31.0%
Achievement Motivation						
I do more than what is expected of me.	4.01	0.69	75.0%	79.2%	78.3%	77.5%
Hard Working						
I work hard to complete assignments.	4.46	0.65	100.0%	83.3%	91.3%	91.5%
I take responsibility for what happens.	4.37	0.62	91.7%	91.7%	95.7%	93.0%
I check over my work.	4.19	0.69	83.3%	79.2%	78.3%	80.3%
Working With Others						
I am inclined to forgive others.	3.99	1.06	78.3%	87.5%	60.9%	74.6%
I respect others.	4.72	0.45	100.0%	100.0%	100.0%	100.0%
I do not like when people challenge my opinions.	2.68	0.92	20.8%	12.5%	26.1%	19.7%
Intellectual Engagement						
In dealing with difficult problems, it is very important to evaluate as many pieces of information as possible.	4.42	0.67	87.5%	95.8%	95.7%	93.0%
I like to know the news of the world.	3.94	0.98	70.8%	83.3%	60.9%	71.8%
I am interested in learning about different cultures.	4.48	0.67	95.8%	100.0%	91.3%	95.8%
Sociability						
I joke around a lot.	3.55	1.01	54.2%	54.2%	60.9%	56.3%
I say what I think.	3.62	1.03	66.7%	54.2%	50.0%	56.3%
I make friends easily.	3.66	1.12	54.2%	66.7%	60.9%	60.6%

Source: Author's calculations using PUPP Scholar Survey data

¹ Percentages were calculated for "Strongly Agree" and "Agree", "Neither Agree nor Disagree", and "Disagree" and "Strongly Disagree"; however, only the first category is presented to highlight agreement.

^a Depending on the survey item, ns range from 16-24 for Grade 10, 16-24 for Grade 11, 20-23 for Grade 12, and 52-71 for the total sample.

Integrating Social Emotional Skill Development

juniors than sophomores, but fewer seniors, agreed with items related to intellectual engagement, possibly indicating a level of fatigue arising by the senior year of high school (commonly referred to as “senioritis” [Blanchard, 2012]). Perhaps, not surprisingly, then, slightly more seniors agreed with the sociability item “I joke around a lot.” More juniors or sophomores agree with the other two survey items addressing sociability.

Scholars’ Perceptions of PUPP’s Contributions to their Social, Emotional, and Cognitive Skills by Tenure in the Program

Our second research question was addressed by an analysis exploring grade-level variations in perceptions of PUPP’s contributions to SEL, using data from Scholar Survey items on the extent to which PUPP contributed to the PUPP Priority Skills of external attitudes and behaviors, internal attitudes and behaviors, communication skills, and critical thinking skills (see Table 4). On most items, the majority of Scholars in all three grade-level groups reported that PUPP contributed to their skill development “quite a bit” or “very much.”

Differences by length of PUPP participation varied for external attitudes and behaviors. More seniors than juniors and sophomores indicated PUPP had helped them develop leadership skills, perhaps due to the additional leadership opportunities they had been afforded during their longer tenure in PUPP. At the same time, while the majority of

all Scholars indicated PUPP had helped them to learn to work well with others, fewer seniors than juniors and sophomores felt this way.

Perceptions also varied by student grade regarding PUPP’s influence on skills related to internal attitudes and behaviors. Nearly 90% of all respondents, but fewer seniors than juniors or sophomores, felt that PUPP contributed “quite a bit” or “very much” to their ability to produce high-quality work. Similarly, more sophomore Scholars than junior and senior Scholars reported that PUPP contributed quite a bit or more to the important skill of perseverance.

While approximately three-quarters of all active PUPP Scholars reported that PUPP contributed “quite a bit” or “very much” to their communication skills, including writing and presentation, more seniors than junior and sophomores felt this way. The majority of PUPP Scholars reported that PUPP contributed to their development of critical thinking skills including numerical problem-solving skills, the ability to assess the value of information, and the ability to break information down into its basic elements. Whereas fewer senior respondents than junior respondents felt PUPP helped them learn to break information down or assess the value of information, many more seniors than sophomores and juniors reported that PUPP contributed to their numerical problem-solving skills.

Integrating Social Emotional Skill Development

Table 4.

Scholar Survey Items on the Extent to Which Scholars' PUPP Experience Contributed to PUPP Priority Skill Development

	Mean	SD	Percentage Responding "Quite a bit" or "Very Much"			Total N=64 ^a
			Grade 10 n=22 ^a	Grade 11 n=22 ^a	Grade 12 n=19 ^a	
External Attitudes and Behaviors						
Leading an extra-curricular group or activity	3.65	1.12	47.8%	68.2%	71.4%	62.1%
Leading my classmates/peers in academic settings	3.76	1.00	60.9%	60.9%	66.7%	62.7%
Working collaboratively toward a goal	4.25	0.88	82.6%	82.6%	76.2%	80.6%
Working with people from diverse backgrounds	4.32	0.99	91.3%	86.4%	70.0%	83.1%
Being open to new ideas	4.27	0.83	82.6%	82.6%	81.0%	82.1%
Internal Attitudes and Behaviors						
Learning effectively on my own	3.98	1.04	72.7%	82.6%	75.0%	76.9%
Persevering to the end of a difficult assignment	4.03	0.94	87.0%	78.3%	61.9%	76.1%
Producing high-quality work	4.39	0.94	95.5%	91.3%	81.0%	89.4%
Communication Skills						
Writing clearly	3.97	0.86	72.7%	73.9%	76.2%	74.2%
Speaking clearly	4.06	0.90	69.6%	78.3%	76.2%	74.6%
Presenting to a group	4.22	0.95	65.2%	78.3%	85.7%	76.1%
Critical Thinking Skills						
Solving numerical problems	3.42	1.05	34.8%	52.2%	75.0%	53.0%
Breaking down information into its basic elements	3.75	0.89	52.2%	63.6%	57.9%	57.8%
Assessing the value of information	3.77	0.94	60.9%	65.2%	55.0%	60.6%

Source: Author's calculations using PUPP Scholar Survey data.

^a Depending on the survey item, ns range from 22-23 for Grade 10, 22-23 for Grade 11, 19-21 for Grade 12, and 64-67 for the total sample.

Integrating Social Emotional Skill Development

Alumni Perceptions of PUPP's Contributions to their Social and Emotional Skills, Cognitive Skills, and College Help-Seeking Behaviors

Our third research question, on alumni perceptions of PUPP's impacts on social and emotional skills and its helpfulness for college experiences, was addressed using data from the alumni survey. Disaggregating survey data by those enrolled in college ("enrolled alumni") and those that had already earned a bachelor's degree ("college graduate alumni") revealed that those in each group held different perceptions of PUPP's influences. Significantly more college graduate alumni than enrolled alumni reported that PUPP made communicating with faculty "easy" or "very easy" (71% versus 44%, respectively). More college graduate alumni than enrolled alumni reported that PUPP made it easier to do things including seeking help, getting along with others, making new friends, and participating in social events (see Table 5). Enrolled alumni were more likely than college graduate alumni to report that PUPP had supported their time management skills or prepared them to develop their leadership skills (see Table 6). Over 73% of enrolled alumni and over 48% of college graduate alumni reported that PUPP prepared them to be in control of their own schedules. Similarly, over 75% of enrolled alumni and nearly 58% of college graduate alumni reported that PUPP helped to develop their leadership skills. More enrolled alumni than college graduate alumni reported that PUPP had prepared them for many college tasks,

including submitting assignments on time, contributing comments and questions to classroom discussions, managing an academic workload, and adjusting to the academic culture of college.

Responses of enrolled alumni and college graduate alumni were also compared for items asking alumni to rate the extent to which PUPP contributed to various other social and emotional skills and cognitive skills (See Table 7). More enrolled alumni than college graduate alumni reported that PUPP had contributed to skills, including speaking clearly and effectively, working with data, thinking critically and solving problems, learning effectively independently, working well with others, producing high-quality work, and designing and executing research.

Discussion

The Influence of PUPP Social and Emotional Learning Supports May Vary by Program Tenure

Our results suggest that the extent of social and emotional skills growth among PUPP participants may vary by tenure in the program, but not in a consistent manner. More senior students (i.e., those with three years of PUPP experience) reported that PUPP influenced their skills related to numerical problem solving and leadership, as well as the communication skills of writing and presenting. Slightly more seniors than sophomores and juniors agreed with a work ethic item "I take responsibility for what

Integrating Social Emotional Skill Development

Table 5.

PUPP Alumni Survey Items Regarding Influence of PUPP on Alumni College Activities/Behaviors

	Mean	SD	Percentage of PUPP Alumni Responding "Easy" or "Very Easy"		
			College Enrollees n=51 ^a	College Graduates n=66	Total N=117 ^a
Seeking help when I needed it	3.49	1.17	51.9%	60.6%	56.8%
Getting along with others	4.20	0.73	80.8%	87.9%	84.7%
Making new friends	3.81	1.08	59.6%	71.2%	66.1%
Communicating with faculty	3.61	0.98	44.2%	71.2%	59.8%
Maintaining family relationships	3.72	1.09	58.8%	60.6%	59.8%
Feeling comfortable where I lived	3.62	1.17	63.5%	62.1%	62.7%
Participating in social events	3.61	1.21	55.8%	63.6%	60.2%
Communicating with staff	3.74	0.93	57.7%	72.7%	66.1%

^a Depending on the survey item, the N sizes range from 51-52 for College Enrollees and 117-118 for the total sample.

Integrating Social Emotional Skill Development

Table 6.

Alumni Survey Items Regarding How Well PUPP Prepared Alumni for College

Percentage Responding "More than Adequately" or "Very well"

	Mean	SD	College Enrollees n=50 ^a	College Graduates n=64 ^a	Total N=115 ^a
Face academic challenges in college	3.97	1.02	62.7%	63.6%	63.2%
Submit all assignments on time	4.20	0.86	82.7%	73.4%	77.6%
Contribute comments and questions to classroom discussions	4.04	0.99	74.0%	60.6%	66.4%
Have a skillset for managing your academic workload	3.98	0.95	74.5%	65.2%	69.2%
Adjust to the academic culture of college	3.96	0.96	66.7%	63.6%	65.0%
Develop your passion for learning	4.26	0.87	80.4%	77.3%	78.6%
Build your self-confidence	3.97	0.92	64.7%	67.7%	66.4%
Be in control of your own schedule	3.81	1.06	73.1%	48.4%	59.5%
Develop leadership skills	3.98	0.96	75.0%	57.6%	65.3%
Show respect for others even in disagreement	4.36	0.83	88.2%	75.0%	80.9%
Develop an individual perspective	4.28	0.88	82.4%	75.4%	78.4%

^a Depending on the survey item, the N sizes range from 50-52 for College Enrollees, 64-66 for College Graduates, and 115-118 for the total sample.

Integrating Social Emotional Skill Development

Table 7.

Percentage of PUPP Alumni Responding "Quite a Bit" or "Very Much"^a

	Mean	SD	Percentage Responding "Quite a Bit" or "Very Much"		
			College Enrollees n=51 ^a	College Graduates n=65 ^a	Total N=124 ^a
Write clearly/effectively	3.48	0.72	88.5%	89.4%	89.0%
Solve numerical problems	2.94	0.90	65.4%	63.6%	64.4%
Speak clearly/effectively	3.33	0.80	84.6%	75.8%	79.7%
Work with data	2.68	0.91	57.7%	54.5%	55.9%
Think critically/problem-solving	3.44	0.81	88.5%	83.3%	85.6%
Use computer technology	2.77	1.02	57.7%	59.1%	58.5%
Learn effectively on your own	3.25	0.90	80.4%	74.2%	76.9%
Work well with others	3.46	0.78	88.5%	83.1%	85.5%
Produce high-quality work	3.48	0.78	88.2%	84.8%	86.3%
Design and execute research	3.06	0.90	76.9%	66.7%	71.2%

Source: Authors' calculations using PUPP Alumni Survey data.

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

^a Depending on the survey item, the n sizes range from 51-52 for College Enrollees, 65-66 for College Graduates and 117-118.

Integrating Social Emotional Skill Development

happens.” We hypothesize that these responses may be due to the fact that a higher “dosage” of PUPP may increase some social and emotional skills, in particular due to the cumulative exposure to opportunities to develop communication and critical thinking skills, in addition to other cognitive and social and emotional skills.

At the same time, seniors performed worse on other work ethic items, including those on leaving work to the last minute and checking over their work; an intellectual engagement item on interest in the news of the world; and an item on inclination towards forgiveness related to working with others. Furthermore, fewer senior Scholars than sophomore and junior Scholars reported that PUPP contributed to other skills related to working with others, including working collaboratively toward a goal and working with people from diverse backgrounds, and to skills important for a strong work ethic, such as persevering to the end of a difficult assignment and producing high quality work. Based on these results, we postulate that those with more PUPP experience may have stronger SEL in some areas, and less strong SEL, or perhaps more realistic perceptions of their skills, in others.

We can speculate that some of these differences in SEL were influenced to some extent by PUPP, but many other factors are also at play. These may include cultural and personality differences, as well as the additional time demands faced by many college-bound students during their junior and senior years of high school, when they prepare for and take college entrance examinations and complete college applications. We also cannot discount the

possibility of fatigue experienced by senior Scholars, as we noted above, and the potential need for additional supports for seniors and the unique challenges they face.

It is also possible that, although PUPP aims to equally support all of the

social and emotional skills it targets for all students each year, some skills may be influenced more in the first, second, or third year. This makes sense, given that the program provides different courses in each of the three years of the program. Another possibility is that first-year Scholars may have a more positive perception of PUPP and its influences on them simply because they are new to the program. In order to better understand grade-level differences in SEL and perceptions of PUPP’s influence on them—to address the question of how much dosage matters for SEL building in PUPP and other such programs— qualitative interviews and



“...we found that college graduate alumni have more positive perceptions of the extent to which PUPP made communicating with college faculty easier for them.”

Integrating Social Emotional Skill Development

focus groups should be conducted with program participants and staff.

Alumni's Perceptions of Social and Emotional Skills May be Shaped by College and Post-College Reflections

Our findings on the varying perceptions of PUPP alumni in college and those who have already graduated highlight that influences on social and emotional skills may be perceived differently as program alumni gain additional life experiences. On one hand, we found that college graduate alumni have more positive perceptions of the extent to which PUPP made communicating with college faculty easier for them. On the other hand, more enrolled alumni than college graduate alumni reported that PUPP supported their time management or leadership skills. The finding that college graduate alumni have an easier time communicating with faculty seems to indicate that college graduate alumni may be more likely to have a positive perception of how their PUPP experiences prepared them to interact with college faculty, perhaps because they had more years of such interactions to reflect on. It could also be that enrolled alumni are more aware of PUPP's influence on their time management skills and leadership capacities, while college graduate alumni have since had other experiences that have supported them in these areas. After all, college certainly provides many opportunities to learn to balance multiple time demands, including coursework, jobs, internships, and student groups, and to lead academic and non

-academic activities.

Conclusion

Our findings highlight the extent to which perceptions of social and emotional skills and of the influence of PUPP supports for social and emotional skills vary by length of time in the program (i.e., dosage). They also reveal the extent to which perceptions of the influence of PUPP on SEL-related college engagement and help-seeking behaviors vary between enrolled and college graduate alumni.

Limitations

This follow-up study is not without its limitations, which include the fact that it is a descriptive study and not experimental; thus, we cannot make any conclusions about causality (Schneider, Carnoy, Kilpatrick, Schmidt, & Shavelson, 2007). Moreover, a bias in favor of PUPP may be found in the Alumni Survey; the 51% response rate is better than many online survey response rates, but it still leaves many voices unheard. It is also possible that active Scholars were swayed by social desirability bias (Grimm, 2010) or a sense of obligation to the program to respond favorably to the survey questions. Prior findings from the PUPP evaluation highlight that active and alumni Scholars tend to report positive influences of PUPP on their social and emotional skills, making it difficult to detect variations within subgroups. Finally, the small size of the three cohorts compared in our analyses provide exploratory results on

Integrating Social Emotional Skill Development

the topic of dosage of SEL supports within a college access program. The comparisons across cohorts provide insights into how dosage influences social and emotional skill development within the context of a college access program, setting the stage for future research using a larger sample size overall and within cohorts.

Implications

Overall, based on our study findings, we can conjecture that PUPP programming may support the development of different social and emotional skills over time, that the extent to which PUPP successfully supports SEL development may vary by multiple factors, and that PUPP alumni college graduates retain fairly positive perceptions of PUPP's support for SEL and related college help-seeking behaviors and experiences. This confirms prior findings on the importance of SEL for college success (Conley, 2015; Heckman & Kautz, 2013; Heckman, Stixrud, & Urzua, 2006) and highlights the great potential of college access programs to support the development of critical social and emotional skills. In fact, it suggests that college access programs not only could support SEL, but they should do so to support the college success of their participants. The study results also suggest that program dosage may matter for some or all targeted social and emotional skills, as other studies have found (Durlak et al., 2011; Taylor et al., 2017); further research could reveal more precisely why and how dosage matters for specific skills. Takeaways for college access

program leaders include that dosage may matter for SEL activities, and that ideally activities should be incorporated into the full program rather than provided as a standalone or short-term module within the larger program. As we noted earlier, it may also be particularly important for college access programs to support the social and emotional skills of first-generation students, as PUPP does, given the many challenges they already face successfully navigating college (Hsiao, 1992) and the importance of SEL for college and career readiness and success (Brunello & Schlotter, 2011; Casner-Lotto & Barrington, 2006; Garcia, 2014; Nagaoka et al., 2013; Shechtman et al., 2013). 

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