The Development and Implementation of ALIGN: A Multidimensional Program Designed to Enhance the Success of Black, Indigenous, and People of Color (BIPOC) Graduate Students in Communication Sciences and Disorders

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Recommended Citation

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Abstract

The critical lack of racially and ethnically diverse healthcare professionals in the field of Communication Sciences & Disorders (CSD) in contrast to the increasing diversity of the U.S. population may contribute to healthcare disparities and negatively impact healthcare outcomes. It is therefore imperative for transformational programs and practices to be enacted to substantially increase the number of CSD professionals representing Black, Indigenous, and People of Color (BIPOC). As training institutions that graduate and contribute to the certification of CSD professionals, universities are fundamental for contributing to this change. Numerous barriers have been identified that limit the number of underrepresented minority students who matriculate in and graduate from speech-language pathology and audiology graduate programs. At Syracuse University, a group of academic and clinical CSD faculty developed a program to specifically address these barriers: the Academic Skill Building and Networking (ALIGN) program. ALIGN implements a multifaceted approach toward facilitating the success of CSD BIPOC graduate students through the integration of academic and professional skill building, peer mentoring and networking, and professional mentoring and networking into the program curriculum. This study described the rationale and development of the ALIGN program, and reported quantitative and qualitative survey results to determine the preliminary effects of this program on an inaugural cohort of ALIGN participants. Overall, quantitative and qualitative data indicated that ALIGN had a substantial, positive impact on academic skills relative to study habits, understanding difficult course concepts, and general learning, and provided crucial support and connection opportunities with fellow BIPOC students.

Keywords

Cover Page Footnote

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There is a critical lack of racial and ethnic diversity among clinical practitioners of communication sciences and disorders (CSD) (Ellis & Kendall, 2021; Fuse, 2018; Thompson, 2013). As a healthcare profession, the lack of diversity in speech-language pathology and audiology is particularly problematic due to the striking disparity between practitioners who provide services and the clients who receive them. Based on the 2021 member demographics reported by the American Speech-Language-Hearing Association (ASHA), the national governance, certification, and regulatory body for CSD, 8.7% of ASHA constituents are non-White, whereas 43% of the total U.S. population in 2020 was non-White (*The U.S. Census*, 2020). Increased diversity in the healthcare sector is paramount for reducing healthcare inequities, improving patient satisfaction and patient-to-provider communication, improving healthcare access for minority patients, and advancing healthcare outcomes (Alsan et al., 2019; Ibrahim, 2019; LaVeist & Pierre, 2014). In speech-language pathology and audiology, diversity in professionals is necessary to address the expansive range of cultural and linguistic backgrounds of those with communication and swallowing disorders. Furthermore, families potentially experience more connection and trust when working with a CSD professional who shares cultural, racial or linguistic commonalities (Fuse & Bergen, 2018). Despite these vital benefits, increases in underrepresented racial and ethnic minority (URM) professionals in CSD have been minimal. Member profile reports by ASHA show an approximate 1% increase in non-White certified audiologists or speech-language pathologists in the last 10 years, despite an increase of more than 40% in ASHA constituents within the same time period (*ASHA Member & Affiliate Counts,* 2020).

In an effort to catalyze transformational change in the diversity of scientists and healthcare professionals, ASHA as well as other governing entities for healthcare (e.g., the National Institute of Health) have launched initiatives that prioritize increasing the diversity of the scientific workforce (*Strategic Pathway to Excellence*, 2021; Valantine & Collins, 2015). These initiatives target recruitment, pipeline mechanisms, and retention strategies for increasing the diversity of professionals in the sciences. Universities serve as a gateway for those entering science-related fields and are therefore a crucial target for enacting desired changes. Because the admissions process ultimately determines the pool of pre-professionals who will eventually matriculate, efforts to enhance diversity of students and subsequent professionals have included a heavy focus on change in admissions practices. Recent studies promote strategies such as holistic admissions review processes for facilitating change in admissions demographics for CSD graduate programs and other healthcare professional programs (Artinian et al., 2017; Guiberson & Vigil, 2021; Wong et al., 2021). Although changes in admissions processes are a necessary element of ultimate change in the diversity of CSD professionals, studies describing methods for improving the success and retention of CSD graduate students while reporting on outcomes of such methods are lacking. Factors that negatively impact the persistence of URM graduate students are multiple and complex, necessitating multifaceted intervention approaches that can address the holistic needs of CSD BIPOC graduate students.

Mohaptra and Mohan (2021) described four major categories of barriers that URM students face for successful entry to graduate programs in the health professions: academic, financial, institutional and cultural (including personal factors and contextual factors). Students who are URM face substantial educational and socioeconomic disadvantages when compared with their non-URM peers. Differences in socioeconomic status (SES) between minority and White populations in the U.S. strongly influence the level of academic preparedness and resources that

students have access to. Black and Hispanic families are substantially more affected by poverty and lower household incomes than White families (*The U.S. Census*, 2020). Negative consequences of lower SES such as attending under-resourced schools, exposure to adversity, and limited "social capital" in the form of socially-driven skills, knowledge, networks and supports that promote academic and career success can impact academic achievement, high school completion rates, and academic success rates in STEM disciplines (Coleman, 1988; Sirin, 2005; Winkle-Wagner & McCoy, 2016). Furthermore, many URM students are the first generation to attend college or graduate school and are more likely to have initiated their studies at a 2-year college (Byars-Winston & Dahlberg, 2019). Due to these complex and interacting factors, URM students often have unequal levels of preparedness for college and graduate education (McGee et al., 2012). Multiple personal and contextual cultural barriers also substantially reduce URM persistence in graduate education, such as the lack of an inclusive climate, feelings of isolation and reduced sense of belonging (Stachl & Baranger, 2020; Syed et al., 2011), reduced exposure to role models (Fuse, 2018; Malone & Barabino, 2009; McGee, 2016), negative stereotypes about academic abilities of URM students (Syed et al., 2011), and difficulty with professional identity formation (Fuse, 2018; Malone & Barabino, 2009; McGee, 2016).

Within the CSD department at Syracuse University (Syracuse U.), we established a Student Diversity and Success Committee (SDSC) comprised of academic and clinical faculty, with overarching goals of increasing the diversity of students in our CSD undergraduate and graduate programs and improving the retention and success of our matriculated graduate students. The initial activities of the SDSC were directed toward changes in our departmental recruitment and admissions processes, including enacting more holistic graduate applicant review procedures that would reduce potential bias and facilitate the assessment of multidimensional applicant strengths (Kalsbeek et al., 2013; Price & Grant-Mills, 2010; Wong et al., 2021). However, in recognition of the need to enhance the success and retention of our own BIPOC students as well as the lack of evidence-based methods for such success-enhancing efforts in CSD, the SDSC shifted its focus in 2019 towards the development of a program that would address known barriers to the success and persistence of our CSD BIPOC graduate students.

Drawing from the theoretical bases and structural frameworks of other successful programs for enhancing the retention of URM graduate and undergraduate students in the overall STEM disciplines, we designed a multidimensional program for our newly matriculated CSD audiology and speech-language pathology students: the ALIGN program (**A**cademic Skil**l** Buildi**ng** and **N**etworking). The ALIGN framework includes four pillar components to provide variegated dimensions of support: a) skill building workshops offering strategies and application opportunities for enhancing academic and professional skills, b) peer-facilitated study groups to address course-specific content identified by students as challenging, d) peer mentoring through pairing of incoming program participants with a returning BIPOC student, and e) professional mentoring through pairing of incoming program participants with certified, practicing professionals for career guidance, professional networking, and enhanced identification as a future speech-language pathology or audiology professional. The present study was designed to describe the rationale and evidence base for the development of the ALIGN program including each pillar of the framework, delineate the methods by which each program pillar was enacted, report preliminary quantitative and qualitative outcomes for ALIGN for its inaugural year, and discuss implications of the program and future directions for refining and improving program impact.

Overall Theoretical and Practical Bases of ALIGN. Despite the lack of studies reporting on CSD program outcomes for enhancing the success and retention of graduate students, multiple programs have been developed to address these issues in undergraduate and graduate STEM disciplines, with studies reporting on program development and outcome data (Byars-Winston et al., 2011; Krulwich, 2009; Maton & Hrabowski, 2000; McGee et al., 2012; Stassun et al., 2010). These programs draw on several theoretical models for factors that influence student persistence, including the role of science identity, sense of community belonging, and how social capital shapes inequities. Detailed discussion of these theoretical models is beyond the scope of this article, but key points will be summarized as relate to the development of ALIGN. Social cognitive career theory (Lent et al., 1994) considers person-related factors inherent to the individual as well as contextual factors such as institutional and environmental influences as determinants of a person's interest, choices and actions in achieving goals such as completion of graduate education. Mediating variables that are critical to outcomes include a person's belief in their own capabilities (self-efficacy) and belief in the probability of success or failure of one's actions (outcome expectations). Thus, key variables that interventional programs focus on include the enhancement of learning experiences, self-efficacy and outcome expectations through programmatic mentoring, opportunities for peer interactions, and targeted supplemental instruction for academic and professional areas necessary for student success (Byars-Winston et al., 2011; Byars-Winston et al., 2015; Krulwich, 2009; Maton & Hrabowski, 2000; Stassun et al., 2010). The extent to which a student identifies with being a scientist is linked to desire to pursue a science-related career as well as persistence in the educational pathways necessary for that career (Byars-Winston et al., 2016). Science identity is impacted by degree of knowledge of science content, science-related skills and opportunities to perform those skills and being recognized as a scientist by others as well as oneself (Carlone & Johnson, 2007). Thus, interventional programs must include opportunities to build science and professional identity for graduate students pursuing speech-language pathology and audiology career paths. Finally, social capital theories (Bourdieu & Passeron, 1977) explain how social networks influence an individual's access to information, resources, and career-related opportunities (Pfund et al., 2016). Explicit opportunities for peer and professional networking need to be built into interventional programs such that URM students have opportunities to build and benefit from social capital.

Programs whose framework and components are congruent with concepts of social cognitive career theory, science identity, and social capital have had demonstrable success in increasing URM students' academic performance, entry into graduate-level science programs, and persistence in undergraduate or graduate programs that they were currently enrolled in. Several programs target increased success of undergraduate URM students in STEM-related disciplines, with the goal of facilitating the successful transition of these students to graduate programs in the sciences. The Meyerhoff Scholars Program at the University of Maryland Baltimore Campus was developed as a multi-pronged program that focuses on stimulating achievement of URM undergraduate students to increase the number of such students who would then continue their education at the graduate level in the fields of science, engineering and math (Maton & Hrabowski, 2000). Objective data and survey-based qualitative data revealed tremendous program success; the cohort of 31 Meyerhoff program students showed pronounced, significant increases in targeted courses and overall GPA (3.16 and 3.30 respectively) as compared to a historically matched sample (2.64 and 2.84 respectively), even with adjustments for confounding factors such as high school GPA. Furthermore, substantially more students in the Meyerhoff cohort pursued graduate

education or medical school (71% combined for the Meyerhoff cohort versus 21% for the historical sample). Program components that were important to its success included study groups that emphasized participatory learning, sense of community established through the program, tutoring resources, and mentoring.

In contrast to the Meyerhoff program which specifically selects high-achieving, top-level URM students to participate in the program, other programs have included URM students whose level of college preparedness is less strong. The Biology Scholars Program (BSP) at UC Berkeley is designed to enhance the retention and success of URM undergraduate students who identify as having an intended Biology major (Matsui et al., 2003). Students who come from low-income households, identify as first-generation college attendees in their family, or who are identified by as advisors as having difficulty with the transition to college are encouraged to apply to the BSP. The overarching goal of the BSP is to offer a community that encourages high academic achievement while offering the support to attain that, and its key components include academic support, seminars addressing academic and career issues, social connection as well as research opportunities, advising, and mentoring. Those who participated in the BSP showed significantly greater rates of graduation in the biology major (with a difference of more than 10%) and significantly higher overall GPA as compared with their non-BSP peers, despite the fact that BSP participants had lower high-school GPAs and SAT scores upon initiating college than their non-BSP peers.

Other studies have reported outcomes for diversity-focused programs that target post-baccalaureate students. Team SCIENCE, developed by Byars-Winston and colleagues (Byars-Winston et al., 2011) at the University of Wisconsin-Madison, is a program whose framework and components are driven by social and cognitive career theory, and served as the model for the underlying tenets of ALIGN. Importantly, academic and psychosocial domains are targeted in Team SCIENCE. Program development was guided not only by theory and supporting evidence, but also by listening sessions held with URM graduate students in which students described factors that acted as barriers and facilitators to their success in their graduate studies. These sessions formed the basis of a needs assessment that was integrated into the design of Team SCIENCE. Graduate PhD students in STEM disciplines who were URM were invited to participate, and this study reported on preliminary survey outcomes for 9 participants. Team SCIENCE program components focused on developing core academic career competencies (e.g., oral communication, writing and expertise that related to research excellence, collaboration skills, and leadership skills) while promoting self-efficacy and positive outcome expectations. In addition to directly addressing these core competencies, program components included career coaching, the creation of an individualized career development plan which specified a student's goals, desired products, necessary supports and short-term needs, and a self-assessment of factors that might facilitate or inhibit a student's career success. A survey assessed perceived value of each of the program components on a Likert scale from 0 to 4, with additional questions that determined qualitative outcomes. Mean ratings demonstrated perceived value for all components and ranged from 2.44 to 3.67. Career coaching meetings that addressed strategies for achieving career goals, facilitation of a mentee's forward mobility in their career, and increasing the visibility and recognition of the mentee's accomplishments, were viewed as the most valuable program component. Qualitative comments indicated that students felt career coaching helped them monitor their own activities for

advancing their education and career, and that advising provided a sense of welcoming and support.

Two other programs which have demonstrated excellent success in promoting the successful continuation of URM students' education to the doctoral level are the Fisk-Vanderbilt Masters-to-PhD Bridge Program (Stassun et al., 2010) and the Mount Sinai Post-Baccalaureate Research Education Program (PREP) (Krulwich, 2009). The Fisk-Vanderbilt Masters-to-PhD Bridge Program recruits URM students who are enrolled in a science-related master's program and is designed to provide scaffolding and support that will allow these students to successfully transition to a PhD program (Stassun et al., 2010). Program components that were critical to the success of students and which informed our choice of ALIGN pillar components included an initial orientation and program kick-off to welcome students and introduce them to the program, a peer-mentorship social group that included senior and new Bridge members to develop a sense of belonging and group identity, and proactive identification of course difficulties and intervention through tutoring conducted by advanced graduate students. The program outcomes were reported relative to the success of participants in transitioning to a PhD program; of the 35 students described in the article, 32 (91%) had already enrolled or were in route to enrolling in a PhD program.

The Mt. Sinai PREP Scholars Program is a post-baccalaureate program that targets the successful transition of biomedical URM students from their already completed bachelor's program in biomedical sciences to a PhD or an MD/PhD program (Krulwich, 2009). The PREP Scholars Program enrolls four to eight students per year and includes a one to two year intervention period. The PREP framework includes an explicit focus on building a sense of career self-efficacy and community among the PREP participants. Components of PREP include individualized tutoring, enrollment in individualized courses specifically identified as facilitative based on participants' prior academic record, and workshops that focus on time management and writing skills. A social worker is directly involved in the program to provide a non-evaluative and independent person for participants to express their individual goals and concerns. Among the 22 PREP Scholars reported on in this article, 73% had already entered a doctoral program and more were expected to shortly enroll in a doctoral program. Overall, these programs demonstrate that multidimensional programs which address core knowledge and skills, self-efficacy, and sense of community belonging can be highly successful in the retention and successful transition of URM students to higher levels of graduate study.

Evidence-Based Support for Each Pillar of the ALIGN Program

Pillar 1 – Academic and Professional Skill Building Workshops. Academic barriers have been identified as the largest impediment to the success of graduate CSD URM students (Mohapatra & Mohan, 2021), and academic support is considered one of the key intervention elements for increasing the success of URM CSD graduate students (Fuse & Bergen, 2018). Racial and ethnic differences in high school drop-out rates, disproportionate representation of minorities in lower-level classrooms, and unequal access to important instructional resources such as highly qualified teachers and hands-on learning labs have been identified as factors contributing to academic disparities between minority and non-minority students (Maton & Hrabowski, 2000; McGee et al., 2012; Mohapatra & Mohan, 2021). Thus, students who are URM have educational disadvantages

relative to their non-URM peers, making it harder to succeed at the graduate level (McGee et al., 2012). Achievement gaps in college level science foundation courses such as biology and chemistry are substantial when comparing grades for Black and Latino/a students to White students (Alexander et al., 2009). These gaps are likely to influence preparedness for CSD graduate coursework, as ASHA considers these foundational science courses as necessary prerequisites for graduate studies in speech-language pathology (*Prerequisite Course Content*, 2022).

The academic skill building workshops in ALIGN provided explicit instruction and practice with learning strategies that have demonstrable evidence for improving academic success and could be applied across all CSD graduate courses that ALIGN students were enrolled in. Programs that were effective in facilitating URM student academic success and retention have explicitly included workshops on optimal learning strategies and study habits (Maton & Hrabowski, 2000; Tien et al., 2002), and the addition of a 50-minute session on learning and study strategies for students in large science classes resulted in significantly better course grades (as much as 10% numeric grade differences) and motivated students to apply one or more of the strategies that were presented (Cook et al., 2013; Zhao et al., 2014). The retrieval-practice effect, often achieved through repeated self-quizzing by learners or instructor-imposed quiz/test opportunities for enhancing recall, results in significantly more durable learning than techniques that involve re-exposure to information (Roediger & Karpicke, 2006). The simple difference of adding intervening quizzes during science learning prior to overall exams can produce average grade differences from C+ to A- for science-related content (Roediger et al., 2011). Whereas cramming can produce better immediate performance on exams, it does not promote long-term learning in the way the repeated retrieval and spaced retrieval practice do. The process of generating information in the learning process can significantly improve recall over information that is presented passively (Slamecka & Graf, 1978), potentially due to the increased engagement and cognitive effort required which can prime neural circuitry for better learning and recall.

Delayed recall in the form of spacing out retrieval opportunities at varying intervals results in even better recall of learned information, likely due to the increased effort that is involved in retrieving information at greater delays from initial learning, which helps solidify the learned information. Clinical performance by medical students in performing various medical procedures was significantly better after spaced instruction than massed intensive instruction (Moulton et al., 2006). Interleaved practice, in which subject matter or types of learned content are purposely varied in the learning practice, has been shown to significantly increase long-term learning of math-related content in college students when compared with learning that massed one type of information (Rohrer & Taylor, 2007). Use of concept maps that provide a structural framework for information and relate information by categories and sub-categories, using directional arrows, drawings, and bullet points with key concepts can help students build mental maps that highlight important concepts and relate information in a structurally coherent way. Students who have strong structure-building skills show better comprehension of material and better ability to discriminate important from irrelevant information than those with poor structure-building skills (Gernsbacher et al., 1990). Activities such as generating concept maps can train these structure-building skills. A workshop on time management was included to address the critical need for efficient and effective use of time throughout ALIGN participants' graduate studies. In graduate CSD programs, the typical 2-year master's SLP program or 4-year AuD program is tightly packed with coursework and clinical work. At Syracuse U., SLP students take anywhere from 47-52 credits of coursework

and complete 375 hours of direct clinical contact time with clients, including two full-time externships in their fall and spring semesters of their second year. Students in the AUD program complete 92 credits of coursework and a minimum of 1820 hours of clinical work, including a one year full-time clinical externship (fall and spring semesters of their 4th year). Compounding these challenging time constraints is the fact that most URM graduate students need to do outside work to fund their graduate education and daily living costs, which can interfere with their educational performance (Estrada et al., 2016; Sowell et al., 2015). The need for excellent time management skills is therefore critical for CSD BIPOC students to be successful. Programs that have achieved remarkable levels of graduate URM retention and success have also included explicit time management instruction (Krulwich, 2009; Maton & Hrabowski, 2000).

Additional workshop topics in ALIGN for academic and professional skills were included based on the integration of these areas in prior successful programs, and through the CSD faculty at Syracuse U. identifying these areas as critical to graduate student success. Research and writing skills have been identified as core competencies for success in science-related graduate education (Byars-Winston et al., 2011), and these skills were directly targeted and considered integral to the successful outcomes of several of the above summarized programs (Byars-Winston et al., 2011; Krulwich, 2009; Maton & Hrabowski, 2000). The Fisk-Vanderbilt Masters-to-PhD Bridge Program included a professionalization course designed to acclimate students to both academic culture and departmental expectations, including areas such as work habits and communication styles (Stassun et al., 2010).

Pillar 2 – Peer Facilitated Study Groups. The academic workshops described in Pillar 1 address overall knowledge and skills that are applicable to content in any area of a student's academic program. However, many students may also benefit from guidance in course-specific content. Substantial evidence supports the value of peer-facilitated study groups, which not only provide specific content-related instruction, but also an opportunity for peer-based scientific community building. Tien and colleagues (2002) described a highly successful model for peer-led learning groups to improve overall student outcomes in an organic chemistry course, notorious for its difficult content and tendency to "weed-out" science students from science majors. Multiple foci of the Tien et al. learning groups were consistent with the theoretical models for ALIGN and thus were incorporated into the ALIGN peer-facilitated study groups. Tien et al. selected peer leaders who had previously taken the same course and therefore had a sense of the breadth and scope of knowledge needed for the course. An initial peer leader training provided leaders with the skills to guide interactions and facilitate students' ability to productively problem solve. Peer leaders integrated learning strategies into their sessions that were specifically useful for the course content and were able to interact with students in ways that the course instructor could not. Important elements of the peer-led learning workshops were that students were required to articulate their conceptual understanding of material to each other and their peer leader, reflect on each other's expressed content, and clarifying misunderstandings with each other. Peer leaders facilitated active learning approaches in which students discussed, debated, evaluated, and built upon existing knowledge. Aggregated evidence is clear that these types of active learning strategies enhance overall student achievement (Schroeder et al., 2007) and are highly effective in STEM teaching (Freeman & Huang, 2014). Furthermore, active learning approaches emphasize collaborative learning and help build student confidence through their emphasis on articulating and refining knowledge, which can be particularly effective for boosting learning outcomes in URM students

(Theobald et al., 2020). When comparing more than 1200 students who participated in peer-led learning workshops to a historical control sample of those who attended traditional recitation sessions, participants in peer-led learning had significantly greater course achievement and were retained in the science majors at significantly higher percentages (Tien et al., 2002).

Similar positive effects of peer-facilitated learning groups have been demonstrated in other science coursework. Preszler (2009) examined the effects of peer-facilitated learning groups in which peer leaders worked with small groups of students once a week in place of one of the previous lecture days for a biology course. Peer facilitators who had previously excelled in the course were selected and paid for their preparation and direct facilitating time. Extensive training of facilitators occurred prior to starting their facilitative role to educate them on the philosophy of the program and methods to engage the students in interactive learning. Overall course grades were significantly higher for the years in which peer-facilitated learning groups were implemented as compared with a historical control sample. Importantly, the increases in grades were even more substantial for URM student participants than for students who were non-URM, although all students benefitted from the peer-facilitated learning approach. Rath et al. (2007) implemented peer-facilitated learning in a supplemental learning context in which students opted into the program and earned an additional credit for their weekly time commitment. Similar to the methods of Tien and colleagues, facilitated learning groups in the Rath et al. study emphasized active and cooperative learning, encouraged facilitators and student members to identify misconceptions and difficulties with content, and encouraged students to discuss and explore concepts in greater depth to enhance more flexible levels of knowledge. Participants in the facilitated learning groups showed significantly higher overall course grades than the comparative student sample, and URM students showed the greatest achievement benefit (Rath et al., 2007). Overall, studies addressing the efficacy of peer-facilitated learning groups encouraged deeper-level conceptual understanding through cooperative and active learning approaches, demonstrate superior academic science outcomes when compared to other learning methods, and often show the greatest achievement benefit for URM students.

Pillar 3 – Peer Mentoring. Wright-Harp & Cole (2008) emphasized the importance of implementing a multiple mentor model to maximize the success of CSD graduate students, and highlighted peer mentoring as one of four crucial types of mentoring support. They suggested that effective peer mentors typically have the same major as their mentee and are at more advanced levels of their program so that they can share their own strategies, experiences, and successes to motivate their mentees and help highlight mentees' successes and accomplishments. These peer-to-peer interactions help build a sense of community and belonging for URM students and can reduce sense of isolation. These peer interactions and program community building opportunities have been identified as key components of successful intervention programs detailed above (Byars-Winston et al., 2011; Krulwich, 2009; Maton & Hrabowski, 2000; Tien et al., 2002). Peer mentors can promote self-efficacy in their mentees, offer models of science identity, and increase motivation in URM graduate students, which are all factors that enhance student persistence (Chang et al., 2011; Hernandez et al., 2012; Syed et al., 2011).

Pillar 4 – Professional Mentoring. Academic and professional mentoring is consistently identified as key factor in the success and persistence of URM students in the sciences at all levels of education including CSD students (Fuse & Bergen, 2018; Hathaway et al., 2002; Maton &

Hrabowski, 2004; McGee et al., 2012; Nagda et al., 1998; Wright-Harp & Cole, 2008). Specific mentoring attributes and practices that have translated to increased URM persistence have been outlined, with emphasis on STEM disciplines (McGee, 2016; McGee et al., 2012; Pfund et al., 2016). Grant-funded, national training centers (e.g., *Center for Improvement in Mentored Experiences in Research*, *National Research Mentoring Network*) have developed curricula for mentorship training. Many of these resources are directed toward institution-specific workshops, such as culturally aware mentoring practices for enhanced mentoring efficacy (Byars-Winston et al., 2018; Pfund et al., 2015), in which a small group of faculty are trained on mentoring pedagogy and practices who then train others within their institution. The majority of these programs were designed to target research mentoring for doctoral students or early-stage university faculty for subsequent increases in the diversity of biomedical faculty performing research (Byars-Winston et al., 2011; Pfund et al., 2014; Williams et al., 2017). Much less attention has been directed toward strategies to enhance the success of individuals with a minority background who are in clinical graduate programs (master's or clinical doctorate). Clinical graduate programs provide the credentialing degree necessary for many health professions such as speech-language pathology and audiology. Therefore, to achieve diversification among these professionals, methods are needed to enhance the academic and career success of graduate students enrolled in these programs.

The addition of coaching to traditional mentoring techniques results in increased informational and emotional support, and provides a non-competitive context for validating experiences, facilitating self-appraisal of strengths and weaknesses, and practicing strategies to increase academic success (Williams et al., 2017). When coaching involves professionals outside of the mentee's institution, it provides alternative options for supportive communities that include URM students, broadens the pool of potential mentors to increase the likelihood of URM mentors, avoids any conflict of interest by allowing the mentor/coach to have a non-evaluative role, and can offer a safe and comfortable context to share perspectives (McGee, 2016; McGee et al., 2012).

The implementation of culturally aware mentoring practices may be pivotal for increasing a student's perceived self-efficacy and reducing feelings of isolation and lack of belonging that are commonly experienced by BIPOC students. Training mentors on how to implement culturally aware mentoring practices leads to an increase in perceived cultural skills and desire to intentionally discuss issues of race/ethnicity with their mentees (Byars-Winston et al., 2018). Long-term behavioral change following culturally aware mentoring training for faculty and administrators includes increased cultural awareness and interventional skills (Womack et al., 2020). Although many of the afore-mentioned programs have focused on training the mentors of doctoral students or students engaged in research, some extend their focus to undergraduate students (Foroozesh et al., 2017; Nichols & Coston, 2019). Culturally aware mentoring practices were therefore purposely integrated into the ALIGN program.

Methods

The Syracuse U. Institutional Review Board (IRB) reviewed and determined that this study qualified as exempt from human subjects research requirements (IRB # 21-285, category 4 of exempt categories).

Program Participants. Students who had self-identified as a person of color in their admissions application material were invited to participate in ALIGN upon initiation of their graduate program in Fall 2020. Seven graduate CSD students who were either enrolled in the Speech-Language Pathology (SLP) or Audiology (AuD) programs at Syracuse U. chose to participate in ALIGN. One student left the graduate program after the first semester, with 6 student participants who completed the ALIGN program. All students were in the first year of their clinical graduate program. Of the 6 final participants, one identified as Black, one as Hispanic and Black, one as Hispanic, and 3 as Asian (including the regions of India, Pakistan, and Bangladesh). Ages ranged from 20 to 26 (mean=22.7 years). Four of the 6 were proficient in a language other than English, two represented the first generation in their family to go to college, two came from economically/educationally disadvantaged backgrounds, and all 6 had attended a four-year college.

The faculty who developed, organized, and facilitated all pillar components for ALIGN were members of the Student Diversity and Success Committee (SDSC) within the CSD Department, including clinical and academic faculty from the SLP and AuD programs. All faculty are ASHA certified clinicians. All members of the SDSC have had training in diversity, equity, and inclusion (DEI) and varied experiences working with clients and students from culturally and linguistically diverse backgrounds.

Development of the ALIGN Program. In addition to the previously summarized evidence base that was used to develop the overall structure and pillar components of ALIGN, communications with experts in mentoring and intervention programs for URM student success also contributed to the planning of ALIGN. Several strategies and approaches that had been successful with the Center for Learning and Student Success (CLASS) at Syracuse U., a program designed to maximize academic success for undergraduate students, were adapted and integrated into some of the content areas of the ALIGN program. Consultation with Dr. Richard McGee (personal communication, February 26, 2020), a Professor and Associate Dean for Faculty Recruitment & Professional Development at Northwestern University, was integral to developing the participatory and reciprocal learning approaches for the peer-facilitated study groups and for adapting professional mentoring to include successful coaching frameworks previously described. Culturally aware mentoring practices were incorporated into ALIGN based on a mentoring training program that the first and third authors attended, "Preparing Mentors and Advisors at Xavier", or P-MAX (Nichols & Coston, 2019). The P-MAX program establishes best practices for mentoring and advising and structures its curriculum around the "Entering Mentoring" program (Pfund, Branchaw, & Handelsman, 2014), an evidence-based model for mentoring diverse populations.

Structure of the ALIGN Program. Four pillar components comprised the structural framework of the ALIGN program, with each designed to promote academic and professional skill building and networking. Portions of the program that focused on *academic and professional skill building* included formal academic coaching workshops, professional skills workshops and weekly peer-facilitated study groups. Components of the program that focused on *community building* and *networking* included peer and professional mentoring interactions.

Workshop topics included the following: a) evidence-based academic learning strategies, b) time management, c) health and wellness, d) professional writing, e) professional communication, and

f) critically evaluating CSD research. This content was chosen based on the previously reviewed evidence demonstrating the importance of these components for program success (Byars-Winston et al., 2011; Krulwich, 2009; Maton & Hrabowski, 2004; Stassun et al., 2010), and to facilitate the success of BIPOC students who may not have had previous opportunities for explicit instruction in these topics (Ramos, 2019). This workshop content also addressed areas identified as critical to graduate program success by prior students and current CSD faculty. Each 2-hour workshop was facilitated by different members of the SDSC team, and implemented active learning activities (e.g., articulating conceptual understanding, reflecting on shared ideas, clarifying and elaborating content, and collaborative concept building) to help students learn and then directly apply targeted strategies to their current course and clinical work.

Pillar 1 – Academic and Professional Skill Building Workshops. Six academic coaching and professional skills workshops were hosted either virtually or in a hybrid (in-person/online) format throughout the academic year to provide students with information on skills needed to be successful in their graduate program and beyond in their professional careers.

Academic Coaching Workshops. Goals of these two workshops included strengthening students' learning skills by directly teaching, discussing, and practicing evidence-based learning strategies through the implementation of participatory, active learning techniques. Initial content included activities to promote and discuss the following:

- Self-reflection of needs and strengths (e.g., each participant sharing their needs as a BIPOC student in the SLP or AUD program, and identifying and discussing three strategies students currently used to help them learn)
- Common misconceptions about what is helpful for learning and evidence for why alternative approaches may enhance learning (e.g., when learning feels comfortable or learning is passive, learners may develop a false security in their knowledge [Kruger & Dunning, 1999]) rather than a deeper and more flexible understanding of concepts)
- The benefits of a growth mindset (Dweck, 2006) involving persistence (e.g., when facing course difficulties, identify what you need to work on more and focus on how you can approach your study process differently), effort (e.g. include study activities that are not easy for you and may not match your preferred learning style), and growth outlook (e.g., view challenges and criticism as opportunities for problem solving new and more effective approaches to learning or performing a skill). The use of "desirable difficulties" were introduced as techniques that enhance learning and remembering of information (Bjork & Bjork, 2011), such as having students test and retest their knowledge rather than rereading notes or text also promotes consolidation, synthesis and application of knowledge.

Subsequent content addressed specific strategies that promote long-term retention and strengthen connections between concepts (Brown et al., 2014; McGuire & McGuire, 2015). Learning and retrieving the names and functions of the cranial nerves was used as a task to exemplify each of the following strategies, due to its applicability to both SLP and AuD ALIGN cohorts.

- Use generative approaches to help prime the mind for learning new concepts (e.g., before attending class or doing an assigned reading, explain 3 key concepts aloud that you think you know about content);

- Practice spaced retrieval which requires more cognitive effort and promotes better long-term retention and consolidation of learned information (e.g., generate self-quizzes for yourself 1, 3, then 5 days after learning new information);
- Use interleaving and varied practice which requires more cognitive effort but promotes long-term retention and improved ability to apply concepts (e.g., study two or more class content areas each night, and when practicing information, switch to a new content area and then later switch back to the first);
- Use concept maps to relate new to previously learned information and to develop deeper mastery of information (e.g., organizational diagrams that start with broad categories and break things down into small constituent parts, with key facts, similarities and differences emphasizes at the micro taxonomy level);
- Use memory strategies such as mnemonics to help retain information (e.g., generate acronyms for a set of information, use generative visual mnemonics such as a drawing a face in which cranial nerve numbers are placed on the area that corresponds to what they innervate).
-

Explicit strategies for time management were also introduced, with strategies then directly applied to students' individual schedules. Templates for weekly planners and semester-at-a-glance planners were presented, examples of completed templates were provided, and students then completed and submitted an electronic planner of their choice. Subsequent discussion addressed methods for prioritizing activities, ways to maximize time for increased productivity, and managing/setting clear boundaries.

Professional Skills Workshops. Four additional workshops addressed professional skills. In the *Professional Communication* workshop, a clinical and academic faculty member facilitated discussion of communication in professional settings. Specific topics included the varied styles of communication that are used across verbal and written modalities, strategies for repairing communication breakdowns, strategies for building rapport with clients and faculty, and individual expression of identity within professional contexts. Students were engaged in discussion and provided with scenarios to promote application of the topic material to their own experiences and to problem-solve challenging situations. In the *Health and Wellness* workshop, a Health Promotion Specialist from Syracuse U. was invited to introduce students to health and wellness services that are offered through the university, including counseling, health care, fitness areas and activities, and meditation/mindfulness practices. Discussion between the Health Promotion Specialist, CSD faculty, and the ALIGN students addressed identifying stress triggers and developing healthy coping strategies for stress.

Two other workshops addressed writing and research skills. In the *Professional Writing* workshop, students were provided with opportunities to refine their professional writing skills through guided discussion and a writing peer review activity. A clinical and academic faculty member led discussion of common errors that occur in the clinical and academic writing of new CSD graduate students. After the discussion, students were paired and completed peer review of a written assignment that they were currently working on in their program. Finally, a workshop titled *Critically Evaluating CSD Research* was offered. Research is a core component of evidence-based practice; thus, understanding the qualities of research that indicate strong scientific evidence for clinical practice is a critical skill for CSD students. This workshop included identifying the sections

of a research article, strategies for reading and interpreting research, and methods for critically evaluating a research article.

Pillar 2 – Peer-Facilitated Study Groups. Students enrolled in the ALIGN program were required to participate in one 2-hour facilitated study group session per week throughout the academic year. The overall goal of the facilitated study groups was to actively engage students in the identification, elaboration and learning consolidation of course topics that each student was having difficulty understanding. The emphasis of the facilitated study groups, which differs from traditional tutoring, is that students were expected to be active contributors in each learning session through explanation of concepts, identification of misconceptions, and elaboration of concepts expressed by other participants; a collaborative and collective learning process was emphasized. Through the collaborative process of explaining and teaching concepts to each other, students strengthened their depth of conceptual knowledge, had opportunities to consolidate learning, and gained confidence about their academic skills. Content covered in each session was driven by the ALIGN students; each week, ALIGN participants were expected to come to the study session with a list of four content areas across at least two different courses that they felt were difficult to understand.

Each study group was comprised of two to three ALIGN students who were in the same graduate program and a study group facilitator who was a second-year graduate student and was in the same graduate program as their assigned ALIGN students. Study group facilitators were identified based on the strength of their academic record, interpersonal and teaching-related skills, and they were paid for their preparation and direct contact time. Meeting times were mutually agreed upon between the facilitator and the group members and could be varied in any given week according to mutual scheduling needs. Prior to their first study group meeting in Fall 2020, facilitators were trained by a designated member of the SDSC on the target techniques and approaches for study group sessions. Training was conducted via Zoom in an approximate 45-minute session. The training included a brief overview of the structure and goals of the ALIGN program, as well as detailed instructions regarding the purpose of the facilitated study groups and the roles and responsibilities of the facilitator. Facilitators were encouraged to contact the SDSC faculty liaison at any time during the academic year with questions regarding their role as a facilitator.

Specific techniques and approaches that the facilitators implemented were as follows:
- Helping students identify what they were not understanding well
- Providing ways to help students conceptualize, organize, and learn the identified difficult information
- Guiding student learning and knowledge, not delivering information
- Providing rapid review of concepts, giving summaries of concepts, helping students to distill information
- Discussing course/content-specific strategies and tips that the facilitator found useful when they took the course previously
- Providing a checkpoint for accuracy of newly learned information
- Providing opportunities for students to retrieve, elaborate on, and connect the newly learned, difficult information with prior knowledge. Methods included identifying similarities and differences of new and prior concepts, asking students to explain what they knew, posing quiz-like questions to students, helping students identify and explain why a

concept was correct or incorrect, and asking students to explain key concepts, provide examples, and relate new concepts to prior concepts.
- When appropriate to content, suggesting diagrams or concept maps for helping students frame and organize difficult information.

Between each study group session, ALIGN participants were expected to practice using the strategies they had learned though study groups or academic coaching workshops. In subsequent study sessions, ALIGN participants were encouraged to discuss the use of these strategies to assess what kinds of methods worked best for each student.

Pillar 3 – Peer Mentoring. Each ALIGN participant was assigned a peer mentor and each peer mentor was assigned two to three ALIGN participants. The overall goals of the peer mentoring pillar were to provide ALIGN participants with an opportunity for perspective sharing, advice, support, and peer networking from another BIPOC student who had successfully completed the first year of their graduate program. Initial training and mentor-mentee interactions were guided by a designated SDSC faculty member, but ultimately the student peer mentors led the mentoring interactions. Peer mentors were selected from a pool of students who were involved in a pilot diversity program initiative from the previous year. All peer mentors selected for the ALIGN program in 2020-21 were second-year BIPOC graduate students and each was assigned to mentees in the same academic program. Peer mentors were paid hourly for their work and were specifically interested in performing this role. Peer mentors were asked to schedule at least one mentoring interaction with their mentees per month, but method of contact and types of interactions varied across mentor-mentee pairs. Given restrictions on in-person gatherings due to the COVID-19 pandemic, most of the peer mentoring interactions for the 2020-21 academic year were virtual.

At the beginning of the fall semester, a designated SDSC faculty member met with the peer mentors to discuss expectations and logistics of the mentoring process. The following tools were used during initial mentoring training:
- Identification of preferred communication styles through completion of a self-rating of communication style
- Identification of mentoring expectations through completion of a worksheet to help guide mentors' interactions and goals
- Examples of written mentoring agreements were provided that addressed mentoring objectives, issues related to confidentiality, and the frequency/duration of mentoring interactions

Mentoring training included discussion of how to align mentor and mentee goals and expectations at the outset of the mentoring experience to help ensure that both the mentor and mentee would be satisfied with the process. Peer mentors were then encouraged to discuss and establish a mentoring agreement with their mentees in their first meeting.

During mentor-mentee meetings:
- Mentees completed a worksheet to identify their expectations for the mentoring process, helping to establish goals and an active, dynamic and process-based relationship between mentee and mentor

- Mentees were encouraged to ask questions and share experiences with their mentor (and other mentees) in a confidential environment.
- Peer mentor-to-mentee topics focused on discussing shared life and educational experiences with other BIPOC students. This differed from the facilitated study groups, which focused exclusively on academic course content.

Pillar 4 – Professional Mentoring. The final component of the ALIGN program involved pairing ALIGN participants with SLPs and audiologists who self-identified as persons of color. The overall goal of professional mentoring was for mentors to be a positive role model for students while supporting their professional development. Following the coaching model of mentoring outlined previously (McGee, 2016; McGee et al., 2012; Williams et al., 2017), professional mentors were identified from outside of the institution to provide non-evaluative and safe contexts for mentoring from successful, BIPOC professionals. Specifically, mentors provided career-related guidance, support, and the opportunity for students to begin building a professional network with a successful and practicing clinician of color.

The inaugural cohort of professional mentors, all alumni of Syracuse U., ranged in number of years of clinical experience from 3 to 27 years. Selection of participating mentors was based on SLPs and audiologists of color who had obtained their Certificate of Clinical Competence (CCC) and had over two years of work experience. Professional mentors who agreed to participate in the ALIGN program often expressed a desire to provide a mentoring opportunity to a minority student from the perspective of a minority professional in the field, which they often were not able to experience themselves as a graduate student or early career professional. The work experiences of mentors represented various settings such as skilled nursing home facilities, acute care hospitals, private practice, school districts, the New York State Board for Speech Language Pathology and Audiology, and academia.

Two initial one-hour group training and orientation meetings were held in Spring 2021 via Zoom, first with the professional mentors and then with the ALIGN participants. The benefits and expectations of mentoring relationships were discussed with all participants to highlight and inform them of the nature of this pillar of the ALIGN program. Professional mentoring expectations and roles were discussed, and example materials for setting mentoring goals were provided. Following these informational meetings, mentor-mentee pairs were matched and ALIGN students were instructed to contact their mentors to establish a routine schedule. A bi-monthly frequency of communication for each dyad was recommended to all participants.

Professional mentoring roles and activities with their mentee included the following:
- Sharing information about the mentor's background, skills, and interests
- Explicitly telling the mentee how the mentor could be helpful
- Listening actively
- Helping the mentee set educational/career goals
- Providing encouragement for building self-confidence and self-esteem
- Offering the mentee constructive and meaningful advice and feedback
- Celebrating milestones and achievements with the mentee
- Acting as a resource for information about careers
- Educating the mentee on workplace expectations

Although the activities of the other three pillars of the ALIGN program ended in May 2021, professional mentors were expected to continue meeting with their assigned mentee student throughout the second year of their program. Given restrictions on in-person gatherings due to the COVID-19 pandemic, professional mentoring interactions for the 2020-21 academic year were conducted virtually. In addition to the one-on-one mentoring meetings, one of the professional mentors also taught a seminar in our CSD department that focused on diversity-related issues and was attended by all ALIGN participants as well as other students and faculty within our department.

Survey to Assess Student-Perceived ALIGN Outcomes. To determine outcomes from the 2020-2021 ALIGN program, an anonymous Qualtrics survey was distributed to all ALIGN participants with survey responses collected in early February 2021. Based on the successful Team SCIENCE intervention program for graduate URM students (Byars-Winston et al., 2011), we constructed a survey that used a similar 5-point Likert rating scale to quantitatively assess each pillar component of our program. Qualitative questions were also included to determine in-depth information on participant impressions and components that were more or less useful to participants' program success. Such survey-based data has been identified as important forms of outcome measures in similar interventional programs as ALIGN (Byars-Winston et al., 2015).

Survey questions addressed program pillars 1, 2, and 3 (Skill Building Workshops, Peer-Facilitated Study Groups, and Peer Mentoring). Because the Professional Mentoring pillar (4) was not initiated until the spring 2021 semester, the survey did not elicit feedback on that program component. For the Professional Skills workshops, the survey did not address the writing and research-related workshops as those occurred later in spring 2021, after the survey was conducted. Twenty-four questions were included in the survey (see Appendix A), with open-ended responses elicited for qualitative analysis, and Likert-ranked closed-response sub-questions elicited for quantitative analysis of the three pillar areas, the overall efficacy of ALIGN, and whether participants would recommend the program. Quantitative questions were grouped by the program pillar/component that the questions addressed and included similar content across program pillars to ensure the consistency of information gathered. Because the nature and goals of the Peer Mentoring were somewhat different, this subset of quantitative questions focused on the extent to which that pillar/component a) helped engender feelings of support and connection, b) provided perspectives from other BIPOC students, and c) contributed to a student's graduate program success. These areas were important to assess based on multiple lines of evidence that URM students feel isolated, feel like outsider with reduced sense of belonging, and that URM student success is promoted by building a sense of program community (Byars-Winston et al., 2011; Krulwich, 2009; Maton & Hrabowski, 2000; McGee, 2016; Stachl & Baranger, 2020; Syed et al., 2011).

Qualitative survey data were also collected for each pillar of the ALIGN program to determine what elements students perceived to be most helpful, and to determine the ways in which each pillar could be improved upon. Such qualitative outcome data have been implemented in prior successful intervention programs addressing URM student success and retention and provide critical student perspectives on the value and impact of programs as well as areas that could be improved upon (Byars-Winston et al., 2011; Maton & Hrabowski, 2004; Williams et al., 2017). Qualitative data were collected in two open-ended questions for each pillar area to determine specific aspects that were helpful in supporting students' academic learning and program success,

and suggested areas for improvement. Two additional open-ended questions solicited feedback on benefits of and suggestions for the overall ALIGN program.

Results

All 6 ALIGN participants completed the overall Qualtrics survey. However, some questions received fewer than 6 responses as indicated in Tables 2 and 3. Quantitative data were analyzed using descriptive statistics, and open-ended questions that solicited feedback on ALIGN strengths and areas for improvement were assessed using a qualitative content analysis.

Skill Building Workshops. Quantitative analysis of the Academic Coaching Workshops (Table 1) suggested that this pillar area was viewed as "Sometimes" to "Often" helpful relative to providing new information, strategies, and useful skills, when averaging the three quantitative subset questions (Mean = 3.56, SD = 1.18). Common themes extracted from the qualitative data (Table 2) indicated that the majority of respondents ($n = 4$) found the academic coaching sessions helpful for new study habits, learning strategies for course material, and note-taking tips. The most common suggestion for improvement was to allow students to select session topics ($n = 3$).

Quantitative analysis of the Professional Skills Workshops (*Professional Communication Skills*, *Health and Wellness*; Table 1) suggested that this pillar area was viewed as "Often" to "Almost always" helpful relative to providing new information, strategies, and useful skills, when averaging the three quantitative subset questions (Mean = 4.13, SD = 1.37). Themes from the qualitative data (Table 2) indicated that respondents ($n = 2$) found the professional skills sessions helpful for providing wellness tips and information about wellness-related campus resources. The most common suggestion for improvement was to have more of a focus on specific academic and course skills ($n = 2$).

Peer-Facilitated Study Groups. Quantitative analysis of the Facilitated Study Groups (Table 1) suggested that this pillar area was viewed as "Often" to "Almost always" helpful relative to providing new information, strategies, and useful skills, when averaging the three quantitative subset questions (Mean = 4.39, SD = 1.00). Common themes extracted from the qualitative data (Table 2) indicated that the facilitated study groups were helpful for providing assistance with specific [course] topics from a graduate student who had taken the same courses ($n = 2$). Suggestions for improvement included having the timing of sessions be more flexible ($n = 1$) and providing the target study group topics to the facilitator in advance to allow for facilitator preparation ($n = 1$).

Peer Mentoring. Quantitative analysis of the Peer Mentoring (Table 1) suggested that this pillar area was viewed as "Sometimes" to "Often" helpful for students feeling supported and connected with other minority students, providing shared perspectives, and for graduate program success, when averaging the three quantitative subset questions (Mean = 3.89, SD = 1.54). The central theme extracted from qualitative data (Table 2) was that respondents ($n = 3$) found Peer Mentoring helpful for providing an opportunity to share thoughts, feelings and frustrations with other students who have similar experiences. Suggestions for improvement included allowing these sessions to be voluntary as related to time demand constraints ($n = 2$).

Table 1

Quantitative survey results for each program pillar

PILLAR 1: SKILL BUILDING WORKSHOPS

Question	*M*	*SD*	Frequency Count	Range
1a) ACADEMIC COACHING (*n* = 6)				
Extent of new information, strategies, or methods	3.17	1.17	1=0, 2=2, 3=2, 4=1, 5=1	2.0 – 5.0
Utility of skills presented	3.33	1.21	1=0, 2=2, 3=1, 4=2, 5=1	2.0 – 5.0
Extent to which student understood how to apply skills	4.17	1.17	1=0, 2=2, 3=2, 4=1, 5=1	2.0 – 5.0
1b) PROFESSIONAL SKILLS (*n* = 5)				
Extent of new information, strategies, or methods	4.00	1.73	1=1, 2=0, 3=0, 4=1, 5=3	1.0 – 5.0
Utility of skills presented	3.80	1.79	1=1, 2=0, 3=1, 4=0, 5=3	1.0 – 5.0
Extent to which student understood how to apply skills	4.60	0.55	1=0, 2=0, 3=0, 4=2, 5=3	4.0 – 5.0

PILLAR 2: PEER-FACILITATED STUDY GROUPS (*n* = 6)

Question	*M*	*SD*	Frequency Count	Range
Extent of new information, strategies, or methods	4.17	1.33	1=0, 2=1, 3=1, 4=0, 5=4	2.0 – 5.0
Utility of skills presented	4.50	0.84	1=0, 2=0, 3=1, 4=1, 5=4	3.0 – 5.0
Extent to which student understood how to apply skills	4.50	0.84	1=0, 2=0, 3=1, 4=1, 5=4	3.0 – 5.0

PILLAR 3: PEER MENTORING (*n* = 6)

Question	*M*	*SD*	Frequency Count	Range
Helped student feel supported and connected	3.83	1.47	1=1, 2=0, 3=0, 4=3, 5=2	1.0 – 5.0
Provided student with a perspective from other student(s) of color	4.00	1.55	1=1, 2=0, 3=0, 4=2, 5=3	1.0 – 5.0
Contributed to student's success in their program	3.83	1.60	1=1, 2=0, 3=1, 4=1, 5=3	1.0 – 5.0

OVERALL ALIGN PROGRAM (*n* = 6)

Question	*M*	*SD*	Frequency Count	Range
Helped student be successful in their graduate program	4.17	0.75	1=0, 2=0, 3=1, 4=3, 5=2	3.0 – 5.0
Would recommend ALIGN to future students of color	4.17	0.75	1=0, 2=0, 3=1, 4=3, 5=2	3.0 – 5.0

Note: Scoring based on Likert Scale, Almost never=1, Occasionally=2, Sometimes=3, Often=4, Almost always=5

Overall Program. Quantitative analysis of the Overall Program (Table 1) indicated that ALIGN was viewed as "Often" to "Almost Always" beneficial for graduate student success, and that participants would "Often" to "Almost Always" recommend the program to future CSD BIPOC students (Mean = 4.17, SD = 0.75). Qualitative data regarding the overall ALIGN program were gathered in questions 1 and 15. The two most prominent themes extracted from qualitative data (Table 3) indicated that ALIGN program overall helped students with study habits, understanding difficult course concepts, and general learning (*n* = 4), and provided support and connection opportunities with fellow minority students (*n* = 3). The most common theme for suggested improvements to ALIGN related to its time commitments being challenging and a need for fewer meetings (*n* = 2).

Discussion

This study addressed the rationale and development of the CSD ALIGN program at Syracuse U., describing the implementation of the four pillars of this program and reporting preliminary quantitative and qualitative program outcomes as measured for the inaugural cohort. Specifically, this program implemented evidence-based approaches for academic skill building, mentoring, and facilitating a sense of community and belonging for BIPOC students participating in the program. Our goal in disseminating a roadmap for ALIGN and initial program outcomes is to stimulate other CSD and allied profession academic departments to consider adopting related programs that may enhance the success of BIPOC graduate students, thereby diversifying our audiology and speech-language pathology professionals.

Table 2

Qualitative survey results for each program pillar, for questions addressing most helpful pillar aspects and areas for pillar improvement

PILLAR 1: SKILL BUILDING WORKSHOPS

1a) ACADEMIC COACHING

Question	Themes Expressed and Exemplar Quotes
What was most helpful…	1. Academic study habits, learning strategies for course material, and note-taking tips (4 responses) "Learning strategies for the neurons overview allowed me to remember and memorize the different neurons and their functions" "Academic study tips" 2. Faculty and peer interactions that supported academic learning (2 responses) "I think it was helpful to have discussions and interact with faculty and my peers to support my academic learning" 3. Time management strategies for planning and organizing class and clinic assignments (1 response) "I appreciated the organizational workshop where we made our schedules to be able to plan out our classes, and clinic assignments"
What could be improved…	1. Allowing students to choose session topics (3 responses) "Let the student maybe choose the topics that they feel they need assistance in" "Doing votes to see what our preference would be for the group meeting topics" 2. More study group sessions and more time within these sessions (2 responses) "More study\tutoring time within the sessions" 3. Addressing discrimination topics (1 response) "I would like to talk about discrimination specific topics and how to deal with that."

1b) PROFESSIONAL SKILLS

Question	Themes Expressed and Exemplar Quotes
What was most helpful…	1. Wellness tips and reminders, learning about campus resources [related to health & wellness] (2 responses) "Wellness tips and reminders to take time for self" "It was nice having a guest speaker come in and tell us about resources available to us"
What could be improved…	1. More focus on academics and specific courses (2 responses) "Less of these discussions and more focus on academics" "Spending more time that directly affects our specific courses, instead of general workshops"

PILLAR 2: FACILITATED STUDY GROUPS (continued)

Question	Themes Expressed and Exemplar Quotes
What was most helpful…	1. It was helpful to have a grad student that had already taken the course [as a facilitator] (1 response) "They were very helpful in all my classes and it helped to have a grad student that already has taken the course" 2. Facilitator provided help with specific topics (1 response) "Being able to ask the facilitator for help with all specific topics" 3. Helpful for understanding new information (1 response) "Very helpful regarding new information"
What could be improved…	1. Have flexible or reduced time commitment due to schedule and time constraints (1 response) "I think it may be more useful if in the future the study groups function on a need basis. The time commitment was a bit overwhelming at times when we had 2 hour sessions on top of an academic coaching session that week, and all of our other commitments and assignments. It's extremely helpful connecting with a second year graduate student, but I think it would be more beneficial if the sessions did not have such a strict time limit" 2. The student mentor should be made aware of topics prior to study group (1 response) "The mentor student being given a heads up on hefty topics"

PILLAR 3: PEER MENTORING

Question	Themes Expressed and Exemplar Quotes
What was most helpful…	1. Opportunity to share thoughts, feelings and frustrations with other students who have similar experiences (3 responses) "Being able to share our thoughts/feelings on topics" "It was helpful being able to vent and talk to other students who have had similar experiences and understood the situation"
What could be improved…	1. These meetings should be voluntary (1 response) "They should not be mandatory meetings only if you need help or need to talk or want to catch up" 2.Time constraints make regular meetings difficult (1 response) "I don't think we have enough time weekly to participate in these" 3. More time is needed for students to get to know each other and other professionals of color (1 response) "More time to get to know each other - find people of color in our profession"

Table 3

Qualitative survey results for overall program

Themes Addressing Most Helpful Aspects of the Overall ALIGN Program with Exemplar Quotes

1. Helped students with study habits, understanding difficult course concepts, and general learning (4 responses)

"I have learned better studying habits"

"The student groups have really been a plus because it allows me to ask for clarification on topics that are confusing or that I am having a hard time understanding"

2. Provided support and connection opportunities with fellow minority students (3 responses)

"It has helped me connect with fellow diverse CSD students"

"It has been very beneficial in my learning and feeling as though I have a support system that understands difficulties minorities may have"

3. Helped students with mental health and stress management (2 responses)

"I have learned how to manage stress"

4. Helped students with professional skills and networking with faculty and students (1 response)

"It has been useful in helping me gain professional skills and network with faculty and students in my cohort"

5. Promoted academic confidence and ability to ask for coursework clarification (1 response)

"The most helpful part of the align programs were the study groups as it helped me solve my doubts easily and interact with my senior promptly over any questions about assignments"

Themes Addressing Aspects to Improve for the Overall ALIGN Program with Exemplar Quotes

1. Fewer meetings, time commitments [for ALIGN] were challenging (2 responses)

"I think the program has so many great components, but there are a lot of time commitments for busy graduate students. It may be more beneficial for the peer mentor to be available for the group if they need the mentor, but not required to meet so often. The tutoring and academic skill building workshops were the most beneficial parts in my opinion. Overall the program has some great ideas, there just sometimes aren't enough hours in the day to get everything done!"

2. More study group sessions (1 response)

"Minority students require more group study sessions, opportunities to brainstorm and review new material together and with a professor"

3. Less focus on professional development (1 response)

"I feel less time is needed for professional development"

4.Gather input on topics students are most interested in (1 response)

"Doing workshops that work well with our time and is also effective (doing polls to know what we want to learn about)"

5. More focus on real-world professional development, less on academic skills (1 response)

"More focus on professional development for the real world instead of academic success workshops"

The ALIGN program was expressly designed and implemented to address the urgent need to create comprehensive university programs to attract, retain, and graduate SLP and AuD clinicians from diverse backgrounds. Increased CSD professional diversity is crucial for best serving clients of diverse cultures and for reducing health disparities (Anderson, 2016; Guiberson & Vigil, 2021). Whereas other STEM disciplines are actively implementing new programs to address the critical shortage of URM PhD recipients and professors, few such diversity-focused program initiatives exist in CSD (Mohapatra & Mohan, 2021). The programmatic pillars of ALIGN were developed to address multiple, known barriers to graduate program success, including academic, institutional, and cultural obstacles (Mohapatra & Mohan, 2021), and to explicitly support BIPOC students in developing social capital to facilitate their success (Museus & Neville, 2012; Twale et al., 2016).

Addressing Known Barriers. The ALIGN program increases access and use of resources for BIPOC students by embedding social and academic opportunities into the curriculum, which are integral elements for benefitting from social capital (Garcia et al., 2021; Lin, 1999). Skill building workshops provided explicit instruction for *how* to study academic material and apply learning strategies to their coursework, as well as how to develop skills in communication and professional interaction. Professional mentoring provided students with the opportunity to develop professional networks, while learning the social/cultural structure and norms of the profession. To help students develop peer networks (which can later add to professional networks), peer mentoring in ALIGN gave participants access to the knowledge, skills, and personal experiences of a peer BIPOC students who successfully completed their first year of graduate school. Finally, through workshops and one-on-one meetings, ALIGN offered participants frequent interactions with ALIGN faculty, providing BIPOC students opportunities to develop relationships with faculty and gain exposure to the culture of graduate school. The generally positive quantitative ratings by the inaugural ALIGN cohort suggested that these program elements of ALIGN provided the intended academic and networking supports. In qualitative feedback, students noted that they "learned better studying habits", that ALIGN helped students "gain professional skills" and that "…it was helpful to have discussions and interact with faculty and my peers to support my academic learning."

Another major impediment to completion of a graduate program can be the sense of isolation and reduced sense of belonging that BIPOC students often experience during their graduate studies (Stachl & Baranger, 2020; Syed et al., 2011). Differences in the background experiences and networks of URM students can hinder the socialization process in graduate school, sometimes making it more difficult for URM students to connect with peers (Twale et al., 2016). Furthermore, feelings of inadequacy or that one does not have the ability to succeed (i.e., "impostor syndrome") impact a students' sense of belonging in a group (Guillory & Wolverton, 2008), particularly for graduate level, URM students in STEM fields (Stachl & Baranger, 2020). Social capital differences for URM students often result in limited exposure to role models within the student's profession, which can lead to difficulty with professional identify formation and further impede sense of professional belonging (Fuse, 2018; McGee, 2016). Effective mentoring can help overcome these barriers for URM students by providing access to social capital in the form of role models, emphasis on assets and strengths of BIPOC students, and forging mentor-to-mentee connections that include respect, support, and investment in success (Pfund et al., 2016; Schwartz et al., 2018; Stanton-Salazar, 2011). Importantly, mentoring can help individuals form a sense of professional identity, which is critical to their academic and career success (Atkins et al., 2020).

In ALIGN, peer mentoring and facilitated study groups directly addressed isolation and reduced sense of belonging through explicit opportunities for connection and discussion with experienced (returning) peers and those who were new and within a student's cohort. Interactions with the peer mentor and peer study group facilitator provided connection opportunities for each ALIGN participant with successful and seasoned 2nd year students. Within-group interactions engaged ALIGN participants with other BIPOC students in their own cohort of ALIGN peers who were assigned to the same small group. The overall group events that occurred over the course of the academic year provided opportunities for ALIGN students to convene, share activity experiences, and connect with one another. These experiences were reflected in the survey comments provided by students, in which students expressed that ALIGN "…helped me connect with fellow diverse CSD students" and "…has been very beneficial in my learning and feeling as though I have a support system that understands difficulties minorities may have." Students also clearly valued the opportunity to discuss shared experiences with their peer mentor, as reflected by comments that it was helpful "…to share thoughts/feelings" and "…vent and talk to students who have had similar experiences…"

Professional mentoring within ALIGN provides a role model of someone who is successful in their mentee's specific profession and is a person of color. ALIGN mentees can build a sense of professional and science identity through connections with their professional mentor, while obtaining specific information about career trajectories and methods to optimize career success. This can be critical in helping students' shape a vision of "life after graduate school" and a belief in their individual ability to succeed. These professional mentoring interactions in ALIGN promoted positive self-efficacy and outcome expectations through providing a successful BIPOC role model who could share career experiences and advice with ALIGN participants.

Negative stereotypes and racialized interactions are frequently experienced by URM students, both from peers as well as faculty, advisors, and staff at universities (Robinson et al., 2016). Being treated with less respect than their majority peers, experiencing differences in work expectations, or experiencing assumptions of lesser ability are forms of racialization reported by BIPOC students. The phenomenon of stereotype threat can ensue, where a person internalizes the negative stereotype to a level where it impairs their performance and then perpetuates the negative self-belief (Syed et al., 2011). This can have rippling negative effects on academic or professional sense of identity and academic performance overall (Steele, 1997).

ALIGN provides peer and professional interactions that help counteract the occurrence of negative stereotypes and racialized interactions while demonstrating faculty and university commitment to the success of BIPOC students. The financial support and resources for ALIGN that span university, college, and department levels demonstrate institutional "buy-in" and help build a culture of diversity and inclusion. The investment of time, energy and expertise in the ALIGN programming from our SDSC faculty provide ALIGN participants with tangible evidence that our CSD faculty are dedicated to supporting BIPOC students, reducing racial and ethnic barriers in academia, and cultivating an inclusive climate. Survey comments reflected the value that students felt from networking and connecting with faculty and CSD professionals: "ALIGN has been useful in helping me gain professional skills and network with faculty and students in my cohort" (Table 3). The structured and repeated interaction opportunities that ALIGN participants have with other BIPOC students as well as successful BIPOC professionals may help reduce the effects of

stereotype threat. ALIGN also serves to help our CSD faculty stay mindful of biases, cultural differences, and racialized interactions, potentially reducing the likelihood of negative stereotypes directed towards CSD BIPOC students.

Comparative CSD Programs. Few CSD-specific programs are available for comparative assessments of the ALIGN methodology and outcomes. The CSD Department at California State University, Fullerton distributed a survey to students in their department to evaluate their bilingual and URM students' needs and experiences (Saenz et al., 1998). Survey respondents included undergraduate (57%) and graduate or non-matriculated (43%) students, with 74% being non-URM. After receiving survey results pertaining to their college/university experiences, the CSD Department implemented strategies to improve recruitment and retention of URM students including: a) providing access to funding through training grants and mentorship, b) the integration of courses on multicultural issues into the academic curriculum, c) inclusion of service delivery to multicultural families in the clinic, and d) increased efforts in recruiting URM students. Although specific outcome data regarding the general programmatic changes were not described, program enrollment reflected positive results: 5 years after implementing these changes, the percentage of URM graduate students in their program increased from 14 to 34%. These results and our own data suggest that systematic changes to graduate-level programming can increase representation of BIPOC students and produce overall positive effects on student learning and success during their graduate education.

Although other CSD programs that addressed the multifactorial needs of URM graduate students were not found in our comprehensive literature search, some programs were identified that focused on establishing minority-focused affinity groups for enhancing a sense of belonging and community. Affinity groups provide a context for students who share a collective identity to share their experiences (Bell, 2015). Nazareth College implemented a Speech-Language Therapy & Audiology Minority Program (STAMP), which provides an affinity group domain for URM students, alumni and professionals. Preliminary anecdotal reports from this program are positive, with student feedback illustrating an increase in students' sense of belonging and having a safe space to share experiences and emotions, improved stress management, and connection-building with peers and professionals of color (Alicea & Johnson, 2021). Some student-led support systems have also recently been developed, including the Speech and Hearing Science for Cultural and Linguistic Diversity Club at Arizona State University (*Supporting A Diverse CSD Community*, 2021). Creating a safe space for URM students to discuss shared experiences promotes a sense of inclusivity and belonging while inherently creating a support system.

Study Limitations

Consideration of various study limitations is important to the interpretation of our ALIGN program and its preliminary outcomes. Presenting the evidence-based rationale for the development of ALIGN and describing the methodology of our program were primary purposes of this study, but the inclusion of preliminary program outcomes was also integral. No such study in CSD has delineated the methods and outcomes of a program similar to ALIGN. However, the small sample size ($n = 6$) of our inaugural ALIGN cohort limits the scope and applicability of these outcome data. Furthermore, for the peer mentoring and professional mentoring pillars, students and mentors were given autonomy in the frequency and structure of their mentoring interactions;

recommendations for frequency of interactions were provided but not monitored. Although this allowed for flexibility and individualization, the frequency of mentoring interactions was inconsistent within and between mentor-mentee pairs, potentially reducing the impact of these interactions. Greater consistency and increased monitoring of the multi-level mentoring interactions in ALIGN would assure that common goals and outcomes were occurring across the various mentor-mentee pairings. Additionally, COVID-19 related restrictions meant that most mentoring for the 2019-2020 ALIGN cohort occurred virtually. Although evidence supports the efficacy of virtual as well as in-person mentoring (Pfund et al., 2016), in-person interactions may allow for greater rapport-building and sense of connection.

An asynchronous start date for the professional mentoring pillar (which began in spring semester 2021) was implemented to provide ALIGN students with professional connections at a period of time in which they were more likely to begin focusing on career development. However, its later initiation may have made it more difficult for students to prioritize these interactions, therefore impacting the frequency and level of engagement of the professional mentor-mentee interactions. Also, although informational meetings were held separately for the ALIGN participants and professional mentors, there were no overall, whole-group interactions, thereby limiting the exposure of ALIGN participants to their single mentor.

Our assessment of study outcomes only included a survey that was specific to the pillar components and overall outcomes of ALIGN. The addition of a standardized survey that addresses known barriers to URM student success and retention, including sense of isolation, degree of belonging and departmental/university level community, self-efficacy, and access to various forms of social capital, would be beneficial for comparing outcomes across past and future studies. Existing studies that were designed to enhance URM student success and retention have focused on non-CSD STEM related disciplines, and our hope is that the methodology and outcomes of ALIGN may promote the development of future CSD-specific programs at other universities. Standardized surveys that have been previously implemented would facilitate comparative assessment of these program outcomes.

ALIGN Modifications and Future Directions

The outcome data that were gathered from this initial cohort of ALIGN participants provided critical feedback for refining and improving the program for 2021-22. The theme of scheduling challenges and time constraints was raised in student feedback relative to the overall program and most of its pillar components. Clinical graduate programs such as those for CSD are tremendously time intensive due to course and clinical training requirements. Adding the time required for ALIGN to their already packed schedules was difficult for most participants. Several measures were implemented for 2021-22 to ease the time and scheduling burdens of ALIGN. A standard meeting time (every other Monday evening) was designated for all ALIGN sessions across the four pillars. All group meetings, including those for orientations to the program and its specific components, skills workshops, peer mentoring and professional mentoring were scheduled in advance for those specific dates, with dates and tentative topics provided to students early in their first semester. Scheduling of additional small group or 1:1 meetings (e.g., facilitated study groups, individual mentoring) was directed to occur on weekends when mutual availability was optimal. Another theme that arose from ALIGN participants' feedback was that they wanted more input on

the topics to be addressed in the skills workshops. Therefore, the 2021 ALIGN orientation meeting included an anonymous survey in which students ranked a "menu" of workshop choices from highest to lowest priority, and suggested an additional one or more topics that were not represented in the menu but that participants felt would be valuable to include. Workshop topics were chosen based on the survey results.

The Peer Mentoring and Professional Mentoring pillars were revised for 2021-22 to provide more structure and monitoring to these mentoring interactions, and to determine the degree to which the mentoring needs of each member of the dyad were being met. Whole group meetings have been included in this year's program so that all mentees can benefit from the experiences shared by the array of peer and professional mentors. Monitoring of mentoring interactions will include supervision of the initial meetings by an SDSC faculty member and required submission of initial mentoring contracts and plans.

To improve the scope and impact of our ALIGN outcome data, future research will address the 3-5-year outcomes of ALIGN. This will increase the total sample size which we can report on, and will allow us to address another critical outcome variable: average retention rates of CSD BIPOC graduate students for the 3-5 year period subsequent to launching ALIGN as compared to a similar time period before ALIGN was implemented. In future work we plan to include an additional validated and standardized assessment to determine ALIGN program impact on known barriers to URM student success. The effects of the ALIGN methodology revisions based on student feedback will also be assessed in this future research, including scheduling revisions to reduce time burdens for participants, increased structure and monitoring of mentoring pillars, and whole-group professional mentoring opportunities.

Finally, one of the largest impediments to the retention of URM graduate students is having sufficient financial resources to cover tuition and living costs associated with graduate school (Carter, 2006; Fuse, 2018; Sowell et al., 2015). The majority of BIPOC students in our AuD and SLP graduate programs work for pay outside of the department in addition to their graduate education commitments, which can interfere with academic performance and result in some students ultimately leaving the program. Although the majority of our overall graduate CSD student body receives some tuition assistance, we hope to offer scholarships or funding to students who participate in ALIGN in the future to better address financial burdens.

Conclusions

Overall, quantitative and qualitative data regarding the inaugural year of the ALIGN program suggest that it had a substantial, positive impact on academic skills relative to study habits, understanding difficult course concepts, and general learning, and provided crucial support and connection opportunities with fellow BIPOC students. Collectively, these results indicate that the ALIGN program addresses several of the barriers affecting CSD URM persistence, which could ultimately contribute to greater diversification of the audiology and speech-language pathology fields through increased numbers of minority CSD professionals. By addressing the limitations of the inaugural ALIGN program, the changes implemented for 2021-22 and those that will continue to be enacted based on future outcome data should further enhance the efficacy and impact of this program.

Author Disclosures

The authors have no financial or nonfinancial relationships to disclose.

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Appendix A
ALIGN Feedback Survey Questions

1.	How has the ALIGN program supported your development as a graduate student?
2a.	The academic coaching workshops provided me with new learning and organizational strategies *
2b.	The academic coaching workshops were helpful for my performance *
2c.	I understood how to apply the learning strategies and organizational tools after the academic workshops *
3.	What were one to three specific things about the academic coaching workshops that were most helpful in supporting your academic learning and performance?
4.	What were one to three specific things that could be improved in the academic coaching workshops to better support your academic performance?
5a.	The professional communication building and health & wellness workshops provided me with new information *
5b.	The professional communication building and health & wellness workshops were helpful for my academic and clinical success *
5c.	I understood how to apply the skills after the professional communication building and health & wellness workshops *
6.	What were one to three specific things about the professional communication building and health & wellness workshops that were most helpful in supporting your success in this program?
7.	What were one to three specific things that could be improved in the professional skills building and health & wellness workshops to better support your success in this program?
8a.	The facilitated study group provided me with new strategies and methods for effective learning *
8b.	The facilitated study groups were helpful for my academic performance *
8c.	I understood how to apply the study strategies and methods after the facilitated groups *
9.	What were one to three specific things about the facilitated study groups that were most helpful in supporting your academic learning and performance?
10.	What were one to three specific things that could be improved in the facilitated study groups to better support your academic learning and performance?
11a.	The peer mentoring activities helped me feel supported and connected to others *
11c.	The peer mentoring activities provided me with a perspective from other student(s) of color
11b.	The peer mentoring activities contributed to my success in this program *
12.	What were one to three specific things about the peer mentoring activities that were most helpful in supporting your success in this program?
13.	What were one to three specific things that could be improved in the peer mentoring activities to better support your success in this program?
14a.	Overall, the ALIGN program helped me to be successful in this program *
14b.	Overall, I would recommend the ALIGN program to future students of color *
15.	What are one to three specific suggestions you have for improving the overall ALIGN program? These may address additional components that you feel should be included in the

| | program, current components that you feel should not be included in the program, and any overall modifications that you feel would be helpful to the program. |

Note : *Likert scale questions were rated (and scored) as: Almost never (1), Occasionally (2), Sometimes (3), Often (4), Almost always (5)