Enhancing Transition Programming for College Students with Autism: A Systematic Literature Review

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Abstract

This article provides a systematic review of the literature related to college transition programs for students with autism. It addresses how individual programs themselves, as well as associated research, can be enhanced to accommodate the needs, identities, and pathways of individual students with autism more effectively. Methods entailed searching three education databases to yield peer-reviewed journal articles on college autism transition programs. The analysis revealed an emphasis on students' social skills and self-advocacy skills, often with a peer mentorship component, and a deficiency of literature in attending to these students' career objectives, trajectories into college, and multifaceted backgrounds. Implications for practice include offering early exposure to college, redesigning programs to include more awareness of students' other identities, embedding more content on career development, and accounting for community college students' and transfer students' unique pathways.

Keywords: Autism Spectrum Disorder, autism, transition programming, college transitions, disabilities

College transition programming, including summer bridge programs, have traditionally targeted minoritized student populations, such as low-income students and students of color, and have shown to be useful in supporting college readiness and campus engagement (e.g., Strayhorn, 2011; Walpole et al., 2008). A limited number of programs have been tailored to students with disabilities (e.g., Cranston-Gringas et al., 2015). Transition programs geared toward college students with Autism Spectrum Disorder (ASD) in particular, however, have emerged as a new priority. For this literature review, autism is defined by the Diagnostic and Statistical Manual of Mental Disorders, 5th Edition (DSM-5; APA, 2013), encompassing autistic disorder, Asperger's disorder, childhood disintegrative disorder, and pervasive developmental disorder not otherwise specified; these were each previously viewed as separate diagnoses.

The National Center for Education Statistics (NCES) indicates that 44.2% of students with autism who received special education services in high school had attended some type of postsecondary education institution within eight years of graduating high school (Snyder, de Brey, & Dillow, 2016). However, this data only covers a student cohort through 2009.

White, Ollendick, and Bray (2011) estimate anywhere "between .7% and 1.9% of college students could meet criteria" for having high-functioning autism (p. 683). These rates are likely much higher now, leading postsecondary education leaders to reconcile an influx of college students with autism without often having the infrastructure to support their needs.

First, it is worth understanding the distinct needs between students with autism and students with disabilities more broadly as they transition into college. The Postsecondary Education and Preparation Toolkit notes that key skills for students with disabilities include critical thinking, reading comprehension, growth mindsets, and interpersonal engagement (National Technical Assistance Center on Transition, 2018). Though students with autism may face similar challenges, they also have distinct differences. Autism manifests uniquely with every person, each possessing particular strengths and obstacles; however, individuals commonly experience differences in socializing, developing interpersonal skills, picking up social cues, understanding abstract language and sarcasm, and experiencing pragmatic language difficulties (Brown & Coomes, 2016; Hewitt, 2015; Retherford & Schreiber, 2015; Schindler, Cajiga, Aaronson, & Salas, 2015; VanBergeijk, Klin, & Volkmar, 2008). These challenges may be enhanced as

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students with autism transition into college and navigate new environments.

Additionally, many individuals with autism lack self-advocacy skills, leading some students to not know how or where to seek college services, such as accommodations (Adreon & Durocher, 2007). As Camarena and Sarigiani (2009) noted, "self-advocacy skills are an essential part of the transition process that need to be nurtured by both schools and families if students are going to successfully navigate the expectations of higher education" (p. 12). Developing self-advocacy skills is instrumental, so they need not over-rely on their parents (Zeedyk, Tipton, & Blacher, 2014), try to hide their disabilities (Ames, Mc-Morris, Alli, & Bebko, 2016), or falsely believe they no longer have autism upon entering college (Cai & Richdale, 2016). In addition to communication and self-advocacy skills, students with autism often have challenges in executive functioning, which pose a barrier to their success in college (e.g., Gillespie-Lynch et al., 2017; Hotez et al., 2018). Transition programs are necessary to support college students with autism in combatting these ongoing difficulties, as well as capitalizing on their strengths.

As students with autism enroll in college, gaining guidance and support from specialized transition programming is key to their emotional well-being and academic success. If provided with intentional transition plans, complemented by visiting campuses and becoming acquainted with resources and staff, college students with autism may find the transition process easier (Dymond, Meadan, & Pickens, 2017). Transition programs work to reduce students' feelings of stress and frustration upon entering college and give them the power to shape their life journeys (Cai & Richdale, 2016; VanBergeijk et al., 2008).

Scholarship on college autism transition programs, while emergent, has traditionally been published in autism-specific journals, and thus not targeted toward higher education professionals, who would significantly benefit from understanding these students' experiences. A systematic review of the literature is essential to: (1) detail how existent, individual college autism transition programs have operated; (2) unveil promising tools that help integrate students into postsecondary education institutions; and (3) to provide inspiration to how both transition programs and research studies can be modified to prioritize a variety of students' perspectives. The purpose of this review is to address the following three research questions:

1. What do studies on individual college autism transition programs uncover as useful supports?
2. How did programs address (or not address) students' needs?

3. How can programs, and the studies that evaluate them, be improved to better account for distinct college students with autism?

This review reveals each program's strengths, identifies gaps, and locates areas of improvement for both existent and future programs.

Study Design

While much literature is emerging on the experiences of college students with autism, few empirical studies examine transition programs specifically designed for this college-level student population. For this study, "college autism transition programs" will serve as an umbrella term to describe programs that take place immediately before, during, or after initial college enrollment, as well as peer mentorship programs situated in postsecondary education institutions.

There are different ways of understanding autism due to its multiple and evolving definitions. While the review draws upon DSM-5 definitions of autism (APA, 2013), the study also capitalizes on Attwood's (1999) strengths-based approach, which embraces the positive characteristics of people with autism and views their struggles with understanding. The review takes into consideration how students with autism are portrayed, and works to veer away from deficit-based models of autism that center on "a clinically apparent deficit in a single cognitive domain or modality as underlying the social, communication, and odd nonsocial behavior in autism," as Minshew and Goldstein (1998, p. 311) critique. The author of this systematic literature review of college autism transition programs, who was diagnosed with Asperger's as a child and attended a community college, is attuned to the role of institutional representation, recognizes the challenges associated with how students with autism transition to college, and ensures that these students' voices are preserved and highlighted in a supportive light.

Search Process

This study utilized three databases (ERIC, Academic Search Premier, and Scopus), based on their education focus, to locate peer-reviewed journal articles. Within each database, all combinations of the following keywords were entered: "autism" AND ("college" OR "postsecondary") AND ("transition" OR "transition program" OR "mentor" OR "mentoring" OR "college preparation"). "Autism" represented the primary keyword due to the review's reliance on DSM-5, and it encompassed all of the related DSM-IV-TR disorders, such as Asperger's (APA, 2000). Articles eventually yielded, such as Roberts and Birmingham (2017), featured participants with

"Asperger's," for instance. Upon conducting a litera-ture search, 262 publications were initially identified. However, most of the studies were removed due to their focus on students with autism *transitioning* into college, not transition programs. As a result, upon ruling out irrelevant articles based on exclusion crite-ria, seven articles met all of the inclusion criteria (see below). Ultimately, all articles were published within education, disability, or autism journals over a four-year period (2015 –2018).

Inclusion and Exclusion Criteria

For inclusion in this review, individual studies had to meet the following criteria. Studies needed to be empirical, peer-reviewed journal articles focused exclusively on an individual college autism transi-tion program. For this systematic literature review, college autism transition programs are defined as being based in postsecondary education institutions and serving incoming or prospective students' explic-it transitions into college. Mentorship programs that help college students with autism acclimate to college life are also included. Dissertations, while often con-taining useful insights, were excluded because they do not undergo peer review. All studies focused ex-clusively on an individual college autism transition program. This condition was established, because review articles that summarized multiple autism programs (e.g., Barnhill, 2016, who covered 30 pro-grams) generally failed to shed light on the particular aspects of *individual* programs that bolster students' success, and lack the student voice. Similarly, as the review wanted to avoid confounding variables, pro-grams focused on broad categories of students, such as developmental disabilities, were excluded. When examining participants, it is hard to disaggregate how students with particular types of disabilities experi-enced the program differently from their peers (e.g., Wood-Groves, Therrien, Hua, & Hendrickson, 2013).

Likewise, articles about individuals' transitions into employment from college were omitted because they were not within the scope of the study purposes. Studies about accommodations or support services provided by institutions were not included because they were not formal programs, and all students with disabilities have access to accommodations, making the unique experiences of students receiving these services difficult to discern from their counterparts participating in transition programs. Meanwhile, studies located in high schools were excluded. Due to legal differences between K-12 (IDEA) providing equal access, and postsecondary education (ADA), including high school-only programs was not deemed as appropriate.

All studies had to include at least some incom-ing or current college students with autism as partici-pants. Studies relying on either or both DSM-IV-TR (APA, 2000) and DSM-5 (APA, 2013) definitions of autism were included in the study, as well as partic-ipants who self-reported themselves as being on the autism spectrum. As these perspectives are often omitted from studies on autism, save for exceptions (e.g., Cox et al., 2017), capturing their voices was necessary. All studies must have been published from 2008 – 2018 to ensure that information was reflective of the current landscape of how institutions support college students with autism.

Data Analysis

Engaging in content analysis, which works to make meaning of how data in written materials is constructed and presented (Krippendorff, 2013, p. 39), was used to analyze each study. Due to the lack of theories across most studies in this review, apply-ing conventional content analysis was a useful induc-tive approach (Hsieh & Shannon, 2005). "This type of design is usually appropriate when existing theo-ry or research literature on a phenomenon is limit-ed" (Hsieh & Shannon, 2005, p. 1279). Accordingly, the review was concentrated on understanding how studies' authors used words and featured particular types of content. Codes are situated alongside other similar codes, with the researcher determining con-nections, and grouping them into themes (Hsie & Shannon, 2005). In this review, student demograph-ics like "gender" and "race" each represented codes, belonging under the broader theme of "student iden-tities." Other similar codes like "transfer students" and "freshmen" were also situated within the "stu-dent identities" theme. Following Krippendorff's (2013) recommendation to clearly demonstrate the context(s) at hand, this review prioritized best under-standing the institutional and programmatic layers associated with each study. While studies generally listed some background information, level of detail varied. Finally, structural coding, which involves coding pieces of data with conceptual-based phras-es (i.e., "reasons for joining program" in a paragraph related to descriptions of why participants joined an autism program), was used to apply a content-based lens (Saldaña, 2016).

Limitations of the Review

The systematic literature review has several lim-itations. First, the small *n* of seven programs restricts understanding autism transition programs more broadly. Accordingly, the findings do not representa-tively account for the many college autism transition

programs that exist, but have not been studied. Second, the review blends a few studies more concentrated on college mentorship support than generalized transition support, though these studies' inclusion illuminates peer mentorship as a viable mechanism for how students with autism acclimate to college. Third, the programs illustrated in the studies are inconsistent in length and scale, so we must not consider them to be comparable.

Limitations of the Literature

Several limitations of the studies must be noted. First, the studies generally offered insufficient demographic information on college students with autism, including their race/ethnicity, socioeconomic status, sexual orientation, and gender identity. Thus, a representative portrait of their backgrounds is absent. Second, none of the studies focused on programs situated at community colleges, leading interpretations of students with autism in transition programs to be limited to students at four-year institutions. Consequently, no co-enrollment programs are part of the sample. Third, the programs illustrated in the studies are inconsistent in length and scale, so they cannot be compared to one another.

Findings

Seven studies that focus on college autism transition programs demonstrate their necessity and value. Each article is detailed individually, and later, several themes gleaned from the studies collectively are illustrated. Table 1 offers descriptive information of each study.

Ames et al. (2016). Through conducting interviews, as well as distributing questionnaires and evaluations, the authors aimed to understand how Autism Mentorship Program (AMP) content aligned with students' interests and objectives. College students with autism, who typically enter AMP during their second year of college, meet with their mentors (graduate students) to discuss college goals, desired skills, and social situations. The authors discovered that, across both mentor meetings and group event contexts, students tended to endorse conversations surrounding specific goals, including sensitive topics like stress and coping, and dating and romantic relationship concerns, as well as social skills. However, gaps also existed across spaces, in that while a high percentage of students (67%) endorsed employment and career in mentor meetings, none had in a group context. Alternatively, sexual health, rarely endorsed in mentor meetings (33%) was commonly endorsed in group events (71%). This speaks to how students

prioritize different topics based on setting and, often, who comprises that space. Ultimately, a majority of AMP mentees commonly met with their mentors, noted mentorship conversation topics as useful, and accessed other campus supports. AMP appears to be a complementary vehicle in affording students outlets to proactively establish and discuss their objectives with their peers.

Gillespie-Lynch et al. (2017). The authors created a mixed methods study to ascertain the efficacy of Project REACH, a mentorship program the authors developed in partnership with Summer Transition Program (STP), as illustrated in Hotez et al. (2018). They aimed to determine what factors support each of these three groups: mentees with autism, mentees with other disabilities, and mentors. Additionally, they sought to identify what benefits mentees gained from program participation. The program's spring semester, which utilized a social skills curriculum, encouraged students to take more active roles in shaping their college experiences, as opposed to depending on their parents. The fall's curriculum, more focused on self-advocacy, employed improvisational techniques, public speaking rehearsals, and workshops on disability rights and disclosure, among other topics, to help college students with autism gain confidence in handling different life situations; eventually, students indicated feeling more adept in defining self-advocacy. Students' written evaluations revealed that they not only enjoyed the social advocacy piece, but also socializing with other students. Focus groups demonstrated that students benefited from rehearsing scenarios and now possessed greater initiative and confidence. Interestingly, students expressed feeling increased social support from the self-advocacy training, not from the social skills training. Project REACH shows much potential to adapt the transition curriculum to reflect college students' development and new skillsets, and to engage students in shaping programming through obtaining their input

Hotez et al. (2018). Through utilizing a participatory approach, only more recently orchestrated with college students with autism, the authors assessed the experiences of New York incoming and current college students with autism in two iterations of a one-week-long summer college transition program. The program consists of 25 hours of programming, including lectures, workshops, rehearsal of skills with facilitators, and a mentorship program. Mentees also complete various measures, such as the Disability Identity and Opportunities Scale (Darling & Heckert, 2010), in order for program facilitators to better understand their backgrounds and abilities. Major findings from the first iteration of the program,

known as the Summer Transition Program 1 (STP1), revealed that the program was helpful in motivating college students with autism via offering different forms of instruction and activities, but that students wanted more group-oriented, theater-based games. To revise programming for the program's second iteration, the scholars invited mentors (both college students with autism and neurotypical students) and mentees to participate in interviews and offer insight on how the program could best serve their respective needs. After facilitating Summer Transition Program 2 (STP2) the next summer, the authors conducted further interviews. Participants noted that they had learned self-advocacy skills, attained new social strategies, and identified useful classroom etiquette tools. STP demonstrates promise in both involving mentees in reformatting programming and inviting mentors to attain leadership skills.

Rando, Huber, and Oswald (2016). These authors surveyed students who had participated in the first year of the Raiders on the Autism Spectrum Excelling (RASE) program, which focuses on transition coaches working with students individually for an hour each weekday to boost their resiliency, time management and organization, social skill development, technology use, and advocacy. For instance, utilizing Universal Design principles allowed coaches to meet students' unique learning styles, such as role playing scenarios. Preliminary results from this survey found that coaches gained confidence in their leadership over time, and had built strong relationships with students. Additionally, 11 RASE students (73%) remained in college after the first year, higher than the university's first-year retention rate, and seven were still enrolled in college into their third year; student G.P.A. had also increased, on average, from 2.58 to 2.71. These findings illustrate encouraging signs of program engagement in students' college persistence and performance.

Retherford and Schreiber (2015). This mixed methods study encompassed an evaluation of the one-week-long Camp Campus program, which involves high school juniors, seniors, or recent high school graduates, engaging in instructional sessions addressing professional development, social communication skills, and executive functioning. Paired with faculty and peer mentors, who participate in trust-building activities, serve as role models, and document daily observations, students work toward engaging in self-reflection and attaining self-determination. Over the course of six years, two-thirds of parents completed surveys. All parents indicated their children were addressing at least one daily task on their own, participating in an extracurricular activity, and show-

ing social skill improvements. Ninety-one percent of parents said their children were enrolled or graduated from a postsecondary education program. Camp Campus illustrates the positive outcomes that may emerge from college-bound students obtaining early exposure to college via this supportive, structured, and succinct format.

Roberts and Birmingham (2017). The researchers employed grounded theory in their qualitative study to understand how nine mentors and nine mentees with autism experienced the Autism Mentorship Initiative (AMI) program. After participating in a day of training about autism and mentorship practices, senior undergraduate students and graduate students were individually paired with a mentee on a weekly basis to talk about academic and social objectives. AMI students also participated in workshops and social events. The authors unveiled that, as mentorship progressed over time, mentees demonstrated greater self-advocacy by not acting in a passive manner, but rather taking more control over their choices in navigating college. As mentor-mentee pairs possessed stronger rapportswith more open, equitable relationships, meetings lacked formality and the mentorship model followed more of a mentee-centered approach.

White et al. (2017). This mixed methods study involved evaluating how the Stepped Transition in Education Program for Students with ASD (STEPS) program serves students' self-regulation, in terms of their executive functioning skills and regulation of emotions, as well as their self-determination of goals. The study consisted of looking at students across two stages. STEP 1, dedicated toward students with autism in secondary school and those unsure of their plans, unites key individuals in their lives in establishing transition plans, assigns activities to students, orients students to their planned college, and utilizes counseling that focuses on regulatory behaviors and self-advocacy skills. STEP 2, targeted to current college students and those who have exited secondary school, distances the role of parents and school personnel to encourage students' independence and participation in individual social outings. Early results indicate that the program was helpful to students in managing daily tasks and achieving college objectives. Due to the study's brevity and offering of only preliminary data, STEPS' long-term effects cannot be verified (White et al., 2017). However, it seems to possess strengths in establishing different objectives for students based on their progress in the program.

Common Themes Across Studies

The studies illustrated three main categories: emphasizing program curriculum; utilizing peer mentors;

and possessing similarities in program evaluation. These themes reveal the current infrastructure of programs and possibilities for further enhancement. Table 2 offers a summary.

Program curriculum. All seven programs emphasized incorporating opportunities for students to be trained and engaged in social skill development, albeit utilizing varied techniques and program duration. Core to many programs is the space for students to rehearse social skills through role-playing activities (e.g., Gillespie-Lynch et al., 2017; Hotez et al., 2018; Rando et al., 2016). These exercises appear viable in building students' confidence. Programs also often incorporated activities to engage students in different social settings, such as karaoke nights and athletic events in the ASD Mentorship Program (Ames et al., 2016). Programs' emphasis on outings similarly seem encouraging in helping students feel more comfortable in socializing with peers across different types of contexts. Many programmatic elements also prioritize helping students with autism attain self-advocacy skills, particularly important in motivating them to take greater ownership over both their daily life skills and academic needs (e.g., Ames et al., 2016; Gillespie-Lynch et al., 2017). Students' ability to possess increased self-advocacy knowledge and define what constitutes self-advocacy varied across studies (e.g., Gillespie-Lynch et al., 2017; Hotez et al., 2018). Unfortunately, studies have yet to explore the social dynamics associated with students' engagement with peers in academic work, nor find ways of measuring self-advocacy changes. These represent areas worth exploring in future studies. It is important for future researchers and practitioners, in particular, to have assessment templates so they are not recreating the wheel.

Though social skills training and self-advocacy skills, and utilization of peer mentors remain these programs' priorities, as mentioned earlier, they often underscore students' career objectives and needs, save for a few exceptions. For example, job skills encompassed a main objective for Project REACH students and, consequently, discussion of interview skills was embedded into the social skills curriculum, yet the productivity of this particular tool was not determined (Gillespie-Lynch et al., 2017). Half of AMP students said they wanted to learn more about careers, though it was unclear based on program results to what extent these objectives were met (Ames et al., 2016). Similarly, AMI students addressed wanting to work on their job skills; although mentors and mentees discussed career goals, they largely did not focus on career pathways (Roberts & Birmingham (2017).

These seven studies, and the programs themselves, also do not emphasize that college often lacks the repetitive nature of how high school courses operate. As college students with autism may find ambiguity and inconsistent structure difficult to absorb (Brown & Coomes, 2016), program participants could falsely interpret the structured curriculum and group activities to be representative of college more broadly. Programs commonly fail to speak to how students transition *out of* the program, such as completing their degrees or entering the workforce.

Peer mentors. Six of the seven studies feature peer mentors (or coaches) to guide college students with autism with their academics, social lives, and other elements associated with attending college – in the case of White et al. (2017), Project REACH used counselors as the primary support mechanism. At times, mentors consisted of graduate students (Ames et al., 2016; Rando et al., 2016; Roberts & Birmingham, 2017), who either had specialized knowledge and/or received training to work with college students with autism. Whether or not mentors possess an extensive background on autism, these individuals are effective in fostering relationships, comfort, and new skillsets with these students. Studies must take into greater consideration, however, the varying levels of qualification of peer mentors, as well as institutional resources, funding, and training curriculum of peer mentors. Though some studies illustrated thorough descriptions of how programs trained mentors (e.g., Gillespie-Lynch et al., 2017; Retherford & Schreiber, 2015), it may be helpful for studies to include links to, or examples of text from, mentorship training handbooks that practitioners could draw from in designing their own programs.

Program evaluation. Studies relied on some common methods for gathering data from program participants. Most prominently, surveys, whether in the form of both pre- and post-program evaluations (e.g., Hotez et al., 2018) or multiple follow-up evaluations (Retheford & Schreiber, 2015) worked to understand the impacts of the content that facilitators delivered. Difficulties exist in not knowing the long-term impacts of programs – later described as a methodological limitation – and surveys represent a low-cost, systematic, and simple to institute avenue for obtaining this data. While interviews were more sparingly used (Ames et al., 2016; Hotez et al., 2018; Roberts & Birmingham, 2017), they offer more complete insights into how college students with autism make sense of these programs. Students must be afforded greater choice in determining the context, subject matter, and length of interviews, as these factors remains absent across the studies and

represents an area of opportunity for future scholarship. Such agency may enhance students' comfort and sense of control.

Discussion

In the following discussion, the theoretical absence in the current literature and utility of Critical Disability Theory, and methodological limitations of existent literature, are explained, as they inhibit understanding college students with autism in transition programs. As the implications for practice section focuses on actionable approaches based on the literature, the main discussion section serves as more of a critique of the literature that practitioners should be mindful of in guiding their work.

Theoretical Absence in the Current Literature and the Utility of Critical Disability Theory

Save for Ames et al. (2016), who drew on student development theory, disability theory, and program theory, and briefly explained these theories' role in shaping AMP's design, the other six studies failed to incorporate references to theoretical frameworks that guided their work. Instead, some studies, such as Roberts and Birmingham (2017), employed grounded theory, which they contend is an ideal substitute due to the dearth of conceptual frameworks amongst studies focused on college autism mentorship programs. Grounded theory has its merits, but as Ames et al. (2016) illustrated, studies should not start from scratch in creating theoretical approaches–or more problematic–fail to broach the topic whatsoever.

Studies addressing transition programs may benefit from utilizing Critical Theory as a guiding framework. As Max Horkheimer (1972) described, Critical Theory's purpose "is to penetrate the world of things to show the underlying relations between persons" and works to deconstruct equality through bringing in one's subjectivity (p. xiii). Critical Disability Theory (CDT), in particular, recognizes disability fluidity and temporality, honors individuals' lived experiences, spotlights social justice issues, and attends to students' intersectional identities (Evans, Broido, Brown, & Wilke, 2017). As critical research works to inspire change by questioning assumptions, challenging norms, and consequently reforming social structures (Ary, Jacobs, & Sorensen, 2010; Morrow & Brown, 1994), postsecondary education institutions must be more inclusive and supportive of college students with autism. Practitioners who run college autism programs may utilize CDT through a variety of means. For instance, in working with college students with autism, they can alter deficit-based language in "helping them" or "treating them," and instead speak to students in a respectful manner that demonstrates to them that they have agency in shaping their life experiences. Practitioners may also carry across CDT principles that prioritize learning about students' constantly evolving and multifaceted identities, as well as the social structures that have shaped their lives. This may, in turn, guide how practitioners individually meet the needs and support the objectives of their students.

Methodological Limitations of the Literature

Current studies offer a variety of avenues for depicting how college autism transition programs support the development of students. Though studies may find it difficult to compact weeks' or months' worth of programming into the page limits of journal articles, when practitioners are looking to develop or refine programs, and researchers seek studying these programs, there are four areas that they can collectively take into consideration. These factors include the following: (1) recognizing students' other minoritized identities; (2) demonstrating their positionality and biases; (3) supporting community college students and acknowledging differences among transfer students' experiences; and (4) tracking the long-term outcomes of program participation.

The first area to engage with is to see college students with autism in a holistic light, as opposed to following stereotypical assumptions of autistic students as *only* white, middle-income, cisgender, heterosexual males who enter a four-year institution straight from high school and seek employment upon attaining a four-year degree. This is the most prominent and serious methodological limitation, and thus deserves the most thorough attention. White students tended to be most prominent in these programs – for instance, more than 80 percent of Project REACH students identified as white (Gillespie-Lynch et al., 2017) – and autism is often portrayed as a one race issue. Students of color may be diagnosed with autism at later dates and less often than white populations, with specific nuances existing according to individual identities based on race and ethnicity (CDC, 2006; Mandell et al., 2009). Accordingly, students of color have been rarely represented in studies because of lack of diagnoses, and were not mentioned in three studies in this review (Ames et al., 2016; Retherford & Schreiber, 2015; White et al., 2017). Three of the four studies that mentioned race, at least, disaggregated racial information, but this is only the first step (Gillespie-Lynch et al., 2017, Hotez et al., 2018; Roberts & Birmingham, 2017).

Even more, no studies address students' socioeconomic status (SES). Low-income individuals who have autism, yet were never diagnosed, remains

a prominent issue (Durkin et al., 2010), as they may not have had access to, nor possessed knowledge of, service providers who could have offered autism diagnoses. Major disparities in diagnosis rates exist based on SES, as Durkin et al. have illustrated such gaps. Children from higher-income families are diagnosed more frequently than their lower-income counterparts, but rates may actually be higher and simply underreported. Other factors that may influence rates of diagnoses, in correlation to SES, include family access to quality healthcare and parental education (Bhasin & Schendel, 2007; Taylor & Seltzer, 2010). Furthermore, transition programs may be financially inaccessible to many students, and studies in this review shed few insights on this topic. While STP is free (Hotez et al., 2018), fees associated with other programs from studies featured in this review are unknown. This continued omission in studies, and within transition programs, composite college students with autism who partake in such programming as strictly middle- or high-income.

Similarly overlooked in these studies was the intersection of autism with sexual orientation and gender identity. Though some scholars (e.g., Gutmann Kahn & Lindstrom, 2015) have examined adolescents with disabilities who are minoritized based on their sexual orientation and/or gender identity identities (e.g., Bedard, Zhang, & Zucker, 2010), studies that even make references to non-heterosexual or non-gender binary college students with autism is generally absent from higher education literature, save for some exceptions (e.g., Miller, Nachman, & Wynn, in press). Demonstrating this intersection is notable for several reasons, such as the parallels of wrestling with coming out (Davidson & Henderson, 2010) and fearing stigmatization (Vaccaro, Kimball, Moore, Newman, & Troiano, 2018). Consequently, scholars fall short in giving full context to these students' identities because the programs omit capturing this information from the onset.

Second, studies must more explicitly recognize the positionality of authors who serve in dual roles (as both researchers and practitioners), and biases held by participants. It is important for practitioners to produce research about practice, and to write with greater transparency, for only some studies (e.g., Hotez et al., 2018) clearly mention this positionality. Otherwise, only some authors' institutional affiliations may suggest having multiple roles. Biases may also exist among participants who self-elect to engage in the studies, though this is rarely mentioned, let alone addressed. Ames et al. (2016) determined that, while completing questionnaires, students may have been biased by their mentors' presence; this may have falsely distorted students' true satisfaction and relationships with mentors. However, it appears that no steps were taken to enhance the rigor given this major problem. Additionally, Hotez et al. (2018) relied on students' self-reports; obtaining additional measures and perspectives would allow for richer insights.

Third, the literature's omission of transition programs' existence at community colleges – complemented by these studies at four-year institutions not referencing transfer students' journeys – contend a need to capture their experiences. Some community college autism transition programs exist, but have yet to be published in scholarly literature, representing an area for future inquiry. Although NCES data shares the percentage of college students with autism who attend and graduate from community colleges, it neither addresses transfer rates nor shares context of what transitions entail (Snyder et al., 2016). Determining students' transfer experiences, nuanced based on size, location, and institutional type, will expose how postsecondary partnerships can resolve college choice challenges. Community college program practitioners should consider working in conjunction with researchers at nearby four-year institutions, who may possess greater funding and resources to track students' experiences.

Fourth, long-term outcomes of programs are hard to determine, often due to the nascence of offerings, as in the case of RASE (Rando et al., 2016) and STEP (White et al., 2017). Here, newer studies that follow the same sets of program participants, or at least programs more generally, will reveal what techniques are effective in shaping college persistence and graduation, as well as students' obtainment of academic, life, professional, and social skills.

Implications for Practice

Three domains represent areas of opportunity for practitioners to enhance current programs or develop higher quality new programs. These include stepping up college awareness and orientation, better recognizing students' identities, and incorporating more content on career development. Table 3 illustrates these recommendations as well.

College awareness and orientation. Practitioners should consider developing or redesigning transition programs to earlier expose students with autism to college settings. The opportunity rests with high school counselors to familiarize themselves with, and offer recommendations to, colleges and programs that most align with individual students' needs (Morrison, Sansosti, & Hadley, 2009). Taking students on campus visits to local institutions provides early

exposure and establishes connections with disability service providers. This is necessary to proactively address students' executive functioning skills, such as adhering to instructions, establishing calendars, and following daily routines (Morrison et al., 2009; Van-Bergeijk et al., 2008; Wenzel & Rowley, 2010). For college-level programmatic practitioners, identifying existing college students with autism who attended the same high school as incoming students may also help in connecting peers who possess similar identities. These individuals may similarly serve as prime mentors for transition programs. Additionally, college program practitioners may consider meeting with high school students with autism on an individual basis to familiarize them with not only their campuses, but also themselves.

Furthermore, encouraging incoming college students to participate in orientation programming is very useful for all students, particularly for students with disabilities (Garrison-Wade & Lehmann, 2009) and students of color (Mayhew, Stipeck, & Dorow, 2011) as they acclimate to college. For college students with autism, who may also have other minoritized identities, institutions should work to offer them separate breakout rooms, longer breaks, and online options with specific functions, such as panels of college students with autism. This option, of course, is contingent on institutional ability to foster trusting and supportive relationships with these students.

Student identities. Practitioners must more greatly recognize and welcome students who have other marginalized identities. Working in tandem with campus organizations that serve students of color and LGTBQ students, for instance, transition program facilitators may develop new ideas of how to provide resources that serve students based on their multiple identities. Additionally, programs may find ways of integrating exercises that lead these students to reflect on these intersections. Pairing college students with autism with mentors who share similar identities can also build trust and community. Ensuring that programs are not cost prohibitive is vital, as a majority of fee-based postsecondary institution programs for students with autism are costly, averaging $6,525 per academic year (Barnhill, 2016). Many low-cost recommendations exist, including beta testing transition programs as registered student organizations, creating informal mentorship groups with neurotypical students as "peer guides," connecting with autism organizations, and creating scholarships designed for low-income students.

Career development. As highlighted in the analysis, college autism transition programs generally focused on self-advocacy skills, social skills,

and utilizing peer mentors. Colleges will continue to experience hurdles if postsecondary education institutions embody the first setting where these factors are prioritized, as well as omit an emphasis on career skills and professional development programming. Working on job applications, rehearsing interviews, and finding and gaining internship opportunities are all important skills for college students with autism to develop (Perner, 2002; Wenzel & Rowley, 2010). Due to the high rates of underemployment among individuals with autism (Taylor & Seltzer, 2011), transition program practitioners must prioritize career assessments and provide students with outlets to learn about different industries or shadow employees at local companies to determine to what extent they suit their interests.

Implications for Research

Scholars are called to not only locate and study transition programs situated at community colleges, but also discover how four-year institution transition programs serve transfer students in their supports. Understanding how these different institutional structures support college students with autism, as well as disaggregating students based on their postsecondary pathways, will help unveil varying experiences students receive across programs.

Conclusion

Over the coming years, both existing college autism transition programs and future programs can be enhanced to meet the specific needs, backgrounds, and strengths of individual college students with autism by intentionally offering more targeted programming. As the review illustrates, further studies covering these programs can also possess greater rigor and inquiry, as well as more strongly value insight on how students' multifaceted identities and experiences shaped their transitions into college and within these programs.

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Acknowledgement

Table 1

Descriptive Information of the Literature

Author, year	Program Name	Program Length	Participants	Diagnostic Criteria	*n*	Methods	Program Key Elements	Examples of Findings
Ames, McMorris, Alli, & Bebko, 2016	ASD Mentorship Program (AMP)	1 year or longer	College students with ASD	DSM-IV-TR	23	Interviews, Year-end evaluations	Social activities, Meetings with mentors	Students frequently met with mentors, discussing topics like mental health, and relationships, and demonstrated high satisfaction with the program
Gillepie-Lynch et al., 2017	Project REACH (Resources and Education on Autism as CUNY's Hallmark)	1 semester or longer	Autistic college students, College students with other disabilities, Mentors	Individualized Education Plans, Psychoeducational Reports	39	Needs assessments, Questionnaires, Scales/inventories, Focus groups Written evaluations	Mentor meetings, Social skills, and self-advocacy curriculum	Students found the program to be most helpful in learning about and gaining social skills and self-advocacy skills.
Hotez et al., 2018	Summer Transition Program (STP)	1 week	Incoming and current college students with autism, Mentors	Documentation of ASD Diagnosis	24	Interviews, Surveys, Scales/inventories	Social activities, Instructional sessions, Meetings with mentors	Students noted increases in self-advocacy and social skills. Mentors attained greater autism knowledge. Students and mentors called for logistical changes.
Rando, Huber, & Oswald, 2016	Raiders on the Autism Spectrum Excelling (RASE)	1 year or longer	Students with ASD, Mentors	DSM-5	19	Surveys	Meetings with coaches	Program participants' GPA increased, whereas student conduct incidents decreased. Coaches gained leadership skills.

(Continued)

Author, year	Program Name	Program Length	Participants	Diagnostic Criteria	*n*	Methods	Program Key Elements	Examples of Findings
Retherford & Schreiber, 2015	Camp Campus	1 week	High school juniors, seniors, or recent grad-uates with high-function-ing autism, Asperger syndrome, or a related social communica-tion disorder (all planning to attend col-lege), Parents	DSM-IV-TR	34	Surveys	Instructional sessions Support groups Social activities Meetings with mentors	Students handled more daily life skills independently. Parents and students indicated improvements in social skills. Most students were enrolled in college.
Roberts & Birmingham, 2017	Autism Men-torship Initia-tive (AMI)	2 semes-ters	Students with high-function-ing ASD, Mentors	DSM-IV and DSM-5	18	Interviews, Durveys, Notes and forms	Meetings with mentors Workshops Social activities	Mentees expressed having attained self-advocacy improvements. Men-tees and mentors learned how to gain mutual support.
White et al., 2017	Stepped Transi-tion in Educa-tion Program for Students with ASD (STEPS)	1-2 semes-ter	Students with ASD, Parents	Not listed	26	Surveys, Ques-tionnaires	Counseling sessions Commu-nity-based outings Online train-ings	Preliminary data indicates that the program was helpful to students, but does not offer any elaboration.

Note. In Hotez et al. (2018), participants also featured mentors, whose *n* was not listed in the study. Additionally, for White et al. (2017), partic-ipants also included parents who completed surveys, but their *n* was not listed in the study. Descriptions of participants are listed in the original authors' words.

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Table 2

Collective Themes in Studies

Main Findings
Program curriculum
Prioritization of self-advocacy skills and social skills
Shortage of content on career development
Peer mentors
Demonstration of mentors as guides and supports
Lack of context on training and qualifications
Program evaluation
Commonality of surveys
Infrequency of interviews

Table 3

Implications for Practitioners

Main Recommendations
College awareness and orientation
Forge connections between local high schools and postsecondary education institutions
Provide high schoolers with campus visits and meet with them
Develop mentorship pairs among prospective and current college students with same high school experience
Student identities
Partner with campus organizations/units that serve other student identities
Pair students with mentors based on similar identities
Reduce fees to programs
Connect with local autism organizations
Create scholarships for low-income students
Orient students with the financial aid office
Career development
Prepare students with how to write job applications
Rehearse interviews
Prioritize career assessments
Offer job shadowing opportunities