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Reading comprehension treatment development for high school students with autism spectrum disorder: Stakeholder considerations for feasibility

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ABSTRACT

Background: We explored the potential benefits, possible challenges, and further considerations of two proposed academic interventions under development. These interventions target the reading comprehension of adolescents with autism spectrum disorder (ASD). These interventions were part of a comprehensive treatment package proposed to improve postsecondary outcomes for those with ASD transitioning to college, vocational training, and careers. Our purpose was to examine the reading comprehension treatments from the perspective of multiple stakeholders from whom buy-in is needed if treatments are to be used with confidence and fidelity. We aimed to better understand and address the issues that may limit the feasibility of implementation and thus treatment integrity and outcomes of our treatments prior to piloting them in typical high school settings.

Method: We conducted six focus groups across two states. The 39 participants included family members of adolescents with ASD, school instructional and support staff members, and school and district administrators. The questions were semi-structured and open ended. A multistep, team-based approach was used to analyze focus group data.

Results: We report on three major themes with supporting subthemes. Stakeholders affirmed the need for and value of the proposed academic component. However, they were unsure that the reading interventions would prove beneficial without the proper supports, understanding of ASD in place, and further enhancements.

Conclusions: This study highlights the complexities of designing treatments for students with ASD across the spectrum.

Stakeholder feedback is relevant and offers those designing and conducting school-based treatments considerations regarding issues of social validity and quality of life that can enhance

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or detract from treatment integrity and sustainability of the intervention. A rationale for gathering and using stakeholder feedback is provided to drive research design and implementation, along with recommendations for future research endeavors.

1. Introduction

Given the importance of reading comprehension to academic achievement and considering that some individuals with autism spectrum disorder (ASD) will likely demonstrate poor reading and academic outcomes (Brown, Oram-Cardy, & Johnson, 2013), a variety of research-based instructional practices feasible for classroom implementation are needed to remediate these comprehension difficulties. Although the Individuals with Disabilities Education Act (2004) mandated the use of research-based practices with students with disabilities, Accardo and Finnegan (2017) uncovered a discrepancy between teacher-reported knowledge of effective practices and preparedness to use them with students with ASD. Though a limited number of evidence-based practices (EBPs; practices with empirical evidence meeting established criteria that are meant to inform practice and are considered the gold standard) have been identified specific to teaching reading comprehension to students with ASD (Knight & Sartini, 2015), educators are often unaware of what constitutes EBPs for this population due to the research-to-practice gap or a lack of access to relevant research (Accardo & Finnegan, 2017). Moreover, they do not feel they have the skills and resources to implement EBPs effectively (Machalicek et al., 2008) or to adapt their instruction to meet both state standards and the diverse needs of the full spectrum individuals with ASD (Fleury et al., 2014). Thus, an educators' perception regarding an educational practice is often noted as a potential barrier or enabler to its feasibility of implementation, especially if teachers are skeptical about the likelihood of it achieving improved student outcomes (Kucharczyk et al., 2015).

The perceived feasibility of a treatment is associated with treatment fidelity, or "the extent to which essential intervention components are delivered in a comprehensive and consistent manner by an interventionist trained to deliver the intervention" (Hagermoser Sanetti & Kratochwill, 2009, p. 448). Ultimately, we are interested in the impact our treatments will have on student reading comprehension outcomes, which is directly related to the extent to which the interventions are delivered as intended. Therefore, we conducted focus groups with stakeholders around the proposed treatments to be investigated and the extent to which stakeholders perceived them to be appropriate and feasible for addressing the academic needs of adolescents with ASD in typical high school settings.

A national team of researchers sought to address academic deficits, by developing a comprehensive treatment package (CTP) to meet the needs of adolescents with ASD. The Center for Secondary Education for Students with Autism Spectrum Disorder (CSESA), a

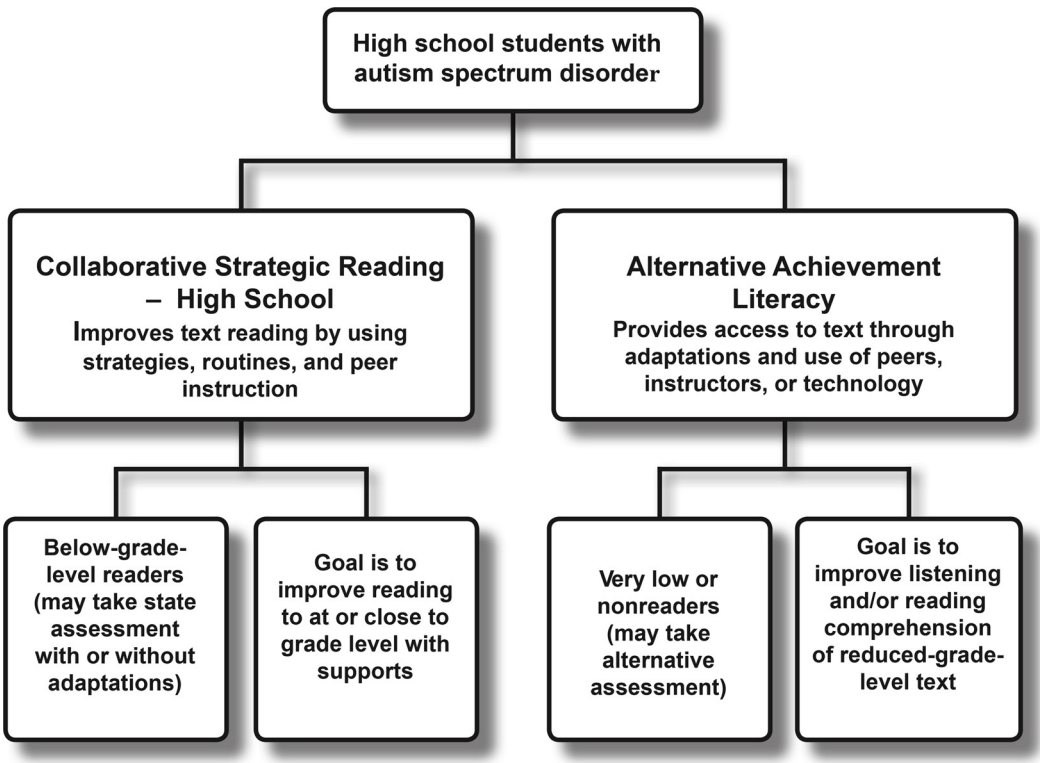

Fig. 1. Reading comprehension interventions for adolescents with ASD.

research and development project funded by the U.S. Department of Education's Institute of Education Sciences, developed, adapted, and studied a comprehensive school- and community-based program of education for high school students with ASD over a 5-year period. It aimed to help students succeed in high school and postsecondary environments by developing evidence-based instructional strategies, interventions, and training in the following areas: academics, transition and family, social competence, responsibility, independence, and self-management. Center leadership drew from existing knowledge generated for adolescents with ASD when they identified the various treatments to be included in the CTP under investigation. Additionally, they pulled from research conducted with adolescents with other disabilities who had shared learning needs (i.e., learning/reading disabilities, behavior disorders).

1.1. The academic component and its treatment options

The academic component in the CSESA model focused solely on reading comprehension. Reading comprehension was selected as the academic focus because it (a) is a conduit to academic learning (Berkeley, Scruggs, & Mastropieri, 2010), (b) allows greater participation in other academic classes, (c) provides a much-needed functional skill for students with vocational outcomes (Spooner & Browder, 2015), (d) supports vocabulary development for verbal and nonverbal students (as demonstrated through the use of alternative and augmentative communication devices), and (e) has the potential to enhance quality of life and future independence (Browder et al., 2009).

The academic component consisted of two distinct reading comprehension interventions (see Fig. 1), Alternative Achievement Literacy (AAL; Browder, Thompson, & Fallin, 2014) and Collaborative Strategic Reading–High School (CSR–HS; The Meadows Center for Preventing Educational Risk, 2014). Two different interventions were included to offer options to educators who serve students across the spectrum. Depending on students' reading ability, verbal ability, cognition, and reading and learning goals, the instructional provider would select one of the two treatment options. AAL targets individuals who may not yet be reading independently and builds skills through listening comprehension of text. AAL focuses on improving the comprehension of students with ASD who take alternate assessments based on alternate achievement of grade-level content. CSR–HS is for use with students who have foundational reading skills in place and can read but struggle with reading to understand. CSR–HS is a multicomponent intervention meant to improve reading comprehension throughout the reading process (i.e., before, during, and after reading). CSR–HS is not a "learn-to-read" intervention; it is specifically designed for students reading at or below grade level. The reading comprehension interventions proposed and presented to stakeholders for comment are described further in the Method section.

1.2. A case for feasibility

According to Lane, Bocian, MacMillan, and Gresham (2004), when designing and implementing school-based interventions, researchers should do due diligence in (a) designing the intervention, (b) training the appropriate personnel, (c) identifying the appropriate target audience, (d) selecting outcome variables, and (e) monitoring the accuracy of outcome data collected. Within the last decade, a focus on treatment integrity has also come into prominence. Beyond those considerations, it is important that school-based interventions are designed feasibly (Kasari & Smith, 2013).

As a case in point, interventions that lack social validity are more likely to be delivered with limited fidelity, especially when they involve a large number of educational stakeholders and a high level of complexity (Greenwood & Abbott, 2001; Snell, 2003), which is commonly the case in today's educational environment. Thus, as part of CSESA's mission to ensure feasibility of implementation of each component, focus groups were conducted to incorporate the perspectives and feedback of stakeholders (e.g., parents of individuals with ASD, educators, administrators, support staff members, other specialists) into the treatments under development and the plans for implementation in typical high school settings. Early on, we planned and conducted the focus groups to gauge stakeholders' perspectives about the two reading treatments (other teams conducted focus groups specific to the other CTP components; see Kucharczyk et al., 2015). We were interested in the acceptability and suitability of the reading interventions and materials proposed as part of the CTP. This information is relevant to many considering the cost, time commitment, and critical need to improve academic outcomes for adolescents with ASD (Fleury et al., 2014).

1.3. Study purpose

The purpose of this descriptive study was to examine the academic component proposed as part of a CTP for high school students with ASD from the perspective of multiple stakeholders. We aimed to better understand and address the issues that may limit the feasibility of implementation of each of the treatments (AAL and CSR–HS). We sought to address the following two questions to improve upon the academic component's treatments:

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1 What are the anticipated benefits and challenges of implementing the academic component for adolescents with ASD in a high school setting?
2 What is needed to support and sustain the academic component?

2. Method

We held six focus groups across a southwestern and southeastern state, each organized by two of the six CSESA universities'

participating research partners. Focus groups were held to gain insight into the perspectives of multiple stakeholder groups on the inclusion of the CTP's academic component (AAL and CSR-HS) as well as their views of the academic component's ability to enhance students' reading and listening comprehension skills. These groups consisted of parents of individuals with ASD, educators, school and district administrators, and related service providers. We arranged the members of each focus group to be homogeneous based on their roles (e.g., educators, parents, administrators) to benefit from the respondents' shared experiences and to avoid social issues such as job-related power dynamics that could arise between groups (Dyson, Godwin, & Hazlewood, 1976; Vaughn, Schumm, & Sinagub, 1996).

2.1. Participants and recruitment

Prior to conducting the focus groups, institutional review board approval was obtained from all universities. Consent and assent were collected from all focus group attendees. All participants had to have direct experience with adolescents with ASD or knowledge about literacy instruction for the targeted population. Participants were recruited from area school community members where the academic component was scheduled to take place in a later phase of the investigation. We recruited focus group participants purposefully to ensure that each key stakeholder group was represented through at least one focus group per site (Maxwell, 2012). We invited adolescents with ASD and their parents, general and special education teachers, related service providers, high school administrators, and other district staff members who had experience with students with ASD. Adolescents with ASD were hesitant to participate in the group format. Although one adolescent accompanied her mother to the parent focus group, she did not contribute to the discussion of the proposed academic component and its two treatments. Other CSESA researchers later conducted one-on-one interviews with students with ASD to capture their perspective on the proposed CTP, although feedback specific to the academic component (i.e., perceptions regarding the two treatments) was not captured. The materials we used to recruit participants included flyers placed in the community, as well as e-mails sent to ASD advocacy groups, ASD service groups, area schools, and direct contacts of school staff members.

A total of 39 participants attended the six focus groups–24 from the southeast (5 parents, 9 educators and staff members, 10 administrators) and 15 from the southwest (4 parents, 4 educators, 7 administrators). See Table 1 for participant demographics. The majority of the participants were female (n = 35). Eleven of the stakeholders not designated as parents indicated they were parents of students with ASD. People often represent more than one role, and this was true of the educators/administrators and parents of individuals with ASD. Participating districts and university partners recruited educators because of their backgrounds with reading and familiarity with characteristics of ASD. They were asked to respond through the lens of instructional providers, but many in this category also provided a unique perspective because they also had children with an ASD diagnosis.

2.2. Description of proposed reading comprehension treatments

2.2.1. Alternate achievement literacy

The term *alternate achievement literacy* (Fleury et al., 2014) refers to using text adaptations and interactive read-alouds to address standards for students participating in alternate assessments. Once students are given alternatives (e.g., text read aloud) to augment emerging decoding skills, the focus of instruction can be the standards of the student's assigned grade level. This literacy approach focuses on two outcome areas: (a) enhanced quality of life through shared literature and (b) increased independence as a reader (Browder, Trela, & Jimenez, 2007). Students who receive the AAL intervention may access text across content areas through reading summaries at a reduced grade level or through read-alouds provided by peers, teachers, paraprofessionals, or technology (e.g., e-

Table 1
Demographics.

	Families	School personnel	
	Parents (n = 9)	Educator or service provider (n = 13)	Administrator (n = 17)
Race			
White	9	9	14
Black	0	3	1
Multiracial	0	1	0
Other	0	0	1
No answer	0	0	1
Gender			
Male	0	2	2
Female	9	11	15
Age in years			
≤18	0	0	0
19–25	0	1	0
26–40	3	5	6
41–55	5	6	6
≥ 56	1	1	5

Note. A total of 11 stakeholders had children with ASD. Those children ranged in age from 12 to 22 years, with a mean of 17 years.

books). The text students access may include novels, newspapers, cookbooks, menus, signs, poetry, or job schedules. Research indicates (Browder, Lee, & Mims, 2011; Mims, Browder, Baker, Lee, & Spooner, 2009; Mims, Hudson, & Browder, 2012) that interactive read-alouds are effective for providing access to grade-level literature to a wide range of students, including those with complex and multiple disabilities who may have few entry-level literacy skills. In most cases, supports and scaffolds are used to make the text accessible, including summarizing passages, providing object supports, and summarizing repeated sentences.

Furthermore, activities related to print awareness, fluency, and comprehension are incorporated through the use of augmentative communication devices, pictures and symbols, graphic organizers, media and technology, and peer support (Browder et al., 2009). Student comprehension responses may be expressed through speech or an alternative or augmentative communication device. For high school students with ASD who primarily access a vocational preparation curriculum or who have more limited literacy skills, this meaning-focused literacy intervention can be implemented in English language arts and reading courses and embedded in vocational courses.

2.2.2. Collaborative strategic reading–high school

CSR–HS has several features to meet the needs of individuals with ASD, who often require consistency, explicit instructions, and visual supports to learn new skills (Thompson, Wood, Preston, & Stevenson, in press). CSR–HS incorporates these features into its instructional design through graphic organizers; visual depictions of key vocabulary terms; and explicit, consistent instructions for completing the strategies. The design is flexible to allow for implementation in the class as a whole or in more intensive peer-directed tutoring sessions guided by a facilitator. Adopting either the whole-class or one-on-one tutoring model depends on the support needs of students with ASD (see The Meadows Center for Preventing Educational Risk, 2014). CSR–HS strategies can be applied to instructional practices already in place to support students' ability to search for and use important information, summarize, and draw inferences. CSR–HS helps students better manage their thinking about and understanding of what they read, as well as their ability to apply reading strategies to written content. These strategies are tools students can apply to text to enhance their comprehension and to better access content knowledge when textual meaning is unclear or confusing. The CSR–HS strategies were designed to help students with ASD and their neurotypical peers work cooperatively to read for meaning in the content areas (see The Meadows Center for Preventing Educational Risk, 2014, for an overview of CSR and a description of the adaptations for individuals with ASD).

CSR with adaptations was selected for inclusion in the CTP targeting secondary students with ASD due to its demonstrated success with students with learning disabilities and reading difficulties. More than 15 years of research has yielded positive results across comprehension, content learning, and vocabulary acquisition. For example, a randomized controlled trial with 61 middle school classrooms found significant comprehension gains for intervention students (Vaughn et al., 2011). CSR is also recognized as an EBP by the National Center on Secondary Education and Transition. All students are taught four comprehension strategies (i.e., previewing, fix-up strategies, main idea, and question generation) to use across content areas in structured collaborative groups. Several components of CSR have proven effective with students with ASD (e.g., cooperative learning, Dugan et al., 1995; reciprocal questioning, Whalon & Hanline, 2008; strategy instruction, Delano, 2007).

2.3. Focus group process

Three university staff members with graduate degrees and extensive experience working with individuals with ASD and their families facilitated the focus group sessions at each site. Members of the broader CSESA project team determined the questions to be asked during the sessions. An expert in focus group methodology led training for moderators to promote consistency in procedures across groups and sites and developed a protocol guidance document. Moderators attended a 1-h training on how to conduct an effective focus group session based on the recommendations of Vaughn et al. (1996). Both sites used the focus group protocol, which included (a) inclusion criteria for selecting participants, (b) format of the focus groups, (c) content of the introductory presentation, (d) focus group questions, and (e) data collection processes.

Three focus groups were held at each of the two research sites, which were in southeastern and southwestern states. At both sites, the focus group moderator delivered a PowerPoint presentation, with a brief introduction about CSESA and an overview of AAL and CSR–HS treatments, and provided handouts summarizing the project's objectives. The stakeholders were asked broad questions about CSESA's aims and the various proposed CTP components (see Kucharczyk et al., 2015). Not all sites asked questions about all the components. This paper presents themes identified based on specific questions about the proposed academic component's two reading comprehension treatment options. All questions were semi-structured and open ended to provide stakeholders with an opportunity to participate in the conversational flow. The questions included: (a) What are the anticipated benefits and challenges of implementing the academic component for adolescents with ASD in a high school setting? and (b) What is needed to support and sustain the academic component?

Focus group locations varied across sites and included two universities and a school district administration building. A moderator, a note-taker, and at least one additional person to handle logistics and recording were present at each focus group session. We asked participants to introduce themselves by using pseudonyms and to provide information on their experiences with individuals with ASD related to academics and literacy. The note-taker was responsible for typing notes and recording the conversations. The moderator summarized key ideas for each discussion. Participants were encouraged to expand on, agree with, or dispute ideas that were presented in the summaries, as well as clarify their own thoughts on topics relevant to the focus group discussions. The sessions varied in length from approximately 1 to 2 h (M = 90 min). Facilitators were given the following parameters as a guide to follow for implementing four stages of their focus groups: (1) introductions, 5–10 min; (2) rapport, 10–15 min; (3) session, 45–60 min; and (4) closure, 5–10 min.

Table 2
Coding by Themes and Participant Groups.

	Total references by participant group							
	Total references	Different groups	Administrators (SE)	Administrators (SW)	Educators (SE)	Educators (SW)	Parents (SE)	Parents (SW)
Anticipated outcomes	41	14	12	5	12	4	6	2
Academic	12	5	0	3	2	3	2	2
Social and personal	16	5	8	1	3	1	3	0
Postsecondary transition	13	4	4	1	7	0	1	0
Challenges of the academic component	72	11	3	11	13	23	7	15
Fidelity of implementation	19	5	0	5	2	9	2	1
Working with and understanding students with ASD	53	6	3	6	11	14	5	14
Supporting and sustaining the academic component	149	20	29	30	35	20	17	18
Collaboration	6	3	0	2	0	2	2	0
Scaffolding	71	6	4	14	22	9	7	15
PD and training	26	5	4	13	1	4	4	0
Buy-in and resistance	46	6	21	1	12	5	4	3

Note. SE = southeast state; SW = southwest state; PD = professional development.

Snacks, free parking, and a small monetary stipend were provided to participants. Summaries of the key focus group themes were shared with participants who expressed an interest in them at a later date. The themes identified and refined by the coding team were also reviewed by the other researchers and writing team.

2.4. Data analysis

A multistep, team-based approach was used to analyze data from each of the six focus groups. Three people were on the coding team. After all of the focus group conversations were transcribed and the data de-identified, each member of the coding team individually read the transcripts and created a list of proposed themes. After individually identifying themes, team members worked together to compare their themes and eliminate, collapse, and refine them as needed to reach agreement. The coders agreed upon three main themes, with subordinate themes for each main theme (see Table 2 for a list of main and subordinate themes). The main themes and subordinate themes were entered into NVivo (2013) as nodes to systematically code and allow for subsequent comparison between coders.

Each coder independently coded all transcripts using the agreed-upon themes, and then the coding team met to run a coding query, in which the initial percentage agreement between coding team members was determined for each main and subordinate theme. The coding team identified the five lowest categories that fell below 85% agreement. Coders came to a consensus about how each item should be coded within each of those categories until 100% agreement was established. The coding team reviewed each transcript and discussed any disagreements about the three main themes, considering context in each case to reach a consensus on how to code the item. Meetings were held regularly to compare coding to ensure that the analysis of the data was rigorous and reflective. At the conclusion of the coding meetings, the percentage of agreement between the three coders was 94%.

We identified and defined themes aligned with our research questions and analyzed the extent to which references supporting these themes appeared across stakeholder groups. The focus group transcripts were categorized by stakeholder type: administrators, educators (i.e., school instructional and support staff members), and parents (i.e., parents and guardians of individuals with ASD—excluding educators or administrators at the participating study sites). We were interested in tracking key topics as they appeared in and across groups. Thus, Table 2 displays the number of references to each theme and subtheme coded, the number of different focus groups in which each code was raised, and the number of times the code was raised by each group. The overarching themes are described below and supported by stakeholders' own words.

3. Results

3.1. Theme 1: anticipated outcomes

The first theme addressed the anticipated outcomes, or benefits, of implementing the academic component for adolescents with ASD in a high school setting. Stakeholders made 41 references to the anticipated outcomes theme, including three subthemes: academic outcomes ($n = 12$), social and personal outcomes ($n = 16$), and postsecondary transition outcomes ($n = 13$).

3.1.1. Academic outcomes

Parents praised the proposed academic interventions for their focus on comprehension for two reasons. First, parents valued their child learning to identify the main idea or most important information, as this skill translates to recognizing and prioritizing the most important part about any job or activity. Second, parents noted the importance of reading instruction going beyond decoding, describing how their children have no trouble recognizing words but make no connection to that word's meaning.

Educators appreciated that CSESA planned to emphasize academic improvement through developing reading comprehension. They talked about how reading comprehension outcomes can translate to so many subject areas. They stressed how working on reading comprehension could also improve students' listening and speaking skills, which is important for many students with ASD. Educators noted the importance of providing students with the tools to comprehend what they read independently and described instances of students with ASD becoming dependent on cues and prompts. Educators stressed the need to help students gain independence with the comprehension strategies included in the interventions. One educator stated:

> Literacy gives us power. A literate person can function much more independently and productively. Teaching our students another strategy to help with comprehension is going to give them the self-determination piece to feel like they can do it, that they actually have the tools they need.

Finally, administrators hailed the importance of literacy. An administrator stated: "Information is power, which is why I'm such a huge proponent of literacy instruction for every single student. The most functional skill we can teach our students is how to read." Another administrator echoed this viewpoint, adding: "Reading is fundamental. Without being able to access and comprehend text, there is no future. I see this as a vehicle to give meaning to their world."

3.1.2. Social and personal outcomes

Parents, educators, and administrators stressed the importance of students with ASD developing the social and functional skills needed to maximize their success after high school. Parents expressed a desire for reading materials that would help students develop independent living skills, such as reading menus, recipes, signs, directions, and employment applications. They asked that tasks like, "reading a schedule, and [learning] how to get dressed in the morning, or do my routine, or make my own menu, or follow my mom

and dad's instruction when they are gone out of the house" be incorporated into literacy instruction and intervention.

Administrators and educators primarily focused on students with ASD developing the social skills necessary to interact appropriately with others. Furthermore, educators expressed their hope that students with ASD would learn to read for pleasure. The ability to read for pleasure, according to the educators, would allow students to explore areas of personal interest independently.

3.1.3. Postsecondary transition outcomes

Parents, educators, and administrators all described the need for students to have positive postsecondary transition outcomes. Parents were adamant about their children being educated in a manner that would support their functional literacy skills beyond high school. Following recipes online, searching for jobs, or finding texts that teach and promote social skills were all suggested ways to make reading instruction more relevant for students with ASD. One parent gave an example of an assignment that was academic but also incorporated postsecondary transition needs:

> My son had an assignment a few weeks ago and it asked him to describe a job in the health field. It was such a great experience for him to go on the computer, learn about a job that interested him, and figure out what it would take to get that job. "What kind of education do I have to have? How much money do they make?"

Several educators also described how technology, such as text-to-speech, spell-check, and word-prediction software, could be used as an age-appropriate tool for students with ASD who need literacy support after high school. Educators also described the importance of helping students improve comprehension skills, as these skills apply to understanding things such as rules and signs. Finally, administrators expressed the need to engage both with students with ASD and their families to determine appropriate postsecondary literacy goals that could be sustained beyond high school.

3.2. Theme 2: challenges of the academic component

The second theme addressed the anticipated challenges of implementing the academic component for adolescents with ASD in a high school setting. Stakeholders made 72 references to the theme, including two subthemes: fidelity of implementation ($n = 19$) and working with and understanding students with ASD ($n = 53$). The working with and understanding students with ASD subtheme was the second most referenced subtheme.

3.2.1. Fidelity of implementation

Parents discussed how important fidelity of implementation is for students with ASD, describing how their children could become far more proficient if they first learned and mastered the steps of the interventions and then focused their energy on text comprehension. Educators also discussed the importance of implementing the interventions as intended. One educator communicated that it would be helpful to provide a structured lesson template indicating how many minutes to spend on each step of the various intervention components. Another educator added that time would likely be an obstacle that could prevent teachers from implementing all of the components of the interventions as intended. Multiple participants said it would be challenging for teachers to implement the interventions as intended for a variety of reasons, such as competing initiatives. One participant explained why CSR–HS components such as cooperative learning and preteaching would likely not be implemented by classroom teachers:

> I don't think it's the fault of the teachers. They have to teach to the test. They are held to such strict timelines in terms of how much time they have to cover a topic or unit. They are very conscious of their pacing, so using cooperative learning groups and preteaching skills, skills many think that these high school students should have already, teachers don't have that flexibility.

3.2.2. Working with and understanding students with ASD

The second subtheme that emerged from the focus groups emphasized how characteristics commonly observed in individuals with ASD can affect learning, reading comprehension, social-emotional skills, and behavior. Many noted challenging behavior and comorbidity with language and other behavioral deficits. Educators and parents brought up many of the challenging behaviors associated with individuals with ASD, such as a lack of interest in reading, low motivation for academic tasks, perseverative interests interfering with attention to academic tasks, distractibility, and refusal to complete work. Educators mentioned that books such as *Grapes of Wrath* and *The Scarlet Letter* are not interesting to some students with autism, as they are unable to relate. Educators, more than other stakeholders, were concerned that students with ASD who had additional comorbid behavioral disabilities experienced exceptional difficulty with demonstrating appropriate attention and behavior in the classroom. An administrator questioned the appropriateness of the interventions for students with ASD who are also deaf, blind, or have a severe cognitive impairment.

All teachers who expressed a concern with students experiencing comorbid difficulties also had doubts about whether the interventions could be scaffolded to meet the needs of students with the most severe challenges. Many parents mentioned that their children with language impairments are able to decode text appropriately but struggle to understand what they read. Educators also noted how students with ASD struggle with comprehension as concepts become more abstract. Educators discussed that some texts are simply not appropriate for all students, given their level of understanding, and highlighted the importance of ensuring that students with ASD have access to texts at appropriate levels.

3.3. Theme 3: supporting and sustaining the academic component

The final theme addressed the second research question: What is needed to support and sustain the academic component? Stakeholders made 149 references to this theme, including four subthemes: collaboration (n = 6), scaffolding (n = 71), professional development and training (n = 26), and buy-in and resistance (n = 46). Because there were more references to this theme than to the two previously mentioned themes combined, we describe this theme in greater depth.

3.3.1. Collaboration

Parents noted the value of collaboration among instructional staff members, stressing that collaborative efforts could provide consistency for their children across the various instructional providers and content areas. One parent discussed the importance of having school staff members ensure that all teachers use the interventions described (i.e., AAL, CSR–HS). Another parent mentioned the need for schools to have an expert who could instruct new or struggling teachers on how to implement the interventions.

Parents identified how the expertise of special educators would likely have to come into play. Specifically, parents stressed that for the proposed interventions to be successful for students with ASD, special educators would have to be present in general education inclusion classrooms during implementation. They saw the benefit of using special education teachers to (a) preteach skills, (b) clarify expectations, (c) help students with ASD work appropriately in groups, and (d) ensure that literacy instruction is provided at an appropriate pace for students with ASD to apply the strategies and gain independence.

Educators primarily discussed collaboration as it relates to general and special education teachers working together to meet the literacy needs of students with ASD placed in general education classrooms. One educator stated: “You would need to have a true collaborative effort between your general education teacher, who is the content specialist, and a special education teacher if the interventions are to be implemented across the curriculum.” The same educator also noted that time would be a big factor: “Planning time is crucial to be able to plan and implement all the steps” of the interventions. Regarding the collaborative roles necessary for the implementation of the literacy interventions, educators perceived the general education teacher as the content expert responsible for ensuring that students master content, not necessarily as the person responsible for student literacy development or instructional efforts targeted to the unique challenges that students with ASD may face.

In regard to collaboration, administrators suggested that outside service providers, occupational therapists, speech/language pathologists, social workers, and guidance counselors could be used to support and implement some components of the AAL curriculum for students with ASD who have more significant support needs. Multiple stakeholders liked the idea of support and non-school staff members reinforcing the literacy instruction in school. Administrators hoped that service providers could provide parent training to bridge the gap between literacy interventions used at school and at home.

3.3.2. Scaffolding

Scaffolding refers to instructional techniques used to provide successive levels of temporary support that help students reach levels of comprehension and skill acquisition that they would not be able to achieve without help. Parents, educators, and administrators all expressed the importance of scaffolding to address the literacy needs of students with vastly different cognitive and academic abilities. Scaffolding was the most referenced subtheme for parents (n = 22) and educators (n = 31). Parents were concerned about how many children with ASD learn to decode but do not comprehend what they read. Parents also expressed a need for instruction focused on generalizable and functional reading skills, such as how to read a menu or follow a grocery list. The administrators echoed this concern for meeting the needs of students who performed far below grade level.

Educators reasoned that because literacy involves listening and speaking, working on comprehension could benefit students with ASD socially as well as academically. However, educators also pointed out that it is challenging to explain technical language to students with limited cognitive ability and so they must carefully choose which parts of the standard curriculum to make accessible to these students. Finally, several educators articulated the importance of scaffolding to teach students with ASD the requisite skills to be successful after high school. One offered this insight:

> I’ve had conversations about students with disabilities getting to college, and there are no supports. They don’t know how to get [support]. They forget all the strategies they learned in high school. I think there will be some opportunities to use some of the reading interventions and strategies to help with that gap.

3.3.3. Professional development and training

Parents, educators, and administrators recognized the need for teachers to receive the professional development and training required to implement the literacy interventions effectively to meet the specific needs of students with ASD. Parents stressed the importance of having instructionally sound teachers who could effectively implement reading instruction with their children with ASD. One administrator noted that although teachers know how to implement programs already in place in the general education classrooms, they would benefit from training on how to adapt those programs for students with ASD who also struggle with reading comprehension. Educators and administrators underscored the necessity of training to help teachers better understand how individuals with autism are neurologically unique. A speech-language therapist put it this way:

> I think teachers don’t fully understand the brain of the person with autism. They don’t understand that the filters [of people with autism] are different and they process language differently. Teachers are good at knowing the external characteristics of autism, but they don’t know what is going on internally. They need to have that training, so they can fully understand what is happening

in the brain and why [students with ASD] may read something so literally.

3.3.4. Buy-in and resistance

The third main theme that emerged from the focus group conversations is the need for buy-in from various groups for the interventions to be successful. The stakeholders concentrated on the need for buy-in from five distinct groups: (a) administrators, (b) general education teachers, (c) special education teachers, (d) students, and (e) families. The parent focus groups primarily concentrated on the buy-in of new teachers. Parents had empathy for new teachers and expressed a desire for in-depth training to help them successfully implement a new curriculum. Parents also voiced their belief that choosing high-interest texts and texts with applications outside the classroom could help to achieve buy-in for the curriculum from their children, though they were not enthusiastic about the idea that educators would deviate from required reading such as the classics and popular fiction.

Educators recognized the need to bridge the gap between home and school environments to increase buy-in from families, though they expressed doubt that academics would be deemed a worthy focus for students with ASD who still haven't mastered basic living skills. Educators suggested that teachers should effectively communicate with families about the academic skills a child is working on at school so that they can reinforce those skills in the home. In addition, educators indicated the need for some parents to go through training to learn to let go, allowing their students with ASD to become less dependent on them.

Educators also discussed the need for buy-in from general education teachers for students with ASD to be successful in the general education classroom. Special educators mentioned that some of the intervention components, such as preteaching and previewing, that would likely be of the greatest benefit to their students with learning challenges might not be implemented regularly due to time constraints from the large amount of content to be covered in an academic year. Educators also noted that many students with ASD also struggle with motivation and refuse to engage, which makes teaching challenging, especially in the general education classroom, where students with autism were described as having different interests from their peers. For example, one behavior specialist stated:

> The general education students like *Macbeth*. It's this bloody play and they buy it, but some of the students with autism aren't hooked by what the other kids like. "So it's the bloodiest play ever written. So what?! Here's what I think about trains!"

Administrators referred to buy-in and resistance more than any other subtheme (n = 22). The administrators' focus group primarily focused on the need for buy-in from parents, although they were generally skeptical of whether parents and educators would be receptive to yet another intervention. Parental buy-in was considered important due to the need for parents to reinforce at home what their child is learning at school. In particular, one administrator pointed out that it's important for educators to understand what kind of future parents desire for their children: "Do they want their child to go to work? Do they want their child to stay at home? By knowing a family's goals for their child, you can more adequately make decisions about what is most important."

4. Discussion

In this study, we sought to better understand the perspectives of stakeholders on the extent to which the proposed research treatments would be appropriate and feasible for addressing the academic needs of adolescents with ASD in typical high school settings. We were also interested in stakeholders' viewpoints regarding the extent to which the proposed treatments would add value to existing instructional practices. Finally, we posited that respondents would identify additional challenges and considerations relevant to those designing and implementing school-based treatments, which would aid in our current and future work, as well of that of other researchers and practitioners.

Themes from our focus groups tell a story of hope, but also of hesitation. On one hand, stakeholders were optimistic about the anticipated benefits of including an academic component targeting reading comprehension in a CTP for individuals with ASD. Although the literature base on reading comprehension and ASD has grown in the last decade (Accardo & Finnegan, 2017; Brown et al., 2013; El Zein, Solis, Lang, & Kim, 2014; Knight & Sartini, 2015; McIntyre et al., 2017; Nally, Healy, Holloway, & Lydon, 2018; Reutebuch, El Zein, Kim, Weinberg, & Vaughn, 2015), teachers lack knowledge of these findings or do not yet feel confident using them with students with ASD (Accardo & Finnegan, 2017). Further, reading interventions for individuals with ASD at the high school level are virtually nonexistent (Thompson et al., 2017). A recent meta-analysis found a total of three high-quality reading intervention studies at the high school level for individuals with ASD that resulted in positive outcomes, only two of which taught reading comprehension skills (Thompson et al., 2017). This limited focus on reading instruction is also demonstrated in the classroom. Individuals with ASD often receive much less than the optimal amount of reading instruction identified by the National Reading Panel (2000); Spector & Cavanaugh, 2015), and the instruction that is provided is highly variable (Smith, Pennington, & Courtade, 2014; Solis, El Zein, Vaughn, McCulley, & Falcomata, 2015; Spector & Cavanaugh, 2015).

Moreover, stakeholders reacted positively to improving the reading comprehension of adolescents with ASD and identified possible improvements not only to academic outcomes, but also to social, personal, and postsecondary transition outcomes. Respondents noted far-reaching benefits of improved academics for the quality of life of adolescents with ASD, including developing greater independence. For students with and without disabilities, including those with ASD, the ability to independently complete activities required to fully participate in and out of school guarantees greater chance of success during and beyond secondary settings (Smith et al., 2014).

On the other hand, stakeholders were hesitant. Not surprisingly, considering the nature of ASD, stakeholders acknowledged several challenges that require additional thought by researchers. These challenges included issues foreseen with fidelity of implementation, given that educators are already charged with incorporating many other district, state, and national initiatives.

Stakeholders further pointed out that the characteristics of ASD are often difficult to address, vary by individual, and are misunderstood. Moreover, parents, educators, and administrators all expressed some concern that the "others" held low expectations for supporting school-based treatment efforts that target academic achievement and made claims that the "others" held students back from becoming more independent.

Administrators and educators also questioned the ability of adolescents with ASD to independently use and transfer reading comprehension strategies to other settings. They hoped that the academic component could promote reading for pleasure in individuals with ASD. Parents supported improvements in comprehension but wished instead for improvements in functional reading skills (reading signs and recipes). Administrators pondered how the academic needs of adolescents who are also deaf, blind, or more severely impaired could be served, pinpointing yet another gap that neither AAL or CSR–HS could fill. Educators and teachers also brought up concerns regarding an overreliance on reading prompts by individuals with ASD. Finally, stakeholders lamented that individuals with ASD may not be motivated to improve their reading comprehension or to engage in the treatments without the addition of strategies and enhancements specific to improving behavior, communication, socialization, and independence.

Systemic barriers are inherent in many of the problems associated with educating individuals with ASD (Kasari & Smith, 2013). Unfortunately, as highlighted by all categories of focus group respondents, there are many roadblocks to providing effective reading comprehension instruction to individuals with ASD, including behavioral excesses and deficits (Fletcher-Watson, 2014; Tager-Flusberg & Kasari, 2013), limited teacher training (Spector & Cavanaugh, 2015), and limited research on effective instructional strategies (Spooner & Browder, 2015; Tager-Flusberg & Kasari, 2013). As many parents noted and research supports, it can be difficult to work with this population when many have limited ability to indicate a response, display problem behavior, have limited motivation, and/or have difficulty developing rapport with their instructors (Fletcher-Watson, 2014; Spooner & Browder, 2015). Further, administrators in our focus groups acknowledged and research substantiates that despite the importance of using effective academic interventions with students with ASD and the increasing number of students with ASD who are taught in general education classrooms, teachers often feel ill-equipped to meet the learning and behavioral needs of students in this population (Marks et al., 2003; Spector & Cavanaugh, 2015).

When planning professional development and training for school-based treatments for adolescents with ASD, respondents recommended that researchers consider schoolwide training that promotes an awareness about ASD and the needs of individuals with ASD across the spectrum. Stakeholders described students' struggles resulting from school staff members, peers, and others having misunderstandings or inaccurate information about ASD. Stakeholders also expressed that with proper training, school staff members might be better aware of difficulties that students with ASD may encounter during academic instruction and could be better prepared to use instructional strategies that are appropriate for their students' unique learning profiles. Buy-in of the treatments and the additional time, effort, and modification of educational plans in place were noted as obstacles to feasibility, especially for educators skeptical of the likelihood of improving student outcomes. In previous research with teachers of students with learning and behavioral disabilities, Boardman, Argüelles, Vaughn, Hughes, and Klingner (2005) noted that educators often do not find EBPs identified in the literature to be feasible or desirable for use. More recently, Accardo and Finnegan (2017) noted that classroom teachers may not perceive EBPs as effective for individuals with ASD.

4.1. Treatment refinement based on stakeholder feedback

Stakeholder feedback from focus groups was carefully considered and used to refine reading treatments before piloting in school settings. The perspectives influenced treatment resources and access to them, as well as professional development and considerations for building the capacity of both implementers and targeted students in a variety of areas. Below, we describe how stakeholders contributed to treatment design elements to enhance the feasibility and, in the long run, fidelity of implementation of the reading comprehension treatments.

Use of motivational and pertinent real-world texts at appropriate reading levels was suggested to improve student engagement. Text including the perseverative interests of students with ASD and choice of text have been associated with increased task engagement, correct responding, and overall productivity (El Zein, Solis, Vaughn, & McCulley, 2014; Reutebuch, El Zein, & Roberts, 2015). AAL used text that neurotypical peers in the same grades as targeted participants with ASD were reading. In our pilot studies with AAL, students with ASD chose from a variety of traditional texts adapted for individual needs (i.e., reading and language abilities), such as popular and classic novels and a variety of e-books on science and social studies topics. CSR–HS provided model lessons using high-interest topics and low-level texts relating to science, social studies, and biographies. CSR–HS also provided a variety of fictional and expository texts of various reading levels, plus students were provided choices of text based on their interests.

Feedback indicated that some students with ASD are apprehensive about working in small groups. Therefore, we replaced the traditional group work aspect with peer pairing and added guidance for neurotypical partners that included information to help build individuals' understanding regarding ASD and their capacity to support partners with ASD with the treatment. Instructional grouping practices can promote favorable conditions for improved student outcomes in reading. Peer pairing which involves students of the same age tutoring each other can increase engagement when students take on roles such as peer mediation (Fuchs, Fuchs, Mathes, & Simmons, 1997) and when peer-assisted learning strategies are implemented. In order to better prepare students without ASD to serve as peer partners and supports to individuals with ASD throughout the treatment, we drew on the work of Carter et al. (2014) to develop lessons specifically for the preselected peer partners without ASD. These lessons provided information about the strengths and needs of students with disabilities to promote (a) accepting attitudes of individuals with ASD, (b) accurate understanding of individuals with ASD, and (c) better conversations, interactions, and cooperation among the assigned partners. In designing and manualizing treatments, research team members may want to consider the core intervention components outlined by Carter et al.

(2014), which include (a) identifying students with ASD and peers who would benefit from and have interest in involvement, (b) orienting students to their new roles and providing relevant strategy instruction, (c) structuring regular interaction opportunities within classroom or noninstructional school settings, (d) providing sufficient (but not intrusive) guidance and support from school staff members as students spend time together, and (e) evaluating the social and learning progress of participating students over time. Although not part of our reading comprehension treatments specifically, an online course on ASD was developed and meant to be completed by CTP implementers and peer partners of learners with ASD prior to individual treatments being rolled out.

Researchers would also be wise to be cautious regarding the confidential nature of individuals' diagnoses of ASD and directives for potential pairing or grouping of students with and without ASD. Several parents of individuals with ASD who attended the focus group sessions warned that their children did not want others to know that they had ASD and would never agree to be part of a treatment that highlighted their unique abilities. Though peer partnering may be beneficial, not all individuals are suited to such an arrangement; therefore, alternatives to pairing and grouping within treatments may need to be offered. In addition to peers being potential partners or group members, other possibilities such as partnering with a teaching assistant or other instructional staff member were added as viable options to our treatments.

Researchers should also take note of stakeholder calls for explicitly developing social and communication skills and independence of participants with ASD. Limited social initiation may contribute to academic difficulty, as students may not seek out social and verbal learning opportunities and miss opportunities to gain valuable information from the environment (Peck, 1985). Hume, Boyd, Hamm, and Kucharczyk (2014) and Hume and Kucharczyk (2014) identified evidence-based interventions for adolescents with ASD to improve behavior, communication, and independence. Focus group respondents indicated that treatments in these areas also would need to be in place to address challenges and deficits that may impede the success of a standalone academic component. Therefore, sections can be added, as we did to treatment manuals and professional development materials for implementers that offer options for addressing behavior and communication challenges and deficits, including developing social skills of target students and using positive reinforcement. It should be noted that the larger CTP tackles these areas as well.

Additionally, opportunities for building students' independence with treatment strategies can be expanded upon. One example of how we went about this was by priming targeted students prior to treatment implementation or as an ongoing supplement to the intervention depending on the level of support individuals demonstrated needed for optimal success. We also provided students with checklists with prompts to help students work through the various reading strategies and scaffolding resources, including asking and responding to comprehension questions and completing graphic organizers.

Stakeholders also suggested integrating technology into treatments, as students with ASD often use tablets and other electronic devices for tasks in lieu of paper and pencil. This suggestion is supported by Clark, Austin, and Craike (2015), who reported that parents and teachers find the devices pleasing and use them often with individuals with ASD. Using electronic devices may also influence motivation and engagement and ease the strain of writing for those with motor skill difficulties. Previous research indicates that the use of technology also may reduce the frequency of adult-delivered prompts and reduce prompt dependency (Mechling, 2011; Smith, Shepley, Alexander, & Ayres, 2015). Though our budgets prohibited us from providing tablets or building our treatments onto a platform to use with touch screens, we were able to design student and implementer treatment materials that were fillable using a word processor or a tablet–something several of our later pilot study participants used as part of IEP accommodations.

Finally, stakeholders requested that the academic component generalize to other settings. Therefore, treatment materials and implementer training can be developed for use by a variety of school staff members (e.g., special and general education teachers, interventionists, teaching aides, volunteers, language therapists). Though we originally designed our treatment specifically for general and special education staff (i.e., English language arts and reading teachers), we broadened our scope to be inclusive of the people in various roles that focus groups respondents indicated may be interested and available to deliver our reading comprehension treatment.

These additional factors influencing the feasibility of the treatments are important considerations for our line of research on individuals with ASD and have practical considerations that extend beyond academic achievement. We have the opportunity and the obligation as researchers to think broadly about a treatment's ability to enhance the quality of life for those participating beyond secondary and postsecondary settings, as well as to design treatments that can be carried out in an efficient and effective manner to lessen the load carried by instructional staff members and parents. Furthermore, funders and policymakers must be made aware of these additional considerations if more inclusive treatments are to be supported, funded, developed, and investigated.

4.2. Limitations

There are a number of limitations to this study. Although we attempted to schedule focus groups at a variety of times for maximal attendance, due to limited time and personnel, our schedule of meetings may have precluded attendance of stakeholders with other family and job obligations. Focus group facilitators were also study authors. It is possible that this may have compromised objectivity and that the findings may not fully reflect an independent assessment.

The focus groups provided opportunities for stakeholders to raise issues and generate ideas, but the social nature of these gatherings and the questions asked might have led us to miss issues that would have been raised had we used other data collection procedures, such as observations or individual interviews. The small group sizes and limited number of focus group sites further constrained the findings, such as limiting the ability to ask questions specific to AAL and CSR–HS as compared to our questions that targeted the academic component in general. Additionally, at some sites, district and school officials made initial contact with individuals who they thought might be interested and/or willing to participate in the focus groups, which might have introduced some biases, including the bias of including educators who had children with ASD with the group of educators without children with

ASD.

It is also possible that individuals willing to participate in a research study are qualitatively different from those who are not. Unfortunately, we did not collect family-level data nor did we match families to individual students to allow us to better understand how the participants may have differed from other families not participating in the focus group study or the context of the stakeholder feedback. The decision not to collect additional family data was due to the sensitive nature of the disabilities. Furthermore, potential participants may not have been included in the study due to the request that participants have ASD, know someone with ASD, or be a family member of an individual with ASD. Adolescents and young adults, who are nonexistent in our study, may be particularly sensitive, indicating a need to capture these missing voices in future work through less intimating means, such as individual interviews or virtual meetings. A general education perspective is also lacking. Although invited, general education teachers may not have had the time, considering their teaching demands. Lastly, other CSESA researchers did conduct individual interviews with students with ASD, although the questions did not align with the questions in our focus group on the academic component, which in retrospect was a missed opportunity to include additional valuable insights to the current study. Those pursuing further research should seek out these missing but critical points of view.

Finally, due to our restricted timeline and scope of work, we did not investigate to determine whether or not the concerns and benefits identified by focus group respondents were actually founded. Given, our careful consideration of them and taken with the research members' combined knowledge and experience with the target population and in designing effective reading interventions, we are confident that the possible concerns and benefits are more likely than not. However, within this paper we do not address the actual impact of feasibility or effectiveness of our treatments. The larger CSESA team received funding for investigating this and that work is currently underway. Unfortunately, the impact of this work is somewhat reduced pending those findings.

4.3. Implications

In addition to shaping the design of the AAL and CSR–HS interventions and their subsequent implementation, the stakeholder feedback compiled is of value to other researchers, given that school-based interventions can be costly and funders put heavy emphasis on positive results. From our modest focus group efforts, we demonstrate that researchers can systematically gather stakeholder input and use it to address potential threats to feasibility. Well-designed treatments are underused or not used at all when stakeholders have issues with their effectiveness, time to implement, intervention complexity, and materials (Lane et al., 2004). Our groups insisted that interventions should be feasible to educators and beneficial for the targeted students. This finding aligns with research indicating that the acceptability rating of treatments for school settings is dependent upon factors such as time and skill required to implement, risks to those targeted, and effectiveness (Witt & Martens, 1983; Witt, Elliott, & Martens, 1984; Witt, Martens, & Elliott, 1984).

There exists a need for treatments for individuals with ASD to be inclusive to general educators, other service providers, and the greater autistic community. Pellicano, Dinsmore, and Charman (2014) expressed this sentiment in the conversation they captured about the research focuses most desired by those with ASD and the larger community of supporters. Further, individuals with ASD could be better served by treatments that help them apply targeted skills to independent living and jobs, so there is a need to think more broadly about teaching these skills across the curricula. There also is a need to consider how to develop student interest and motivation to learn and use comprehension strategies.

4.4. Further considerations for future research

For others pursuing this line of work, we offer suggestions for how future research could improve upon our current study. First, to lessen potential bias, a broader stratification of focus group attendees is necessary. Conducting separate focus group interviews with educators who are also parents of individuals with ASD would allow for comparison of perspectives across the two groups of educators. Second, conducting one-on-one interviews with individuals with ASD instead of attempting to gather groups of adolescents together may be a more acceptable and less risky environment for capturing those unique outlooks. Third, including a review of the emerging literature on postsecondary educational supports, outcomes, and their perceived value can help contextualize the postsecondary experience and environment (Anderson, Stephenson, & Carter, 2017; Roux et al., 2015) and ensure that designers of interventions in secondary settings are aware of what is and isn't working well for those with ASD enrolled in college and vocational courses. Finally, it is reasonable to provide outreach to general education staff members, especially considering the topic of improving academics. Just as we recommend conducting separate focus groups for educators with and without children with ASD, researchers could conduct separate sessions for those in general education from those in special education to allow for a safe, comfortable environment for participant voices to be heard, the particular challenges of those groups acknowledged, and distinctive points of view captured.

Feedback from the focus groups highlights the potential benefits of the academic component and brings to light some of the obstacles to implementation, which call for continued thinking and planning about design and delivery of treatments. For the aforementioned interventions to be supported, sustained, and successful, they must be relevant and meaningful to stakeholders. Considering the many obstacles in implementing treatments in a school-based setting, we suggest pairing interventions targeting students with ASD with professional development for general and special education school staff members that builds awareness and understanding of autism. In addition, we believe it is necessary to conduct further research into the ways that general educators, special educators, and families of adolescents with ASD can work together to incorporate needed interventions into high school classes and make these kinds of interventions more appealing to individuals with ASD and their peers.

Conflicts of interest

The authors have no conflicts of interest.

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