Alignment of Supplementary Aids and Services with Student Needs and Placement

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Abstract

Trends in the supplementary aids and services (SAS) written in individualized education programs (IEPs) for students with significant disabilities (a) in different educational placements, (b) with and without behavior support plans (BSP), and (c) with and without complex communication needs (CCN) are examined using multivariate analysis of variance. Results show no significant differences in SAS for students across separate, resource, and inclusive placements. Students with BSPs had significantly more collaborative and behavior SAS than those without BSPs. Students with CCN had significantly more social-communication SAS than those whose IEPs indicated little to no communication support needs; however, 51.1% of students with CCN had no social-communication SAS. Findings raise concern around the extent to which SAS are considered before placement decisions, the high frequency of paraprofessional support for students with BSPs, and the low frequency of social-communication SAS written for students with CCN. Implications for policy, practice, and future research are provided.

Keywords: supplementary aids and services, individualized education program, significant disabilities, behavior support plan, least restrictive environment, complex communication needs

Alignment of Supplementary Aids and Services with Student Needs and Placement

Students with extensive support needs (ESN), defined as students with low-incidence disabilities (i.e., moderate-to-severe intellectual disability, multiple disabilities, autism spectrum disorders, and deaf-blindness), constitute the one percent of the student population who qualify to take their state alternate assessment (Taub, McCord, & Ryndak, 2017). These students face challenges in accessing equitable educational services in the general education setting as compared to their peers with other disabilities. For example, they are almost two times more likely to be placed in separate special education classes than general education settings compared to children with other disability labels (Morningstar, Kurth, & Johnson, 2017; Thompson, Walker, Shogren, & Wehmeyer, 2018). Furthermore, the supplementary aids and services (SAS) within individualized education program (IEP) of students with ESN often reflect general statements of personnel supports more frequently than specific supports to access and make progress in the general curriculum within the general education setting (Authors, 2019). Specific supports that are beneficial for students with ESN to access the general education setting include curricular modifications, peer supports, and assistive technology (Kurth et al., 2018). Author's findings are disconcerting, as students who receive special education services are entitled to (a) a free and appropriate public education, (b) education occurring in the least restrictive environment, and (c) the provision of necessary SAS to make progress on their individualized goals (IDEA, 2004). We begin with a brief review of relevant federal legislation specific to special education, an overview of SAS, discussion of the relationship between educational placement and SAS, and populations impacted by SAS.

Federal Mandates

The description of least restrictive environment in the Individuals with Disabilities Education Improvement Act (IDEA, 2004) highlights the importance of SAS for children with disabilities to support education in the most inclusive setting possible. SAS have been in special education law since P. L. 94-142 (1975). However, there is almost no existing research or federal guidance to help teams make decisions about their appropriate selection and use. The description of SAS in the IDEA is vague. Consequently, IEP teams "often lack a clear process for discussing and determining those aids and services" (Etscheidt & Bartlett, 1999).

The regulations in IDEA (2004) related to least restrictive environment require that students with disabilities are "educated with children who are not disabled, and special classes, separate schooling, or other removal of children with disabilities from the regular [general] educational environment occurs only when the nature or severity of the disability of a child is such that education in regular [general education] classes with the use of supplementary aids and services cannot be achieved satisfactorily" (20 U.S.C. § 1401(5)(A)). In this definition, SAS are the lynchpin to students receiving an inclusive education. In fact, each IEP "must include" a statement of needed SAS, "based on peer-reviewed research to the extent practicable, to be provided to the child, or on behalf of the child, and a statement of the program modifications or supports for school personnel that will be provided to enable the child to: (a) advance appropriately toward attaining annual goals; (b) be involved in and make progress in the general education curriculum…and to participate in extracurricular and other nonacademic activities; and (c) to be educated and participate with other children with disabilities and nondisabled children" (20 U.S.C. § 1414(d)(1)(A)(IV)). IDEA outlines how SAS should support students, but it does not define the aids, services, and supports that constitute SAS.

The lack of guidance and definition of SAS in federal legislation further extends to a dearth of peer-reviewed research in this area. A review of the literature identified only two peer-reviewed articles related to SAS (Etscheidt & Bartlett, 1999; Authors, 2018). Etscheidt and Bartlett (1999) developed, defined, and recommended four domains of potential SAS: social-behavioral-communication supports, collaborative supports for school personnel, supports for the physical environment, and supports for instruction. Authors (2018) updated the definitions of these four categories and conducted a descriptive analysis of the SAS found in IEPs from regions across the United States. Findings indicated that SAS frequently reflected removal from general education, rather than supports to facilitate "involvement and progress in the general education curriculum" in the least restrictive environment (IDEA, 2004). However, research investigating the relationship among SAS, student placement, and student support needs is not available. Therefore, analysis of student placement decisions and specific student support needs in relation to SAS written in the IEPs of students with ESN is needed and would expand understanding of trends in the assignment of SAS. The following sections provide a rationale to investigate trends in SAS across student placements and factors that may affect SAS. Factors such as the presence of a behavior support plan (BSP) or complex communication needs (CCN) status may affect the selection of SAS as these two groups of students are frequently at risk for separate special education placements (Kleinert, 2019; Kurth & Zagona, 2018).

Factors affecting SAS

Students with ESN are comprised of a diverse group of individuals who require individualized supports and educational planning that is deliberate and capitalizes on student strengths and unique support needs (Thompson et al. 2018). Certain learning characteristics of students with ESN necessitate that IEP teams adequately contemplate these characteristics in

order to ensure their educational programming is individualized, reflects student present levels of academic and functional performance, and capitalizes on student strengths. In addition to individual learning characteristics, the place in which students with ESN receive special education services may also impact the type or number of SAS provided in their IEPs. For example, Mayton, Carter, Zhang, and Wheeler (2014) noted placement in separate educational settings is often conflated with the intensity of student support needs, meaning that students may be placed into more restrictive settings based on the assumption that they will have greater access to intensive supports. Likewise, Hehir (2012) described criticisms of the capacity of less-restrictive or inclusive settings to provide highly specialized and intensive services. Both note the potential impact of setting on student supports. Therefore, an investigation of trends in SAS in IEPs for students with ESN across different placements is warranted.

Students with BSPs and students who have CCN are two examples of populations who may require specific types of individualized SAS to address their educational needs. Students with BSPs typically engage in challenging behaviors that interfere with the learning of the child or others (Kurth & Zagona, 2018). These behaviors may include class disruption and/or aggressive behavior towards self (i.e., self-injurious), others, or materials. The BSP is a component of the IEP for students with challenging behaviors that operationally defines the challenging behaviors, support strategies, and behavioral goals (Collins & Zirkel, 2017). Students with CCN are students who communicate non-verbally or through the use of high-tech or low-tech devices (Beukelman & Mirenda, 2013). SAS for students with BSPs and CCN are essential to support access to the general curriculum within the least restrictive environment.

Placement. The concept of least restrictive environment has been one of the guiding principles of IDEA since 1975. From the conception of this legislation, the least restrictive

environment decision-making process has been interpreted differently across states, districts, and schools, inadvertently creating confusion about its application (Hyatt & Filler, 2011). While the U.S. Department of Education has made attempts to define special education as "a service…rather than a place where children are sent" (IDEA, 2004, 601(c)(5)), IDEA continues to support the provision of supports and services across a continuum of placements. These can range from inclusive general education settings to separate special education classes, separate special education schools, home schools, and hospital-based instruction (Hyatt and Filler, 2011). Section 618 of IDEA requires states to report (a) the number of students spending 80% or more of the school day in general education settings, (b) the number of students spending 41% and 79% of the school day in general education settings, and (c) the number of students who spending less than 40% of the school day in general education settings. In turn, special education services and place (i.e., the location of special education service delivery) have been conflated in least restrictive environment decisions (Sauer & Jorgensen, 2016).

Research has shown that inclusive placements result in improved academic and post-school outcomes for students with ESN (Agran et al., 2019; Causton-Theoharis, Theoharis, & Orsati, 2011; Shogren, McCart, Lyon, & Sailor, 2015). This is complemented by research revealing that separate educational placements often fail to provide effective, individualized supports (Kurth, Born, & Love, 2016). Yet, students with ESN continue to be placed in separate placement more frequently than other students (Brock, 2018; Morningstar et al., 2017). What constitutes least restrictive environment and the placement decision-making process are inextricably linked to SAS as articulated in IDEA.

Behavior support plans. A 1997 amendment to the IDEA legislation required schools to address any behaviors that impede student learning within the IEP as part of the offer of a free

and appropriate public education (Drasgow, Yell, Bradley, & Shriner, 1999; IDEA, 2004). That amendment states IEP teams will "consider, when appropriate, strategies, including positive behavioral interventions, strategies, and supports to address [the] behavior" impeding learning (IDEA, 20 U.S.C. § 1414(d)(3)(B)(I)). Students with ESN often engage in behaviors that may affect the opinions, behaviors, and ability of adults, such as teachers, to advocate for and support their access to inclusive school environments and academic progress (Kurth & Zagona, 2018). Behavior support plans that are individualized to students' specific needs and implemented collaboratively across school environments and staff can be an effective strategy for improving access to inclusive education for students with ESN (Trader et al., 2017). These supports should be clearly outlined in the IEP document to ensure all school staff can seamlessly implement the designated supports across school environments. Examples of behavior supports described in the literature include token economy systems (Matson & Boisjoli, 2009; Wadsworth, Hansen, & Wills, 2015), visual schedules (Spriggs, Mims, van Dijk, & Knight, 2016), and social narratives (Loman, Strickland-Cohen, & Walker, 2018).

Complex communication needs. Students who communicate non-verbally as their primary mode of communication are referred to as having CCN (Beukelman & Mirenda, 2013). These students often use, or would benefit from access to, augmentative and alternative communication systems (AAC). A student who is a non-verbal communicator might use a combination of unaided forms of AAC (e.g., sign language), low-tech aided AAC (e.g., picture-based communication systems), and/or high-tech aided AAC systems such as speech generating devices (Beukelman & Mirenda, 2013). Due to the pervasive nature that the lack of a functional communication system may have on every aspect of a student's life, it is essential that IEPs for students with CCN include SAS that support access to alternative means of communication

(Authors, 2018). Other SAS necessary for learners with CCN include assistive technology to support access to reading as well as aid in the demonstration of knowledge through the written modality (Orlando & Scherba de Valenzuela, 2018). Some assistive technology supports known to encourage access to content for children include text-to-speech, switch access, magnification, word processors, and word prediction software (O'Neill, Light, & Pope, 2018; Nordström, Nilsson, Gustafson, & Svensson, 2018). Prior research shows that the provision and support of AAC is of paramount importance to the educational experience of students with CCN; however, a concerning percentage of students who require AAC do not have access (O'Neill et al., 2018, Kleinert, 2019). As a result, students with CCN often exit school without an AAC system or implementation plan to support their transition to post-secondary settings (Kleinert et al., 2015).

Research Questions

The current analysis seeks to better understand the trends in SAS in IEPs for students with ESN across placements as well as for students with behavioral support needs and those with communication support needs. Given the critical role that SAS play in securing and maintaining appropriate educational placements and the limited amount of research specific to SAS, research is needed to identify trends in the provision of SAS. The following research questions were addressed:

1. Are there any significant differences in the number and type of SAS in the IEPs of students in a continuum of placements including, separate, resource, and inclusive placements?
2. Are there any significant differences in the number and type of SAS in the IEPs of students with BSPs and those without?

3. Are there any significant differences in the number and type of SAS in the IEPs of students with CCN and those who do not have CCN?

Method

Participants

After following the appropriate institutional review board procedures at each university, the research team contacted teachers of students with ESN known to team members through professional connections and requested de-identified IEPs. Teachers with students in a full range of instructional placements were contacted to obtain a sample of IEPs representing inclusive, resource, and separate placements. No IEPs of students taught in separate schools, at home, or in hospital settings were collected. Teachers of students with ESN provided the research team with 92 de-identified IEPs. All identifying information in the IEPs were removed by the special education teachers before they were provided to the research team. Prior to analysis, each IEP was evaluated using the following inclusion criteria: (a) IEP written for a student in grade K-12, and (b) the student had ESN, as evidenced by eligibility for their state's alternate assessment and/or having support needs related to their disability described in the present levels of academic and functional performance section of the IEP which significantly impacted their ability to access grade-level content without extensive supports. After applying the inclusion criteria, 88 IEPs qualified for further analysis.

The 88 de-identified IEPs that were included in the analysis came from 41 teachers across six states. IEP Demographics can be found in Table 1. The states in this sample are, California (n = 6), Colorado (n = 2), Florida (n = 2), Kansas (n = 48), Missouri (n = 7), and Wisconsin (n = 23). While these states represent a range of geographical areas in the United States, a majority of the sample represents IEPs from the Midwest (n = 79). IDEA Section 618 categories were used

to define student placement. For example, students spending 80% or more of the school day in general education settings were categorized as taught in ‘inclusive’ settings. Students spending between 41-79% of the school day in general education were taught in ‘resource’ settings. Those students spending less than 40% of the school day in general education settings were categorized as taught in separate special education classes. Twenty-six students were taught in inclusive settings (29.5%), 20 were taught in resource settings (23.5%), and 39 were taught in separate settings (47%). The student placement could not be determined in three IEPs.

Students ranged in age from 5 to 18 (M = 10.9) and represented grades K to 12. The exact age of the student could not be determined in 10 IEPs, as this information was obscured during the de-identification process. IEPs from 65 males and 23 females were included. Student primary disability labels included autism (n = 31), intellectual disability (n = 20), multiple disabilities (n = 7), orthopedic impairment (n = 6), other health impairment (n = 6), developmental delay (n = 4), speech or language impairment (n = 3), emotional disturbance (n = 2), hearing impairment (n = 1), and deaf-blindness (n = 1). In seven instances, the student’s primary disability could not be determined, as this information was obscured in the de-identification process. However, a review of the present levels of academic and functional performance section of these IEP revealed that the student met the inclusion criteria through eligibility to take the state alternate assessment. It is important to note that while IEPs in this analysis included primary disability categories that are not considered “low-incidence” such as other health impairment and emotional disturbance, a full review of each IEP identified that these students had secondary disability labels of intellectual disability, or had present levels of academic and functional performance that documented ESN across cognitive, academic, and/or functional performance domains. These students were reported to perform significantly below grade level academically, were reported to

score significantly low on measures of cognitive and functional performance, and/or had CCN. Participants were identified as having CCN if: (a) their IEP specifically listed aided/unaided forms of AAC were used by the individual or (b) description of the student in the present levels of academic and functional performance or goals made it clear that their use of speech was not a functional means of communication. For example, students whose speech was reported to consist primarily of echolalia and/or had a low percentage of intelligibility for familiar/unfamiliar communication partners were considered to have CCN.

Instrument

A conventional content analysis was conducted to gain an understanding of the demographics (i.e., eligibility, placement), present level of academic and functional performance, and SAS sections of each IEP (Authors, 2018). The research team developed categories of SAS coding through separately reviewing the SAS in six IEPs not included in the study. A codebook was developed based on the 21 categories of SAS which emerged from the inductive analysis. The four categories of SAS identified by Etscheidt and Bartlett (1999) were used to organize the 21 identified SAS categories. The original social-behavioral SAS dimension was split into two separate dimensions in order to more accurately discriminate mean differences in social-communication SAS (e.g., high- or low-tech communication devices, social narratives) and behavioral SAS (e.g. token economy system, break cards, visual schedules). This results in five final SAS dimensions: physical access SAS, instructional SAS, behavioral SAS, social-communication SAS, and collaborative SAS. The dimensions, categories, and their definitions can be seen in Table 2. This codebook guided all analysis of included IEPs.

To begin the coding process, the SAS from each IEP was copied verbatim into a Microsoft Excel document. Next, each SAS from every IEP were assigned to one or more of the

domains listed in the SAS codebook for all 88 IEPs. Dichotomous coding was used for each SAS in every IEP analyzed. A ‘0’ was entered for SAS domains that were not present in the IEP, and a ‘1’ was entered for SAS domains that were present in the IEP. Inter-rater reliability was conducted on 29% of randomly selected SAS by a second rater on the research team. Interval-by-interval inter-rater reliability was calculated by dividing the number of agreements by the sum of the number of ratings in agreement and disagreement (total ratings), multiplied by 100 to obtain a percentage. Inter-rater reliability was 96.8% (*range* = 87-100% for each item). The research team met to discuss agreements and disagreements in the assignment of SAS to particular domains. Disagreements in coding centered on definitions of various SAS. Disagreements were resolved by reviewing the codebook and discussing the rating until agreement was reached across all raters. Consensus was reached on 100% of SAS prior to analysis.

Data Analysis

Power analysis for a MANOVA with two levels and five dependent variables was conducted in G*Power (Faul, Erdfelder, Lang, & Buchner, 2013) to determine a sufficient sample size using an alpha of 0.05, a power of 0.80, and a medium effect size ($f = 0.50$). Based on these assumptions, the required minimum sample size is 50 IEPs. A second power analysis for a MANOVA with three levels and five dependent variables was conducted using the same assumptions yielding a required sample size of 24 IEPs. Eighty-eight IEPs were collected for this study exceeding the minimum requirement of 50.

The statistical program SPSS™ (Version 25) was used to conduct MANOVA analysis of the mean differences between three IEP characteristic factors (placement in inclusive, resource, or separate settings, presence or absence of a BSP, and CCN status), and five dependent variables (physical access SAS, instructional SAS, behavioral SAS, social-communication SAS,

and collaborative SAS). Separate MANOVA analyses were conducted for each of the three factors with the same five SAS category dependent variables for a more granular analysis to clearly identify any difference in mean SAS selected for individuals who belonged to a respective group (e.g., those with CCN vs. those without CCN). Missing data were addressed using listwise deletion. This resulted in the three IEPs without placement information being removed for any analysis of mean difference of SAS across the different placement levels. No other data were missing, and all 88 IEPs were utilized in all other analyses. When warranted from significant or near significant omnibus MANOVA test results, additional ANOVA analyses were used. Additionally, pairwise comparison statistics were used to further examine data that were flagged as significant during ANOVA analyses**.** Partial Eta Squared was calculated following each MANOVA and was used as an effect size estimate.

Results

Placement Status (Research Question 1)

A MANOVA was conducted to assess the mean difference between students who were placed in an inclusive setting (n = 26), resource setting (n = 20), or separate setting (n = 39) on the following five dependent variables: physical access SAS, instructional SAS, behavioral SAS, social-communication SAS, and collaborative SAS. The omnibus MANOVA was not significant using the Wilks' lambda criterion (F [10, 156] = .722, p=.703; *Wilks' Λ* =.088; partial η^2= .044). We conducted no further assessment and concluded there were no significant mean differences in SAS across different placement categories.

Behavior Support Plan Status (Research Question 2)

A MANOVA was conducted to assess the mean difference between students with a BSP in their IEP (n = 33) and those without a BSP (n = 55) on the following five dependent variables:

physical access SAS, instructional SAS, behavioral SAS, social-communication SAS, and collaborative SAS. The omnibus MANOVA was significant using the Wilks' lambda criterion (F [5,82] = 2.718, p=.025; *Wilks' Λ*=.858; partial η^2=.142). To further investigate any specific dependent variables in which mean differences could be found, a series of univariate ANOVAs were conducted. There was no statistically significant difference of the presence of a BSP on physical access SAS, (F (1, 86 = .672, p = .415), instructional SAS, (F (1, 86) = .885, p = .350), or social-communication SAS, (F (1, 86) = .012, p = .914).

There was a statistically significant difference in mean number of collaborative SAS, (F (1, 86) = 6.339, p = .014). Students with a BSP in their IEP had a mean of 2.36 collaborative SAS (*range* = 0-10), with 30 of 33 (91%) students having 1 or more collaborative SAS. Students with no BSP had a mean of 1.35 collaborative SAS (*range* = 0-9), with 20 out of 55 (36%) of students having 1 or more collaborative SAS. There was a statistically significant difference in mean number of behavioral SAS (F (1, 86) = 7.139, p = .009) between students with and without BSPs in their IEPs. Students with a BSP in their IEP had a mean of 1.87 behavioral SAS (*range* = 0-6), with 24 of 33 (73%) students having 1 or more behavioral SAS. Students with no BSP had a mean of 1.06 behavioral SAS (*range* = 0-7), with 26 of 55 (47%) students having 1 or more behavioral SAS. Collaborative and behavioral SAS were more frequent in IEPs with BSPs.

Complex Communication Needs Status (Research Question 3)

A MANOVA was conducted to assess the mean difference between students with CCN status (n = 47) and those who did not have CCN status (n = 41) on the following five dependent variables: physical access SAS, instructional SAS, behavioral SAS, social-communication SAS, and collaborative SAS. The omnibus MANOVA was not significant using the Wilks' lambda criterion (F [5,82] = 2.291, p=.053; *Wilks' Λ* = .877; partial η^2= .123). Further univariate

ANOVA assessment was conducted due to the near significant MANOVA results. There was no statistically significant difference of CCN status on physical access SAS, (F (1, 86 = 1.379, p = .244), instructional SAS, (F (1, 86) = .275, p = .501), collaborative SAS, (F (1, 86) = 1.798, p = .183), or behavioral SAS, (F (1, 86) = .874, p = .353). There was no significant interaction between CCN status and physical access, instructional, collaborative, or behavioral SAS.

There was a statistically significant difference in mean number of social-communication SAS (F (1, 86) = 8.225, p = .005) between students with and without CCN. Students with CCN had a mean of 1.06 social-communication SAS (*range* = 0-6) with 24 of 47 (51.1%) students with CCN having zero social-communication SAS and 13 of 47 (27.7%) having one social-communication SAS. Students who did not have CCN had a mean of .32 social-communication SAS (*range* = 0-2), with 9 of 41 (22%) of students having one or more social-communication SAS. Those with CCN were more likely to have more social-communication SAS.

Discussion

Overall, our findings illustrate that students in our sample placed in inclusive, resource, and separate placements were not significantly more likely to have any particular type of SAS (i.e., physical access, instructional, behavioral, social-communication, or collaborative). Students with BSPs had significantly more collaborative and behavioral SAS in their IEPs, as would be expected. Students with CCN were significantly more likely to have social-communication SAS supports, such as assistive technology than students without CCN. This is also expected given the specific communication support needs of students with CCN. Conversely, the descriptive data related to the number of social-communication supports for students with CCN revealed a shockingly low frequency. These findings are discussed further in the following sections.

Impact of Placement Status on Supplementary Aids and Services

According to IDEA, SAS ensure special education services are provided in the least restrictive environment for students with disabilities. Thompson and colleagues (2018) define disability as a mismatch between personal capacity and demands of the environment. Therefore, supports can be provided to address any mismatches that occur. We hypothesized that students in inclusive placements would have more instructional SAS written into their IEPs given that curriculum adaptations and modifications would likely be necessary for students with ESN to access the general education curriculum. Yet, no significant difference between placement categories was noted for any SAS domain, indicating that a similar number of instructional SAS are written into the IEPs of students in each placement setting.

Considering IDEA identifies SAS as supports "that will be provided to enable the child … to be educated and participate with other children with disabilities and nondisabled children…" (§300.320(a)(4)) and students are only to receive a more restrictive placement if "education in regular classes *with the use of supplementary aids and services* cannot be achieved satisfactorily" (emphasis added, [Section 612(a)(5)]), it is surprising that a similar number of supports were identified across all placement categories. While this analysis could not assess the implementation or decision-making process behind the SAS in the sample IEPs, the similarity displayed across inclusive and separate placement IEP SAS introduces two questions: 1) Could the SAS listed in IEPs with separate placement decisions be provided in inclusive settings? and 2) Was provision of these SAS considered as possible supports in the inclusive setting before a more restrictive placement decision was selected? Consistency in number and types of SAS across placement categories in this sample suggest that students in restrictive placements have similar support needs as students in inclusive placements or that IEP teams have selected inclusive placements for students who require less SAS. Unfortunately, no IEPs in this sample

referred to consideration of SAS in the least restrictive environment decision section (Authors, 2019) despite the fact that SAS were introduced as a way to ensure student access to the least restrictive learning environment. This raises questions about the extent to which SAS were considered before placement decisions and provides additional evidence that factors independent of support needs, such as disability label, geographic location, and/or socio-economic status may affect placement decisions (Brock & Shaefer, 2015; Kurth, Mastergeorge, & Paschall, 2016).

Impact of Behavior Support Plan Status on Supplementary Aids and Services

Findings for mean differences between students with and students without BSPs reveal students with BSPs had significantly more behavioral and collaborative SAS written into their IEPs. It is an encouraging finding that students with behavioral support needs had significantly more behavioral supports written in their IEPs. While students with BSPs had a significantly higher occurrence of collaborative SAS, one must take into consideration what supports constitute collaborative SAS when making conclusions about this finding. Prior research involving this sample of IEPs indicates that the most common collaborative SAS is personnel supports from paraprofessionals (Authors, 2018). Although collaborative SAS includes a variety of personnel supports, home-school communication, and training, trends in collaborative SAS within this sample suggest that students with BSPs are more likely to have additional support from a paraprofessional throughout the day in order to access the educational environment (Authors, 2018). It is concerning that adult personnel supports were among the most frequent SAS in all settings considering that criticisms of reliance on paraprofessionals have persisted for decades (Giangreco, Edelman, Luiselli, & Macfarland, 1997; Giangreco, Suter, & Hurley, 2011).

Assigned paraprofessional support is an invasive support that can carry academic and social impacts for students (Giangreco et al.,1997, Rubie-Davies, Blatchford, Webster,

Koutsoubou, & Bassett, 2010). Paraprofessionals are more likely than credentialed teachers to provide students answers without instruction and less likely to use prompts or questioning to support student learning (Rubie-Davies et al., 2010). Paraprofessionals may also impede access to general education teacher instruction (Giangreco, Boer, & Suter, 2011) and social interactions with peers (Asmus et al., 2017; Brock & Carter, 2015). These characteristics of paraprofessional support are invasive to student social and learning spaces and can lead to student dependence on adult support throughout the day (Brock & Carter, 2015). This is problematic as research indicates paraprofessionals, who have the least preparation of any instructional school staff, provide the bulk of academic support with insufficient general or special education teacher supervision (Biggs, Gilson, & Carter, 2019; Brock & Carter, 2015; Giangreco et al., 2011).

This research indicates IEP teams may reduce reliance on adult personnel supports if more focus is placed on developing behavioral SAS that are naturally available in the classroom. Additionally, SAS that can be managed by the student (e.g., self-monitoring tools) and/or supports for routines, schedules, and timing can help reduce dependence on adult personnel supports (Kuntz & Carter, 2005; Kurth, Lyon, & Shogren, 2015). For example, task analysis may enable a student to transition more independently. Furthermore, educational supports and individuals currently available within the natural environment may be another option to utilize in lieu of additional adult supports, such as the use of peers (Asmus et al., 2017). In addition to helping provide students with ESN access to the curricular content and avoid the need for invasive adult intervention, frequent use of peer-delivered supports may help assimilate students with ESN into the social fabric within the classroom and/or school, which may increase opportunities for socialization in meaningful contexts (Carter, 2017).

Impact of Complex Communication Needs Status on Supplementary Aids and Services

The provision of SAS that enable effective and efficient communication in a variety of modalities is critical for students with CCN to receive educational services that are truly appropriate (O'Neill, Light, & Pope, 2018). SAS designed for communication and language development, such as aided AAC systems, provide a way for students with CCN to access curriculum, demonstrate their knowledge of the curriculum, build foundational language skills, and establish and maintain friendships with their peers. Our analysis of data from this study indicates that students with CCN have more social-communication supports written into their IEPs. This finding, in part, is positive.

The most common social-communication supports in this sample were aided AAC, such as access to a high-tech communication device and social interaction SAS, such as "encourage peer interaction throughout the day" (Authors, 2018). However, the mean number of SAS identified was only 1.06, with a range of zero to six. It is alarming that 78.7% of students with significant communication support needs in this sample had one or less communication SAS written into their IEPs. Most concerning is the finding that 24 of the 47 (51.1%) students identified as having CCN had zero social-communication supports in their IEPs. Why might this be the case? Despite a clear position statement by the National Joint Committee on Severe Disabilities (2003) discouraging professionals from using a priori determinations to determine who constitutes a "candidate" for AAC, myths persist in the schools that negatively impact how quickly aided communication devices are acquired. Romski and Sevcik (2005) outline some of these myths. They state children who require an aided communication device with a robust language system may not have access to one because they: (a) have not "mastered" the use of lower-tech forms of AAC; (b) have non-functional speech production capabilities (e.g., echolalia); (c) and/or they have a specific diagnosis, such as a severe intellectual disability. The

persistence of these restrictive eligibility practices may, in part, be attributed to the limited number of Speech-Language-Hearing programs which have faculty with knowledge and skills in the area of AAC (Ratcliff, Koul, & Lloyd, 2008). In turn, the lack of academic coursework and pre-service clinical exposure to clients who use AAC may explain the generally low numbers of social-communication supports documented in our findings as professionals may be less familiar with these communication supports (Costigan & Light, 2010).

The low occurrence of social-communication SAS in the IEPs of students with CCN adds to existing research that has identified gross lack of access to communication supports for students with CCN (Kearns, Towles-Reeves, Kleinert, Kleinert, & Thomas, 2011; Kurth et al., 2016; Authors, Under Review). Kurth and colleagues (2016) found students with ESN and CCN in special education classroom settings had low levels of access to AAC devices and were more likely to interact with their teacher than other students in their class without CCN. Similarly, Author and colleagues (Under Review) found that students with ESN and CCN in general education academic content classes accessed AAC supports in only 10.1% of observation intervals. The current findings and extant research highlight that students with CCN in schools have a lack of access to communication supports.

Limitations

Several limitations of this study are noted. First, this analysis utilized a relatively small sample of 88 IEPs. Additionally, the IEPs represented a primarily Midwestern sample, and the location of schools within urban or rural districts is unknown. These sample characteristics impact the generalizability of these findings. The present study engaged in document analysis of de-identified IEPs. Therefore, the practices of the teachers who wrote these IEPs are unknown, and as a result, we do not know the frequency and overall intensity that the listed SAS were

implemented in the school setting. It is also possible that there were additional unknown factors, such as the use of universal design for learning in classroom environments, which would decrease the need for teachers to write explicit SAS for students. Additionally, students were not matched by characteristics such as age, disability, or support needs across placements, which could have increased the reliability comparisons. Another limitation is the lack of demographic information about teachers who provided IEPs, such as experience levels, pre-service/in-service training, and other characteristics that may impact the number and type of SAS selected.

Recommendations for Research

The 88 IEPs in this sample were primarily from Midwestern states. While there were a small number of IEPs representing east coast and west coast states, it would be beneficial to replicate the methods in this study with a larger sample that represents more geographic diversity. A sample with a wider array of eligibilities, number of IEPs, races, ethnicities, districts, and states would increase the generalizability of results. Current research on SAS for students with ESN leaves many questions left to be answered. The document review used with this sample of IEPs provided no information on the teacher decision-making process for identifying SAS. An investigation of the student, classroom, and school characteristics or data used to identify SAS would be a meaningful contribution to the field. Additionally, no research was identified that investigates teacher fidelity of implementation of SAS that are listed within the IEP. An IEP document review, in conjunction with investigation of SAS implementation in classrooms, would be an important next step in extending this research. Lastly, research has established that students should have access to a robust language system that allows for linguistic growth over time (Paul, 1997). Yet our findings suggest many students with CCN do not have communication SAS written into their IEPs. Future research examining the AAC assessment

process in school systems with varied population characteristics (i.e., rural, suburban, urban) may also complement the current literature base and provide a clearer picture of the barriers and facilitators influencing the acquisition of aided and unaided AAC.

Recommendations for Practice

Collaborative domain SAS, specifically personnel in the form of paraprofessionals, were written significantly more frequently for students with BSPs. This finding should promote a concerted effort to decrease reliance on personnel supports. The data suggest schools may decrease reliance on paraprofessionals (collaborative SAS) by increasing instructional, physical, social-communication, and behavior supports that can be embedded by existing staff, peers, or through student self-monitoring. Additional communication supports (Kleinert et al., 2015), peer-assisted learning (Carter, 2017; Mastropieri et al., 2001), curricular adaptations (Kurth & Keegan, 2014), and self-monitoring supports (Kuntz & Carter, 2019) could decrease reliance on paraprofessionals and increase student independence and interactions with peers.

The strikingly low frequency of communication SAS recorded in the IEPs of students with CCN in this sample complements prior research showing that only 46-51% of students with CCN have access to AAC supports in school; together, these findings indicate a significant need in the area of service provider preparation (Kearns et al., 2011). We recommend an increased focus in speech-language pathologist, teacher, and administrator preparation programs on the importance of communication in the teaching and learning process. It is essential that school teams are aware of recommended communication evaluation practices to identify the aided or unaided communication supports necessary for students to access content, social-communication, and all other school activities (Beukelman & Mirenda, 2013, Romski & Sevcik, 2005). Students who do not communicate effectively or efficiently through verbal speech have a

right to access communication supports to meet their individual needs and support the development of language skills (Kleinert et al., 2015; Smith, 2015). School teams must make every effort to ensure this right is met when developing IEPs.

Recommendations for Policy

Stronger guidance and requirements for SAS are needed within the IDEA. In the next reauthorization of IDEA, specific guidance on how teachers can consider the least invasive supports should be presented. For example, curricular modifications or task analysis are recommended to be considered prior to more invasive supports, such as paraprofessional services. Federal guidance on processes for identifying SAS that will be the most feasible and effective for students in the general education setting is needed. Additionally, the current IDEA policy states that students may only be removed from the general education setting if they are unable to be supported in that setting with appropriate SAS. This wording does not explicitly require trial or implementation of supports in general education settings, leading to possible placement of students with ESN in separate settings without having had a chance to succeed in the general education setting. IDEA should not only require a statement of SAS and least restrictive environment decision but also a thorough description of SAS trialed and the outcome of those trials (i.e., supporting data). Future reauthorizations of IDEA should require the least restrictive environment decision include documentation of efforts to support students with SAS in the general education setting. With this addition, IEP teams would be unable to make a more restrictive placement decision without first trialing robust supports for students in the general education setting.

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Table 1. *IEP Demographics*

Demographic Area	Description
State	California (*n* = 6) Colorado (*n* = 2) Florida (*n* = 2) Kansas (*n* = 48) Missouri (*n* = 7) Wisconsin (*n* = 23)
Gender	Female (*n* = 23) Male (*n* = 65)
Disability Category	Autism (*n* = 31) Deaf-blindness (*n* = 1) Developmental delay (*n* = 4) Emotional disturbance (*n* = 2) Hearing impairment (*n* = 1) Intellectual disability (*n* = 20) Multiple disabilities (*n* = 7) Orthopedic impairment (*n* = 6) Other health impairment (*n* = 6) Speech or language impairment (*n* = 3) Unknown (*n* = 7)
School Level	Elementary (*n* = 58) Secondary (*n* = 27)
School Placement	Inclusive (*n* = 26) Resource (*n* = 20) Separate (*n* = 39) Special education school/hospital (*n* = 0) Unknown (*n* = 3)
Complex Communication Needs Status	No (*n* = 41) Yes (*n* = 47)
Behavior Support Plan Present in IEP	No (*n* = 55) Yes (*n* = 33)

Table 2. *Supplementary Aids and Services Code Book*

Supplementary Aids Services (frequency)	
Physical/ Accessibility Dimension	
Environmental Supports (83)	Seating (e.g., wheelchair adjustable desks; preferential seating); setting (e.g., lighting, temperature), location of testing or working; distractions (e.g., study carrels, defined work areas)
Vision Supports (13)	Supports for vision accessibility (e.g., large print, Braille, color, font; Closed-circuit television (CCTV)
Hearing Supports (7)	Supports of auditory accessibility (e.g., FM systems; preferential seating if for sole purpose of improving hearing)
Sensory Supports (24)	Supports for sensory regulation or accessibility (e.g., ear plugs, fidgets, weighted items); leave class early / come late to avoid hallways
Health and Safety (48)	Supports for health and safety of student (e.g., tube feeding, medical supports, toileting, textures of food, adapted utensils/plates/cups); any mention of supports for student safety (e.g., alert bracelets, close proximity to adults “for safety”)
Assistive Technology (52)	Any assistive technology (AT) for purposes *other than* communication. This could include for writing, posture, and other (e.g., "self-regulation"). Use if unclear if would fit in more than one existing categories because it's purpose is not stated. Supports provided for motor accessibility (e.g., adapted scissors; raised line paper, pencil grips)
Instructional Dimension	
Curricular Modifications (60)	Supports to provide meaning to curricular content: change reading level, change assignment; Use of specialized or alternate curriculum (e.g., Unique Learning, News2You); use of alternate assignments and/or materials
Curricular Accommodations (147)	Supports to access curricular content: audio book, highlighting/bolding, typing, scribe, voice to text, word bank, graphic organizers, note taking supports (copy of notes, cloze notes, record lecture), calculator, manipulatives, charts, read problems aloud. Categorization of materials (e.g., color coding); organizing materials; assistance maintaining materials; providing materials for student (e.g., give them copies of the books for home and school, providing them a pencil)
Grading for courses (25)	Change grading criteria for courses or assignments (e.g., pass/not pass, modified weights and/or scales)
Testing Modifications (36)	Supports for meaning of test contents (e.g., number of items in multiple choice, open vs. close ended questions, format adjusted -scribe) delivery

	(e.g., use of study guides; reading test read aloud); change criteria for grading on a test)
Testing Accommodations (27)	Supports to access content of tests (e.g., length, presentation - font/size, location adjusted) delivery (e.g., use of study guides); use of scribe / bubbler; testing location; small group testing
Timing, pacing, length, and frequency (80)	Extended time; break assignments into smaller parts; shorten assignments; repeated practice and review; chunking
General Visual Supports (51)	Visual supports not otherwise specified (e.g., visual schedules in general, visual prompts, checklist)
Cognitive / Memory (65)	Supports for cognitive or memory demands (e.g., processing time; repeated instructions; reminders for students; task analysis)
Behavior Dimension	
Anxiety, behavior, emotional supports (106)	Supports for student regulation (e.g., frequent positive feedback; reinforcer(s); self-monitoring; timers/stop watches; token economy system; break cards; visual schedule only if specifically mentions schedule for behavior/emotional/anxiety needs; social-emotional regulation supports)
Transition (26)	Any supports provided to support successful transitions, including schedules, warnings, and items
Social-Communication Dimension	
Social supports (21)	Supports to develop friendships (e.g., peer buddies); to teach social skills (e.g., social groups); to use cooperative learning (e.g., peer tutors); social narratives
Communication (43)	Use of technology (e.g. high- or low-tech communication devices; switches); supports for primary language (e.g., use of English Language Learner materials); supports for increasing communication effectiveness
Collaborative Dimension	
Training and support for Staff (30)	Any training or support for instructors working with student (e.g., learning how to use AT, how to work on individualized education program goals or services). Use of co-teaching or co-planning. Observing, consulting, training.
Personnel Supports (113)	Any type of personnel support (e.g., 1:1 paraprofessional, co-teacher, adult check-in)
Home-School Communication	Planned communication and collaboration between school and family