



# Proactive versus Reactive: Strategies in the Implementation of School-based Services for Students with ASD

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## Abstract

Autism spectrum disorder (ASD) is increasingly prevalent, intervention costs are high, and long-term outcomes are poor. Proactive implementation of evidence-based practices (EBPs; Steinbrenner et al., *Evidence-Based Practices for Children, Youth, and Young Adults with Autism*, 2020) through an assessment or planning process can lead to more effective services (Rubin et al., *Admin Policy Mental Health Mental Health Serv Res* 43(6), 1023–1028, 2016). The objective of this study is (a) to identify factors associated with the use of proactive versus reactive strategies for school-based services for students with ASD and (b) to examine school personnel perceptions of the use of proactive versus reactive strategies. Data were from a larger project in which 6 semi-structured focus groups were conducted to understand school personnel perceptions of how school districts implement new programs for ASD. Transcripts were coded using an iterative coding and review process. In the present study, primary themes were identified and classified as proactive or reactive. Participants reported both proactive and reactive allocation of district resources for intervention implementation. Reactive implementation was associated with litigation or due process, escalated student behavior, and non-public school placement, whereas proactive implementation was associated with ASD-specific programming, grants, personnel experience with EBPs, and prospective needs assessment. Participants perceived the reactive strategies as disadvantageous, and yet these strategies were sometimes still employed. Understanding the role of proactive and reactive strategies and the factors that influence their use could enable more effective planning for EBP use to improve both cost savings and student outcomes. This study is an important first step to explore resource allocation for school-based services for students with ASD.

**Keywords** Autism spectrum disorder · School-based services · EBP implementation · Policy · Cost analysis · Leadership

## Literature Review

Autism spectrum disorder (ASD) is increasingly prevalent, with approximately 1 out of 54 children affected in the United States (Maenner et al., 2020). The annual medical, non-medical, and lost productivity cost of ASD to the US economy is estimated to be \$268 billion (Leigh & Du, 2015), and the average cost of government and caregiver spending to support one individual with ASD for their lifespan in the US is estimated to be between \$1.4 million and \$2.4 million (Buescher et al., 2014). Despite these investments, long-term outcomes for this population are poor: compared

to outcomes for children with other disabilities, young adults with ASD are less likely to live independently or outside of the family home (Anderson et al., 2014; Roux et al., 2017), to be employed or attend postsecondary education (Shattuck et al., 2012; Wei et al., 2018), to participate in social activities (Orsmond et al., 2013) or to exhibit social skills (Deckers et al., 2017). These disparities in quality of life outcomes also suggest substantial cost inefficiencies in ASD services. We should be placing our efforts into making services and supports for individuals with ASD more effective at improving outcomes through the use of evidence-based practices (EBPs; Cook & Odom, 2013). There are many EBPs available for ASD (at least 28; Steinbrenner et al., 2020), and when they are used in classrooms appropriately, students with ASD experience improved outcomes at the end of the academic year after receiving the EBP (Kratz et al., 2019).

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## The Implementation of EBPs in Schools

School is the primary source of interventions for children with ASD (Brookman-Frazer et al., 2009) and school-allocated funding is the biggest contributor to costs associated with childhood ASD (Buescher et al., 2014; Lavelle et al., 2014). Compared to children with other disabilities, children with ASD often require more comprehensive services, receive more types of school-based services, and spend more hours per week in special education settings (Bitterman et al., 2008). Despite at least 28 EBPs being available for children with ASD (Steinbrenner et al., 2020), and despite government regulation mandating the use of scientifically-based services in schools (Individuals with Disabilities Education Act [IDEA], 2004; No Child Left Behind, 2002), teachers report using an EBP for only 50% of students' high priority goals, with over 50% of the goals not yet mastered for 2 or more years (Brock et al., 2020). Increasing the use of EBPs within school-based programs for children with ASD is a research priority (Sam et al., 2021).

## Special Education Funding and Law

During the 2018–2019 school year, California provided over 795,000 students with special education services, with an average cost of \$26,000 per year per student (Legislative Analyst's Office [LAO], 2019), of which over 120,000 were students with ASD (California Department of Education [CDE], 2020a). These costs are paid through three categories of funding: state categorical funding, federal categorical funding, and local unrestricted funding (LAO, 2019). Within the state of California, funding is allocated to Special Education Local Plan Areas (SELPA) to provide all special education services for students within that SELPA region (Willis et al., 2020). The amount of funding provided is based on overall student attendance and historical SELPA costs, regardless of the current number of students or their identified needs. SELPAs then distribute the received funding to Local Educational Agencies (LEAs, individual schools or school districts; CDE, 2020b). If LEAs do not have enough resources to provide a Free and Appropriate Public Education (FAPE), they are still mandated by IDEA to provide it through paying another institution, yet the federal proportion promised by IDEA has not been fulfilled (National Council on Disability [NCD], 2018), leaving the state and local districts to acquire the resources to make up the difference.

Due in part to funding shortfalls, schools may not have the resources to readily implement EBPs for all students. If parents believe that their child is not receiving adequate

services, they have the right to enact procedural safeguards through mediation (an agreement with the school) or due process (file a formal complaint against the school; IDEA, 2004). The number of disputes filed by parents is increasing: between 2006–2007 and 2016–2017, the number of hearings and mediations increased by 84% in California (LAO, 2019). These hearings sometimes result in requiring the district to pay for a student to attend non-public school (e.g., private schools, privately funded behavior support agencies), which can be costly and is the most frequently reported type of cost pool funding (funds reserved by the state to support extraordinary costs) used by SELPAs (Willis et al., 2020). Compared to children with other disabilities, parents of children with ASD report less access to and more dissatisfaction with school services (Montes et al., 2009) and are more likely to enact procedural safeguards (Mueller & Carranza, 2011), and thus may be more likely to utilize cost pools to fund services. Mediation and due process are intended to protect the right of all students with disabilities to have access to a FAPE. However, even though these safeguards exist, some parents may not have the resources in terms of knowledge, time, and advocacy skills to effectively enact their rights.

## Litigation and Disparities in Autism Education Services

Although mediation and due process were established as safeguards for families to access educational services, this system may unintentionally benefit some students more than others and lead to service disparities. For example, parents with higher SES are more likely to enact procedural safeguards (Burke & Goldman, 2015), and 70% of procedural safeguard documents are written at a graduate reading level (Gray et al., 2019). Therefore, a student with caregivers who have adequate resources to file for due process, may receive a disproportionate amount of educational and related services compared to students without similar familial resources. Consistent with this hypothesis, some research indicates SES/income and race/ethnicity can impact the type, amount, or quality of services a student receives (Suhrehrich et al., 2021b). One way of conceptualizing this potential disparity is related to how and when program improvements occur. Whereas *reactive* investments (e.g., litigation) are more likely to provide disparate benefit to students with higher resource families, *proactive* investments (e.g., EBP implementation and program development) are more likely to benefit all students. Additionally, reactive investments may resolve an individual family complaint, but may not serve as a method to maximize the cost effectiveness of existing resource allocation.

## Proactive versus Reactive Strategies in EBP Implementation

In their insightful commentary about the asynchrony between implementation science research and policy systems, Rubin et al. (2016) described that implementation efforts are often initiated to solve a system problem (reactive) rather than identified as a priority through a needs assessment or planning process prior to initiation (proactive), and commented that although this event-driven reactivity is an opportunity to gain resources, it also makes EBP implementation susceptible to short-term planning and quick initiation, which can hinder its sustainment (maintaining the implementation of an EBP long term). In contrast, the use of implementation frameworks such as *Exploration, Preparation, Implementation, and Sustainment*, promote data-based planning and investment prior to implementation (Aarons et al., 2011).

One feature in implementation frameworks across fields (e.g., education, health, and business) is the Exploration stage of implementation (stage where the implementation team and organization identify what practice will be done, how it will be done, and the resources and timeline for to be done; Fixsen & Fixsen, 2016). One brief by Fixsen and colleagues (2014) described that although the Exploration process requires initial investments in time and effort, the costs to immediate EBP implementation in comparison to prepared EBP implementation are large (e.g., reduced likelihood of sustainment, wasted resources under inadequate conditions for implementation of the practice, and lost opportunity to invest in more suitable practices). In this study, immediate implementation is considered reactive and prepared implementation is considered proactive.

Studies have suggested that long-term investments are associated with EBP sustainment. For example, a qualitative study implementing an EBP in child welfare, SafeCare, highlights the impact that early investments have on EBP sustainment (Willging et al., 2015). In sites where the EBP was sustained, policymakers learned strategies to support sustainment, participated in planning meetings, and fostered buy-in with leadership. In partial or non-sustaining sites, policymakers reported that they were occupied with other tasks and did not put in the investments and resources required to maintain the intervention. In sum, proactive implementation could lead to more successful EBP sustainment.

In addition to successful EBP sustainment, proactive implementation could offset long-term cost of care. For example, compared to children with ASD who participated in community services as usual, children who participated in early intervention (Early Start Denver Model) used fewer long-term autism services, and the costs of the program was offset in about 2 years (Cidav et al., 2017). Although not specific to ASD services, cost comparisons indicate that early

intensive intervention could save a state \$208,500 per child across 18 years of education (Chasson et al., 2007), and in other contexts, well-designed early childhood interventions could generate returns of \$1.80-\$17.07 for each dollar spent on the program (Karoely et al., 2005).

## The Present Study

Given the service needs for individuals with ASD, associated costs, and the potential benefits of proactive planning for EBP implementation in student gains and cost savings, it is important to better understand factors associated with proactive planning for EBP implementation. As a first step in this process, the objective of this study is (a) to identify themes associated with the use of proactive versus reactive strategies in resource allocation for school-based services for students with ASD and (b) to examine perceptions of first-level leaders employing proactive versus reactive strategies.

## Method

This study was one part of a larger project aimed at understanding first-level leader (e.g., immediate supervisors of direct service providers; see Supplemental Table 2 for participant roles and definitions) perceptions of how school districts implement new practices. A focus group approach was used to gather participant experiences and opinions about this topic through the use of a structured facilitator guide with predetermined research questions (Gibbs, 1997; Merton & Kendall, 1946).

## Participants

Participants ( $n = 33$ ) were school-based service providers to children with ASD. Six separate focus groups were conducted: 4 groups included participants ( $n = 23$ ) from urban-located school districts and 2 groups included participants ( $n = 10$ ) from rurally-located school districts. There was a large range between Median Household Incomes in the zip codes of participating SELPAs. Available data ranged from \$31,400 to \$105,100 Median Household Income per year (average of \$68,400 per year across SELPAs; U.S. Census Bureau, 2019). Participants were mostly female ( $n = 32$ ), and worked as program specialists ( $n = 11$ ), autism specialists ( $n = 5$ ), speech language pathologists ( $n = 2$ ), behavior/learning specialists ( $n = 3$ ), program supervisors ( $n = 2$ ), special education coordinators ( $n = 2$ ), autism coordinators ( $n = 1$ ), school psychologists ( $n = 2$ ), SELPA coordinator ( $n = 1$ ), and teachers on special assignment ( $n = 4$ ).

Participants were recruited in partnership with the California Autism Professional Training and Information Network (CAPTAIN), an agency that author J.S. has partnered

with to explore the implementation of EBPs. CAPTAIN is a multi-agency network developed to support the understanding and use of EBPs for individuals affected by ASD across the state of California ([captain.ca.gov](http://captain.ca.gov)). All eligible CAPTAIN members from districts representing the highest and lowest 20% of districts based on student enrollment were sent a recruitment letter via email inviting them to participate in a 1-hour focus group. The potential participants who accepted the invitation completed consent forms outlining the risks and benefits of the study. These procedures were approved by the Institutional Review Board at San Diego State University.

## Procedure

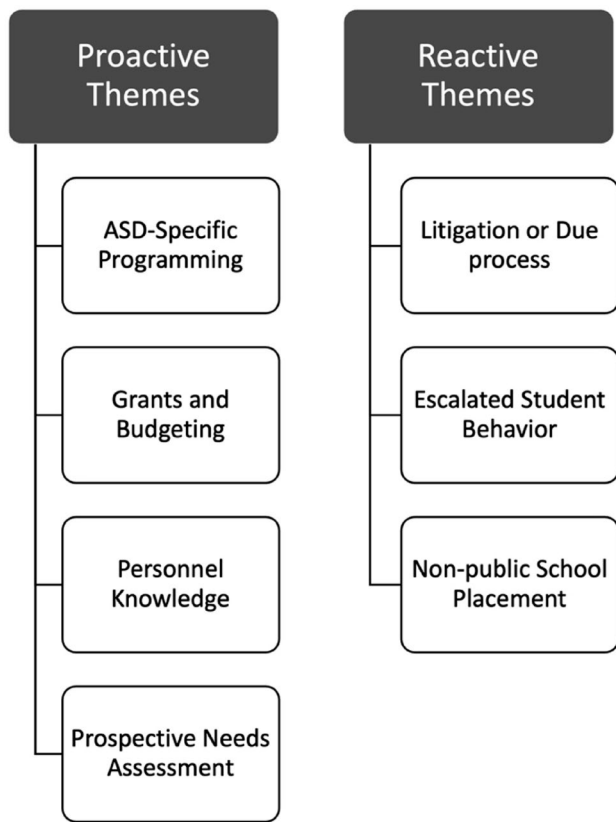
Focus groups were conducted in County Offices of Education or public library conference rooms across the state of California: two groups each in Stockton, Camarillo, and San Diego. Only participants and researchers were present during the focus groups.

Consistent with a well-established focus group methodology (Merton, 1987; Schensul et al., 1999), a structured guide was developed by the authors to facilitate discussion among participants through exposure to uniform stimuli, and to provide a basis for the quantification and comparison of responses within and across focus groups. The focus group facilitators all had experience with qualitative data collection, held either M.A. or Ph.D. credentials and worked as research faculty or staff. J.S. was one of the facilitators. All facilitators followed a guide with detailed instructions, questions, and additional probes. All participants were given a participant guide which included the focus group agenda and questions. Participants were asked to recall an implementation effort to introduce or scale up new services for students with ASD within their district. For the purposes of the larger study, guiding questions targeted: (a) key personnel involved in decision making and change, (b) perceived barriers to implementation, (c) resources needed and how they would be accessed, and (d) perceived likelihood of success across Exploration, Preparation, Implementation and Sustainment phases (this question was asked as a part of the larger study to evaluate an adaptation of an implementation framework for EBP implementation in schools; Suhrheinrich et al., 2021a). Participants were paid \$25 in compensation for their time.

## Data Analysis

Focus groups were audio recorded, transcribed, and then coded using NVivo QSR 11 (QSR International, 2012). Field notes were also collected by a second researcher (not the facilitator) during each focus group. Coders (B.R. and M.M.) used an iterative coding and review process informed by a framework-driven analytic approach that is often employed in qualitative implementation research (Hamilton & Finley, 2019). A codebook, which contained operational definitions of codes, guidelines for use, and examples for inclusion in the category, was developed by J.S. based on constructs of interest from previous research. Implementation factors were coded, such as student needs, litigation and due process, and district structure. These factors were also coded with a specifier if applicable: as a facilitator (e.g., helpful to the implementation of practices) or a barrier (e.g., a challenge or issue to the implementation of practices). Disagreements in assignment or description of codes during development were resolved through discussion between the research team until a consensus in coding was reached and reliability between codes was established. The NVivo software program was also used to conduct thematic analysis and coding. All interview transcripts were coded by authors B.R. or M.M. and 50% of randomly selected transcripts were double coded and assessed for inter-rater reliability. The coders met weekly to compare and discuss coding, and the discrepancies were discussed and resolved to ensure consensus. (See Suhrheinrich et al., 2021a for full details).

In the transcripts, when participants were asked to describe the process in which their districts implemented a new program or intervention, they often described instances where districts provided resources to select and implement interventions after an IDEA violation (reactively), and instances where districts did so prior to an IDEA violation (proactively). To identify factors that promoted the initiation of the selection and implementation of interventions (both reactive and proactive strategies), NVivo coding queries were used to find factors associated with the “facilitator” code (implementation factors that were described as the cause of support or help to successful implementation of a practice). To compare factors associated with use of proactive versus reactive strategies in EBP implementation, primary themes were identified. These themes were then sorted into reactive and proactive themes, and are defined below (See Fig. 1).



**Fig. 1** Proactive versus Reactive themes. Lists proactive and reactive themes, which influence resources and support received within the districts

**Results**

Participants reported instances in which districts provided resources to select and implement interventions reactively

(after an IDEA violation, or when an escalated situation occurs) and instances in which districts provided resources proactively (prior to an IDEA violation, or based on student needs). Both reactive and proactive themes are outlined below, along with participant perceptions of reactive versus proactive strategies (Table 1).

**Reactive Themes**

Some participants indicated that their district employed a reactive strategy to providing resources. Factors of EBP implementation were classified as reactive themes when participants described obtaining access to resources after an inciting event occurs rather than based on evaluations of student or program needs. When participants were describing districts’ approach to providing resources and support for students reactively, three reactive themes emerged: (a) Litigation or Due process, (b) Escalated student behavior, and (c) Non-public school placement.

**Litigation or Due Process**

A prominent theme of the discussions was that resources, funding, and support was given only after a school district faced due process or litigation.

Some participants described that training and money were provided to programs only after a series of litigation cases.

I think there was a lot of training and money put into autism because it’s very litigious, a few years ago.

Participants that provided training for districts reported that school administration would request specific trainings because they were facing litigation.

**Table 1** Definitions of proactive and reactive themes

Proactive theme	Definition
ASD-specific programming	District personnel specifically selected and implemented interventions that promoted success for students with ASD
Obtaining grants and budgeting	School personnel planned for funding in order to initiate the implementation of some interventions
Personnel knowledge in EBP implementation	Personnel with knowledge and skills in EBP implementation helped initiate the implementation of EBPs proactively
Prospective needs assessment	Districts identifying student needs prior to delivering services (i.e., based on the needs of incoming or transitioning students)
Reactive theme	Definition
Litigation and due process	Resources, funding, and support was given only after a school district faced due process or litigation
Escalated student behavior	New strategies or services were only being selected or implemented because there was an escalated situation involving a student with ASD, such as a challenging behavior that personnel could not address independently
Non-public school placement	Implementation of programs occurred in response to districts paying for their students to attend non-public schools (e.g. private schools, privately funded behavior support agencies, etc.)



I tend to find that we're getting a lot of requests actually from schools for specific trainings. Unfortunately, a lot of that comes from the highly litigious cases that they're facing.

### Escalated Student Behavior

Other participants highlighted that new strategies or services were only being selected or implemented because there was an escalated situation involving a student with ASD, such as a challenging behavior that personnel could not address independently.

Usually what happens is there's a need—something has happened with a student with autism and now they're [district administration] in a panic and they call me.

Only if they have that behavior problem kid that they [teachers] want you to come in and fix it. Otherwise they don't want to learn anything else new, because they are already overworked, but if they have that one kid in their classroom that "oh my god, your student's in my room, we need training".

Some participants reported that there was a lack of teacher preparation, and teachers only accessed training on how to respond to individual situations with specific students, rather than training on how to implement effective strategies in a more generalized way.

So, it would be literally problem solving one kid at a time. And going in and training the teacher in one sort of thing: "Do this when he does that." How to use a token economy, how to prompt—those kinds of things. Because they weren't people with a big history in Special Ed.

### Non-public School Placement

Another important theme identified was that the implementation of programs only occurred in response to districts paying for their students to attend non-public schools (e.g. private schools, privately funded behavior support agencies, etc.).

Participants reported that programs specialized for ASD were implemented in response to many students being enrolled in these costly and highly restrictive non-public schools.

We have a lot of kids that go to non-public schools, they're very specialized and supporting those behaviors; so that [the Autism Focus Program] was our response to that, in part.

Participants reported that when a critical mass of students were placed in non-public school, the district would then select a program to provide for their needs in order to bring them back to the district.

I would say [the EBP] was selected because we had a group, a lot of students being placed at a non-public school... and they were, we were trying to move them back to our comprehensive campuses and they were not school-ready.

### Proactive Themes

Some participants indicated that their district employed a proactive strategy to providing resources. Facilitators of EBP implementation were identified as proactive themes when participants described obtaining access to resources prior to an inciting event or based on knowledge of student and program needs. When participants were describing a district's approach to providing resources and support for students proactively, four proactive themes emerged: (a) ASD-Specific programming, (b) Obtaining grants and budgeting, (c) Personnel knowledge in EBPs, and (d) Prospective needs assessment.

### ASD-Specific Programming

A prominent proactive theme in the discussions was that the district personnel specifically selected and implemented interventions that promoted success for students with ASD. For example, participants described having to meet guidelines in order to provide effective strategies and supports for students with ASD.

We had autism guidelines, meaning our classrooms were designed for children with autism. We had to meet these certain requirements.

I would say that there's more training with our Autism behavior programs because of the needs of the students being so intensive in our district.

Participants reported that when the SELPA offered trainings targeted for students with ASD, teachers attended.

We did send the teachers out to lots of things that were available through the SELPA. So, the training process for that particular team was different in that it was targeted towards ASD, and EBPs specifically.

## Obtaining Grants and Budgeting

Another proactive theme that was stressed by participants was that school personnel chose to plan for funding in order to initiate the implementation of some interventions.

Some participants reported that they were able to support EBP training in their district because they applied for a grant for the training, which otherwise would be too expensive for the district to fund.

So, we selected [PRT] based on it being an evidence-based practice, and so with that we had people apply to be trainers of trainers, and so we had 10 people who ended up starting the program to be trainers of trainers... we got a grant to be able to support that training, it was pretty expensive.

Participants also reported that collaborating with the SELPA administrators and governance boards to create a budget helped them to support the desired program.

And, so it [the intervention] started with our policy council, and where our SELPA director brought us in to talk about it and got them to approve a budget to help support that. Like, we were able to buy a STAR kit for everybody and send five people to a summer institute for a 5-day training.

## Personnel Knowledge in EBP Implementation

Another important theme indicated was that personnel with knowledge and skills in EBP implementation helped initiate the implementation of EBPs proactively. For example, some participants reported that having knowledge in EBP implementation from collaboration with CAPTAIN (a multi-agency network that supports the understanding and use of EBPs for individuals affected by ASD) made it easier for them to advocate for the implementation of programs to other school personnel.

For me, sharing information and being part of the CAPTAIN Cadre, sharing that information with my director, my teammates has been—it was pretty much an easy sell.

In addition to first-level leaders becoming better advocates, district leaders that were knowledgeable in the implementation of EBPs were supportive in initiating their implementation.

Luckily my SELPA director was one of the first CAPTAIN Cadre members the first year it was implemented and... so he has an understanding that it is very important for EBPs and the training and the dissemination and implementation in the classrooms.

## Prospective Needs Assessment

This theme identified interventions as being selected or implemented because of districts identifying student needs prior to delivering services (i.e., based on the needs of incoming or transitioning students). For example, participants indicated that professionals evaluated and identified the needs of the students, and this identification influenced their decisions to provide more support to teachers and direct service personnel.

The middle school program that we built two years ago, they're in 8th grade now so we need to build that for high school. So, the first conversation was, "How many kids do we have coming up? How many kids do we have coming from the outside that will need something in the 9th grade?"

Participants reported that programs were implemented based on an evaluation of the number or needs of incoming students.

This year we're adding another autism program because we have a giant cadre of kids coming out of our preschool.

## Perceptions about Proactive versus Reactive Strategies

While not directly asked about their perceptions of "proactive" versus "reactive" strategies, during the focus group discussions in the larger study (Suhreheinrich et al., 2021a), some participants also shared their perceptions about the priorities of districts, which could influence the use of proactive versus reactive strategies. These topics include (a) Avoiding due process as a priority, (b) Current costs, and (c) Resolving individual situations. Critically, participants often reported that while implementation of proactive strategies would require more effort and money initially, they believed that it would be more productive (e.g., cost-effective, provide support for teachers) in the long run.

### Avoiding Due Process as a Priority

Participants reported that, because of the legal regulations in Special Education, districts prioritize avoiding due process or litigation over the benefits of proactive implementation of EBP strategies.

So I feel like there's a real misunderstanding of Special Ed and everything that comes with it and you've got the legal side of it and then the whole education side of it, the whole implementation of strategies, behavior coaching, all of that is kind of put to the wayside for

the legal side of it and the compliance side and we forget to really focus on the preventative pre-stuff that could save us in the end.

### Current Costs

Participants reported that districts wait to provide funding until an IDEA violation occurs because the decision-makers do not seem aware that it would be more cost-effective to spend money on the proactive implementation of services.

I think some of the people who are making the decisions around that don't see the whole picture of how it could be cost-effective to do that [the intervention]. I'm like, "I need this aide and this will save you \$200,000 in 3 years because we won't have to hire this aide later. Can we do that?" And it's like, no because it costs more money right now. But then if we don't do this now, I promise you we're going to have 5 years of this.

Participants reported that although program implementation would prevent the district from needing to send a student to a non-public school, requests for resources to implement programs are denied because they are costly upfront.

We're going to have to send the kid to a non-public if we don't do this right now. And it's like, no it costs money right now.

### Resolving Individual Situations

Participants reported that providing training reactively can only address teachers' needs on a case-by-case basis, even though the participants would rather provide training that would support teachers to develop the skills to independently support students long-term.

The coaching is much more sort of flying by the seat of our pants. Because of the tiny snippets of time, and the very specific solutions we're trying to create. It's—for us, I think in the little districts, it is literally one kid, one teacher, and one situation at a time. So, to get ahead of the training, and do training to prevent the need for those other interventions, that's what's not happening.

## Discussion

With the primary objectives of (a) identifying themes associated with the use of proactive versus reactive strategies in resource allocation for school-based services for students with ASD and (b) examining perceptions of employing proactive versus reactive strategies, our study provides a

novel contribution to the literature. Participants discussed how reactive strategies could lead to worse outcomes for both the school district (in cost) and for the student (in educational need) than proactive strategies. Coupled with data indicating parents with higher SES are more likely to enact procedural safeguards (Burke & Goldman, 2015), and 70% of procedural safeguard documents are written at a graduate reading level (Gray et al., 2019), reactive strategies may also exacerbate disparities in services. Despite the perceived disadvantages, reactive strategies are still employed, suggesting an opportunity for multiple system supports/interventions to proactively plan for EBP implementation.

### Contextual Factors Across System Levels

Our study further highlights that, to promote the implementation of EBPs, contextual factors should be evaluated across system levels (Aarons et al., 2011; Damschroder et al., 2009; Locke et al., 2017). In schools, system levels include the provider level, school district or SELPA level, and the state or government policy level (Stahmer et al., 2018). By examining factors across system levels, tailored and multilevel implementation strategies could be developed.

### Leadership

Our results support previous research suggesting that leadership characteristics may impact the use of EBPs for students with ASD in schools (Locke et al., 2020; Stadnick et al., 2019). In our study, participants report proactive leader behavior such as identifying needs and allocating resources as a facilitator of EBP use. For example, some administrators provided training and applied for grants in order to implement a new program in their district and facilitate EBP implementation. Participants also described leader behavior that may have posed a barrier to EBP implementation, such as short-term budgeting. This pinpoints the importance of understanding how leadership can promote proactive strategies.

### Professional Network/Collaboration

Through collaboration with CAPTAIN, some represented districts had both first-level and high-level leaders that were educated about EBPs for ASD, which was highlighted as a facilitator of proactive strategies by participants. Collaboration between school leadership and other agencies may improve knowledge and attitudes toward EBP implementation or allocation of resources. This aligns with existing research indicating the benefits of professional communities in promoting the knowledge of evidence-based practices in school providers (Hall, 2015).



## Policy

Although IDEA requires children to have access to individualized and evidence-based education, the funding structure is typically based on the number of students, rather than individual needs. Within California, SELPAs receive most of their funding from the state (AB 602), which is based on their overall student attendance, regardless of how many students receive special education or which services those students require (LAO, 2019). There is evidence that EBP implementation in an organization can be strongly influenced by larger policy or economic factors (Goldman et al., 2001). For example, in one qualitative study on the perspective of agency leaders in mental health, agency leaders reported that external funding was essential for EBP implementation (Stewart et al., 2016). In our study, participants also reported that leadership was reluctant to provide resources because of the current incurring costs. If cost analyses were conducted, this could provide some incentive for the state to re-allocate the support and resources needed for implementation.

## Future use of Cost Analyses

Cost-analysis tools are often used to determine the return on investment in large-scale interventions in other areas in healthcare and education, such as early childhood intervention, nutrition, elder care, diabetes, and substance use disorder (Barnett & Escobar et al., 2002; Bhutta et al., 2013; Counsell et al., 2009; Klonoff & Schwartz, 2000; Spoth et al., 2002). One type of cost-analysis that could improve the selection of different programs is a cost-effectiveness analysis, a type of cost analysis used to compare the differences in cost and effectiveness among different programs or strategies. For example, if the goal is to improve reading fluency, leadership can compare the costs of implementing a literacy pull-out program versus a literacy afterschool program while considering the expected increase in performance on a fluency assessment associated with each program (Hollands & Levin, 2017). Although cost-effectiveness analyses are often labeled as tedious, they do not have to be time-consuming and prices can be approximated efficiently (Institute of Education Sciences [IES], 2020). Research evaluating cost-effective services in general education exists (Dhaliwal et al., 2013), however, there is limited research on which special education programs are most cost-effective. IES requires researchers to include cost-analyses in their grant submissions and provides the tools to do so, which indicates a general movement in the field of education.

While we have qualitatively evaluated participant perceptions of reactive versus proactive strategies in this study, cost-analyses tools could be used to quantitatively evaluate the cost-effectiveness of reactive versus proactive strategies. For example, to provide some proportion of the funds

proactively (e.g., to implement an autism program) that would have been used from the state cost-pool for non-public school placements (reactively). Appropriate resource allocation may be a first step to maximizing student outcomes with the number of resources available.

## Limitations and Considerations

The results of this study may inform future research and development of a system-level intervention to support proactive planning for EBP implementation. However, as participants consisted of a small sample size drawn from one state, the results of this study may not reflect a full representation of variability within other states or regions. Our sample reflects the complex make-up of school-based service providers in California, which may not align with the organizational structure and job roles in other states and internationally. Our participants were also recruited from CAPTAIN in districts within 20% highest enrollment and 20% lowest enrollment, in order to have participants representing both larger and smaller districts. Future studies should recruit participants more broadly and explore additional relevant contextual factors. Additionally, this study does not address the scope or frequency of reactive versus proactive strategy use. Future studies should evaluate how often districts take a reactive approach and reasons why, as this could heavily impact the implementation of evidence-based practices and future policy decisions.

This study also does not address the degree to which reactive strategies, when properly reviewed, inform the future development of proactive strategies, and how useful or necessary short-term reactive strategies are in highly individualized services such as IEPs. It may not be possible or productive to “fully eliminate” the use of reactive strategies. However, when the same reactive strategies are used across students or districts, this suggests that the solutions to reactive strategies are generalizable, and would be ideal targets for transitioning to a proactive strategy. Future studies should evaluate the “cycle” and interactive nature between reactive strategies and proactive strategies, the amount of each necessary for EBP sustainment, and how we can identify which reactive strategies should be targeted for development of proactive strategies. One potentially interesting variable that our study did not explore is the perception of principals and administrators of proactive and reactive strategies in EBPs. One previous study found that administrators reported that funding was a barrier to provide the special education supports needed. One principal acknowledged the need for appropriate services, and another described that they do not believe strategies are sustained when an expert comes in and teaches the strategies (Iadarola et al., 2015). As a future research topic, it would be interesting to explore

whether administrators also believe that proactive strategies would be more cost-effective and efficient in the long run, or if they have differing views.

Additionally, although this study reported the range of Median Household Income represented by the participating SELPAs, it did not examine the relationship between the socioeconomic resources of each SELPA and the focus group participant responses within that SELPA. Because socioeconomic characteristics could play an important role in a district's propensity to utilize proactive versus reactive strategies, future studies should collect district-level socioeconomic data to evaluate how these characteristics influence proactive program implementation.

Finally, although this study does report some provider perceptions on the cost-effectiveness of proactive planning, this study does not quantitatively evaluate whether proactive planning is actually more cost-effective than reactively providing resources for school-based services for students with ASD. A future study should develop and evaluate a cost-effectiveness analysis to compare proactive versus reactive strategies in implementing programs for students with autism. Despite the limitations and considerations, the qualitative analysis and outcomes may be useful in future research and implementation efforts across more varied school-based programs supporting students with ASD.

## Summary

In sum, this study uses focus group methodology to explore strategies for implementation of services to support students with ASD. More research is urgently needed to understand the role of proactive and reactive strategies in enabling more effective planning for EBP use to improve both cost savings and student outcomes. This study is an important first step to explore resource allocation for school-based services for students with ASD.

The role of proactive and reactive strategies in enabling more effective planning for EBP use to improve both cost savings and student outcomes. This study is an important first step to explore resource allocation for school-based services for students with ASD.

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## Declarations

**Conflict of interest** All authors declare that they have no conflict of interest.

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