Two sides of the same coin: A qualitative study of multiple stakeholder perspectives on factors associated with implementation of evidence-based practices for children with autism in elementary schools

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Abstract

Schools are the primary setting in which autistic youth receive intervention, yet fidelity to implementation of evidence-based practices (EBPs) for autism in schools varies. Fidelity is an important metric to determine whether educators are delivering EBPs as designed, and there are many different factors that predict fidelity to EBP implementation. This qualitative study used Domitrovich et al.' (2008) multilevel framework to explore individual- and school-level factors that facilitated or impeded EBP implementation for autistic students in elementary schools. Semi-structured interviews with 26 special education teachers with high and low fidelity implementation of three EBPs for autism (discrete trial training, pivotal response training, and visual schedules) and 26 administrators in schools explored multiple stakeholders' perspectives of the implementation process. Thematic analysis revealed factors from the individual- to the macro-level that influenced teachers' implementation fidelity. Many of these factors are malleable and represent targets for implementation strategies to improve the use of EBPs for autistic students in schools.

With the rise in autism spectrum disorder rates to approximately one in every 54 children (Maenner et al., 2020), there are a growing number of autistic[1] students served in public schools (U.S. Department of Education, Office of Special Education and Rehabilitative Services, 2020). Special educators are increasingly responsible for the provision of individualized, responsive, and evidence-based practices (EBPs) for these students (Individuals with Disabilities Education Act, 20 U.S.C. § 1400, 2004). However, they face implementation challenges with variable fidelity and sustainment, which point to a need to explore the factors that may influence implementation in schools (Alexander, Ayres, & Smith, 2015; Dingfelder & Mandell, 2011; Fishman, Beidas, Reisinger, & Mandell, 2018). Successful implementation likely requires provider-level education and training in effective EBPs (Alexander et al., 2015; Hsiao & Sorensen Petersen, 2018) as well as supportive implementation contexts (Locke, Lee, et al., 2019). Yet, knowledge gaps remain about implementation of EBPs in the complex school context, and research is needed to illuminate the various malleable macro-, school-, and individual-level factors that teachers and administrators identify as barriers and facilitators to implementation.

[1] While there is variability across individuals, we are using identity-first language given the identified preference of many autistic self-advocates (Bottema-Beutel, Kapp, Lester, Sasson, & Hand, 2020).

1. Implementing EBPs with fidelity for improved outcomes

EBPs are more effective at improving outcomes when implemented as designed (Fixsen, Blase, Metz, & Van Dyke, 2013). Fidelity is one key component to understanding whether and how an intervention is successfully used. Harn, Parisi, and Stoolmiller (2013) assert that "the primary intent of measuring fidelity in schools is to ensure quality implementation to improve student outcomes across time" (p.185). Studies of educators' EBP fidelity have been linked to autistic students' outcomes (Kratz et al., 2019; Mandell et al., 2013). While we expect better fidelity to lead to better outcomes, research has shown that fidelity relates to many factors, including student characteristics (e.g., student age; Suhrheinrich, Dickson, Rieth, Lau, & Stahmer, 2016), skill area (Odom, Boyd, Hall, & Hume, 2010), intervention characteristics (Locke, Lee, et al., 2019; Mandell et al., 2013), individual teacher characteristics (e.g., a teacher's commitment to an intervention philosophy; Coman et al., 2012), and school-level resources (e.g., number of available staff; Locke, Lee, et al., 2019). The varied influences point to a need to explore whether fidelity is a critical lever in students' outcomes, necessitating a systematic approach to exploring the malleable factors within and across levels that may be associated with implementation fidelity.

2. Understanding fidelity of implementation through a multilevel framework

Implementation of EBPs operates within interconnected and dynamic levels of influence (Domitrovich et al., 2008). *Macro-level factors,* such as state and district policies and resources, set the foundation for available resources and policies to which schools and school administrators abide and establish a conducive organizational culture and climate (i.e., *school-level factors*). Within these schools, teachers have their own characteristics, considerations, and interactions within their environment at the *individual-level* (Domitrovich et al., 2008). Domitrovich et al.' (2008) multi-level framework helps to guide the best ways in which to match existing implementation supports to improve implementation and, ultimately, student outcomes (Durlak & DuPre, 2008; Locke, Lee, et al., 2019; Wilson & Landa, 2019;

Table 1 Macro, school, and individual factors from the multilevel framework.

Macrolevel	School-level	Individual-level
Policies and Financing	Resources	Professional Characteristics
University/ Community Partnerships	Decision Structure	Intervention Perceptions & Attitudes
Leadership and Human Capitol	Mission/Policy Alignment	Psychological Characteristics
	Classroom Climate	
	School Characteristics	
	School Climate & Organizational Health	
	School Culture	
	Administrative Leadership	
	Personnel Expertise	

Note. Levels and factors selected from the multilevel framework (Domitrovich et al., 2008) that guides this study.

see Table 1). Yet, there remains much to learn about how these factors manifest in the implementation of EBPs for autistic students in schools.

Macro-level factors include those related to financing, employment policies (i.e., working hours, salary), and workforce availability, such as trained educators. Though little investigation has been performed identifying how macro-level factors relate specifically to fidelity, particularly in special education, these factors may include the financial cost of implementing EBPs, the time commitment required for already burdened educators (Brunsting, Sreckovic, & Lane, 2014), and the specialized training needed that is rarely available to educators (Scheuermann, Webber, Boutot, & Goodwin, 2003). These factors may present even more challenges for schools that are under-resourced, where time and funding are limited (Locke et al., 2015). Macro-level policies and funds set the implementation stage for schools and educators, where different influences may relate to teachers' implementation of EBPs.

At the organizational or school-level, administrators may play an important role in how educators feel supported in implementing new practices (i.e., implementation leadership, Locke et al., 2019) and school-level decisions about resources for implementing EBPs (i.e., number of staff, Locke,

Lee, et al., 2019). Administrators/principals have a specific role in supporting implementation—as the building leaders, their strategic behaviors determine whether the implementation climate is conducive for successful use of EBPs (Meza et al., 2019). However, they have reported divergent perspectives on school-level barriers to and facilitators of EBP implementation (Iadarola et al., 2015; Locke, Lee, et al., 2019; Wilson & Landa, 2019). The bidirectional nature of teachers implementing practices under administrator supervision, or lack thereof, and administrators supporting teachers in using practices within their school context necessitates understanding both stakeholders' perspectives to inform our understanding of the interactive nature of these levels of influence (Locke et al., 2015, 2017). To facilitate improved implementation and student outcomes, a multidimensional approach is likely needed for stakeholders across levels.

Though students and teachers are situated within schools, EBP implementation for autistic students ultimately occurs at the individual teacher level, as the most likely intervention agent. Refining our understanding of implementation at this level is key to identifying why there is observed variability in implementation even in the same school context and with the same supports (Durlak & DuPre, 2008; Knight, Huber, Kuntz, Carter, & Juarez, 2018). Importantly, individual-level factors, such as a teachers' attitudes and beliefs are, at least in part, related to whether and how a practice is implemented (Collier-Meek, Sanetti, Levin, Kratochwill, & Boyle, 2019; Coman et al., 2012; Fishman et al., 2018; Odom, Cox, & Brock, 2013; Ruble, McGrew, Wong, & Missall, 2018), and have been found to relate to implementation above and beyond organizational (Locke, Shih, et al., 2019) or macro factors (Knight et al., 2018). Moreover, as teacher factors can serve as the ultimate impediment or facilitator of EBP use, obtaining the perspectives of teachers as well as administrators is a critical step toward narrowing the research-to-practice gap and enhancing the feasibility and sustainability of EBP implementation (Locke et al., 2017; Stahmer, Suhrheinrich, Reed, & Schreibman, 2012). There is a need for true listening to and understanding of school personnel to inform research, hopefully lessening the bidirectional practice-research gap.

3. Digging deeper: Understanding how multilevel factors relate to implementation quality

In their multi-level framework, Domitrovich et al. (2008) relate these factors to quality of implementation with an emphasis on fidelity. In a large, multiphase, mixed-methods study, we applied this framework

(Domitrovich et al., 2008) to implementation of three EBPs (discrete trial teaching, pivotal response training, and visual schedules; Locke et al., 2016; Locke, Lawson, et al., 2019; Williams et al., 2019). Teachers received professional development training and were expected to implement all three EBPs. The quantitative fidelity of implementation outcomes varied, with some educators using practices with high fidelity and others not. Combined with the mixed findings on the limited impact of school-level (organizational culture and climate, implementation climate, implementation leadership) and differentially impactful teacher-level factors (attitudes toward EBPs), there is a call to further investigate the influences on implementation across levels of EBPs for autistic students (Locke, Lawson, et al., 2019). Adding nuance and clarity to these analyses, the researchers used the Organizational Social Context measure and found that schools' organizational culture and climate profiles showed that fidelity was related to whether the profile was comprehensive (i.e., proficiency culture and a positive climate), supportive (less rigidity, positive climate), or constrained (highly rigid, high stress; Williams et al., 2019). Together, these findings show the importance of both individual- and school-level factors and highlight the need to explore preidentified factors that predict implementation from the intervention agents (i.e., implementers) and building administrators (i.e., organizational leaders) in schools.

4. Purpose

There is a need for qualitative studies to explore both why and how factors at the macro-, school-, and individual-level manifest for administrators and teachers and are related to each other (Locke, Lawson, et al., 2019; Williams et al., 2019) and implementation (i.e., fidelity). By qualitatively exploring the experiences of special education teachers and administrators who participated in research studies focused on implementing EBPs for autistic students (Locke, Lawson, et al., 2019; Williams et al., 2019), we can understand the individual and contextual nuances that facilitate or impede implementation in schools for this population (Brantlinger, Jimenez, Klingner, Pugach, & Richardson, 2005; Patton, 2002). Through focusing on the experiences of teachers and administrators in low- and high-fidelity classrooms, specifically, we may help to identify actionable strategies that can help promote high-quality implementation in service of improving students' outcomes. To explore this, the aim of this study was to understand, from the perspective of both special education teachers and principals, the

similarities and differences in macro-, school-, and individual-level factors in special education classrooms with high- and low-fidelity implementation of EBPs for autistic youth.

5. Method

5.1 Participants and setting

These data are drawn from a larger study that examined individual- and organizational-level (school-level) factors that may predict special education teachers' fidelity to three EBPs for autistic youth. Details of the larger context and study are described elsewhere (Locke et al., 2016; Locke, Lawson, et al., 2019; Williams et al., 2019). Table 2 presents characteristics of the $N=26$ special education teachers ($n=13$, high fidelity; $n=13$, low fidelity) and $N=26$ principals who completed qualitative interviews. All schools were located in the northeastern United States. Twenty-four schools had one teacher, and one school had two teachers included in the sample; one school had one principal participate, but the teacher who was classified as a high-fidelity classroom declined the interview.

Participating schools were required to use three autism-focused EBPs based on the principles of applied behavioral analysis: discrete trial training, pivotal response training, and visual schedules (Arick, Falco, Loos, & Krug, 2004; Dettmer, Simpson, Myles, & Ganz, 2000; Schreibman, 2000; Smith, 2001). Teachers received training in the three practices at the beginning of the school year as part of standard professional development and monthly coaching with an EBP expert. This paper reports on the qualitative interviews. Data were collected between 2015 and 2017.

Teachers were purposefully sampled based on their average levels of fidelity (i.e., high vs low) across the three EBPs. Fidelity assessments focused on the EBP implementation of teachers during the designated observation period were used. Fidelity ratings were specific to each EBP. Trained coders rated educators' use of the EBPs via a specific fidelity checklist consisting of core components of each practice from 0 (Does not implement) to 4 (Highly accurate implementation). Observations of fidelity of EBPs occurred in January to April during the academic year in which data were collected. See Locke et al. (2016) for details. Teachers in the top tertile based on their average fidelity rating across all three practices and those in the bottom tertile were invited to complete interviews. Teachers were rank ordered and invited to participate—we invited the next participant with the highest or

Table 2 Characteristics of study participants.

	Teachers (*N* = 26) ***M* (*SD*) or *n***	**Principals (N = 26)** ***M* (*SD*) or *n***
Age in years	35.79 (9.87)	46.30 (7.35)
Years of Experience	6.81 (4.47)	8.35 (6.03)
Sex		
Male	2	6
Female	24	20
Race		
Black/African American	2	12
White	24	11
Asian	0	1
Other	0	2
Ethnicity		
Hispanic	0	2
Not Hispanic	26	24
Educational Attainment		
Bachelor's Degree	2	2
Graduate/Professional	23	23
Other	1	1
Level of fidelity (0–4 scale)		
High fidelity group ($n = 13$)	2.77 (0.45)	–
Low fidelity group ($n = 13$)	1.44 (0.17)	–

Note: The study sample included $n = 1$ teacher per school for $k = 24$ schools; $k = 1$ school had $n = 2$ teachers (both high fidelity teachers); $k = 1$ school had $n = 0$ teacher (high fidelity teacher, declined interview).

lowest fidelity scores when participants declined following procedures outlined in Beidas et al. (2013) and Lyon et al. (2013). Principals of each of the high- or low-fidelity teachers also were invited to participate. We conducted enough interviews in April and May of the same year in which fidelity data were collected from both the high and low fidelity conditions to achieve data saturation (Guest, Bunce, & Johnson, 2006).

5.2 Procedure

Participating teachers and principals completed individual, semi-structured interviews that lasted 45–60 min. The senior author (JL) conducted all interviews using two parallel interview guides that were developed following the Domitrovich et al. (2008) framework. Questions were designed to elicit participants' experiences regarding the EBP implementation process in their school. Example items from the teacher interview guide include: "What has it been like for you to implement EBPs in your classroom?"; "Tell me what makes it difficult to use these practices in your classroom."; and "You've been trained in/asked to do so many things this year. How do you make these strategies work together in your classroom?" Example items from the principal interview guide include: "Tell me how you *facilitate* or *support* your special education teachers' and classroom staff's use of these practices."; "Think of a recent challenge or barrier that your special education teacher and/or classroom staff had when using one of these practices in their classroom. What was that challenge or barrier? Tell me the steps that you took to help remove or address that barrier." Participants provided informed consent and were paid $50 for their time. The University of Washington provided ethics approval for the study.

5.3 Analysis

Semistructured interviews were transcribed and uploaded to NVivo QSR 10 for data management. The coding scheme was developed using a systematic, transparent, and iterative thematic analysis (Braun & Clarke, 2006). The research team met as a group to develop a preliminary codebook for teacher and principal interviews. Examples of when to use and not use each code were delineated in each codebook. This deductive coding scheme was then applied to all interviews (Bradley, Curry, & Devers, 2007). See Table 3 for code definitions. Four BA-level trained coders coded all data using the codebook, and interrater reliability was calculated for 20% of the transcripts (MacPhail, Khoza, Abler, & Ranganathan, 2015). The coders met weekly to discuss, clarify, verify, and compare codes; disagreements were discussed with the entire research team to attain consensus. Percent agreement was calculated based on the number of words the two coders agreed upon for each code. Specifically, NVivo calculates the percentage of the source's content (amount of text) where the two users agree on whether the content should be coded. Average agreement for teacher interviews was 94.18% and principal interviews was 97.04% across all codes.

Table 3 Definitions of codes.

Code/*reporter*	Definition
Working in Large, Under-Resourced Settings	
Teacher	• Description of what it's like to work in a large school district • Assessment of working conditions in the district or with district officials • District-wide policies and mandates • Teacher contracts with the district
Principal	• Attitudes toward working in a large district • Coordination between district goals and schools' ability to perform goals • Availability of resources, resource allocation, budget challenges • Proper training offered by school district
General School Environment	
Teacher	• School culture, general school mission, collaboration, closeness, staff interactions, tightknit community, questions related to school district, physical space, broader school context, under-resourced environment
Principal	• Building a broad school/organizational culture, school safety procedures, warmth (climate among workers), collaboration, teamwork, physical structure of the building/space, principal's general expectations of the school and staff
Administrator Support	
Teacher	• Communication, evaluations, feedback, and principal's expectations of the special education teacher • Problem-solving, ownership, trust, rewards/praise, budget allocation, principal knowledge of EBPs, allowing attendance to professional development or trainings, and other methods of support/non-support • Ideal support from principal/assistant principal

Table 3 Definitions of codes.—cont'd

Code/*reporter*	Definition
Principal	• Principal support for special education teachers, including indirect or direct praise, professional development, providing trainings or allowance to attend trainings, principal feedback (strategies/suggestions), problem solving, troubleshooting, recognition, meeting with principals/direct communication, planning time, and grade group meetings • Spending time informally in special education classroom, knowing autistic students by name, principal being a helper in the classroom, stepping in to help a student at the time of a crisis/problem • Transactional/transformational leadership
Self- Evaluation	
Teacher Only	• Teacher's self-reflections (e.g., about contributing to child improvement) • Teacher thoughts, attitudes, feelings, self-efficacy, self-confidence, efficiency, burnout, emotional exhaustion, and feelings of being unprepared or ineffective • Teacher definition of personal success

Note: Self-evaluation is a teacher-only code, as it captures teachers' internal experiences.

6. Results

We organized the four codes to align with Domitrovich et al.' (2008) multi-level conceptual framework to explore both teacher and principal perspectives regarding implementation at high and low levels of fidelity across macro-, school-, and individual-level factors. See Table 4 for sample quotes for each code. Results for the factors that were more distal to implementation (e.g., macro-level or general school environment) were mixed, such that there were not consistent differences between high- and low-fidelity classrooms within these schools. Therefore, we identified broad themes for these factors. In contrast, factors more proximal to implementation (e.g., individual-level factors) more reliably differentiated high- and low-fidelity classrooms, and we highlighted these differences below. Table 4 includes a summary of codes that differed across high- and low-fidelity classrooms by respondent.

Table 4 Example of codes and factors affecting high- and low-fidelity classrooms.

Construct	Reporter	Fidelity/*example quotes*	Similarities across level of fidelity	Differences by level of fidelity
Working in Large, Under-Resourced Settings	Teacher	High: "*Being a teacher in the school district is what makes my job hard. It's not the kids. It's not the autism. It's the district – the things the district requires, the lack of resources they provide – and the just general cognizance of what they're doing with the children.*" Low: *"[School District] has us wearing too many hats. We're social workers. We're parental support people. We are behavioral specialists. We are psychologists. We are asked to write the re-evaluations. We're just spread so thin, and then, oops, they fell and bumped their knee. Gotta make a call to the parent. Oh, I don't have an outside line. I gotta go to my cell phone"*	• Lack of resources: material, personnel, and financial • Inadequate staffing • District budget constraints (no raises) • Increasing student population • School disconnected from district: extensive paperwork requirements • Poverty-stricken area • Low community morale	No difference
	Principal	High: *"It's been extremely difficult the last five to six [years]. There's been an extraordinary reduction in available resources, both human and physical. The accountability has only increased and it's just been hard."* Low: *"There hasn't been a contract now for teachers, it's going on 5 years. And I don't think people realize what that really means when it comes down to morale and motivation for teachers. So, for example, over the last 5 years, not one teacher has gotten a step raise or a cost-of-living raise."*	• Lack of resources: material, personnel, and financial • District budget constraints (no raises) • Increasing student population • Variations in teacher motivation and skills • Lack of district PD specific to autism • Poverty-stricken area	No difference

General School Environment	Teacher	High: *"Even if there's another AS teacher, I really think I'm alone because I'm in the basement. Half of the time the school doesn't even know I'm a teacher."* Low: *"…very busy school. So it's pretty much, you know, you may see someone in the hallway or in the teacher's lounge and you just speak and keep it moving. No one really says, you know, 'Hey how are things going?'"*	• Positive implementation climate (e.g., EBPs align with school motto) • Organizational climate and cohesion of school ranged from isolating to collaborative • School conditions (e.g., unsafe school yard)	No difference
	Principal	High: *"It's nothing that I feel like my team wouldn't do for me and then* vice versa *and then everybody with each other. I think that's what makes it work, just kind of a family or a team approach."* Low: *"The faculty, staff, parents and community members work to create a culture in which our children will be safe, respected and academically empowered to become socially conscious productive members of society. Our mission as a school community is to promote a positive learning environment."*	• Focus on organizational climate (e.g., positive behavioral supports) • Variation in provision of teacher rewards • Distributive leadership • Low expectations for autistic students • Creating warm, safe, and inclusive schools	No difference
Administrator Support	Teacher	High: *"I think this school specifically has a good reputation, and I think that comes from the principal. I think if you have a good leader in the school, it trickles down to your teachers. It trickles down to your students and supports your school overall."* Low: *"I'm a forgotten about classroom… I don't get observed… I'm not included in the grade level PDs or nothing… kind of left here on like an island."*	• Supportive principals, effect on morale • Resource allocation (e.g., supporting PD attendance) • Provide feedback, praise • Allowing autonomy • Lack of principal autism knowledge	High: • Greater involvement (e.g., IEPs), positive feedback, and active problem-solving • Autonomy → Trust Low: • Unsupported; stressful principal interactions • Autonomy → isolation • Negative consequences from lack of principal knowledge

Continued

Table 4 Example of codes and factors affecting high- and low-fidelity classrooms.—cont'd

Construct	Reporter	Fidelity/*example quotes*	Similarities across level of fidelity	Differences by level of fidelity
Administrator Support	Principal	High: *"I think the more you acknowledge people publicly, the more people feel valued or appreciated. And then it lets other people know that this could be a person that I could tap for information or they could be a resource to me. So I try to do those types of things."* Low: *"The reward is respect. And respect, for me, to teachers, means I trust them…So the reward, I think, for them, it's not a cookie. It's the fact that they can come to work and feel respected. And that goes way further than giving a $20.00 gift card because you had perfect attendance this month as a teacher."*	• Feel positively about special education classrooms • "Open door policy" • Range of comfort and knowledge about autism	High: • Greater use of rewards • Create opportunities for teacher collaboration • Visit special education classrooms, use modeling • Autonomy with support • Seek out autism knowledge to support teacher Low: • Use of rewards uncommon • Negative perceptions of special education teachers • Autonomy without support
Self-Evaluation	Teacher	High: *"You learn all these things. You're like, 'Oh, I can make a difference. I wanna do this now.'"* Low: "I*t's kinda like this isn't what I always thought teaching would be. When you grow up and you wanna be a teacher – or even when you go to college, they don't prepare you at all for this"*	• Feel positively about teaching and students • Beneficial to observe growth and progress	High: • Acknowledge difficulty, maintain positive outlook • Higher self-efficacy • Realistic expectations Low: • Feeling overworked and underappreciated, burnout • Lower self-efficacy

6.1 Macro-level factors

The extant literature shows that individual- and organizational-level (i.e., school) factors predict implementation of autism EBPs (Locke, Kang-Yi, Frederick, & Mandell, 2020); thus, these factors were the primary focus in the interview guide. However, macro-level factors, including federal, state, and district policies as well as community context, still emerged from the data in interviews across stakeholders and provide an important frame for the setting in which the schools were situated.

6.1.1 Working in large, under-resourced settings

Teacher Perspective: Teachers across high- and low-fidelity classrooms identified many challenges associated with working in large, under-resourced settings. Most teachers described a lack of resources in the form of classroom materials, upkeep (e.g., fixing a broken elevator), training, and staff with a growing number of autistic students to support. One teacher highlighted that the school district trend was to "keep upping those numbers and upping those numbers [of autistic students]." Moreover, budget constraints prevented teacher raises, even as teachers regularly spent their own money for classroom supplies.

Several teachers described their school district as disconnected from the needs of the schools, such that "the left hand has no idea what the right hand is doing," resulting in "insurmountable paperwork" and "redundant" requirements. This contributed to teachers "wearing too many hats" and being "spread so thin where [they're] just so frustrated. And [they] can't do [their] jobs the way [they] want to." Another teacher stated, "This district doesn't really get it" and went as far as to say the school district would "rather be sued than fix the problems."

Some teachers attributed tight budgets and inadequate staffing to their context, specifically their location in an urban area. One teacher noted that there would be extra people "if [they] were in the suburbs." Another teacher described that they're "working in areas stricken with severe poverty" and high "violence and crime." Other teachers described their location and the associated public perception as contributing to low morale. Specifically, one teacher cited the outside view of their school as "a failing school" with "students who are failing, communities who are failing, apathetic parents… teachers who are not interested in their children or are just here for a paycheck" as challenging for morale.

While there was primarily consensus across teachers regarding the challenges of the settings in which their school was located, one teacher in a high-fidelity classroom noted that while the school district "has its challenges… it all depends on your building." The teacher stated, "When everyone bonds together, it makes it a lot—a lot easier to overcome—you know, all the outside district issues." Specifically, the "cohesion" within buildings made a difference in the face of broader, systemic challenges. In addition, despite the challenges of being in a large, under-resourced system, this teacher viewed the size as creating opportunities and "room for movement within the district," which prevented teachers from getting "stuck in one category in one job."

Principal Perspective: Similarly, principals in schools with both high- and low-fidelity classrooms identified significant challenges associated with working in a large, under-resourced setting. Most principals highlighted a lack of "both human and physical" resources in their schools stemming from the school district and broader system. Principals identified challenges with both the number and type of staff (e.g., teachers, assistant principal) and the quality of staff in their building, which had implications for their ability to meet students' needs and to be effective in their positions. For instance, one principal noted that they had students who were supposed to be receiving specific supports (e.g., speech therapy, emotional support), but because they did not have a speech therapist in their building or enough emotional support classrooms, students were not able to get appropriate services. Relatedly, principals noted that they previously had "more adults in the building, full-time aides…which [they] no longer have." However, this was not a result of fewer students; rather, one principal described their school as "busting at the seams" with students.

Given this insufficient staffing in school buildings, at the time of their interview, one principal had already served in multiple roles in a half-day of school:

> *I've been acting in the capacity of a counselor. I've already called for an ambulance for a student who was not breathing, and I don't have a nurse. So, it's kind of constantly being torn in between responsibilities and duties that obviously fall under the scope of the principalship, but not necessarily a quote, unquote principal's duty.*

Another principal described that inadequate staffing was leading to everyone "trying to wear multiple hats… so that the children can learn." Moreover, while more was being asked of teachers and school personnel, there was not job security through contracts or adequate compensation with traditional raises or "steps" given the financial constraints of the district. One principal

highlighted how it was difficult to maintain teacher motivation without adequate recognition of their efforts:

> *But the thing is, you can't keep going above and beyond every single year where you don't feel appreciated. Not by me, but by simply the contract. You know, saying that we appreciate you but we're not going to give you a contract.*

Not only were there not enough staff, but it was difficult to retain staff given the budget and financial limitations, which affected staff "morale." Principals added that it was important to recognize that many teachers start in the profession with "huge college expenses" and then want to start families without "making enough money to live." As a result, "in some areas where morale is really bad and the leadership's awful, it makes you not even want to come to work and people are leaving the profession."

Beyond challenges with maintaining adequate staffing in the building, principals described that there was variability in teacher motivation and skills. One principal stated:

> *The issue is not a [special education classroom] issue. It's who is being hired for positions within the [district] and…what those individuals are motivated by. So the same way you can have a teacher in a classroom who is here to collect a paycheck, next door, you could have a teacher who has always dreamed of being a teacher and always wants to do right by children.*

Further, specific to preparing schools to support their special education classrooms, one principal noted that there was minimal professional development about autism and a lack of trained staff or teacher support in the district for principals.

While principals universally described their settings as under-resourced, one principal acknowledged that despite their location in a "poverty-stricken area," their city's proximity to some of "the best hospitals in the world" could have led to partnerships between the school district and local hospitals and universities. Some principals described creative or strategic approaches at the teacher- or school-level to obtain needed materials. For instance, one principal noted that one special education teacher fundraised for "autism awareness" to support the special education classroom or that their school obtained materials through donors or university partners. Notably, several principals in high-fidelity schools described being strategic with how they used their limited resources and budgets. For instance, one principal commented that using their budget for a climate manager "free[d] a lot more time for [them] to be able to be the instructional leader and to meet with parents and to meet with teachers and so forth."

6.2 School-level factors

6.2.1 General school environment

Teacher Perspective: Teachers provided descriptions of their school environment, including aspects of the school culture and community, staff interactions, physical characteristics of the school, and broader school context. Variations in teacher report of school environment did not differ by high or low fidelity.

In terms of implementation climate, special education teachers across both high- and low-fidelity classrooms described positive implementation climates, particularly when autism EBPs fit into the broader school framework of positive behavior supports. Similarly, several teachers identified that the practices aligned or complemented their schools' vision or building mission. Said one teacher, "The school's motto is about inspiring leaders… to me the evidence-based practices are going to help the children become more independent…all of these things are guiding them towards being independent and as successful as possible on their own."

In addition, while a few teachers identified poor communication and a lack of teamwork in their school, most teachers reported a collaborative or cohesive environment. Regular meetings, frequent email communication, and staff flexibility facilitated collaboration to meet students' needs, such as constructing and implementing student plans across classrooms. One teacher summarized: "Everybody is so accommodating… everybody really works really hard here. They do. I mean the teachers, I can't say enough." Other teachers described the culture among the school staff as a "family."

Despite positive feelings about the supportiveness of fellow staff, personal relationships among staff were variable. While some described "close knit" relationships, others described isolation or difficulty breaking into existing "cliques" within the school. Several teachers cited their positions in special education classrooms resulting in being "self-contained" as staff. One teacher noted:

> *It's pretty much you come in. You sign in. You go to your room. You do your job. You leave at the end of the day… I don't know if it's because I'm a Special Ed teacher. I don't really interact with the other teachers when they have like breakroom meetings.*

Another teacher summarized, "I feel sort of outside looking in still."

While a few teachers described their school as clean (or "cleaner" compared to other schools in the district), many teachers noted physical problems with their school. In regard to school condition, teachers described their

environments as "disgusting," lacking clean supplies, and in states of disrepair (e.g., "ceiling plaster falling"). Other teachers' characterizations of their schools included: an unsafe school yard, the school itself being very large, and the school being located in a "very impoverished" neighborhood.

Principal Perspective: Similarly, principals did not reliably differ in their characterization of their school environments based on their special education teachers' fidelity to EBP implementation. They commented on aspects of implementation and organizational climate, the school culture and community, leadership, and the broader school context.

Overall, principals described school climate more broadly, such that few explicitly referenced implementation of autism EBPs. More commonly, principals outlined approaches to foster a positive organizational climate and promote schoolwide programs, such as positive behavior supports. Specific references to implementation climate were rare, though they were primarily from principals with high-fidelity classrooms. One principal described setting high expectations for implementation, such that teachers "have to hold up their end of the bargain and when they don't then they have to either find different work or step up to the plate." In contrast, another principal cited low expectations for autistic students as contributing to lack of implementation fidelity. They remarked:

> *Nine times out of ten when they don't do it [perform at fidelity] and I don't know about it, they continue about their day… There's very little perceived accountability… I think there's an underlying bias that you don't expect [autistic] students to achieve. It's not that you don't think that they can but there is no expectation for it. So if it's not demonstrated, there is no sense of urgency to correct that.*

In terms of organizational climate, principals across levels of implementation fidelity noted both positive and negative climates. Principals described providing rewards or recognition for teacher attendance. Many also detailed systems for student expectations and rewards with the goal of "building the climate and culture… with the teachers, with the students." In addition, principals noted that they sought to create supportive and collaborative working environments one principal summarized:

> *To attain our vision, we create that safe and nurturing environment in which all students can achieve academic success. The environment is critical to us, because if the environment isn't safe, isn't nurturing – I don't care how good that lesson plan was, it's not going to land appropriately. It's not going to have the effects it should.*

Principals varied in their views of teachers' perspectives on the working environment. Some acknowledged that teachers wanted to maintain the

status quo and "people get on board or people leave" while other principals noted that, in general, they only lost teachers to retirement. Barriers to promoting a positive climate included a "morale sapping" disciplinary process, high teacher absenteeism, lack of step raises, and negative attitudes toward the principal.

Along the same lines, principals described trying to foster an environment where teachers "have more of a stake in the school" and using "distributive leadership." Strategies included creating leadership and teacher teams with people who were willing to provide honest feedback and regular meetings to review data. One principal described that the key to seeking to improve their school environment was to know that they might not receive "instant gratification," such that, "All of the work you do today may show five years from now when students have already moved on… But you have to keep going."

In terms of the physical environment and characteristics of the school, several principals highlighted the importance of creating a "warm," inclusive, and safe environment through policies (e.g., checking IDs, monthly safety drills) and a clearly identified mission and structure. One principal described that prior to their arrival, "This building was like Beirut," in terms of rules and expectations. Other principals noted that their school environments were highly diverse in terms of racial/ethnic diversity, languages spoken, and students in special education.

6.2.2 Administrator support

Teacher Perspective: Across high- and low-fidelity classrooms, many of the teachers had supportive principals, though there was a wide range in level of support. Several teachers described the benefits of having a supportive administrator, including the effect on school climate and teacher motivation. One teacher remarked, "When you have a good leader, it's easier to work for somebody who has the same goals and aspirations as you." Another teacher echoed, "She [the principal] really understand us… Whoever you are as a person, you're more defined than just being a teacher, and she understands that." While teachers reported strong principal support regardless of their level of fidelity, teachers from low-fidelity classrooms were more likely to identify feeling unsupported. One teacher replied, "She comes to work," when asked how their principal provides support. Beyond a passive lack of support, several teachers with low fidelity to EBP implementation noted stressful or negative interactions with administration. For instance, different teachers described having a "bullseye on [their] back daily," the principal

"play[ing] favorites," or frequently hearing the principal "screaming on the loudspeaker or screaming in the hallway," contributing to anxiety or stress for them or in their classrooms.

Regarding the ways in which principals provided support, teachers across high- and low-fidelity classrooms identified the allocation of resources, feedback or praise, consultation and joint problem-solving, and allowing autonomy as key methods of support. For instance, teachers appreciated their principals forwarding relevant announcements for professional development (PD) activities, and supporting PD attendance, especially for autism-specific PDs. In addition, targeted efforts to obtain needed materials or funds for materials were appreciated, as teachers acknowledged "doing this job without materials is almost impossible." For additional resources, teachers appreciated staffing support (e.g., principal filling in when staff were out or ensuring adequate classroom staffing). One teacher in a high-fidelity classroom identified being allowed to observe in other special education classrooms as highly beneficial. Several teachers implementing with high fidelity added that their principal read IEPs, attended all IEP meetings, and provided regular feedback on their weekly lesson plans, while never forgetting to "sandwich" constructive comments with positive praise.

In addition, several teachers in high-fidelity classrooms described their principals' willingness to collaborate in problem-solving. Principals supported their classrooms by connecting teachers to additional resources, such as sending emails to obtain support or consulting with the behavior specialist. Overall, teachers across both high- and low-fidelity classrooms reported principal support for autonomy in managing their own classrooms (i.e., being allowed to "do [their] thing" in their classrooms). The extent to which this was reported to be helpful varied.

Teachers in high-fidelity classrooms were more likely to identify benefits of autonomy. For instance, one teacher summarized, "She [the principal] really allows the teachers to run their classrooms how they see fit… once I explained to her for sensory reasons, [students] work better without all the lights on. I think once that was explained she was more flexible." Other teachers described feeling trusted by their principal, and there was an understanding that the special education teachers "know the kids better than they [the principals] do," so the principal took the approach of "whatever you need to do you need to do." In contrast, teachers implementing with low fidelity were more likely to describe autonomy to the point of isolation. One teacher described being the only classroom on a particular floor of the building and noted that it was the choice of

the principal to place them there. Several teachers implementing with low fidelity described being "forgotten," "not on the radar," and that "there's bigger fish to fry" in their school. Another teacher summarized, "We often refer to ourselves as Special Ed Island. We're off and everybody else is their own thing."

Across high- and low-fidelity classrooms, teachers reported variability in principal knowledge of autism or EBPs, with most describing a lack of knowledge. Several teachers identified that they would like to be able to receive consultation from their principal, but that their principal was "clueless." One teacher remarked,

> *I'd like an outside pair of eyes to kind of be more receptive to what's going on and what [students'] triggers are and what the functions of a lot of the issues I'm having are. But there's nobody here who can do that because you have to be trained and very familiar with kids with autism to start to pick that up… I think if [the principal] had a basic understanding of how autism works and what it looks like in a classroom, he could give a little bit better feedback.*

While a few principals were described as frequently popping into classrooms and knowing all of the children by name, most teachers across high- and low-fidelity classrooms indicated that they desired greater interactions between their principals and students, including more frequent classroom visits. Notably, teachers in low-fidelity classrooms were more likely to identify negative consequences associated with principals' lack of understanding of a special education classroom. For instance, several teachers described being "dinged" on performance evaluations because principals were not "aware of the diversity of how [autistic] students can [demonstrate] that they are learning." One teacher stated that on their performance evaluation: "The things [the principal] gave the negative remarks about or the 'needs improvement' about were things that if he understood autism wouldn't have been there." Moreover, another teacher in a low-fidelity classroom cited lack of principal understanding as contributing to loss of needed support staff. For instance, one teacher summarized,

> *I would like my principal to understand… those one-on-one's are in the classroom because the student they may be assigned to may have severe needs. Telling me I have so many adults in my classroom, one can be sent [somewhere else]– you're taking away from the student needs.*

Principal Perspective: Regardless of their schools' level of fidelity, most principals described positive feelings about their teachers and special education classrooms and highly valued their teachers and special education liaisons

(SELs) who provided additional support. One principal noted, "I love that classroom. I'm so blessed that it's in my building and that they're part of our community." While a number of principals described having teachers that go "above and beyond," several principals with low-fidelity classrooms described some teachers in a more neutral or negative light. One principal commented, "I can't teach warm and fuzzy," and another remarked that the special education teachers were "opting not to" participate in different building communities. Thus, principals described that regardless of their level of intervention, they "can't be in there 24/7" to provide support on challenging staff dynamics or EBP implementation.

Notably, principals differed in the amount of reinforcement they provided to their teachers for a job well done. While principals in schools with both high- and low-fidelity classrooms described using praise, tangible rewards (e.g., gift cards, buying meals or supplies), acknowledgement via a "dailygram" or "weeklygram" with "kudos," and other methods of recognition, principals with high-fidelity classrooms were more likely to show appreciation. One principal described their motivation for providing rewards as: "The intention is to incentivize things like coming to work. The intention is to reward teachers and acknowledge teachers for doing the right thing… I want teachers to feel like they're valued." In contrast, several principals with classrooms implementing the autism EBPs with low fidelity indicated that they rewarded teachers "indirectly" or that teachers' "reward is respect." One principal summarized: "I don't stand up at a meeting and say, 'Hey, yippee-ay, you did this' … the expectation here is that we're looking for new ways to help our kids and…using research-based practices to support students, and so that's our expectation." Another principal described feeling unappreciated as a principal and wondering why they should continue to expend effort to appreciate teachers when being a principal "can be a thankless job."

In terms of providing supports, principals across schools identified supporting PD attendance as one way they support their teachers. Principals in schools with high-fidelity classrooms described additional methods of support, including creating opportunities through teacher schedules for collaboration or shared prep time. Principals cited professional learning communities (PLCs) or grade group meetings as important opportunities for their teachers to feel supported or problem-solve. Principals in schools with high-fidelity classrooms also provided additional personnel or "aggressively" filled staffing vacancies.

Across schools, many also described an "open door policy" for teacher support or consultation. However, principals in schools with high and low implementation fidelity differed in how actively they provided support. For instance, principals in schools with high-fidelity classrooms highlighted the importance of visiting classrooms and modeling the use of strategies. One principal remarked:

> *When I give them something to do, I'll go in their room and demonstrate it. I don't want you to do anything that I couldn't, wouldn't, or shouldn't do myself. And so I demonstrate my expectations, whether it's classroom management or instruction.*

Thus, while principals provided trust and autonomy, they also were prepared to offer support as needed. As described by one principal, "I give my teachers a lot of autonomy because I trust that they're going to do the right thing. And if I see that they're not, then I step in."

Principals with low-fidelity classrooms also described giving autonomy to their teachers via a "hands off approach" and not micromanaging, such that they "don't get in [the teachers'] way." Few principals described providing in-classroom support. One principal's reaction to a recent school survey in which teachers requested more administrative support was that teachers did not understand that they should be the "first stop" or "first line of defense" before going to the principal with challenges. Said another principal: "If you would like to meet with me then my door is open and just come. As you can imagine many teachers just don't come."

Moreover, while principals across schools varied in their level of autism and EBP knowledge, principals with high-fidelity classrooms cited taking advantage of other knowledge in their building to enhance their ability to support special education classrooms. For instance, one principal described: "I'm constantly in contact with our SEL, our special education liaison, because she's more of an expert. And I'm asking her, 'Is this good, is that good, what should we be doing?'"

6.3 Individual-level factors

As teachers were the implementers of the EBPs, only their perspective was considered an individual-level factor affecting implementation fidelity.

6.3.1 Self-evaluation

Teacher Perspective: Across high- and low-fidelity classrooms, most teachers described having a positive perspective towards teaching. They described "loving" their students, such that, "The kids really make the job."

Several teachers in high-fidelity classrooms cited their patience as an important characteristic contributing to success in working with autistic students as well as maintaining a positive outlook, as many of the students demonstrate challenging behavior. One teacher noted that working in a special education classroom is "definitely not for everybody." While a number of teachers, regardless of level of fidelity, recognized the challenge of working in a special education classroom, there were differences in how this appeared to influence teachers' perspectives of their work. Specifically, one teacher in a high-fidelity classroom stated:

> *In the beginning, I would stress myself out over it, but now I think we're kind of at acceptance… And what's most important is that the kids are enjoying school and they're learning at the same time. And that's more important than us accomplishing our agenda every day.*

In contrast, teachers in low-fidelity classrooms described feeling "overworked" and underappreciated for their efforts. One teacher said, "I don't think they make the connection… that I've put in tons of work to make my room the way it is." For some teachers implementing autism EBPs with low fidelity, their interactions with administrators seemed to affect their self-efficacy and contribute to emotional exhaustion or burn-out. One teacher added, "I don't want somebody to come back and make me just feel like I'm an awful, awful teacher. And I just feel like sometimes I get knocked down." Another teacher implementing with low fidelity said they "don't ever feel like [they, as the teacher, are] putting 100 percent in" to their job.

There also were noticeable differences between high- and low-fidelity classrooms in how teachers described their self-confidence and self-efficacy in implementing autism EBPs. One teacher implementing with high fidelity stated, "I'm the PRT [pivotal response training] queen." Another teacher described their "natural tendency" for using some of the interventions, though also highlighted that it can be tough to "tie [the pieces] together into a cohesive plan." Similarly, a different teacher implementing with high fidelity noted that "tackling one thing at a time" was helpful in implementing autism EBPs, as they found PRT to come more naturally than DT (discrete trial training). Several of the teachers implementing autism EBPs with low fidelity reported that they struggled with implementation, as one teacher did not attend the PRT training and, therefore, didn't "know exactly how PRT goes." A different teacher identified as a "beginner" and stated, "I feel like I don't see the results that maybe somebody else would see. I feel ineffective at it," in regard to implementing EBPs. Relatedly, this teacher admitted that working in a special education classroom was "not [their] first choice of

placement" and perhaps they were "not embracing the new position fully when [they] got it because [they] didn't want it."

Notably, teachers in both high- and low-fidelity classrooms discussed the value of observing progress and feeling as though they were contributing to child improvement. Specifically, teachers frequently cited seeing "growth" as what can "keep [them] going." One teacher stated that witnessing progress "makes the work that [they] do in [their] work worthwhile, seeing the results… And how [they] can see the impact on these families is really rewarding." Teachers implementing with high fidelity frequently described the importance of having a nuanced perspective as to what progress looks like for their students. For instance, teachers identified understanding that each of their autistic students "has their own unique personality and their own unique goals" and, therefore, progress may look differently or happen in "small increments." One teacher implementing with high fidelity stated:

> *Even if it's the most minute progress, it's still progress because these kids learn differently…it takes them longer to learn a skill. But, where they have deficits, they have strengths, too. So being able to see that strength…Really celebrating those tiny little things. Like my little friend who was writing her name not with my hand-over-hand… I just wanted to give her the biggest hug and just like I'm so proud of you… It's worth it. All of this time, I'm like it's getting—we're getting somewhere, which is really—that's rewarding.*

7. Discussion

As schools are the primary setting in which autistic youth receive intervention, it is important to understand factors that contribute to successful EBP implementation in schools (Kang-Yi, Locke, Marcus, Hadley, & Mandell, 2016). EBPs for autistic students often are implemented with poor fidelity (Mandell et al., 2013; Suhrheinrich et al., 2016), which may negatively affect student outcomes. Many different factors predict fidelity; thus, we engaged key school stakeholders (i.e., principals and special education teachers) to explore factors that affect teacher fidelity to implementation of EBPs for autism through the lens of a multi-level framework (i.e., Domitrovich et al., 2008). While factors that were more proximal to the implementers (i.e., individual-level, administrator practices at the school-level) differed more reliably between teachers with high and low fidelity, factors across all levels affected teachers' implementation of EBPs for autistic youth. Specifically, we discuss (a) the impact of the macro-level and school-level factors on teachers' implementation, (b) the individual differences in

teachers' experiences of these factors, and (c) the intertwined nature of these factors and their variable impact on fidelity. Results have direct implications for practices and implementation strategies that can be used across levels to better support EBP implementation for autistic youth in schools.

Regardless of level of implementation fidelity (i.e., high vs low), our results suggest teachers and principals universally recognized the role of macro-level factors in their implementation context. Importantly, despite their "poverty-stricken," under-resourced school district, some teachers were able to implement EBPs for autism with fidelity. Macro-level factors (e.g., staffing, salary raises) did not reliably differentiate high- and low-fidelity classrooms, though they were cited across stakeholders as factors that set the stage or detracted from implementation. For instance, both principals and teachers described being "spread thin" given the lack of district resources, and principals specifically highlighted a lack of district level support and autism-related training. Thus, some teachers were able to implement EBPs for autism with fidelity *despite* their macro-level context, though this raises questions of the likelihood of long-term sustainability, as one principal cited macro-level factors as contributing to school personnel "leaving the profession."

Similarly, general school environment, as a distal school-level factor, was described as a facilitator to and barrier of EBP implementation for autistic students. Both principals and teachers highlighted the importance of creating a positive organizational climate (i.e., supportive school environment) through practices such as positive behavioral supports. However, as the leaders of the school, few principals cited ways in which they intentionally fostered an implementation climate (i.e., expectations, rewards, or support for EBP implementation at the organizational or school-level; Ehrhart, Aarons, & Farahnak, 2014) that encouraged use of EBPs for autism. It was noted that ableism via low expectations (i.e., "an underlying bias that you don't expect [autistic] students to achieve") may detract from the implementation climate, creating little accountability for low implementation fidelity. Moreover, lack of attention to implementation climate also may have been related to principals' lack of knowledge of the autism EBPs or autism more broadly. As emphasized by Williams et al. (2021) continued research into the malleability of school culture and climate and focused strategies to target these factors (e.g., fostering anti-ableist expectations of students; Lalvani & Bacon, 2019) is needed.

Our results point to a small step that administrators can immediately take to foster a positive implementation climate. We found that both stakeholders

highlighted principals' use of positive reinforcement as a facilitator of autism EBP implementation. Specifically, principals in high-fidelity schools described the importance of making teachers feel valued through praise, tangible rewards, and other methods of acknowledgement. In contrast, teachers implementing with low fidelity were more likely to feel unappreciated and have negative or stressful principal interactions. Ensuring that teachers feel valued through positive reinforcement and balancing praise with constructive feedback are small but important actionable steps for principals to support EBP implementation in schools.

As a more proximal implementation factor, stakeholders frequently cited principal knowledge as a facilitator and barrier to autism EBP implementation. Specifically, low-fidelity teachers described ways in which lack of principal knowledge impeded EBP implementation (e.g., needed support staff were removed from classrooms). In contrast, principals in high-fidelity schools were more likely to seek out and connect teachers to alternative sources of autism-specific knowledge and support (e.g., behavior specialist, observations in other special education classrooms). Despite some principals in high-fidelity schools being able to compensate for their lack of autism expertise, both stakeholders described that principals were better able to support their teachers if they had a baseline understanding of autism and autism EBPs. Therefore, we recommend that all principals, regardless of their experience, attend autism-specific trainings and professional development so they can better understand, support, and evaluate EBP implementation for autistic youth in their schools.

Our results also suggest that teacher autonomy is an additional proximal school-level factor that distinguished between high- and low-fidelity implementation, yet its impact varied for different teachers. For instance, teachers in high-fidelity classrooms reported freedom to adjust their classroom practices depending on their autistic students' needs, and their principals trusted them but were willing to "step in" as needed. In contrast, teachers implementing with low fidelity reported autonomy to the point of isolation on "Special Ed Island," and their principals described passive support (e.g., leaving their doors open) or expecting teachers to be the "first stop" in problem-solving. As demonstrated by O'Brien et al. (2019), autonomy is a positive component of teachers' working conditions, though special education teachers often also report isolation.

Beyond the different perceptions of autonomy, results indicate that autonomy and administrator support can be beneficial but may be insufficient for the heterogeneity of teacher factors, specifically, when teachers lack

knowledge and skills in implementing EBPs. For instance, teachers with high skill, knowledge, and self-efficacy regarding EBP implementation for autistic youth succeeded with high autonomy even with a lack of administrator support, whereas teachers given autonomy without the requisite individual knowledge or skills did not have high implementation fidelity. Results demonstrate the necessity of empowering teachers with autism-specific knowledge and intervention skills (Hsiao & Sorensen Petersen, 2018; Iadarola et al., 2015) and building their confidence in implementing these EBPs (Brock, Huber, Carter, Juarez, & Warren, 2014). Ensuring that autonomy is not provided at the expense of other factors that support implementation (e.g., training in EBPs, administrator support, positive implementation climate) is essential.

Notably, consistent with past research indicating that there may be interactions among these factors (Durlak & DuPre, 2008), our results suggest that there may be a threshold for administrator support and teacher autonomy that varies by teacher. Therefore, it is important for principals and teachers to communicate regarding teachers' support needs and consider a developmental model to administrator support (i.e., higher support and some fading with increased skill and self-efficacy). However, while teachers may be able to implement EBPs without administrator support, autonomy to the point of isolation may lead to emotional exhaustion or burnout (e.g., teachers feeling "overworked"; Pas, Bradshaw, & Hershfeldt, 2012; Skaalvik & Skaalvik, 2014). Thus, while foundational knowledge, skill, and self-efficacy affect implementation (Durlak & DuPre, 2008), creating an implementation context that fosters increased use and sustainability of EBPs in schools for autistic youth requires attending to factors across all levels (Domitrovich et al., 2008; Locke, Shih, et al., 2019) and interactions among factors (Kratz et al., 2019).

Ultimately, while systemic support for EBP implementation at the macro-level via school districts and community or school-university partnerships are likely to facilitate implementation, fidelity to autism EBPs was still possible even in a poverty-stricken, under-resourced school district. This suggests that other factors, specifically factors more proximal to the implementers, can compensate for and enhance EBP implementation in spite of a challenging context. Similar to the organizational culture and climate profiles that predicted differences in fidelity to autism EBPs (Williams et al., 2019) and a recent call to explore bridging factors (i.e., relational ties between outer [macro-level] and inner contexts [school-level]; Lengnick-Hall, Stadnick, Dickson, Moullin, & Aarons, 2021), there are likely interactions between factors across the macro-, school-, and individual-levels

that affect implementation fidelity (Durlak & DuPre, 2008). The identification of actionable factors across levels that are associated with successful implementation of multiple autism EBPs can inform the use of targeted implementation strategies (Cook, Lyon, Locke, Waltz, & Powell, 2019) to improve implementation outcomes. Future research ought to consider the complex interplay between factors within and across levels.

There are several study limitations. First, the study was conducted in a large urban school district in the northeastern United States, which limits the geographic generalizability. Moreover, the study was conducted with special education teachers implementing EBPs for autism in special education classrooms and, therefore, results may not generalize to general education classrooms. In addition, while this study included multiple stakeholders (i.e., teachers, principals) that influence the school-based implementation of EBPs, it did not examine the perspectives of district leaders who also play an influential role in school-level decision-making. Regarding the qualitative methodology, interviews were conducted in-person and recorded, which may have contributed to socially desirable responses from participants. There also was no member checking of results, which can strengthen the accuracy and credibility of qualitative data.

Teachers and principals in this study provided a rich, in-depth understanding of factors from the individual- to the macro-level that influenced teacher fidelity to EBP implementation for autistic youth in schools. The results of this study suggest that despite challenging circumstances (i.e., a poverty-stricken context, under-resourced school district), some teachers were able to implement EBPs for autistic students with moderate fidelity. Factors more proximal to the implementers (i.e., individual-level [e.g., self-efficacy] and school-level [e.g., administrator support]) may be more influential for implementation fidelity. As EBP implementation in schools is complex, it is important to continue to examine the effects of factors at all levels that support the implementation of EBPs for autistic youth in schools.

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