



## Research article

# Parents' long-term experiences in a recreational dance program for their children with autism spectrum disorder



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## A B S T R A C T

**Background and Aims:** Motor impairments are associated with Autism Spectrum Disorder (ASD); yet few children receive appropriate therapy. Dance interventions are known to have diverse benefits, but research is lacking in how dance can benefit those with ASD. Ballet for all Kids is a novel program that has taught recreational dance classes to those with ASD for over a decade. We aimed to analyze families' experiences in the program over many years, specifically examining why they continue to participate.

**Methods and Procedure:** Semi-structured interviews were conducted with 20 parents and/or legal guardians of long-term participants of Ballet for All Kids. Inductive thematic analysis was conducted to elucidate their experience in the program.

**Outcomes and Results:** In examining the program's retention factors, thematic analysis identified five themes: (1) authentic ballet training, (2) person centered program, (3) sensory integration and self-regulation, (4) skill development, and (5) interpersonal relationships.

**Conclusions and Implications:** Parents' reports add to the literature that dance can benefit participants psychologically, physically, and socially. High retention rates demonstrate the need and desire for a recreational dance program. The authenticity and individualized support of Ballet for All Kids was emphasized by parents and should inform the direction of similar programs.

## 1. Introduction

### 1.1. Motor impairments in ASD

Though Autism Spectrum Disorder (ASD) is characterized by social communication delays, the pervasiveness of motor impairments associated with the diagnosis is becoming clear [1–3]. In a recent sample of school-age children diagnosed with ASD in the United States, 87% were found to be at risk for some form of motor impairment [4]. Reported motor impairments vary from delayed gross motor skills such as motor planning [5,6], postural control [6–8], gait [8,9], coordination [8] and balance [8], to fine motor skills such as reaching or grasping [10].

Not only do these motor impairments often present early in a child's life [2], but they often worsen with age [11]. Moreover, the risk of children diagnosed with ASD presenting motor impairments has been shown to increase with repetitive behavior severity and increasing social communication, functional, cognitive, and language delays [1]. This connection between motor and social/communication development has long been reported [2,12,13]. These findings suggest that motor impairments might serve as predictors of core deficits of ASD, and other, later to develop global delays [14].

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Despite this, only 31.6% of children in that same large sample were receiving some form of physical therapy [4]. This discrepancy between the prevalence of motor impairments and engagement in targeted therapies demonstrates the need for increased recognition and treatment of motor delays associated with an ASD diagnosis [4].

### 1.2. Dance and autism

Dance interventions offer a unique opportunity to address these motor, and related social/communication concerns. First, dance has been shown to not only improve physical health (flexibility, bone health, cardiovascular fitness), but also cognition (spatial reasoning and memory), psychological well-being (enhanced perception of self), and social participation (a heightened sense of belonging) [15–20]. Therefore, dance is one intervention that can target an array of challenges for those with ASD. Second, dance, being an art form, allows participants to express themselves in an authentic and beautiful manner [21]. This aesthetic expression differentiates dance from other forms of physical activity and results in a wide range of benefits such as improving participants' sense of identity, belonging, creativity, and self-worth [16]. Third, dance allows participants to express themselves through non-verbal means, thus enabling those who have communication challenges to fully participate [22,23].

Despite these reported benefits, not much is known about dance's impact on children with ASD. In a systematic review examining recreational dance programs for children with physical and developmental disabilities, researchers reported improvements in physical, social, cognitive, and psychological outcomes, yet the majority of studies analyzed were of poor quality and heterogeneous [24]. Only Arzoglou et al. [25] and Greer-Paglia [26] specifically studied the impact of recreational dance programs on children with ASD and reported improvements in coordination and social competency respectively. These reported benefits coupled with children with disabilities' preference for dance over other physical activities [27] and enjoyment of dancing [28] demonstrate the potential that dance interventions have. Research teams are designing and implementing a dance program for those with ASD [29]. Yet, the program's eight week duration was too short to see many physical or creative outcomes in a recent study [29]. Thus, research is lacking on how dance programs can benefit those with ASD.

For those with ASD, dance and movement therapy (DMT) is a more extensively studied proxy. DMT is defined as "the psychotherapeutic use of movement to promote emotional, social, cognitive and physical integration of the individual" [30]. DMT has been shown to improve joint attention [31], reduce negative symptoms [32,33], and improve well-being, body awareness, self-other distinction, and social skills [34]. However, fundamental differences in DMT and recreational dance programs limit the transferability of these findings [35]. An example of a difference between DMT and recreational dance programs is where these programs take place. Recreational programs occur in school or community settings, while DMT occurs in clinics or a therapists' office. By holding classes in a community setting, non-therapy dance programs can allow those with ASD to meaningfully participate in their community and increase their quality of life [36]. Therefore, there is a need to examine how participation in recreational dance programs can benefit children with ASD.

### 1.3. Ballet for All Kids (BFAK)

BFAK, founded in 2008, is a nonprofit organization that has taught classical ballet and other dance styles to children of all abilities including, but not limited to, children diagnosed with down syndrome, cerebral palsy, and ASD, and neurotypical children. Though BFAK targets a diverse population, all further discussion will be limited to their participants diagnosed with ASD. The program is based on the *Schlachte Method* – a "certified curriculum designed to assist all children regardless of their abilities or disabilities, strengths or weakness, to learn and reap the benefits of a classical ballet education." The methodology uses a wide variety of teaching styles to accommodate all modes of learning and to strengthen diverse skill sets in all children [37]. The methodology combines four types of

**Table 1**  
Specifics of the schlachte method.

Type of Learning	Schlachte Method Support
Visual	<ul style="list-style-type: none"> <li>• Visual schedule is posted in every class</li> <li>• Personal work areas for each dancer are clearly designated by taping squares on the floor</li> <li>• All exercises are conducted in front of mirrors</li> <li>• Each class has an accompanying video curriculum</li> </ul>
Auditory	<ul style="list-style-type: none"> <li>• Props are used to teach movement quality and body positions</li> <li>• Each class utilizes classical ballet music that was specifically composed for that class</li> <li>• All music aligns with the timing of movement</li> <li>• All music aligns with the emotion being expressed in each exercise</li> <li>• Teachers sing each exercise</li> </ul>
Vestibular/Proprioception	<ul style="list-style-type: none"> <li>• Exercises isolate different parts of the body (i.e. fingers, toes, spine)</li> <li>• Exercises vary in energy level</li> <li>• Partner and group exercises are utilized to teach spatial awareness</li> <li>• Dancers learn personal space by clearly designated squares that are taped on the floor</li> </ul>
Imaginative	<ul style="list-style-type: none"> <li>• Exercises designed for dancers to express emotions through facial expressions</li> <li>• Prior to movements being shown, classical fairytale stories are told to help dancers imagine the movement quality</li> <li>• Video curriculum utilizes the same stories that are presented in class</li> <li>• Social stories are presented in class</li> <li>• Props provide tactile and visual stimuli to help dancers imagine movement quality</li> </ul>

learning (visual, auditory, vestibular/proprioception, and imaginative) to individualize classroom instruction. As those with ASD often struggle with imaginative play [38], the Schlachte Method uses stories and props to expand their students' imagination and emotional intelligence. Across all levels, each exercise is paired with a classical fairytale story, such as the Little Red Riding Hood, and a prop. Students are told the story, shown props prior to the exercise, and taught how to express the story through movements and facial expressions. Through the Schlachte Method, students practice using their imagination, eliciting a specific movement quality, and identifying and expressing different emotions. Other details of the Schlachte Method are summarized in [Table 1](#).

All teachers are highly trained in their respective dance disciplines and receive training on working with children with diagnoses. In addition to these teachers, BFAK uses neurotypical volunteers to assist students on a one-on-one basis. Volunteers are experienced dancers and receive training on working with children with disabilities. Volunteers attend every class and help to redirect students' attention, maintain their engagement, and physically guide them through the movements. Teachers and volunteers teach hour-long classes that are categorized into one of five levels according to students' age and ballet experience with Level 1 being reserved for the youngest and least experienced dancers to Level 4–5 and Adult Ballet being reserved for the oldest and most experienced dancers. Classes are held weekly, and students work through exercises that are repeated each week. Students' work and progress culminate in biannual recitals that are performed in front of family, friends, and community members [39]. Though BFAK has been providing dance instruction for over a decade, its impact on participants' experiences has never been studied.

#### 1.4. Research question

This research study aims to fill the gap in the literature and examine a recreational dance program for those with ASD. Through semi-structured interviews, we aim to elucidate the experiences of long-term BFAK participants. Semi-structured interviews were chosen because they allow participants to openly state their own experiences, beliefs, and feelings [40], which aligns with our research objective.

BFAK is a novel program as, to our knowledge, there is no other recreational dance program for children with ASD that has provided students with dance instruction for such a long period. Thus, participants of BFAK are uniquely positioned to attest to the long-term experience of participating in a dance program. In this light, we aim to assess BFAK's retention factors and why families continued to participate in the program for a number of years.

## 2. Method

### 2.1. Participants

Participants were included if they (a) were above 18 years old, (b) were fluent in English, (c) were a parent or legal guardian of a child diagnosed with ASD and (d) had a child who was a long-term participant of BFAK. Children's diagnosis status was determined by parents' self-reports. A long-term participant was defined as a child who participated in the program for at least one continuous year. We recognize that those who participate in BFAK for one year are likely to have a positive experience. Because this study aimed to discuss retention factors of BFAK, long-term participants were the most suitable sample. Potential participants were sent an online eligibility survey through a secure university-affiliated Qualtrics account. Informed consent was received prior to the completion of the eligibility survey and all surveys were destroyed once a decision regarding the participant's eligibility was made. If the parent met the inclusion criteria, informed consent was provided again prior to the completion of the interview. 20 parents or legal guardians met the inclusion criteria and completed the study.

Due to familiarity with BFAK and the aims of the research study, potential participants were first referred to the study by a member of BFAK through email. Further contacts were made by the first author who had not met the participants prior to the interview. After review, the Institutional Review Board Office of Research Integrity of Brown University approved data collection.

### 2.2. Data collection

#### 2.2.1. Semi-structured interviews

An interview guide focused on families' experience in BFAK was collaboratively developed by the research team. External feedback was provided by two published qualitative researchers, and one whose focus is on the impact of dance training on individuals with disabilities. To ensure the questions appropriately centered the voices of families, a sibling of a person diagnosed with ASD reviewed the guide. The questions addressed (a) program attributes, (b) a brief background of child, and (c) perceived impacts of program participation. Perceived impacts of program participation were broken down into three domains: behavioral, physical, and social. These domains were chosen by the research team from their experience tailoring dance classes to those with ASD and from published studies examining dance interventions for those with ASD [29,34].

To describe program attributes, participants were asked questions including: "If someone were to ask you to describe the BFAK program, what would you say?" and "What makes BFAK unique?" To give a brief background of their child, parents were asked "If you were to describe your child, what would you say?" Participants' answers to this question were then used to individualize questions about BFAK's impact on their child. For example, if a participant described that their child had difficulty with eye contact, researchers would ask if BFAK has impacted that challenge. Questions were designed to be open-ended to give participants autonomy over the interview. Participants were also asked throughout the interview if there was a specific moment that they remember that they can attribute to their claim. This question promoted participants' recollection and memory of BFAK. The final two questions ("what has

been the overall influence that BFAK has had on your child?" and "is there anything you would like to add to what you have said?") were designed to encourage participants to freely share any experience that they have had, reinforcing their control over the interview.

An emergent design, in which the interview questions were refined as interviews were carried out, was employed. For example, a question about parents' experiences during BFAK's recitals was added after several parents independently mentioned the topic. Though the researcher adhered to the interview guide, flexibility was allowed to maintain the fluidity of the conversation. Questions were excluded if the participant expressed discomfort with answering. A copy of the interview guide can be requested from the first author.

Informed consent was provided verbally at the beginning of each interview. Interviews were completed by the first author from June 2021 through September 2021. All interviews were conducted via Zoom with the exception of one, which was conducted over the phone, per the participant's request. Two participants had twins who both participated in BFAK and chose to speak about both children's experiences. Clarifications were made to ensure the interviewer was aware which child the parent was referring to. The interviews lasted an average of 42 min (SD: 15). To enhance trustworthiness and transparency, at the end of each interview, participants were invited to ask the researchers any questions. After the interview, the first author emailed the participants an online survey to provide feedback on their experience participating in the study.

### 2.2.2. Data analysis

To reflect on past interviews and center herself prior to each interview, the first author took notes before each interview. In addition, to record any immediate reactions, the first author took notes immediately after each interview. All interviews were audio recorded and transcribed by the first author. Audio recordings were stored on a password protected phone and were destroyed once the transcription was completed. All transcriptions were de-identified and, along with de-identified interviewer notes, uploaded to NVivo Version 20.5.1.940.

Data analysis was conducted through an inductive, semantic thematic analysis under an essentialist/realist paradigm in accordance with the outline provided by Braun and Clarke [41]. In order to familiarize oneself with the data and ensure the accuracy of all transcriptions, the first author transcribed the interviews verbatim, and then, relistened to each recording. To further enhance content validity, each participant was sent a copy of their transcript by the first author via email and invited to review it. No participant expressed a concern with their transcript.

After independently reviewing the transcripts, members of the research team generated the initial codes. The first and fourth author independently, fully coded the transcripts. Any discrepancy between codes was resolved by discussion. Initial thematic coding began with understanding participants' experiences and why they continue to participate in BFAK. Since interviews were conducted with long-term participants, study participants were in ideal positions to discuss retention factors. Initial codes aimed at summarizing interview anecdotes. After the initial codes were generated, the first author grouped the codes in three categories: (a) program factors, (b) perceived impacts on parent and (c) perceived impacts on child. Codes in these three categories were then aggregated to produce larger themes. Themes were discussed by the research team and compared to the data set to ensure their encompassment of the interviews. The refinement of themes' definition and analytic narrative was further discussed by the research team until a consensus was reached.

### 2.2.3. Researcher reflexivity and positionality

As a group, researchers discussed their knowledge of dance, autism and working with this population. In these discussions, the research team acknowledged and reflected on their own prior knowledge and any assumptions that they carried. These discussions occurred biweekly throughout the study's implementation to ensure the reflexivity of the study's design, data collection, and data analysis. To further enhance reflexivity of the data analysis, researchers acknowledged their active role in producing themes and understood that other interpretations could be derived. The interviewer's positionality was made transparent to all participants as they were made aware of the interviewer's knowledge of dance and autism in the informed consent forms prior to joining the study. None of the participants met the interviewer prior to the interview.

## 3. Results

### 3.1. Sample characteristics

18 out of 20 participants were mothers who identified as female, and the remaining two were fathers who identified as male. All were biological parents except for one mother who adopted her child. Parents were on average 47 years old (SD: 9) and 50% (n = 10) of them identified as nonwhite (2 Hispanic/Latino, 3 Asian, 2 African American, and 3 mixed/other). 77% (n = 17) of their children identified as female. Their children were on average 13 years old (SD: 4) at the time of the interview, started dancing at six years old (SD: 2), and have participated in BFAK for seven years (SD: 3.5). Four children were nonverbal or had minimal communication, and several had comorbidities (2 anxiety, 1 epilepsy, and 2 attention-deficit hyperactivity disorder (ADHD)).

### 3.2. Themes

Thematic analysis identified five themes: (1) authentic ballet training, (2) person centered program, (3) sensory integration and self-regulation, (4) skill development, and (5) interpersonal relationships. Exemplary responses are presented in [Table 2](#).

**Table 2**

Thematic analysis of parent's qualitative responses to experiences with Ballet for All Kids.

Theme 1: Authentic Ballet Training, <i>n</i> = 20	<p>"The teacher expects more out of your kid than we do. We know our kids have limits. The teacher doesn't see those ... The teacher will push your kid outside of limits you think your kid has, and she will succeed and not to the detriment of a child. She will succeed in a kid growing and expanding from where they start."</p> <p>"I think ballet there is such a direct correlation between the fact that the teachers give them a name, she tells and shows them what to do, and then she tells them and shows them how to do it like those three things tied together don't often happen with language in other situations."</p> <p>"Because it's like your lessons have a purpose and their purpose is a performance, and every other context we're not quite sure what the purpose is or the purpose is making me fit in or the purpose is making me understand how to talk to other kids, which still puts them at a disadvantage of you being constrained to be a little more socially acceptable. And this is like you're being trained to do something that other people cannot do."</p> <p>"It was really sort of a ray of a light in our lives and my child's life because as I said before, she loves ballet. She loves music. She loves dancing and she was kind of good at it ... But the fact my child has struggled with so many things in her life, sometimes things that kids her age or her older siblings they're natural to them. My child has struggled with. And when we went to ballet ... when she had a good class, it was something that you could see that she was proud that she was succeeding at and I was really amazed."</p> <p>I think watching him perform during that first recital and seeing that little tiny body on stage and thinking I'm so incredibly proud of him. I'm so incredibly proud of the fact that not only is this kid up there performing, but he's up there performing, defying odds with so many different challenges. Every BFAK recital has been a very emotional experience for me."</p>
Theme 2: Person-Centered Program, <i>n</i> = 20	<p>"But whatever your child's ability is, she'll make it fit and she'll have them do whatever they can do to the best of their ability and she'll find a way to fit it into the performances and the class."</p> <p>"It is also very key when somebody works with your kid that they have intuition for your child ... and to get that you need a person to care about kids. She [the teacher] needs to pay attention to everyone as best as she can and care. Her brain synthesizes in the end how everybody should be treated. So, definitely you can tell that the teacher cares a lot."</p> <p>"There is this huge element of trust and care and guidance like physical guidance to help them position themselves that the volunteers bring that ... I've seen certainly not anywhere else because most dance programs don't have one on ones for their dancers. But even in school, my child has one on ones in school, and they're really close with her but I don't think there is the same level of trust that she has with people who regularly physically keep her safe and help her do what she wants to do in all contexts. I wouldn't have believed at her first nutcracker recital where she would have been maybe dancing a year that she could stand still and quiet for 20 min, but a 15-year-old girl got her to stand still and quiet for 20 min"</p>
Theme 3: Sensory Integration and Self Regulation, <i>n</i> = 20	<p>"In looking at ballet, it is so disciplined, and it is so your whole mind has to be there in order for you to. You know it's funny because anybody who dances doesn't really understand how much there is the mental component of understanding the choreography and the preciseness of the movements and all that stuff, but I think it really occupies his mind and really makes him feel centered in a way that nothing else does."</p> <p>"She would put her kindle down, her sesame street down like all the things that are her usual distractions. She's multitasking. She does a lot of things at the same time, but she's like stopping and actually being still and listening. When it's music and the arts, this is what reaches her. It reaches her on another level that she's like wait I don't need all these other things that I use to shut the world out and now I want to participate."</p> <p>"It was a place that they knew would be there for them no matter whatever was going on no matter what kind of day they were having. When they got there, even if they struggled all day at school and just had a terrible day at school, we could kind of reset and get to ballet and not continue the downward spiral but actually turn the day around and gain some confidence and be happy."</p> <p>"[My daughter] tells me on and off like I want to go to the doctors so they can fix my head ... When she goes to ballet, and for example, during the recitals, there's a lot of people in the crowd. There's a lot of people there and she's like "I did it. I did a good job." So, she's all happy. She doesn't feel shy. She feels included. She feels that someone is acknowledging her hard work versus being at school when other peers are like "ok we don't understand you" and they walk away and then she just looks down and she sits and she doesn't get up from there."</p>
Theme 4: Skill Development, <i>n</i> = 20	<p>"I would say focus has improved and then for her the executive planning how to sequence things and put it all together. That's where I've seen the biggest change for her."</p> <p>"Well my daughter used to tiptoe when she started ballet when she was 4 years old ... She was walking just on her tiptoes. She didn't have vestibular strength so she would trip and fall all the time. She would bump against door frames walls, you name it. And her eye coordination was really bad. No. Hardly anything. But we noticed when she started taking ballet, her walking improved. She was able to jump, have more balance, coordinate. She had more strength on her core."</p> <p>"It's being able to see those little movements and how they're progressing and kind of going like "oh wow" like this is the kid who couldn't walk without falling down most of the time and now he's able to hold his own in a ballet class which is very awe inspiring."</p> <p>"He doesn't have any of those meltdowns anymore ... When he's dancing, he's completely regulated and completely present, which is I can't say that's generalized into other areas because there are still times that he has tremendous challenges with self-regulation, but when he's dancing his body is doing something and he's in control of his body and it's really cool that it provides him that regulation that he thrives from."</p>

*(continued on next page)*

Table 2 (continued)

Theme 5: Interpersonal Relationships, n = 20	<p>“I would say that the coordination he has gotten from ballet specifically from BFAK and this program has generalized into [physical education], into any other sports that he tries. He was recently evaluated for his triennial IEP and we wanted to have a look in terms of his physical coordination through assistive physical education and he didn't qualify for services because he was so coordinated.”</p> <p>“For my kid, once or twice a week, she was guaranteed to be in a setting where she was considered to be one of the gang, to be incredibly competent, not a problem, not challenging. She just felt totally accepted and craved their company and that's huge for kids on the spectrum.”</p> <p>“Before [BFAK], she desired connection but with the verbal and the other things just really didn't know how to achieve it. She can get overwhelmed with things too. So, not only the verbal, but also if a lot of kids are coming at her talking, it's too much for her.</p> <p>But, with BFAK, she's been able to really get the confidence that 'I am likeable. People do want to be with me. I can connect.”</p>
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### 3.2.1. Authentic ballet training

Parents appreciated BFAK's emphasis on classical ballet instruction. They described how other programs targeted to children with ASD can be a “watered down” or lightened version of the activity. In comparison, BFAK provided their children with an opportunity to learn authentic ballet technique.

In addition, BFAK mirrors many characteristics of a dance program designed for neurotypical children such as opportunities for advancement, observable dance technique progression in the children, and participation in bi-annual recitals. The professionalism of the recitals was noted by many. The pedagogy of the instructors also emulates recreational dance programs designed for neurotypical children. Parents described that the instructors expect that all children present in the class, regardless of diagnosis, are engaged and willing to work hard. Though instructors push children to put forth their best effort, the instruction is given with kindness.

Another aspect of BFAK that adds to its authenticity is its consistent curriculum. Ballet classes follow a standardized, universal routine, which BFAK adheres to. Uniquely, the program uses the same music for the same ballet step in each class allowing children to become familiar with the routine of the class. This consistent routine allowed students to understand what is expected of them and anticipate what move is coming next. Parents described that these clear expectations and ability to predict what is coming next decreased their child's anxiety and made them feel comfortable, which in turn enabled them to focus on their dance technique.

Since BFAK feels like an authentic ballet program, parents state that their children see ballet as a physical activity that is less clinical in nature than other interventions. Parents described how the classical ballet instruction and opportunities to perform makes BFAK fun for their kids. Many parents compared BFAK to physical or occupational therapy. They expressed how the creativity and self-expression inherent to ballet differentiates BFAK from the rigidity of those therapies.

As a result, many parents reported that at BFAK, their children felt like they were “good at something” and gained a sense of self-fulfillment that is usually absent in their lives. The parents also gained a sense of pride in their children, which was especially salient during the bi-annual recitals.

### 3.2.2. Person centered program

Parents reported that BFAK balances its authentic ballet training and high expectations with a person-centered approach. Person centeredness emphasizes accepting participants for who they are and adjusting lessons to match each child's individual needs. Parents reported that the teachers of BFAK would tailor accommodations to fit their child's unique needs and change these accommodations to best support the child in each class. One parent described BFAK as a “firm approach with complete compassion.”

Parents stated that the instructors are able to effectively accommodate children with ASD because of their extensive knowledge of both ASD and dance. Parents further stated that the instructors also gain an intimacy with each child. Over years of participation, instructors are able to get to know each child and know how best to support them. The dedication of the instructors to develop this intimacy was reported by many.

Another component of BFAK that enables instructors to individualize instruction is the use of neurotypical volunteers. Parents stated how BFAK always had a sufficient number of volunteers in each class. Many parents emphasized how crucial the volunteers were to BFAK's success.

Parents stated that this person-centered approach was unique to BFAK and was not replicated in other settings such as school, therapy sessions, and other activities. They praised this approach as it allowed their children to feel comfortable and meaningfully participate in the weekly ballet classes and recitals.

### 3.2.3. Sensory integration and self-regulation

Parents also stated that their child was able to meaningfully participate in BFAK due to the calming sensory input that their child received during each class. Many children found the classical music used in BFAK engaging and calming. In addition, dancing itself served as a calming force.

Many parents stated that dance engages their child because dance, music, or art is what their child is interested in. Thus, BFAK gave them the opportunity to translate this passion into a meaningful activity.

Another element of BFAK that helped to calm children was the improved mind-body connection. Many parents stated that during class, their child could see themselves moving in the mirror and understand exactly where their body was in space and what their body

was doing. Their children often do not have such an awareness of their body, and gaining this understanding helped to ease their anxiety. As one parent stated, “with dance, you’re just getting more comfortable in your own skin.” Since their child was less anxious, parents noticed that their child tended to be more regulated during class, and this regulation helped to improve their mood.

Many parents described that this calming sensory input coupled with increased regulation helped their child to fully participate in BFAK. Since their children fully participated in BFAK, they were proud of their participation and felt better about themselves. This improved self-esteem was reported by all parents.

#### 3.2.4. Skill development

Due to this comfort and regulation, parents noted that their child was developing specific skills over years of attending classes at BFAK. This observable progression contributed to families’ continued participation. Due to the diversity of ASD manifestations and the study’s small sample size, these improvements vary in presentation and scale. Parents mentioned improvements in focus, attention, executive functioning, movement sequencing, tolerating other children’s behaviors and following verbal directions. Physical development including enhanced flexibility, balance, coordination, and strength was also reported. These cognitive and physical gains coupled with the child feeling comfortable and regulated resulted in fewer behavioral interruptions during ballet classes.

Parents also reported the generalizability of these skills. They described how BFAK gave their children the tools and confidence to join other extracurricular activities, advance out of services, such as adaptive physical education, and improve participation in school and other therapies.

#### 3.2.5. Interpersonal relationships

Parents reported that because dance classes in BFAK are a group activity, the program presented a social opportunity for their children. The authenticity of the dance program resulted in these social interactions being more natural and less structured than in other interventions. For example, during recitals, parents would drop their kids off for a few hours before the performance to allow them to prepare. During this time, their children would freely interact with either volunteers, BFAK staff, or their fellow dancers. Being separated from their parents for an extended period of time and having this unrestricted interaction time was noted by many parents as a unique component to BFAK and highly enjoyable for their children. The fact that their children felt fully accepted and comfortable also promoted socialization.

Parents mentioned additional factors aiding this development of friendships including their children working towards a shared goal (i.e. the recitals), exposure to the same peers every week, and the use of volunteers, which promoted positive interactions with neurotypical peers. These positive interactions, especially with neurotypical peers, were rare as other programs failed to meet their children’s needs and facilitate meaningful bonds, resulting in their children feeling judged and excluded.

## 4. Discussion

This paper is the first to examine the long-term experience of families with children with ASD in a recreational dance program. To our knowledge, all previous studies on recreational dance programs for those with ASD have been limited to 8–15 weeks of participation [25,26,29]. Shorter durations are a limitation of previously published studies as many physical and creative outcomes of attending dance classes do not have time to occur. In contrast, the families in this study have been taking classes with BFAK for an average of seven years, enabling them to uniquely attest to the full range of impacts that recreational dance programs can have. Three out of our five themes (sensory input and self-regulation, skill development, and interpersonal relationships) specifically highlight how BFAK has impacted its participants. Since our study aimed to assess why families continued to participate in BFAK for years, it is noteworthy that three out of our five themes are directly related to how BFAK has benefitted the child. These themes suggest that one metric for parents to continue an intervention is for them to see marked progression in their child’s participation, which can help inform BFAK and similar programs’ future directions.

As parents reported, BFAK presented the same exercises and music during each class. Thus, after a few classes, students were able to feel comfortable with the routine of BFAK and were able to predict what was coming next and what was expected of them. This consistency specifically fits the needs of those with ASD as adherence to routine is associated with a diagnosis [38]. Moreover, just as parents reported in our sample, music is an interest of many with ASD [42], and has long been shown to have therapeutic benefits [43–45]. Thus, dance classes are uniquely positioned to provide calming sensory input and promote behavioral regulation through their use of a structured, repetitive routine and classical music.

The psychological outcomes of BFAK were most commonly reported amongst parents. In fact, the only outcome that was reported by all parents was increased self-esteem. Since those with ASD are at risk for developing low self-esteem [46], this finding is notable as it demonstrates the potential BFAK has to improve a common challenge for those with ASD and corroborates a published finding in neurotypical dancers [19]. Two themes (skill development and interpersonal relationships) also replicate published benefits of dance for neurotypical dancers [17,18], and corroborate the literature that has started examining recreational dance programs for children with disabilities [24]. Thus, our study has added to the growing body of literature that suggests dance can benefit those with ASD psychologically, physically, and socially. We have uniquely shown that these benefits can span years of participation. However, our results have limited generalizability and should be interpreted cautiously as they represent the personal experiences of a small subset of the population who have a child with ASD. The population of families with a child diagnosed with ASD is markedly heterogenous and cannot be fully represented by the 20 perspectives outlined in this paper.

The longevity of BFAK and its high retention rate also has implications for practice. First, BFAK demonstrates the feasibility of implementing such a program and presents a methodology that eliminates the majority of the published barriers to recreational dance



classes for those with disabilities [47] that other efforts can follow. Second, many parents reported that BFAK allowed their child to translate a pre-established interest for the arts into a meaningful activity. Clinicians and caregivers of a child with ASD should consider integrating dance programs into children's care, especially if an interest in music and other art forms has been expressed. Third, other programs for children with ASD can be informed by the attributes (authentic ballet training and person-centered programming) that parents praised, claimed to contribute to program retention, and emphasized as unique to BFAK. If programs desire to incorporate the perspectives of parents into their program design, then maintaining the authenticity of the activity and providing individualized support should be considered.

#### 4.1. Limitations

This study is limited by several factors. First, this study examined the experience of a small sample of families ( $n = 20$ ) from one community in the United States. The population of families with a child with ASD is diverse and spans internationally, and thus future research should attempt to reflect this heterogeneity in their sample. Furthermore, the presentation of ASD is diverse, and thus, not all children with ASD will be suited for participation in a recreational dance program. There is a need for future research to replicate these reported outcomes on a more diverse sample and determine which children would be best suited for this program. Second, this study's sample was only comprised of long-term participants of BFAK. Albeit, not all families who attend a BFAK class will continue their participation nor enjoy their experience. However, since this study aimed to assess BFAK's retention factors, its scope was limited to long-term participants. The perspectives of the families who quickly terminate their participation with BFAK are important as they can inform changes and the future direction of BFAK and similar programs, and thus, are in need of future research. Third, BFAK caters to a diverse population including neurotypical children and children with down syndrome and cerebral palsy. Notably, all these children attend the same classes. Though this paper was limited to examine the experience of dancers with ASD, how the program impacts these other populations and how does the interaction between these diverse populations of students shape the social environment of BFAK warrants further research. Lastly, this study used qualitative methods to elucidate the personal experience of long-term BFAK participants. Though this methodology best suited the research objective, the results lack any objective data over the amelioration of ASD in the children described. Future research, through the examination of a larger sample and use of reproducible, objective quantitative methods, should work to quantify the impact of participation in a recreational dance program like BFAK on the health outcomes, symptom severity, and trajectory of ASD. And, in turn, more robustly characterize how long-term participation in a recreational dance program like BFAK can impact those with ASD and their families.

## 5. Conclusion

The current study reported why parents of children with ASD continued to participate in a recreational dance program for many years, which can help inform the future directions of similar recreational programs or therapies. Five themes were identified: authentic ballet training, person-centered approach, sensory input and self-regulation, skill development, and interpersonal relationships. Themes corroborate previous research that demonstrate how dance benefit those with ASD psychologically, physically, and socially. Future research is necessary to confirm and expand upon the findings of this small-scale qualitative report and add to the limited body of literature examining how dance can benefit those with ASD.

### Author contribution statement

Noy Alon: Conceived and designed the experiments, Performed the experiments, Analyzed and interpreted the data, Contributed reagents, materials, analysis tools or data, Wrote the paper.

Michael Wheaton; Katherine Lin: Contributed reagents, materials, analysis tools or data, Wrote the paper.

Bonnie Schlachte; Rebecca Elbogen; Julie Strandberg: Conceived and designed the experiments, Analyzed and interpreted the data, Contributed reagents, materials, analysis tools or data, Wrote the paper.

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### Data Statement

Due to the sensitive nature of the questions asked in the interviews, study participants were told that identifiers would be deleted. No data that could be used to identify an individual participant would be published. Participants were assured that raw or coded data would not be used for future research projects.

### Data availability statement

The data that has been used is confidential.



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