



PARENT-CHILD INTERVENTIONS, GROUP-BASED

INTERVENTIONS, & MENTAL HEALTH INTERVENTIONS

FOR CHILDREN AND YOUTH WITH AUTISM

AUGUST 2024

**Report prepared for the BC Association for Child Development and
Intervention (BCACDI)**

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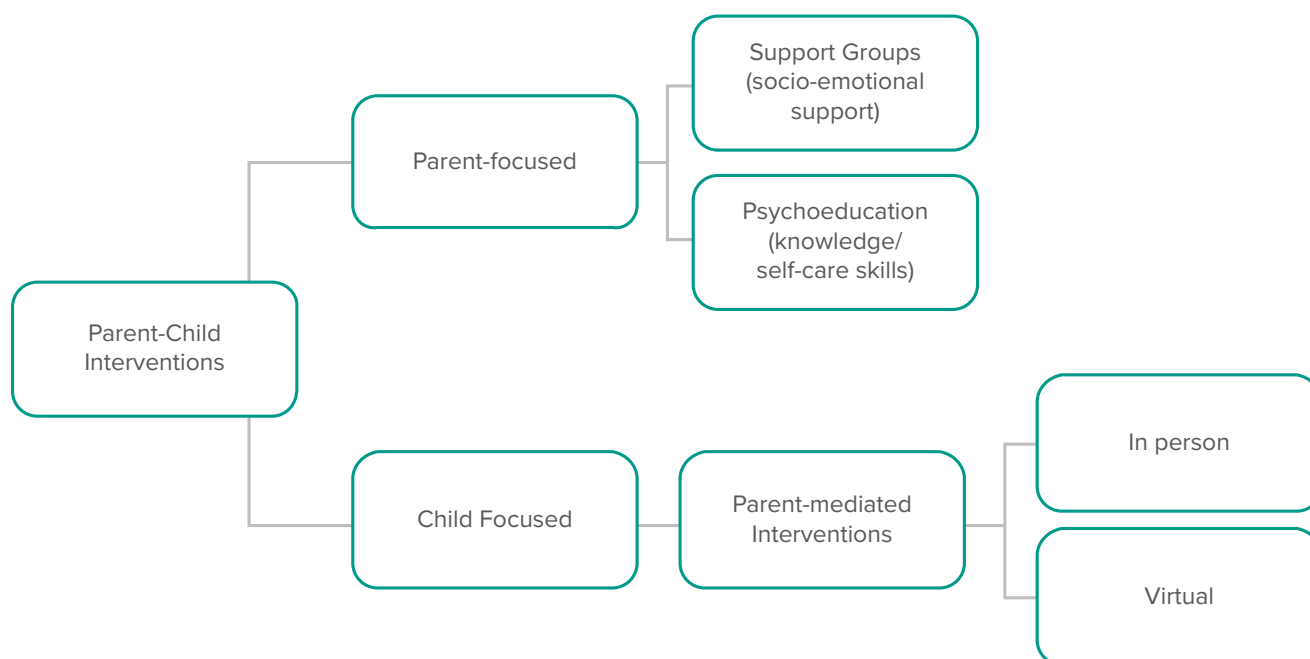
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EXECUTIVE SUMMARY

This document summarizes research and recommendations related to three types of interventions for autistic children, youth, and/or their families: parent-child interventions, group-based interventions, and mental health interventions.

Parent-Child Interventions

The Figure below summarizes the sub-types of parent-child interventions included in the review.



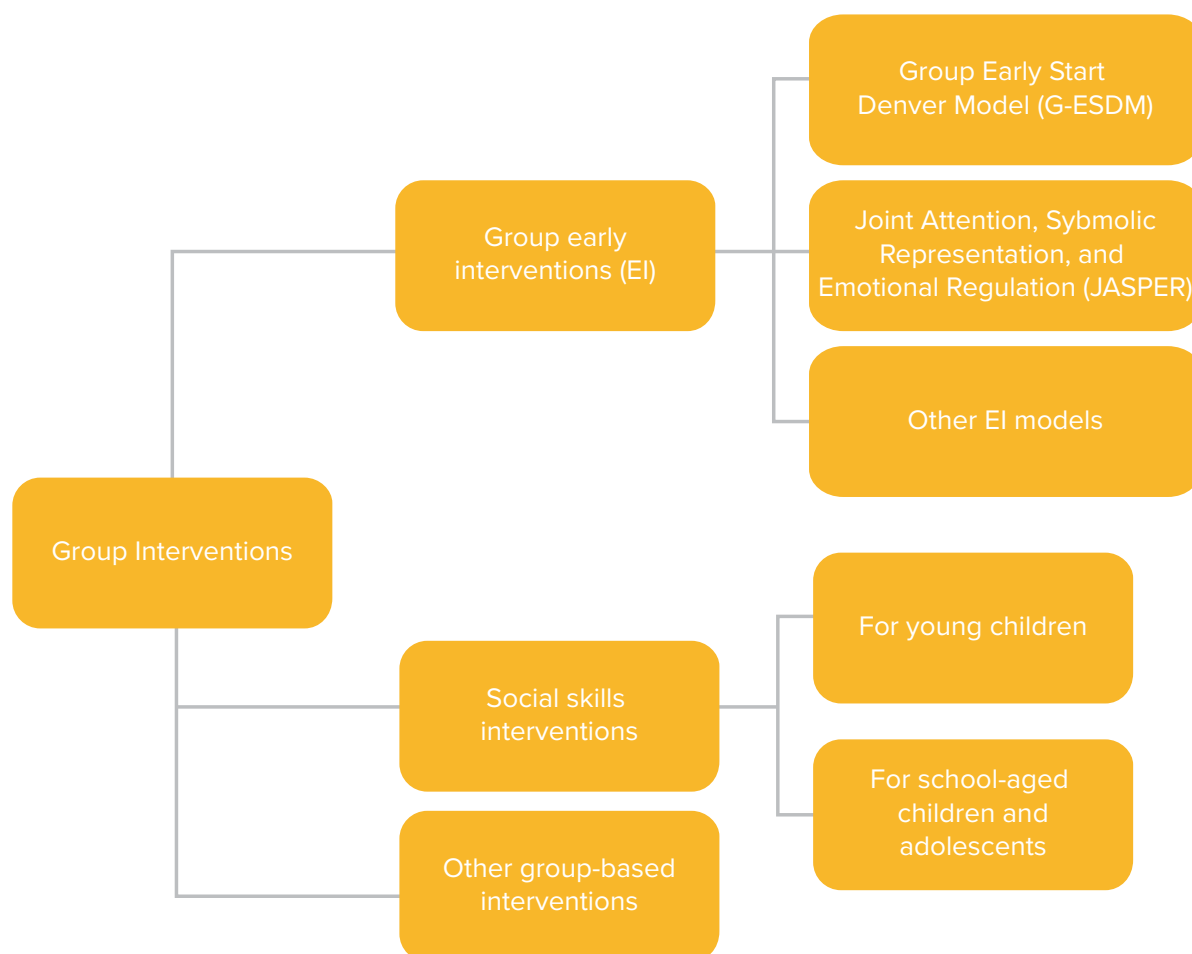
The research on parent-child interventions reflects considerable variability across sub-types with regard to effectiveness and outcomes. Research suggests that:

- Objective measures of change do not support the effectiveness of support groups for reducing parent stress, anxiety, or depression, nor for increasing parents' psychological health (e.g., wellbeing, coping skills, etc.). However, parents who participate in support groups generally endorse them as beneficial for receiving social-emotional support from other parents with shared experiences; sharing resources; and enhancing acceptance, hope, and optimism about their child's future.

- Psychoeducational interventions aimed at information-sharing can help parents feel more confident and accepting of their child. Evidence-based psychoeducational interventions such as Acceptance and Commitment Therapy (ACT), cognitive behavioural therapy (CBT), and mindfulness training have potential for reducing stress and parental mental health challenges.
- Manualized, in-person parent-mediated interventions (PMIs) have been shown to be effective for supporting language development, social engagement, adaptive behaviour, changes in autism characteristics, and distressed behaviour in autistic children and youth. PMIs may also support increased parent responsiveness/engagement during parent-child interactions, particularly with young children.
- Virtual, synchronous PMI instruction can be as effective as in-person PMI instruction; however, asynchronous PMI instruction is not as effective. Virtual PMI instruction appears to be especially useful for increasing children's social-communication skills and decreasing children's distressed behaviour.

Group-Based Interventions

The Figure below summarizes the sub-types of group interventions included in the review.

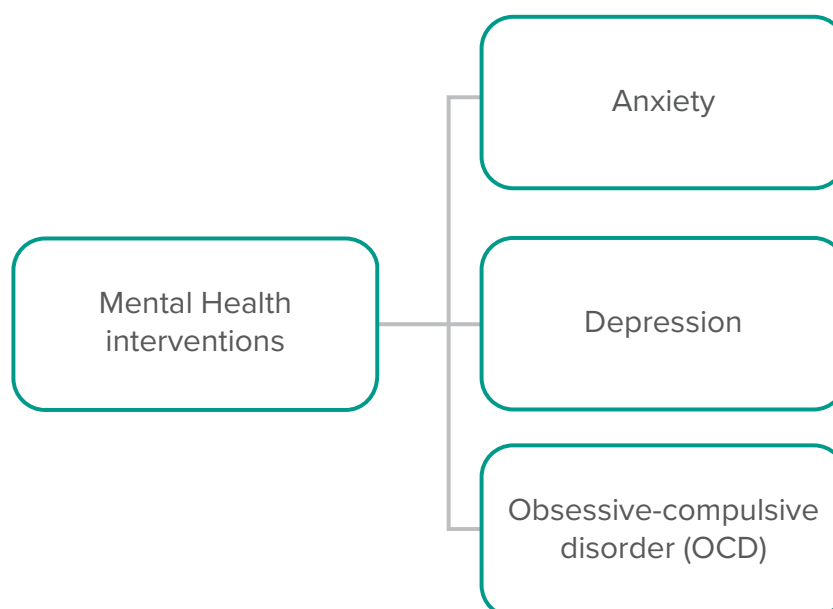


Overall, the research on group interventions for autistic children and youth suggests that:

- Manualized early intervention programs such as the Group Early Start Denver Model (G-ESDM) and the Joint Attention, Symbolic Play, Engagement, and Regulation small group model (JASPER-SG), delivered by appropriately trained intervention/therapy staff, can be effective for promoting foundational skills such as imitation and joint attention; language development; social interaction; adaptive behavior; and play skills in young autistic children.
- Group early intervention can be delivered effectively in both autism-only and inclusive preschool classrooms as well as in low-resource settings, if staff are appropriately trained and supported.
- The Program for the Education and Enrichment of Relational Skills (PEERS®) for Preschoolers (Laugeson, 2014) appears to be an effective social skills program for young autistic children with good cognitive and language skills, although more research is needed.
- Manualized group-based programs such as PEERS® for Adolescents (Laugeson & Frankel, 2010) can be effective for increasing social skills in school-aged children and adolescents without co-existing intellectual disabilities.
- Group-based occupational therapy and organized physical activity interventions may also be effective, although more research is needed.

Mental Health Interventions

The Figure below summarizes the research on mental health interventions for autistic children and youth included in the review.



Overall, the research on mental health interventions for autistic children and youth suggests that:

- Cognitive behavioural therapy (CBT) interventions that are adapted for autism and delivered by professionals with expertise and specific training (e.g., counsellors, psychologists, behaviour analysts) can be effective for treating anxiety in autistic children and youth without intellectual disability and/or with good verbal communication skills. Interventions for anxiety that involve parents/caregivers are generally more effective than those that do not, and 1:1 interventions appear to be more successful than interventions delivered in a group format.
- Although some research suggests that CBT may also be helpful for treating depression, more research is needed.
- CBT, combined with exposure and response prevention (ERP) and psychoeducation, may result in a reduction or resolution of OCD symptoms, primarily in autistic children and youth without intellectual disability and/or with good verbal communication skills.

Recommendations

Three broad recommendations emerged from the research reviews:

1. Provide agency-led, multi-disciplinary autism programs for young children (i.e., under age 6) in a variety of formats, based on child and family needs.

- Assuming adequate funding, programs for young autistic children can be offered in 1:1 and/or small group formats, with intensity and format based on child needs. Parents of infants and toddlers and/or parents of children with suspected autism should be involved in one of the evidence-based PMIs that are designed to help parents promote play skills and communication, language, and social development. The PMI should be delivered by staff who have completed the training required for certification in the specific model selected. PMI can be offered in person or in a synchronous, virtual format, to either individual parents or small groups. Virtual instruction will be most appropriate for families who (a) live in rural and remote areas that make travel to a CDC difficult and (b) have access to stable, broadband internet and a secure online platform such as Zoom.
- Either 1:1 or small group programs based on an evidence-based behavioural or naturalistic developmental-behavioural intervention (NDBI) approach should be offered to preschool-aged children. One-to-one programs should be delivered by behaviour interventionists who are trained and supervised by a behaviour analyst. Children who are more likely to benefit from small group programs include those with longer attention spans, more social interest in peers, and low levels of distressed behaviour. Group programs should be based a manualized, evidence-based model such as G-ESDM or JASPER-SG and delivered by staff who are appropriately trained and supported.
- Concurrent speech-language therapy should be continuously available to young autistic children, with intensity based on a child's needs. Children with persistent speech delays and those who struggle with language comprehension will require more frequent

supports. Occupational therapy (OT) should also be available, especially for children with feeding, dressing, toileting, play, and fine motor challenges. Intervention may be feasible for some children in a small group format if OTs are willing to provide it.

2. Provide agency-led autism programs and supports for school-aged children and youth over age 6 in a variety of formats, based on needs.

- Assuming adequate funding, 1:1 supports that focus on communication; social skills; daily living skills such as dressing, toileting, and meal preparation; and community skills such as ordering food in a restaurant, street crossing, and recreation skills may continue to be appropriate for some children over age 6. In particular, those with co-occurring conditions (e.g., intellectual disability, ADHD, physical and/or sensory impairments) will require ongoing 1:1 instruction in essential skill domains. Group programs that focus on daily living skills and community skills should also be available to children and adolescents who can participate in groups.
- Evidence-based group social skills programs such as PEERS® for Adolescents (Laugeson & Frankel, 2010) should be provided by staff with appropriate training.
- Cognitive behavioural therapy (CBT) interventions led by appropriately trained professionals should be available to school-aged children and adolescents who struggle with anxiety and/or OCD and have good verbal communication skills without co-occurring intellectual disability.

3. Provide an array of evidence-based supports to families.

Depending on the needs of parents/caregivers, various supports may be useful and should be included in the annual funding formula for each agency.

- For families of children with suspected autism and those with new diagnoses, short-term group-based psychoeducation aimed at sharing information about autism in general and how parents can support their autistic child should be available, ideally in parents' home languages. Group sessions may be conducted over 4-8 weeks and are best led by veteran parents who are supported by a professional and have been trained to deliver information that is accurate, compassionate, and hopeful. Information-sharing sessions in a similar format should also be available to parents prior to school entry, to prepare them for school expectations, the individualized education planning (IEP) process, and so forth.
- Support groups – especially those offered in a home language to parents in minority language groups -- can also be helpful to parents who seek information about local resources and social supports from other parents.
- Finally, if professionals with appropriate training are available, Acceptance and Commitment Training (ACT), cognitive behavioural therapy (CBT), and/or mindfulness training should be available to reduce parent stress and/or support parents with mild mental health challenges.

PART 1: PARENT-CHILD INTERVENTIONS

In the autism research literature, providing support to parents and caregivers has been referred to using many different terms, including *parent support*, *parent education*, *parent psychoeducation*, *parent training*, and *parent-mediated interventions*. Definitions for these terms also varies widely, creating challenges when attempting to summarize research outcomes. In this section, information is organized according to the primary beneficiary and focus of an intervention that involves parents/caregivers, as displayed in Figure 1; definitions follow.

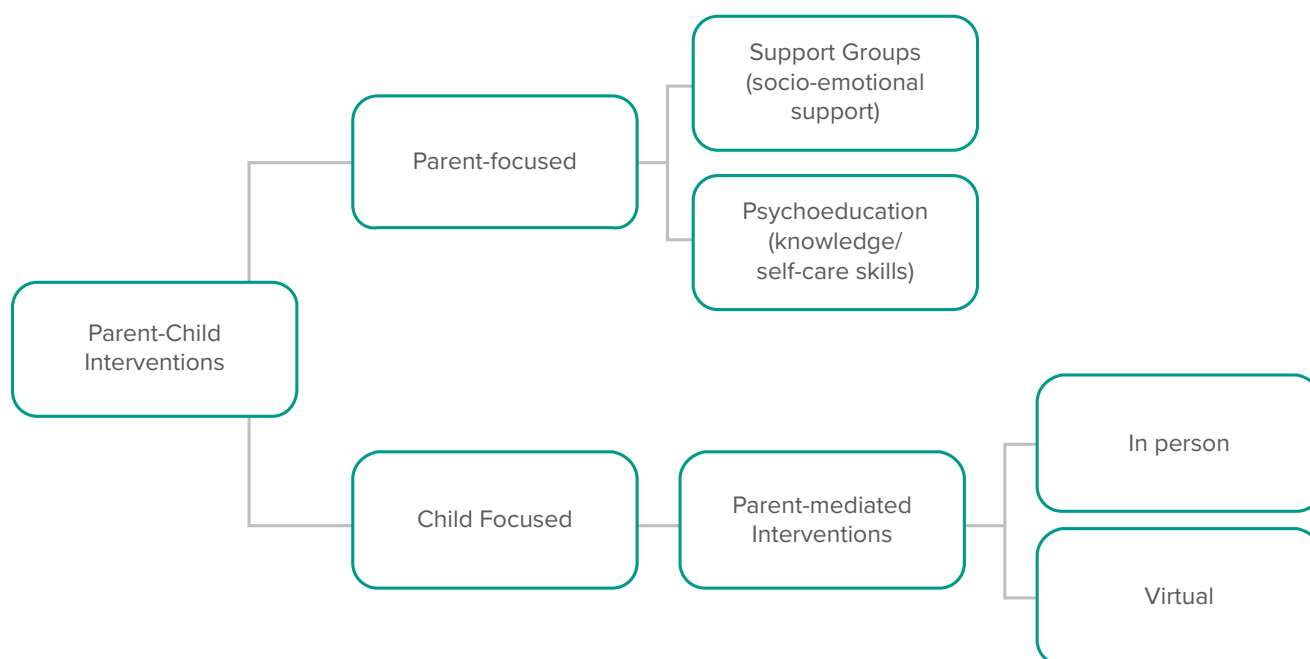


Figure 1. Autism supports involving parents.

Parent-Focused Interventions

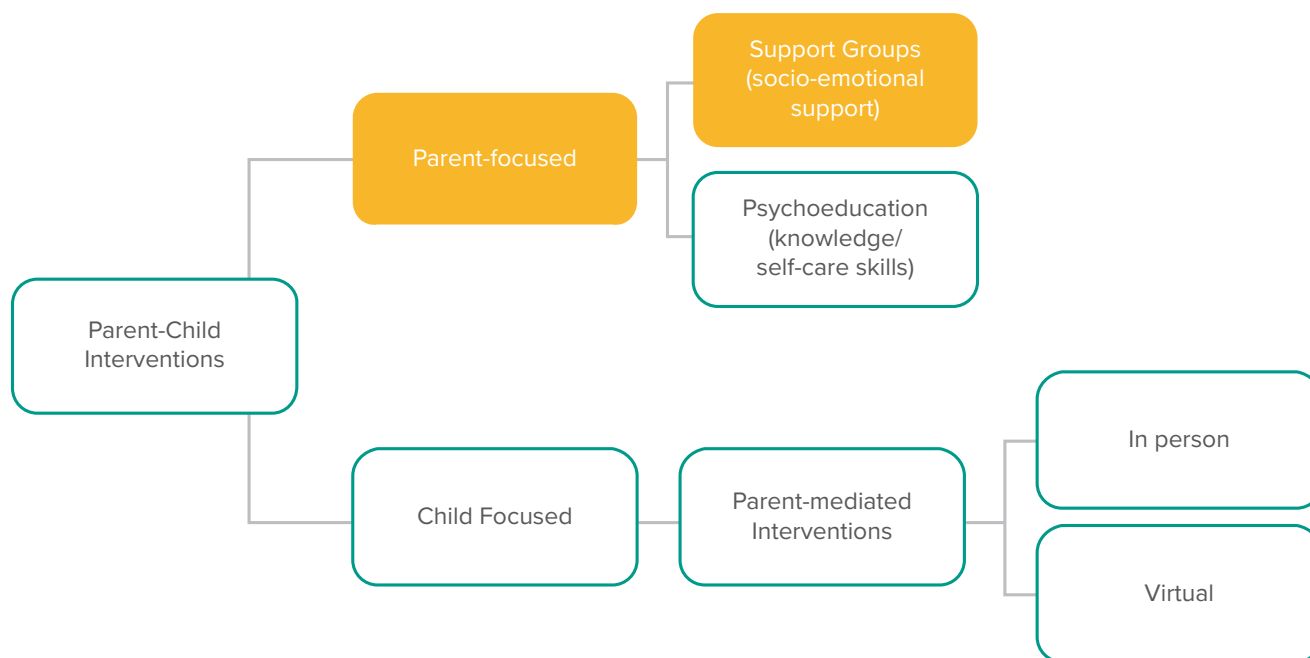
The primary beneficiary of a parent-focused intervention is the parent/caregiver of an autistic child or youth. Parent support groups are primarily aimed at providing socio-emotional support to parents by connecting them to other parents who have shared experiences. Support groups may be overseen by parents themselves without professional involvement (these are often called parent-to-parent or peer support groups) or may be overseen by a professional such as a counsellor or family support worker. In a support group, parents may learn about autism, community resources, and how to navigate and advocate within the service delivery system, but information-sharing is not the primary purpose of the group. In contrast, psychoeducational interventions are primarily aimed at increasing parents' knowledge base about autism and

related topics (e.g., community resources, advocacy) and/or teaching parents problem-solving, coping, and/or stress management skills that enable them to care for themselves in healthy ways. Programs aimed at psychoeducation are usually run by professionals who have the necessary expertise and resources. When knowledge sharing is the primary focus, these programs are usually group-based; when skill-building is the primary aim, interventions may be either group-based or delivered individually. Parent skill-building interventions are usually structured according to an evidence-based protocol and are aimed at reducing parental stress/distress, depression, anxiety, and other mental health concerns. The most prominent skill-building approaches include cognitive behavioural therapy (CBT); mindfulness training; and Acceptance and Commitment Therapy (ACT), a combination of CBT and mindfulness. Group-based psychoeducational interventions may have a secondary effect by connecting parents for socio-emotional support, but this is not the primary purpose.

Child-Focused, Parent-Mediated Interventions (PMIs)

The primary beneficiaries of parent-mediated intervention (PMIs) are autistic children or youth themselves. In a PMI, parents are taught skills aimed at supporting their child with autism to learn and develop. Some PMIs focus on teaching parents how to support their child's communication, social, and/or play skills, while others may focus on self-care skills such as self-feeding, dressing, and toileting. PMIs can also be aimed at teaching parents strategies for supporting children with distressed behaviour (e.g., aggression, tantrums, self-injury, property destruction). PMIs can have secondary effects on parents (e.g., increased self-efficacy, increased confidence, decreased stress) but parents are not the primary focus. PMIs can be delivered in person or virtually; both types will be reviewed in this report.

SOCIAL SUPPORTS AND PARENT SUPPORT GROUPS



In this section, research related to social supports in general and support groups for parents/caregivers of autistic children and youth in particular will be reviewed and summarized.

Social Supports

It is well-documented that parents/caregivers of autistic children and youth experience higher levels of stress, depression, and anxiety than parents of both neurotypical children and children with other neuro-developmental conditions (Schnabel et al., 2020). Parents often find that the caregiving burden that underlies these emotional states can be moderated through social supports. A considerable body of research has examined the impact of both formal and informal social supports on parents' psychological health. In these studies, *formal social supports* are typically defined as paid or unpaid supports offered in the community (e.g., respite care, early intervention programs, parent support groups). *Informal social supports* are defined as physical and emotional assistance provided by a spouse, extended family, and/or friends at no cost to a parent/caregiver. In some studies, researchers have measured the relationship between parents' perceptions of the social supports available to them (formal and/or informal) and negative emotional states (e.g., stress, distress, depression, anxiety, caregiving burden). In other studies, researchers have measured the relationship between parents' perceptions of available social supports and positive emotional states (e.g., resilience, life satisfaction, wellbeing, psychological health, quality of life).

Negative Emotional States

Table 1 summarizes the results of 12 studies that examined the relationship between perceived social supports and negative emotional states in parents of autistic individuals. Study inclusion was limited to research published in peer-reviewed, English language journals in the past 10 years. The studies were conducted in several countries and included parents of preschool-aged to adult children with autism. Eight studies found inverse relationships between parents' access to and use of informal social supports and negative emotional states (i.e., higher access to and/or use of informal supports was associated with lower stress, depression, etc.). Four studies that examined both informal and formal social supports found this inverse relationship for informal supports only. Overall, these studies strongly suggest that parents with strong informal social support networks are less likely to experience high levels of stress and other negative emotional states, but this is not the case for formal social supports.



Table 1: Studies Examining the Relationship Between Social Supports and Parents' Negative Emotional States (in chronological order)

Author/Year	Type(s) of Support, Parent(s) (Child Age)	Country	Stress	Depression	Anxiety	Distress	Caregiving Burden
Smith et al., 2012	Informal, mothers (adolescents, adults)	USA		Decrease ^a			
Falk et al., 2014	Informal, both ^b (<18 yr)	Australia	Decrease	Decrease	Decrease		Decrease, informal only
Marsack & Samuel, 2017	Informal and formal, both (adults)	USA					
Zaidman-Zait et al., 2017	Informal, mothers (preschoolers)	Canada		Decrease			
Lindsay & Barry, 2018	Informal, both (4-11 yr)	USA				Decrease	
Lu et al., 2018	Informal, both (≤18 yr)	China	Decrease				
Zaidman-Zait et al., 2018	Informal, mothers (6-9 yr)	Canada				Decrease	
Marsack & Hopp, 2019	Informal, both (adults)	USA					Decrease
Drogomyretska et al., 2020	Informal, mothers (<18 yr)	Ireland	Decrease friends > spouse, family				
Shepherd et al. 2020 ^a	Informal and formal, both (unknown)	New Zealand	Decrease for children w/ severe autism, informal only			Decrease for parents w/ high stress, informal only	
Shepherd et al., 2020 ^b	Informal and formal, both (children-adults)	NZ	Decrease, informal only				
Schiller et al., 2021	Informal and formal, both (≤19 yr)	Multiple	Decrease, primarily informal				

^aDecrease = Decrease in negative emotional state (e.g., less depression, less stress) associated with availability of social support

^bboth = study included both mothers and fathers

Positive Emotional States

Table 2 summarizes the results of eight studies that examined the relationship between perceived social supports and positive emotional states in parents with autistic children; four of these studies were also included in Table 1. Again, study inclusion was limited to research published in peer-reviewed, English language journals in the past 10 years. Multiple countries were represented across a broad range of child ages. Six studies found direct relationships between parents' access to and use of informal social supports and positive emotional states (i.e., higher access to and/or use of informal supports was associated with higher resilience, life satisfaction, etc.). Two studies that examined both informal and formal social supports found that a direct relationship was evident for informal supports; one of these found this for formal supports as well. Overall, these studies suggest that parents with strong informal social support networks are more likely to experience high levels of resilience and other positive emotional states.

Summary

Consistently, research in the past 10 years has shown the positive impact of informal social supports on the emotional states of parents of autistic children, adolescents, and adults. Parents with access to *strong informal social support* networks (e.g., spouses, extended family members, friends) experience less stress, depression, anxiety, distress, and caregiving burden and/or greater resilience, life satisfaction, wellbeing, psychological health, and quality of life, compared to parents without access to such networks. However, this is not the case for formal social supports; in several studies, formal supports were found to have neither a positive nor a negative impact on parental emotional states. This is not to say that formal supports are not important components in the array of services provided to families of autistic individuals; rather, it suggests that *the category* "formal supports" might be too broad to capture the impact of *specific types* of such supports. For example, there is considerable research documenting the positive impact of respite care, a type of formal support, on the psychological health of parents of autistic children (e.g., Dyches et al., 2016; Easler et al., 2022) and those with other challenges or neurodevelopmental conditions (see Mirenda, 2023). This might be the case for other specific types of formal supports as well, such as parent support groups. The research on this topic is reviewed in the section following Table 2.

Table 2: Studies Examining the Relationship Between Social Supports and Parents' Positive Emotional States (in chronological order)

Author/Year	Type(s) of Support, Parent(s) (Child Age)	Country	Resilience	Life Satisfaction	Wellbeing	Psychological Health	Quality of Life
Smith et al., 2012	Informal, mothers (adolescents, adults)	USA			Increase ^b		
Pozo et al., 2014	Informal, both ^a (preschool-adults)	Spain					Increase
Marsack & Samuel, 2017	Informal and formal, both (adults)	USA					Increase if high burden, informal only
Lu et al., 2018	Informal, both (≤18 yr)	China		Increase			
Iacob et al., 2020	Informal, both (6-14 yr)	Multiple	Increase				
Shepherd et al. 2020 ^a	Informal and formal, both (unknown)	New Zealand				increase, both types	
Fong et al. 2021	Informal, both (<18 yr)	Canada	Increase				
Zhao et al., 2021	Informal, both (<12 yr)	China	Increase				

^aboth = study included both mothers and fathers

^bIncrease = increase in positive emotional state (e.g., more resilient, higher life satisfaction, etc.) associated with availability of social support

PARENT SUPPORT GROUPS

One type of formal social supports, the parent support group (PSG), is a relatively cost-effective and easily implemented intervention for supporting the social-emotional needs of families. Parent-led support groups (also called peer-to-peer support groups, mutual support groups, or self-help groups) are organized and facilitated by the group members themselves (i.e., parents). Typically, parent-led support groups are aimed primarily at providing members with emotional support, community, a sense of belonging, friendship, and a platform for advocacy and empowerment (Shilling et al., 2013). Professionally facilitated support groups are led by professionals such as counsellors or psychotherapists. Often, professionally led groups are aimed primarily at providing parents with information (e.g., about autism in general) or teaching new skills (e.g., mindfulness meditation, how to support communication development, how to support a child with distressed behaviour; Jackson et al., 2018). In the review that follows, research on PSGs whose primary aim was emotional support, belonging, and so forth rather than providing information or teaching new skills (i.e., psychoeducation) were included, regardless of the facilitator. Research on support groups aimed primarily at parent psychoeducation will be reviewed in a subsequent section.

PSG Research

Researchers have measured the impact of PSGs using quantitative and/or qualitative measures. In *quantitative studies*, parents complete a formal instrument that measures one or more variables that might be impacted by PSG participation, such as stress, depression, marital satisfaction, and so forth. The instrument yields an objective score that reflects the amount of the variable measured (e.g., the amount of stress parents experience). In *qualitative studies*, parents participate in an interview or focus group in which they talk about their experiences in the PSG. The results reflect their *subjective opinions* about how the PSG affected them. Some studies use both types of measures, but most use one or the other.

Quantitative studies. Table 3 summarizes the results of seven studies that measured the impact of support groups for parents of autistic individuals using quantitative measures. Study inclusion was limited to the past 10 years unless the studies were unique in some way (e.g., conducted outside of North America). In all of these studies, parents completed measures that yielded scores related to one or more hypothesized outcomes of the PSG (e.g., reduced stress, increased quality of life). In some studies, scores for parents who participated in a PSG and parents who did not were compared to determine PSG impact; in other studies, parents' pre- and post-PSG scores were compared. Regardless, a statistical comparison was done to determine if there was a *significant difference* between the scores. Here, the term "significant" means that the difference between the scores was large enough to have occurred as a result of PSG participation, not chance variability. For example, the difference between a score of 52 and a score of 55 is likely due to chance, but the difference between scores of 52 and 75 likely reflects a real PSG effect. Differences that were due to chance variability are called "non-significant" in Table 3. PSGs were conducted in person in five of the seven studies. One was online only and in another, authors examined the overall outcomes of six in-person and one online PSGs (Catalano et al., 2018).

Results suggest that objective measures do not support the effectiveness of PSGs. Across 20 variables of interest, only seven (35%) were found to change significantly as a result of PSG participation, with reduced anxiety and reduced stress/distress the only two variables that showed an effect in more than one study. These results are congruent with the results of a meta-analysis in which researchers pooled the results of 18 quantitative studies that examined “peer support interventions” for parents and caregivers of children with complex needs, not just autism (Sartore et al., 2021). These authors found “no evidence of either benefit or harm” (p. 2) on any parent outcome as a result of peer support interventions.

Table 3: Studies That Examined the Impact of Autism Parent Support Groups (PSGs) Using Quantitative Measures (in chronological order)

Author, year	Parent(s) (child age)	Type of PSG	Country	Depression	Anxiety	Stress/distress	Wellbeing/QoL	Optimism	Positive child perceptions	Coping skills	Marital satisfaction	Family function
Shu & Lung, 2005	mothers (unknown)	In person	Taiwan				ns					
Clifford & Minnes, 2013	mothers (2-22 yr)	Online	Canada, USA	x	ns	ns			ns			
Elfert & Mirenda, 2015	fathers (3-15 yr)	In person	Canada	ns		ns		ns		ns	ns	
Lunsky et al. 2017	both (17-38 yr)	In person	Canada			ns						
Catalano et al., 2018	both (<18 yr)	In person & Online	Multiple		x ^a	x	x					x
Alibekova et al., 2019	both (unknown)	In person	Kazakhstan	ns	ns	ns						
Sharma et al., 2022	both (4-17 yr)	In person	India		x	x						

Key: ns = non-significant effect of PSG participation; x = significant effect of PSG participation

^asignificant effect of participation for in person but not online PSG

Qualitative studies. Table 4 summarizes the results of 12 studies that measured the impact of support groups for parents using qualitative measures such as interviews and focus groups. Study inclusion was limited to the past 10 years unless the studies were unique in some way (e.g., conducted with immigrant families). The majority of participants in all 12 studies were parents of autistic children, although other neurodevelopmental conditions were also represented in a few. Three of the studies were also included in Table 3, as they used both quantitative and qualitative measures. In-person PSGs were conducted in 7 of the 12 studies. An additional four were online only and in Catalano et al. (2018), authors examined the overall outcomes of six in-person and one online PSGs.

Results suggest that subjective parent reports support the effectiveness of PSGs, especially with regard to resource sharing; receiving social-emotional support from other parents with shared experiences, and enhancing acceptance, hope, and optimism about their child's future. These results offer contrasting information when compared to the results of quantitative studies and are also in line with the results of the meta-analysis by Sartore et al. (2021), who also found that “qualitative data suggest that parents and carers value peer support interventions and appreciate emotional support” (p. 2).

Summary

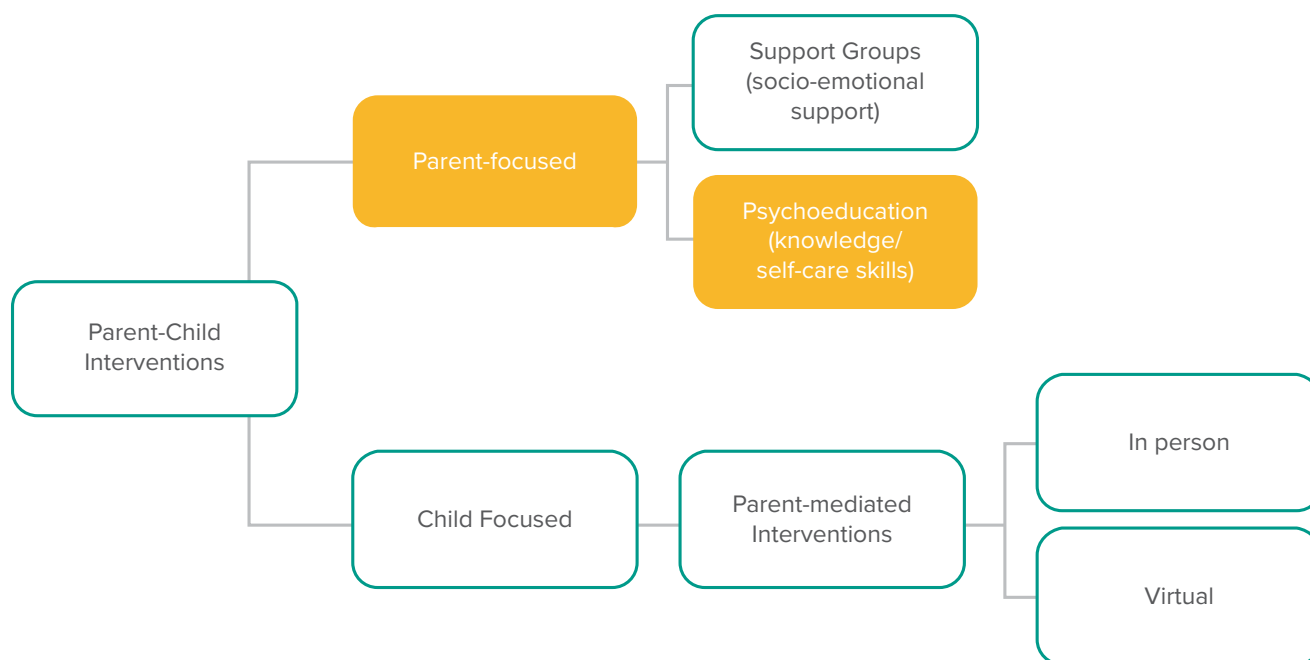
How can we interpret the fact that PSG studies using quantitative and qualitative approaches are not in agreement? It may be that, while parents of autistic children endorse PSGs for providing social and emotional support, such support is insufficient to mitigate the objectively measured (di) stress, depression, and anxiety that they experience as a side effect of the caregiving burden. Said another way, it may be that parents who participate in PSGs “feel better” in the short term but are unable to sustain this emotional relief as they manage the day-to-day challenges of raising and supporting an autistic child, no matter how old. This is not to say that PSGs are not useful and appropriate; for example, when PSGs were provided to North American immigrant families in their native language (e.g., Cantonese or Mandarin in Lo, 2010 and Vietnamese in Poon et al., 2022), parents strongly endorsed their importance as a partial solution to the linguistic isolation they otherwise experienced. For parents such as these, PSGs became a source of informal social support, even though they were offered as part of a formal community-based program. Overall, the results emphasize the need for multi-dimensional interventions that are aimed at preserving the emotional and mental health of parents as their autistic children grow and develop; PSGs may be one component in an array of such supports.

Table 4: Studies That Examined the Impact of Autism Parent Support Groups (PSGs) Using Qualitative Measures (in chronological order)

Author, year	Parent(s) (child age)	Type of PSG	Country	Resource sharing	Shared experience/ social supports	Advocacy	Acceptance/hope/ optimism	ASD knowledge	Behaviour concerns	Communication concerns	Medical/diet concerns	Problem solving
Lo, 2010	both (unknown)	In person	USA (Chinese)	x	x	x	x					
Papageorgiou & Kalyva, 2010	both (unknown)	In person	Greece		x			x				
Clifford & Minnes, 2013	mothers (2-22 yr)	Online	Canada, USA	x	x							
Elfert & Mirenda, 2015	fathers (3-15 yr)	In person	Canada		x							
Reinke & Solheim, 2015	mothers (2-17 yr)	Online	USA	x	x	x		x				
Wynter et al., 2015	both (10 mo-11 yr)	Online	Australia	x	x			x				
Cole et al. 2017	both (5-11 yr)	Online	South Africa	x	x		x		x	x	x	
Catalano et al., 2018	both (<18 yr)	In person+ Online	Multiple		x		x					
Chiaraluce, 2018	mothers (5-17 yr)	In person	USA	x	x		x					
Jackson et al., 2018	both (mean 24 yr)	In person	USA		x							x
Batchelor et al., 2021	fathers (3-20 yr)	In person	Wales, UK	x	x							x
Poon et al., 2022	mothers (2-21 yr)	In person	Australia (Vietnamese)		x							

Key: x = significant effect of PSG participation

PSYCHOEDUCATIONAL INTERVENTIONS



As noted previously, psychoeducational interventions are typically designed to teach parents knowledge-based content (e.g., what is autism?) and/or enhance parents' self-care skills (e.g., by teaching them stress management or other coping strategies). Psychoeducational interventions are not aimed at autistic children or youth; they are aimed at their parents/caregivers. Because numerous studies of psychoeducational interventions have been conducted, research in this section will be summarized primarily through systematic reviews and meta-analyses. In a systematic review, researchers first search the published literature to identify studies on a topic that meet specific criteria. They then extract and interpret data from these studies and analyze, describe, critically appraise, and summarize interpretations into a refined evidence-based conclusion about overall effectiveness. In a meta-analysis, after locating studies that meet specific criteria, researchers use statistical procedures to combine and analyze results in order to come to an evidence-based conclusion about overall effectiveness. In general, a meta-analysis is considered to be a higher-level synthesis than a systematic review, although both are useful for summarizing a large body of research on a topic.

The criteria used to select studies that are included in systematic reviews and meta-analyses vary widely. In English-speaking countries, researchers first identify all published studies that examined a specific type of intervention (e.g., parent psychoeducation) and were published in English. Following this, some researchers may narrow the criteria to include only randomized controlled trials (RCTs) in which parents are assigned at random to two groups, one that receives an intervention and that does not (i.e., the control group). Outcomes of the two groups are then compared to determine if the treatment group's outcomes differ from those of the control group. Other studies include a broader range of experimental studies that use objective outcome measures. Some researchers may include only studies that examined manualized interventions (i.e., those that have been standardized, often in a published manual) or that use one or more specific assessment tools to measure progress, while others are more flexible with regard to these and other variables. The wide variability in inclusion criteria explains the wide variability in the number of studies included across systematic reviews and meta-analyses on the same topic.

Table 5 summarizes the outcomes of systematic reviews and meta-analyses of psychoeducational interventions for parents/caregivers of autistic children and youth since the first such review was conducted in 2017. Except for two studies, all included research from several different countries and socio-demographic groups. Many studies included research on parent support groups and/or parent-mediated interventions as well but analyzed the results for psychoeducational interventions separately; however, in Table 5, the number of studies and participants (column 2) reflects those for psychoeducational interventions alone. Broad-based systematic reviews and meta-analyses that did not allow for disaggregation of psychoeducational interventions were not included.

In the Table, three evidence-based approaches were included in several of the reviews. *Acceptance and Commitment Therapy* (ACT; Hayes et al., 2016) refers to an evidence-based cognitive-behavioural approach that combines mindfulness skills with the practice of self-acceptance and encourages parents to embrace their negative thoughts and feelings rather than fighting or feeling guilty for them. Another evidence-based approach, *cognitive-behavioural therapy* (CBT; Evans-Jones, 2017) focuses on the way people think ("cognitive") and act ("behavioural") and helps parents learn to identify and change destructive or disturbing thought patterns that have a negative influence on their behavior and emotions. Mindfulness training (Kabat-Zinn, 2023) also has a strong research base and focuses on teaching parents to be intensely aware of what they are sensing and feeling in the moment, without interpretation or judgment. In addition, the reviews included various other generic psychoeducational interventions such as those aimed at providing information about autism and/or teaching parents coping, problem-solving, relaxation, and/or stress management skills.

Table 5: Outcomes of Systematic Reviews and Meta-analyses of Psychoeducational Interventions for Parents of Autistic Children and Youth (in chronological order)

Author, year (type)	# of studies/# of participants	Psycho-educational intervention(s)	Anxiety	Depression	Stress/distress	Wellbeing/QoL	Mental/psychological health	Confidence/self-efficacy	Acceptance of child	Knowledge
Da Paz & Wallander, 2017 (SR)	13/836	ACT, CBT, MT, RT, SM	MT	ACT	ACT MT RT		MT		ACT	
Catalano et al. 2018 (SR)	20/702	ACT, I, MT, PS, RT, SM	All	All	All	MT PS SM	ACT MT SM	IA PS	IA	IA
Frantz et al., 2018 (SR)	15/672	CBT, I, MT, RT		CBT MT	CBT MT RT			CBT IA		
O'Donovan et al., 2019 (SR)	5/449	IA							IA	IA
Rutherford et al., 2019 (SR, MA)	22/607	IA, MT			Both			IA		
Yu et al., 2019 (MA)	25/938	ACT, CBT, I, MT					ACT CBT MT			
Merriman et al., 2020 (SR)	8/307	ACT, CBT, I, MT			ACT MT	ACT IA				
Mackenzie & Eack, 2022 (MA)	21/990	IA, SM						Both		
Agirkan et al., 2023 (Turkey) (SR, MA)	12/306	IA, CS, PS				All	All			
Li et al., 2024 (SR, MA)	21/1613	ACT, CBT, I, MT		All	ACT MT					

Key: ACT: Acceptance and Commitment Therapy; CBT: cognitive behavioural therapy; CS = coping skills instruction; IA = information about autism; MA = meta-analysis; MT = mindfulness training; PS; problem solving instruction; RT = relaxation training; SM = stress management training; SR = systematic review

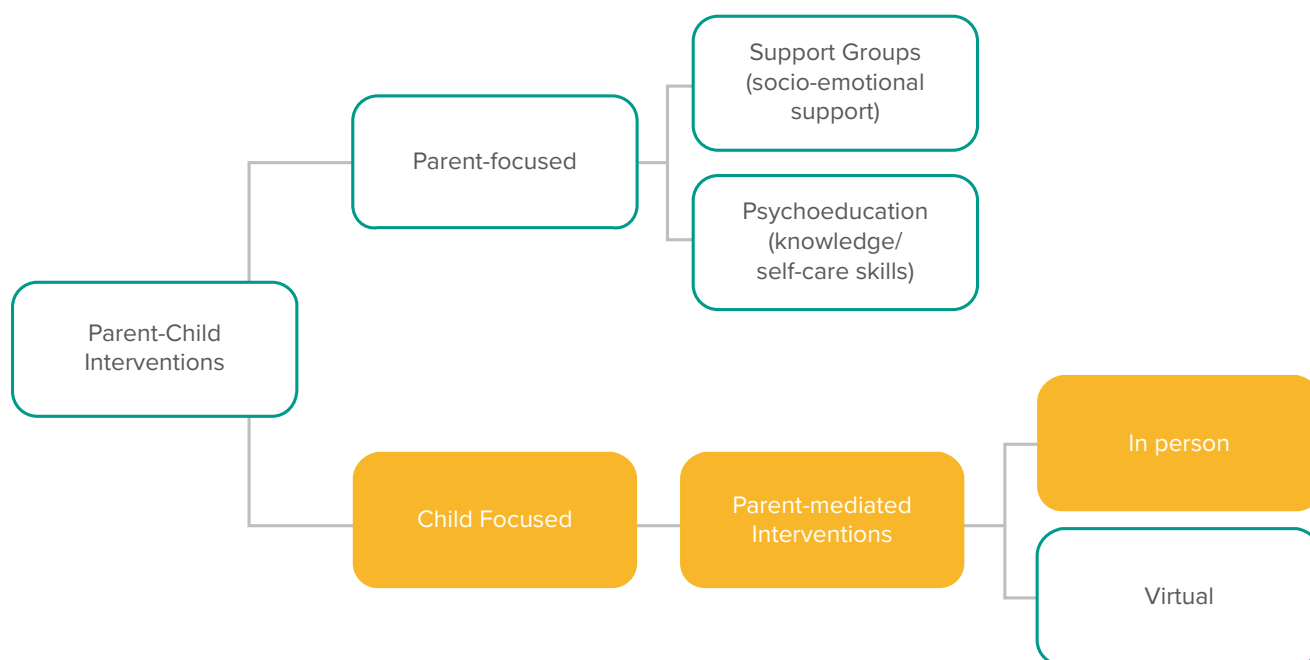
Summary

Outcomes of psychoeducational interventions were found to vary widely, although some patterns are evident in Table 5:

- Mindfulness training was found to be effective for decreasing parental anxiety in two systematic reviews; and ACT, CBT, and mindfulness training were found to reduce parent depression in two or more analyses. The same three approaches were also shown to reduce parental stress/distress, along with generic relaxation training.
- There was no pattern for the effects of psychoeducational interventions on parental wellbeing/quality of life; but, again, ACT, CBT, and mindfulness training predominated for improvements in overall mental/psychological health.
- In two or more reviews, providing information about autism was found to be useful for increasing parents' confidence/self-efficacy; acceptance of their child; and/or knowledge about autism, community resources, and other practical matters.

From this summary, it appears that evidence-based interventions such as ACT, CBT, and mindfulness training have potential for reducing parental mental health challenges, while information-sharing can help parents feel more confident and accepting as a side effect of knowledge enhancement.

PARENT-MEDIATED INTERVENTIONS (PMIs), IN PERSON



Parent-mediated interventions are meant to supplement – *not replace* – speech-language, occupational, and other therapies delivered by professionals at a level of intensity based on children’s needs. In a PMI, professionals teach parents/caregivers to use strategies that are designed to support child development in one or more areas. The training may involve group didactic instruction and/or individual coaching to help parents promote their child’s communicative and social development, play skills, and/or self-care skills (e.g., dressing, toileting). Parents may also learn strategies to support self-regulation and/or to support children to engage in socially appropriate instead of distressed behaviour. Instruction can be provided to parents either in person or virtually; regardless, in the research literature, trainers are almost always professionals with extensive experience or formal certification in a specific PMI model. Some of the most commonly-used PMI models in North America include naturalistic developmental-behavioural interventions (NDBIs) such as the Early Start Denver Model (ESDM); the Joint Attention, Symbolic Play, Engagement, and Regulation (JASPER) model; Project ImPACT; Social ABCs; and Pivotal Response Treatment (PRT). Regardless, the goal is to provide parents with skills that they can use on a day-to-day basis to help their children develop and learn.

PMI instruction can take many formats. In some cases, a trainer simply explains a strategy and why it can be useful (e.g., imitating a child's actions) and then models the strategy with the child while the parent observes. The parent is encouraged to use the strategy at home with the child during playtime, mealtime, and other naturally-occurring routines. In other cases, a trainer may explain a strategy and ask the parent to try using it with the child; no modeling is provided. The trainer then elicits feedback from the parent and/or provides feedback to the parent about the attempt, how effective it was, and what the parent might do differently. The coaching sequence is repeated for a second and perhaps a third attempt by the parent, with mutual feedback after each. In still other cases, all of these strategies are combined: explanation, modeling, parent strategy use with the child, and feedback; this is sometimes referred to as behavioural skills training (BST). Other variations of these formats have also been used, but no evidence-based standard has been established. Thus, PMI research reflects a combination of these and other parent training and coaching approaches.

As was the case for psychoeducational interventions, numerous PMI studies have been conducted worldwide, especially over the past 10 years. Thus, once again, systematic reviews and meta-analyses that summarized PMI outcomes were located to examine the research evidence. Some of these studies included only child outcome measures as a result of the PMI (e.g., changes in child communication skills, autism characteristics, distressed behaviour), others included only parent outcome measures (e.g., changes in parent stress, mental health), and some included both.

PMI Child Outcomes

Table 6 summarizes 20 synthesis studies that include *at least child outcomes* and were published in English since 2013. Some such studies were quite narrow in scope (e.g., including only studies that used a specific type of experimental design) and others were quite broad in this regard. Some focused on PMIs for a specific age group (e.g., children under or over age 6) while others were more generic. Some restricted the focus of the PMI itself (e.g., PMIs aimed at reducing children's distressed behaviour, PMIs conducted in specific countries, PMIs designed for parents in a specific language group). Note that (a) all studies included research from multiple countries unless otherwise specified and (b) only studies in which autistic children predominated were included when children with other diagnoses were part of the sample.

Table 6: Summary of Systematic Reviews and Meta-analyses of In-Person Parent-Mediated Interventions (in chronological order by age range)

Author, Year (type)	# Studies/ dyads ^a	Child Diagnosis	Child Age	PMI Intervention Focus
PMIs for Young Children (< age 6)				
Nevill et al., 2018 (MA)	19/608	autism	15-72 mo	Broad ^b
Hampton & Rodriguez, 2022 (SR, MA)	17/715	possible autism	6-31 mo	NDBI or developmental
Law et al., 2022 (SR)	7/457	possible autism	6-31 mo	Broad
Pacia et al., 2022 (SR)	54/444	autism	19-69 mo	Family members as mediators
Deniz et al., 2024 (SR, MA)	26/1459	autism	12-72 mo	Play-based
PMIs for School-aged Children and/or Adolescents (> age 6)				
Althoff et al. 2019 (SR)	13/835	autism	≤8 yr	Broad; USA only
Reichow et al., 2022 (SR, MA)	75/4746	autism, ID, DD, DS, FX	M 6 yr	Broad
McGinnis et al., 2023 (SR)	10/19	autism	M 15.9	Daily living skills, distressed behaviour, BST
PMIs for Broad Age Ranges				
Oono et al., 2013 (MA)	10/55-316	autism	17 mo-6 yr	Broad
Postorino et al., 2017 (SR, MA)	8/343	autism	M 4-8	Distressed behaviour
Tarver et al. 2019 (SR, MA)	11/396	autism	2-14	Distressed behaviour
Deb et al., 2020 (SR, MA)	17/715	autism	20 mo-10yr	Broad
Liu et al., 2020 (SR, MA)	21/709	autism	1-15 yr	Broad; China, Hong Kong, Taiwan
Ratliff-Black et al., 2021 (MA)	18/170	autism	3-23	Broad
Conrad et al., 2021 (SR, MA)	30/1934	autism	15 mo-13 yr	Broad
Pi et al., 2022 (MA)	16/748	autism	3-29 yr	Social-communication using technology

Author, Year (type)	# Studies/ dyads ^a	Child Diagnosis	Child Age	PMI Intervention Focus
Cheng et al., 2023 (MA)	51/2895	autism	M 5.5 yr (2-15)	Broad
Kei et al., 2023 (SR, MA)	13/1029	autism, DD, IDD, FASD	2-8 yr	Communication
Londono et al., 2023 (SR, MA)	11/2222	autism, TD, DD, ADHD, CD	M 5.5-14	Distressed behaviour; families with limited majority language proficiency
Yakobova & Chen, 2023 (SR)	9/22	autism	2-17	Video-based PMIs, functional skills

^adyad = one parent/caregiver + one child; ^bBroad = PMIs addressed a broad range of skills (e.g., social-communication, play, daily living skills, etc.)

Key: ASD = autism spectrum disorder; BST – behavioural skills training; CD = conduct disorder; DD = developmental disability; DS = Down syndrome; FASD = fetal alcohol spectrum disorder; FX = Fragile X syndrome; ID = intellectual disability; IDD = intellectual or developmental disability; MA = meta-analysis; SR = systematic review; TD = typically developing

Many different measures were used across the original studies, and authors of the synthesis studies combined them in many different ways. Table 7 summarizes the child outcomes from all studies in Table 6. The most frequently-measured outcomes included overall language (i.e., a combination of expressive communication, language comprehension, and vocabulary scores), social skills/social engagement, adaptive behaviour/daily living skills, autism characteristics, and distressed behaviour.

Summary

For the most frequently-measured child outcomes, small-to-medium improvements following PMIs were found for 5/8 analyses of overall language development, 6/7 analyses of social skills/social engagement, 7/10 analyses of adaptive behaviour, 6/8 analyses of autism characteristics, and 10/10 analyses of distressed behaviour. Increases in adaptive behaviour and reductions in distressed behaviour were confined to PMIs for children >age 6. Outcomes for social communication were inconsistent, with two studies showing small improvements following PMIs and three showing no effect. Too few syntheses examined joint attention, expressive language, language comprehension, play skills, and cognitive development to detect patterns across studies.



Table 7: Child Outcomes of Systematic Reviews and Meta-analyses of in-Person Parent-Mediated Interventions (in chronological order)

Author, Year	Joint attention	Social communication	Expressive communication	Language comprehension	Overall language	Play skills	Social skills/ engagement	Adaptive behaviour/daily living skills	Autism characteristics	Cognitive development	Distressed behaviour
PMIs for Young Children (< age 6)											
Nevill et al., 2018					no		small		small	small	
Hampton & Rodriguez, 2022									no	no	
Law et al., 2022				medium -large	medium -large	medium -large					
Pacia et al., 2022		medium		medium					small		
Deniz et al., 2024		medium		small					small		
PMIs for School-aged Children and/or Adolescents (> age 6)											
Althoff et al. 201		medium				medium		medium	medium		medium
Reichow et al., 2022								no			medium
McGinnis et al., 2023								small			small
PMIs for Broad Age Ranges											
Oono et al., 2013	small	no	no	no	small			no	small		
Postorino et al., 2017											medium
Tarver et al. 2019											medium
Deb et al., 2020									small		
Liu et al., 2020					medium		medium	medium	large	large	
Ratliff-Black et al., 2021							medium	medium			large
Conrad et al., 2021								small	no		medium

Author, Year	Joint attention	Social communication	Expressive communication	Language comprehension	Overall language	Play skills	Social skills/ engagement	Adaptive behaviour/daily living skills	Autism characteristics	Cognitive development	Distressed behaviour
Pi et al., 2022		no			no	no					
Cheng et al., 2023					medium	small					medium
Kei et al., 2023		no			no						medium
Londono et al., 2023											small-medium
Yakobova & Chen, 2023					large	large					

Key: MA = meta-analysis; SR = systematic review; Large = large positive effect; medium = medium positive effect; small = small positive effect; no = no positive or negative effect

PMI Parent Outcomes

Table 8 summarizes 12 PMI synthesis studies that included *at least parent outcomes* and were published in English. With four exceptions, all of these PMI studies also appeared in Tables 6 and 7 because they included child outcomes as well. Again, many different measures were used across the original studies, and authors combined them in many different ways. The most frequently-measured outcome was parent responsiveness/engagement with their autistic child.

Summary

Small to large positive effects were found in 8/8 synthesis studies with measures of parent responsiveness/engagement. One of these (Sone et al., 2021) found this outcome only for PMIs that used a coaching strategy with parents; those that used didactic instruction plus modeling by the trainer, without including parent-child interaction opportunities and feedback as well, did not show this effect. In the Londono et al. (2023) study, the focus was on teaching parents how to support children with distressed behaviour, so the analogous outcome measure was called positive parenting.



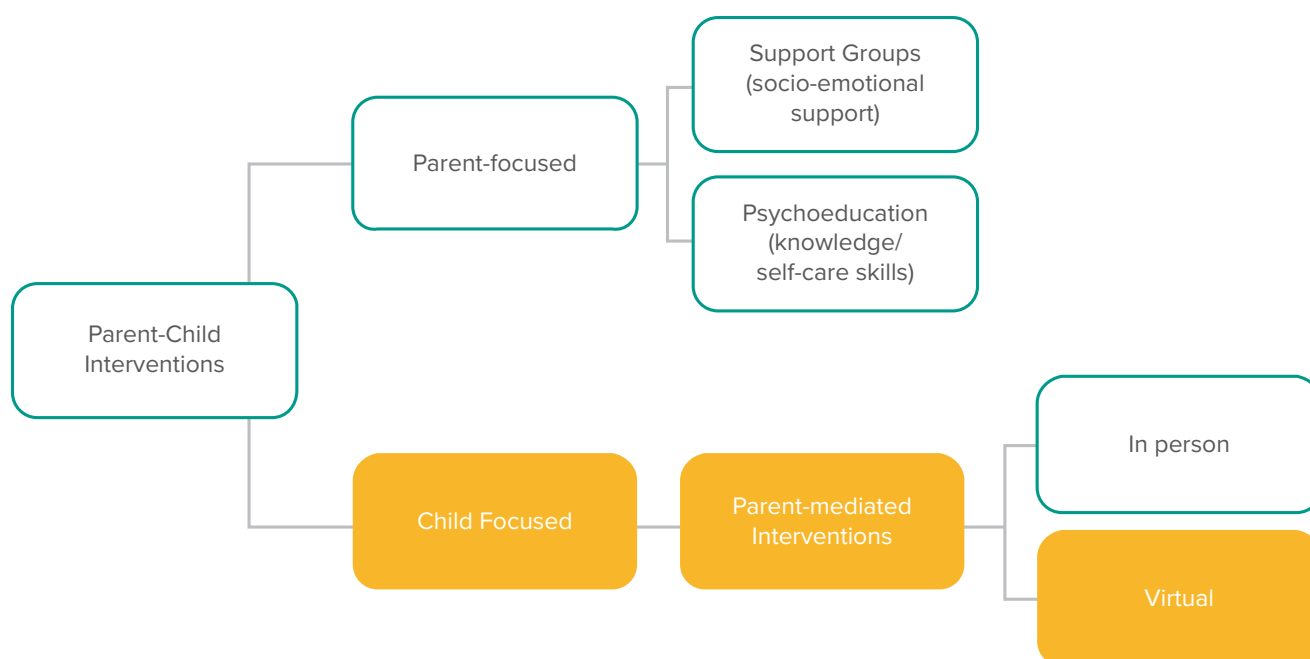
Table 8: Parent Outcomes of Systematic Reviews and Meta-analyses of In-Person Parent-Mediated Interventions (in chronological order by age range)

Author, Year	# Studies/ Dyads ^a	Child Age	PMI Focus	Stress	Psychological health	Responsiveness/ interaction skills	Positive parenting skills	Competence	Interpersonal family relations
Lang et al., 2009 (SR)	11/60	9 mo-19 yr	Communication			large			
Oono et al., 2013 (SR, MA)	10/55-316	17 mo-6 yr	Broad ^b			large			
Factor et al., 2019 (SR)	10/355	M 3-11 yr	Broad			small			
Tarver et al. 2019 (SR, MA)	11/396	2-14	Distressed behaviour					medium	
Deb et al., 2020 (SR, MA)	21/709	20 mo-10yr	Broad	small					
Schaefer & Andzik, 2021 (SR)	20/81	2-17 yr	Behavioural skills training			large			
Sone et al., 2021 (SR, MA)	7/480	3-51 mo	Early intervention			large, coaching			
Hampton & Rodriguez, 2022 (SR, MA)	17/715	6-31 mo	NDBI or developmental			medium			
Law et al., 2022 (SR)	7/457	6-31 mo	Broad			medium			
Reichow et al., 2022 (SR, MA)	75/4746	M 6 yr	Broad			medium			medium
Kei et al., 2023 (SR, MA)	13/1029	2-8 yr	Communication	small				no	
Londono et al., 2023 (SR, MA)	11/2222	M 5.5-14	Distressed behaviour; families with limited majority language proficiency				small- medium		

^adyad = one parent/caregiver + one child; ^bBroad = PMIs addressed a broad range of skills (e.g., social-communication, play, daily living skills, etc.)

Key: Large = large positive effect; medium = medium positive effect; small = small positive effect; no = no effect

PARENT-MEDIATED INTERVENTIONS (PMI), VIRTUAL



In the past decade, partially in response to the COVID pandemic, PMIs with virtual parent instruction have become increasingly popular. This format is especially useful for parents who live at a distance from centre-based resources where professionals are typically housed, as it enables them to access PMI training in their own homes without additional socio-economic or time burdens related to travel. Because of the large number of virtual PMI studies, results from systematic reviews and meta-analyses were again used to summarize the evidence. Some of these synthesis studies focused on comparisons of virtual and in-person (i.e., face-to-face) PMIs to answer the question: are the two formats equally effective, or is one more effective than the other? Others assessed the effectiveness of virtual PMIs compared to a control condition in which parents received no instruction. Table 9 provides a summary.

Table 9: Outcomes of Systematic Reviews and Meta-analyses of Virtual Parent-Mediated Interventions (in chronological order by age range)

Author, Year, Type	# studies/ dyads ^a	Child age	Focus of PMI	
Hall et al., 2016 (SR)	11/209	unknown	Wide range	Generally positive outcomes; “eLearning studies seem to demonstrate promising findings”
Parsons et al. 2017 (SR)	7/197	M 80 mo or less	ABA-based and social-communication NDBIs; self-directed; remote areas	Synchronous > asynchronous for parent skills, child social-communication
Sutherland et al., 2018 (SR)	14/284	2-11	ABA-based and social-communication NDBIs	“Largely positive” outcomes; in-person = virtual; synchronous > asynchronous
Tomlinson et al., 2018 (SR)	22/113	2-12	ABA-based	In-person = virtual; decreased child distressed behaviour
Ferguson et al. 2019 (SR)	28/194 parents	1-16	ABA-based and social-communication NDBIs	100% of children: improvement in at least one outcome measure; 61%: improvements in all outcome measures
Unholz-Bowden et al. 2020 (SR)	30/132	1-16	ABA-based	Decreased distressed behaviour or increased skills for most children; increased skills for most parents
Ellison et al., 2021 (SR)	34/557	2-16	ABA-based and social-communication NDBIs; in-person vs virtual	In-person = virtual, esp child for social-communication and distressed behaviour
Pi et al., 2022 (MA)	16/748	2-23	Social-communication	Children: no effect on social-communication, adaptive behaviour, emotion recognition
Yosep et al. 2022 (SR)	6/324	unknown	NDBIs	In-person = virtual for social-communication and social skills; synchronous important for positive outcomes

Author, Year, Type	# studies/ dyads ^a	Child age	Focus of PMI	
deKnocker & Toolan 2023 (SR)	12/410	1-19	ABA-based and social-communication NDBIs; in-person vs virtual	In-person = virtual for child social-communication; synchronous > asynchronous
Glenn et al., 2023 (SR)	14/375	1.5-16	ABA-based and social-communication NDBIs; self-directed	Children: small-medium increases in social-communication or decreases in distressed behaviour
Pan et al., 2023 (MA)	17/902	M 27-92 mo	Early intervention; some in-person vs virtual	Decreased parent stress and child distressed behaviour overall; in-person = virtual for both

^adyad = one parent/caregiver + one child

Key: ABA-based: PMIs based on the principles of applied behaviour analysis (ABA); NDBIs: naturalistic developmental-behavioural interventions (e.g., Early Start Denver Mode, JASPER)

Summary

Compared to other topics covered in this report, synthesis studies of virtual PMIs were relatively weak. Two did not specify children's age range; and 3 of the 5 studies published prior to 2020 did not describe the outcome measures in detail and/or provided only general conclusions. Because of this wide variability, it was not possible to construct a detailed Table of outcomes such as those provided for previous sections of this report. Nonetheless, a few conclusions can be drawn from the information summarized in Table 9:

- Six of the 12 studies found that virtual instruction in PMIs was as effective as in-person instruction;
- Four of the 12 studies found that virtual PMI instruction with at least some synchronous component was more effective than instruction that was asynchronous (i.e., self-directed) only. In asynchronous/self-directed instruction, parents simply signed onto a website and completed written and/or videotaped modules designed to teach them specific skills; no professional interaction was involved. In synchronous instruction, some or all of the instruction to parents was delivered virtually by a trained professional in real time (e.g., via Zoom or a telehealth platform).
- Five of the 12 studies found increases in children's social-communication skills following virtual PMI instruction, but one study (Pi et al., 2022) found no effect on this outcome;
- Five of the 12 studies found decreases in children's distressed behaviour following virtual PMI instruction; and
- Although not included in Table 9, parents generally expressed satisfaction with virtual PMI instruction and met fidelity on the skills they were taught (i.e., they learned to do them correctly).

PARENT-CHILD INTERVENTIONS: CONCLUSIONS

Many types of parent support interventions are common in autism and considerable research has been conducted to examine their effectiveness. Different types of parent supports are associated with different outcomes, and each may have a role to play in an overall constellation of services. In general, research suggests that:

- Parents who participate in support groups generally endorse them as beneficial for receiving social-emotional support from other parents with shared experiences; sharing resources; and enhancing acceptance, hope, and optimism about their child's future. On the other hand, objective measures of change do not support their effectiveness for reducing parent stress, anxiety, or depression, nor for increasing parents' psychological health (e.g., wellbeing, coping skills, etc.)
- Evidence-based psychoeducational interventions such as ACT, CBT, and mindfulness training have potential for reducing parental mental health challenges. Psychoeducational interventions aimed at information-sharing can help parents feel more confident and accepting of their child;
- Manualized, in-person parent-mediated interventions (PMIs) may result in improvements for children's language development, social engagement, adaptive behaviour, changes in autism characteristics, and distressed behaviour.
- Manualized, in-person PMIs may result in increased parent responsiveness/engagement during parent-child interactions.
- Virtual, synchronous PMI instruction can be as effective as in-person instruction; however, asynchronous instruction is not as effective. Virtual PMI instruction appears to be especially useful for increasing children's social-communication skills and decreasing children's distressed behaviour.

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PART 2: GROUP INTERVENTIONS

Historically, evidence-based early intervention programs for autistic toddlers and preschoolers have been delivered in a 1:1 (staff:child) format, based on each child's developmental abilities and needs. This requires an adequate number of trained staff to be available for the number of children who require individualized intervention, as well as concomitant funding for staff salaries and benefits. In recent years, a growing body of research has been conducted to explore the effectiveness of group-based early interventions that can be delivered in community settings and are more cost-effective. There is also considerable research on the effectiveness of group social skills interventions, which by their very nature require peer-to-peer interaction. Finally, some research has explored the utility of other group-based interventions, including occupational therapy, and physical activity programs. Research in each of these areas will be summarized in the sections that follow.

GROUP EARLY INTERVENTIONS

In 2018, Tachibana and colleagues published a paper summarizing a meta-analysis of individual versus group interventions for preschool children with autism spectrum disorder. In a meta-analysis, data from multiple studies are pooled and are then examined statistically to determine the overall outcomes of one or more types of intervention. Unfortunately, out of 32 studies included in the analysis, only three examined the outcomes of programs in which children received group-based early intervention for at least part of the day. Thus, despite the promise suggested by the study's title, Tachibana et al. concluded that "the small number of...group intervention studies included in the data synthesis limited our ability to make inferences regarding comparisons of individual versus group interventions" (p. 25) for young autistic children.

In this section, two types of naturalistic developmental-behavioral interventions (NDBIs) (Schriebman et al., 2015) that have been adapted for use in group early childcare settings -- the Group Early Start Denver Model (G-ESDM; Vivanti et al., 2017) and the Joint Attention, Symbolic Play, Engagement, and Regulation (JASPER) model (Kasari et al., 2022) -- are reviewed in detail. These are followed by summaries of two studies from Tachibana et al. (2018) that examined group-based interventions for young children.

Group Early Start Denver Model (G-ESDM)

By far, G-ESDM is the group-based early intervention approach that has received the most research attention to date. Since 2014, Giacomo Vivanti and colleagues have developed this approach and examined its use in community-based childcare centres in both Australia and the United States. G-ESDM is not a “watered down” version of ESDM, which was designed as a 1:1 intervention (Rogers & Dawson, 2010; Rogers, Dawson, & Vismara, 2012); rather, it is an adapted version that embeds ESDM goal-setting and instructional principles in the context of small group activities that are common in preschool and other early childhood settings. G-ESDM is designed to be delivered in a staff:child ratio of 1:4. Implementation requires the availability of an adequate, well-organized classroom space; a transdisciplinary team with at least one lead adult instructor certified in ESDM1; regular use of ESDM assessment and data collection tools to determine individual goals and track child progress; and opportunities for team members to plan and communicate regularly in a supportive environment. Table 10 summarizes the core G-ESDM principles and strategies.

Table 10: G-ESDM Principles and Strategies (Vivanti et al., 2017)

Principle	Strategies
Manage children’s attention effectively	<ul style="list-style-type: none"> • Use strategic positioning so the lead adult is face-to-face with all children and has easy access to materials • Gain attention of all children at the start of an activity • Minimize environmental distractors • Use materials that are interesting to all children in the group • Use individualized strategies to maximize attention • Facilitate shifts of attention between the adult, materials, and peers
Provide high quality teaching	<ul style="list-style-type: none"> • Insure that each child receives at least one learning opportunity per minute • Insure that the antecedent-behavior-consequence format of instruction is clear • Insure that the number of repetitions is well matched to individual children and to group needs
Use appropriate instructional techniques	<ul style="list-style-type: none"> • Use least-to-most prompting, shaping, chaining, and prompt fading • Use an “invisible support” person positioned behind the children to prompt target behavior, as necessary • Target appropriate behaviors for each child and do not allow a child more two sequential errors before adjusting the instructional technique

Principle	Strategies
Manage children's affect/arousal	<ul style="list-style-type: none"> • Insure that the overall group affect is pleasant and playful • If arousal issues are observed, adjust the activity to meet the needs of the group (e.g., change the pace) • Use “invisible support” as needed to assist children displaying affect/arousal challenges
Manage unwanted behavior in supportive ways	<ul style="list-style-type: none"> • Use positive techniques that successfully redirect the child and elicit more appropriate behavior, while maintaining safety of all staff and children • Implement strategies to prevent behavior from escalating and promote learning • Insure that adult roles when providing behavior support are clear, consistent, and well communicated
Maximize peer interaction	<ul style="list-style-type: none"> • Use materials and a group physical set-up to facilitate peer interaction • Support children to resolve conflict as independently as possible • Use multiple strategies for peer interaction by each child throughout the group activity (e.g., passing materials between peers, peers greeting each other, peers supported to observe other peers, peers supported to imitate each other, peers supported to communicate with each other, including requesting, asking questions, commenting)
Optimize children's motivation	<ul style="list-style-type: none"> • Choose and plan activities according to the interests of each child • Give choices and follow children's lead throughout the activity, as appropriate • Target a combination of maintenance (existing skills) and acquisition skills (new skills) for each child • Reinforce individual child attempts and provide natural reinforcement • Use strategies to maintain motivation (e.g., alternate preferred and less preferred activities, use an activity length that is appropriate for each child, use motivating objects)
Display positive Affect	<ul style="list-style-type: none"> • Display positive adult affect in face, voice, style, as appropriate for the needs of the group and without over-arousing the children. • Match positive affect to the overall affect of the children in the group

Principle	Strategies
Employ sensitivity and responsivity	<ul style="list-style-type: none"> • Make every effort to understand the verbal and non-verbal cues of each child • Respond to children's communication cues without reinforcing unwanted behavior
Provide multiple and varied communicative opportunities	<ul style="list-style-type: none"> • Target at least one communication objective for each child in each group activity • Provide communication opportunities for two or more of the following communication functions per child, per activity: requesting, commenting, naming, protesting, affirming, seeking help, indicating completion, greeting, and imitating the adult's sounds or gestures • Scaffold child communication by modelling language, expanding the child's utterances, and/or restating the child's utterances
Use appropriate adult language	<ul style="list-style-type: none"> • Use the "one-up" rule to expand the children's communications • If a range of language levels are present, vary language accordingly for each child • Insure that the adult's language is syntactically, semantically, and pragmatically appropriate
Use joint activity routines	<ul style="list-style-type: none"> • Target goals across multiple developmental domains • Individualize activities to an appropriate level for each child • Insure that each activity routine has a 4-part structure (set up, theme, elaboration, close)
Support smooth transitions between activities	<ul style="list-style-type: none"> • Structure the environment to facilitate independent transitions • Support children to transition as independently as possible • Insure that adult roles during transitions are clear • For children who find transitions difficult, use individualized strategies to support the transition

G-ESDM Research

Several studies have evaluated various aspects of G-ESDM effectiveness. In the first study, Vivanti et al. (2014) compared the effectiveness of preschool G-ESDM versus autism preschools that employed interventions derived from best practice guidelines (e.g., visual supports; structured large and small group activities; instruction in natural contexts such as free play and snack time; the Picture Exchange Communication System). Next, Vivanti & Dissanayake (2016) compared the effectiveness of G-ESDM preschools for autistic children <48 months and >48 months of age.

Later on, Vinen et al. (2018) and Clark et al (2023) conducted follow-up studies to explore the school-age outcomes of children who were in both the 2014 and 2016 studies. Vivanti et al. (2019) compared the outcomes of G-ESDM in inclusive early childhood settings (i.e., 1-3 autistic children and an average of 12 typically developing peers) versus specialized early childhood settings (up to 10 autistic children only). Vivanti et al. (2022) examined predictors of G-ESDM benefit for children in inclusive vs. specialized early childhood settings. Zitter et al. (2023) explored the feasibility of providing G-ESDM to low-income families in an under-resourced community. Most recently, Bent et al. (2023) compared the outcomes of preschool G-ESDM versus preschool Early Intensive Behavioural Intervention; EIBI was primarily delivered on a 1:1 basis using a manualized applied behavior analytic (ABA) curriculum. Table 11 provides details about each of these studies, including outcomes.

Summary

Altogether, this body of research offers several insights about the potential of G-ESDM, a group-based intervention for young autistic children:

- G-ESDM, a manualized group intervention (Vivanti et al., 2017) delivered in a 1:3-4 staff:child ratio and conducted by certified therapists/teachers for at least 15 hrs/wk, can be as effective as a primarily 1:1 ABA-based intervention of equivalent quality and intensity (Bent et al., 2023). Children with higher verbal and nonverbal skills prior to intervention initiation are likely to benefit more from G-ESDM than children with lower skills (Clark et al., 2023).
- G-ESDM can be equally effective for autistic children both under and over 48 months of age (Vivanti & Dissanayake, 2016).
- In the short term, G-ESDM has an advantage over high-quality, evidence-based preschool programs of equivalent intensity (Vivanti et al., 2014); however, this advantage may wane over time, depending on the quality of post-preschool services received (Vinen et al., 2018).
- G-ESDM can be implemented effectively, with equivalent outcomes, in both inclusive and autism-only early childhood settings (Vivanti et al., 2019). Children with higher social interest in peers and higher nonverbal cognitive skills at baseline are likely to benefit more from G-ESDM in inclusive settings (Vivanti et al., 2022).
- G-ESDM implementation is feasible and may be effective in low-resource settings with staff who are less trained, but more research is needed (Zitter et al., 2023).

Table 11: G-ESDM Research

Author, Year, Country	Study Design	Focus	Participant Groups	Staff:Child Ratio	Intervention Frequency	Staff Training	Outcomes
Vivanti et al., 2014 (Australia)	pre-post	G-ESDM preschool vs ABA evidence-based autism preschool	27 G-ESDM, 30 autism preschool; all 18-60 mo	G-ESDM: 1:3-4 autism preschool: 1:2-3	Both groups: 15-25 hr/wk, 12 months	ESDM certification	Both groups: gains in cognitive, adaptive, and social skills; G-ESDM group: larger gains in developmental rate and receptive language
Vivanti & Dissanayake, 2016 (Australia)	pre-post	G-ESDM for children <48 mo and >48 mo	18-48 mo: 32 children; 48-62 mo: 28 children	Both groups: 1:3 G-ESDM	Both groups: 15-25 hr/wk, 12 months	ESDM certification	<48 mo: larger expressive and receptive language gains compared to >48 mo; both groups: equal gains in nonverbal cognition and adaptive behaviour
Vinen et al., 2018 and Clark et al., 2023 (Australia)	Post-followup	Follow-ups of children in 2014, 2016 studies	31 G-ESDM, 28 autism preschool; all 79-84 mo	n/a; all children were in school	n/a; all children were in school	n/a; all children were in school	All children: gains in cognitive functioning by school age;; G-ESDM: by school age, children with higher baseline verbal and nonverbal skills made more gains in both domains and in adaptive behaviour
Vivanti et al., 2019 (Australia)	RCT	G-ESDM in inclusive vs autism-only preschools	22 inclusive, 22 autism-only; M age for both: 25-26 mo	Both groups: 1:4	Minimum 15 hr/wk for 10 months	Both: 1 ESDM certified therapist + ECEs with ESDM training	Both groups: gains in spontaneous vocalization, social interaction, imitation, verbal cognition, adaptive behavior, autism symptoms

Author, Year, Country	Study Design	Focus	Participant Groups	Staff:Child Ratio	Intervention Frequency	Staff Training	Outcomes
Vivanti et al. (2022) (Australia)	RCT	Children who benefit most from inclusive G-ESDM	30 inclusive, 28 autism-only; M age for both: 25-27 mo	Both groups: 1:4	Minimum 15 hr/wk for 10 months	Both: G-ESDM certification	Children who attended inclusive preschools and had higher social interest and nonverbal cognitive skills at baseline showed larger gains in social communication
Zitter et al., 2023 (USA)	pre-post	G-ESDM effectiveness in under-resourced communities	5 children, 32-41 mo, autism preschool	1:3	20 hr/wk for 6 months	ECE staff with ESDM training and support but no certification	4/5 children made measurable progress in cognition and in receptive and expressive language
Bent et al. (2023) (Australia)	pre-post	G-ESDM vs EIBI	43 G-ESDM, 46 EIBI; M age for both: 32 mo	G-ESDM: 1:3-4 EIBI: 1:1-2; primarily 1:1	G-ESDM: 15 hr/wk for 10 mo EIBI: 20-27 hr/wk for 10 mo	G-ESDM: 1 ESDM certified + trained assistants; EIBI: 1 BCBA + trained therapists	Both groups: significant overall gains in cognitive development; children who paid more attention to a playful adult at baseline made greater gains in verbal and adaptive behaviour G-ESDM: children with higher sustained attention at baseline made greater gains in nonverbal cognition

Joint Attention, Symbolic Play, Engagement, and Regulation (JASPER)

Like ESDM, the JASPER model was originally designed as a 1:1 (staff:child) intervention and has a long research history documenting its effectiveness (Waddington et al., 2021). Based on this research, the JASPER model was manualized in 2022 (Kasari et al., 2022). Implementation of standard JASPER requires the availability of an adequate, well-organized toy play area; an adult instructor who is JASPER certified²; and regular use of JASPER assessment tools to determine play level, individual goals, and child progress. JASPER therapists complete an extensive training program consisting of both didactic and hands-on instruction prior to certification.

Two types of research have examined the effectiveness of JASPER in preschools and other childcare settings. In some studies, community providers were trained to use basic JASPER strategies on a 1:1 basis during part of a preschool day (e.g., 30 minutes); otherwise, the children participated in the ongoing curriculum activities in the classroom. In other studies, community providers were taught to use modified JASPER strategies in small group activities during part of the day. Only the latter studies will be reviewed in this section, as they are most relevant to the feasibility and effectiveness of group instruction. JASPER strategies and their modifications for group instruction are summarized in Table 12.

Table 12: JASPER Strategies and Modifications for Groups (Panganiban et al., 2022)

Strategy	Modifications for Groups
Support engagement and regulation	<ul style="list-style-type: none"> • Appropriately modulate affect to match those of the children and provide space for child communication • Allow children some choice of materials used • Use behavioral strategies to support engagement and regulation
Set up the environment	<ul style="list-style-type: none"> • Set up the table and group to promote engagement and social communication • Select materials appropriate for the developmental abilities of children • Sit in front of the children and provide support when needed
Balance imitation and modeling	<ul style="list-style-type: none"> • Model the steps of an activity at the beginning of the play routine • Incorporate a balance of imitation and modeling throughout the play routine

² In BC, training for JASPER certification is available through the Nurture Society for Learning and Development (<https://nurturelearn.ca/>).

Strategy	Modifications for Groups
Establish play routines	<ul style="list-style-type: none"> Set up the activity with clear, repeatable steps, and clear, active roles for all children and the teacher Modify activities to meet the developmental level of all children in the group Build in moments to facilitate peer interaction and/or collaboration
Expand play routines	<ul style="list-style-type: none"> Provide environmental support to help each child add new play steps Imitate play expansions; if a child does not expand, provide support
Program for joint attention and requesting	<ul style="list-style-type: none"> Model joint attention and requesting throughout the activity and respond to all children's joint attention and requesting bids Provide explicit opportunities for children to initiate joint attention
Use appropriate language	<ul style="list-style-type: none"> Model language at the children's level, responding to children's language, expanding children's language, and providing opportunities for children to initiate language

Small Group JASPER Research

Several studies have evaluated various aspects of small group JASPER (JASPER-SG) effectiveness. In the first study, Chang et al. (2016) compared small group “play centre” JASPER instruction to small group play centre instruction using ABA approaches. All preschool classrooms in the study used the ABA-based Verbal Behavior Milestones Assessment and Placement Program (VB-MAPP; Sundberg 2008) as their primary curriculum. The format of the Chang et al. study was later applied to low-resource classrooms for autistic toddlers (Shire et al., 2017). Subsequently, Shire et al. (2019) conducted a follow-up study in the same classrooms to examine JASPER-SG effectiveness in a new toddler cohort and the outcomes in year 2 of the program for children in the 2017 study. Gulsrud et al. (2019) examined the effectiveness of low dose JASPER training in multiple urban, low-income community childcare centres following autism screening. In one of the most recent studies, Panganiban et al. (2022), taught teachers to embed JASPER-SG strategies into the Creative Curriculum for Preschool (CC; Dodge et al., 2002) that was utilized in low-resourced, ethnically diverse classrooms that each served up to 10 children with mixed disabilities. Finally, Chang et al. (2022) examined JASPER-SG effectiveness for children with bilingual vs monolingual language exposure. Table 13 provides details about these studies and their outcomes.

Summary

Together, the studies summarized in this section offer several insights about group-based JASPER:

- Following relatively brief training and coaching interventions, early childhood educators can learn to use JASPER-SG strategies during small group instruction with toddlers and preschoolers who have either suspected or confirmed autism (Gulsrud et al., 2019; Panganiban et al., 2022).
- Low dose (i.e., ~ 30 min/day) JASPER-SG instruction as part of an otherwise evidence-based early childhood curriculum may promote joint attention gestures, vocal language, child-initiated joint engagement, functional play skills, and/or social engagement with peers for autistic toddlers and preschoolers.
- JASPER-SG can be implemented successfully in low-resource, ethnically diverse, autism-only classrooms as well as in mixed-disability classrooms (Gulsrud et al., 2019; Shire et al., 2017; Panganiban et al., 2022), and both monolingual and bilingual children can benefit (Chang et al., 2022).

Table 13: JASPER-SG Research

Author, Year, Country	Study Design	Focus	Participant Groups	Staff:Child Ratio	Intervention Frequency	Staff Training	Outcomes
Chang et al., 2016	RCT	JASPER-SG vs activity-based small groups; both in ABA preschool classrooms	35 JASPER-SG, 28 small group ABA; all age 3-5 yr	Both ABA and JASPER small groups: 1:2-4	Both: 30 min small group/ day for 2 months	Both: training in VB-MAPP; JASPER-SG: 1 hr didactic + 2-10 15 min coaching sessions/wk, for 8 wks	JASPER-SG children had greater improvement in initiations of joint attention gestures, joint attention language, child-initiated joint engagement, functional play skills, mean length of utterance with their teachers, and overall cognitive development
Shire et al. 2017	RCT	Same as Chang et al., 2016 but in low-resource preschool classrooms	78 JASPER-SG, 69 small group ABA; all age 24-36 mo	Both ABA and JASPER small groups: 1:5	Both: 30 min small group/ day for 10 weeks	Both: training in VB-MAPP; JASPER-SG: 1-wk onsite training + ongoing remote support	JASPER-SG children had more improvement in play skills, joint engagement, joint attention, and social communication
Shire et al. 2019	New RCT and year 2 of Shire et al. 2017	Same as Chang et al., 2016 in low resource classrooms; also change in Shire et al. 2017 children in year 2	55 JASPER-SG; 63 year 2 JASPER-SG; all M age 32 mo at entry	Same as Shire et al., 2017	Same as Shire et al., 2017	Same as Shire et al., 2017	New RCT: same outcomes as Shire et al., 2017; year 2: joint engagement and initiation skills from year 1 were maintained but play skills and social communication were not

Author, Year, Country	Study Design	Focus	Participant Groups	Staff:Child Ratio	Intervention Frequency	Staff Training	Outcomes
Gulsrud et al., 2019	RCT	Effects of low dose JASPER-SG training	16 JASPER-SG; 4 regular childcare; all age 16-30 mo	JASPER-SG: 1:4-5; regular childcare: unknown	JASPER-SG: 30 min, three times weekly for 4 wks	2-hour introductory JASPER-SG seminar and minimal onsite support	JASPER-SG children had increased child-initiated joint engagement, symbolic play, and language use
Panganiban et al., 2022	RCT	JASPER-SG in low resource, mixed disability classrooms vs Creative Curriculum (CC) small groups	33 JASPER-SG + 21 small group CC; M age 49 mo	Both: 1:2-5	Both: three 10-15 min small groups/day	Both: training in CC; JASPER-SG: 2 hr didactic instruction + two, 1 hr coaching sessions/wk, average 28 hrs overall	Both: gains in joint attention, requesting, expressive language, and receptive language: JASPER-SG: more peer engagement in small groups
Chang et al., 2022	Followup to 2016 study	JASPER-SG effects for children with bilingual vs monolingual home exposure in 2016 study	Same as Chang et al., 2016	Same as Chang et al., 2016	Same as Chang et al., 2016	Same as Chang et al., 2016	JASPER-SG children with bilingual home exposure demonstrated the greater gains in receptive language

Other Group Early Intervention Studies

Two additional research studies also examined the effectiveness of group-based early intervention. In Landa et al. (2011), 50 autistic toddlers (age 21-33 mo) were randomized to one of two 6-month interventions: Interpersonal Synchrony (IS) or Non-Interpersonal Synchrony. Both interventions provided identical intensity (10 hours/week in the classroom), adult-to-child ratio (3:5), daily schedules, home-based parent training (1.5 hours per month), parent education (38 hours in total), a developmental curriculum, and instructional strategies (including discrete trial instruction, natural environment teaching, visual supports, and low-tech augmentative communication supports, as needed). However, children in IS classrooms received many more opportunities to respond to and initiate joint attention, imitate others during social interaction, and share positive affect, with interventionists enticing and modeling social targets and prompting as needed. Results indicated that children in both types of classrooms made comparable and significant gains in expressive language, nonverbal cognition, joint attention initiation, and shared positive affect; however, children in the IS group showed greater gains in socially engaged imitation. This study provides additional support for the effectiveness of a group-based approach in a preschool setting for autistic children.

In Roberts et al. (2011), 84 autistic preschoolers (age 2-5 yr) were randomized to one of three groups: a home-based (HB) program, a centre-based (CB) program, and a waitlist (WL) comparison group. It is important to note that the CB program was not an option for children who lacked sufficient social maturity or engaged in high levels of distressed behavior that would have precluded them from benefitting from small group instruction; such children were shifted to the HB program as necessary. Children in the HB program were visited by a member of a transdisciplinary team for 2 hr every 2 wks for 40 weeks (total = 40 hrs maximum). During these visits, the team member provided training to develop parents' skills for working effectively with the child in priority areas such as managing distressed behaviour in a positive manner, teaching functional communication skills, extending attending and play skills, and developing self-help skills such as independent toileting. Children in the CB program attended 2 hr sessions for 40 weeks (total = 80 hr maximum). The CB program consisted of six playgroups with a 2:4-6 staff:child ratio, plus six concurrent parent support and training groups. The child playgroup component involved children participating in a condensed, manualized preschool curriculum with the goal of preparing them for integration into regular preschool settings by focusing on the development of social play skills, functional communication skills, and participation in small group activities. Results indicated that children in all three groups made gains over the intervention period in some domains of behaviour, communication, or social interaction. However, children in the CB group improved significantly more than those in the other two groups on some social and communication measures. Parent outcomes varied, with CB group parents making the most gains in their perception of competence and quality of life. Overall, the small group centre-based + parent program resulted in the best and most cost-effective outcomes for the autistic children and families who participated in it.

GROUP-BASED EARLY INTERVENTIONS: CONCLUSION

Almost all of the research studies on the effectiveness of small group interventions for young autistic children have been based on manualized NDBI approaches that were originally designed for 1:1 delivery and were subsequently adapted for groups. Two models -- G-ESDM and JASPER-SG -- predominate, with promising outcomes available for both. G-ESDM was designed to be used in a whole-classroom context, while JASPER-SG was designed to be embedded in other, evidence-based early childhood curricula. Of note is the fact that, in all of the JASPER-SG studies, children in both the experimental and control groups received small group instruction but only those in groups run by JASPER-trained teachers showed significant improvements in joint attention, communication, and/or social domains. From this, it seems clear that small group instruction may not be effective unless it is delivered by staff who have been taught to use evidence-based strategies and supported to do so. It is also important to note that, with the possible exception of the Bent et al. (2022) G-ESDM study, no research has examined the comparative effectiveness of solely individual (i.e., 1:1) versus solely group instruction (i.e., 1:2 or more) with this population. Bent et al. is qualified here as a “possible” exception in that 88% of children in the EIBI group in that study received the majority of intervention hours (21 out of a maximum of 27 hr per week) on a 1:1 basis; thus, although there was some 1:2 intervention for this group, it did not predominate. Furthermore, regardless of type, no study has provided less than 10 hr/wk of intervention and all have provided intermittent, ongoing support to teachers and teaching assistants following initial training.

The “bottom line” from this body of research is that group-based early childhood interventions can be effective if they are derived from an evidence-based NDBI model and delivered at adequate intensity (i.e., no less than 10 hr/wk) by trained staff who receive ongoing coaching and support from a qualified and experienced trainer. Additionally, individual child goals should be identified using a developmental assessment tool that is designed to identify current and target skills in key domains (e.g., for G-ESDM: the ESDM Curriculum Checklist (Rogers & Dawson, 2010); for group JASPER: the Short Play and Communication Evaluation (SPACE; Shire et al., 2018). Finally, data should be collected periodically to evaluate children’s progress and adjust instruction, as necessary.

SOCIAL SKILLS GROUPS

Regardless of age, autistic individuals struggle to develop social skills; in fact, difficulty in this domain is one of the characteristics required for a diagnosis. Broadly, social skills are “socially acceptable, learned behaviors that enable individuals to function competently in various social tasks. These specific behaviors, or skills, increase the likelihood of others receiving an individual positively and can be culturally bound” (Moody & Laugeson, 2020, p. 359). Social skills are essential for the development of reciprocal friendships and romantic relationships and are also predictive of mental health outcomes, quality of life, self-esteem, and overall happiness.

Because autistic individuals experience lifelong social challenges, a large body of research has examined the effectiveness of interventions in this domain. For young children, evidence-based early intervention programs target at least basic social skills such as turn-taking, joint attention, social initiation, and requesting. For school-aged children and adolescents, instruction usually focuses on more advanced skills such as the ability to initiate and maintain conversational interactions; understand and use nonliteral language (e.g., idioms), sarcasm, and jokes; and know “who and when to talk about what” (i.e., conversational modulation). By its very nature, social skills instruction requires at least two people: the learner and another person with whom the learner can interact. Thus, the advantage of group social skills instruction is that children can learn and practice these skills with their peers rather than with an adult, who is the only person available when instruction is delivered in a 1:1 format.

Group Social Skills Interventions for Young Autistic Children

As noted previously, social skills instruction is included in all evidence-based early intervention programs, including those that are offered in a group context. Thus, approaches such as G-ESDM, JASPER-SG, and others that were reviewed in the Early Intervention section include social skills instruction and are not included in this section as well. In addition, a few individual studies in the past 10 years have examined specific group social skills approaches for young children; Table 14 provides a summary.

Table 14: Studies of Group Social Skills Interventions for Young Autistic Children

Author, Year, Country	Study Design	Participants; Groups	Intervention	Intervention Frequency	Outcomes
Ichikawa et al., 2013	RCT ^a	11 children with HFA ^b , age 5-6 and parents; 5 in SSG ^c , 6 in control	children: warm-up, games, role-plays and feedback, exercise routine parents: child observations, parent training in social skills support	SSG: weekly 2-hr group sessions over 6 mo (20 sessions total) control: 3 group meetings with social worker	SSG children: moderate improvement in social reciprocity and parent-child interactions SSG parents: small reduction in depression, moderate reduction in stress
Park et al. 2023	pre-post	11 children, age 4-6 and parents	PEERS® for Preschoolers ^d : children: watch puppets model social skills, practice and feedback with puppets and games; practice in mock playdates parents: learned to use praise, prompts, feedback, and reinforcement during mock play groups/dates	16 90-min group sessions, once weekly	Post: improvements in children's social cognition, motivation, assertion, and engagement; reductions in restricted/repetitive behaviour and hyperactivity/inattention
Tripathi et al., 2022	pre-post-follow-up (-5 yr)	29 children, age 4-6 and parents	PEERS® for Preschoolers ^d ; see Park et al., 2023	16 90-min group sessions, once weekly	Post: reductions in child ASD-related social impairments, hyperactivity/ inattention, and parent stress; improvements in child self-control, engagement, and responsibility; increase in monthly playdates Followup: maintenance of gains in ASD-related social impairments (social communication, social responsiveness, social motivation) and playdate frequency

^aRCT = randomized controlled trial (participants were assigned at random to an intervention or a control group that did not get intervention)

^bHFA = high functioning autism

^cSSG = social skills group

^dPEERS® = Program for the Education and Enrichment of Relational Skills

Summary

Two of the three studies in Table 14 examined the effectiveness of the Program for the Education and Enrichment of Relational Skills (PEERS®) for Preschoolers (Laugeson, 2014), a recent adaptation of the PEERS® curriculum for adolescents and young adults, one of the few evidence-based group social skills programs for autistic individuals. Both of these studies showed short-term effects and one documented long-term effects (after an average of ~3 years) in several areas as well. It is important to note, however, that children in Park et al. (2023) had IQ scores between 75-166 and children in the larger follow-up study (Tripathi et al., 2022) were required to demonstrate “comprehension and expression of sentence-level speech, with spontaneous expressive use of 4-word phrases including verbs” (p. 2612) during interactive play activities prior to study commencement. Furthermore, neither study was a randomized controlled trial that compared children and parents who participated in the PEERS® intervention to those who did not, so additional research using this “gold standard” design is needed. Nonetheless, it appears that PEERS® for Preschoolers has promise as a focused group-based approach for teaching social skills to young children

Group Social Skills Interventions for School-Aged Autistic Children and Adolescents

Because numerous studies of group social skills interventions have been conducted for autistic children over age 6, research in this section was examined primarily through systematic reviews and meta-analyses (see pp. 15-16 for definitions). In 2012, Reichow et al. conducted the first systematic review and meta-analysis of group social skills research for autistic children and youth age 6-12. Only five RCTs (196 participants in total) met the inclusion criteria, and they found “some evidence” (p. 269) that social skills groups improve overall social competence. Since then, a number of additional reviews have been completed. Table 15 provides a summary of reviews of group social skills studies for children and adolescents that were published in English in the past 10 years. Studies that included both adolescents and young adults or that did not focus specifically on group interventions were not included.

Table 15: Systematic Reviews and Meta-analyses of Group Social Skills Interventions for School-Aged Autistic Children and Adolescents

Author, Year, Country	Type and Number	ASD Participants	Interventions	Intervention Frequency	Outcomes
Miller et al. 2014	Systematic review (SR ^a); 44 studies, 1,123 participants	Adolescents age 12-18 yr; no ID ^b	typically, 4-6 children/group; more than one study examined the Multimodal Anxiety and Social Skills Program (MASSI), PEERS [®] for Adolescents, or Skillstreaming; most included a combination of didactic teaching and experiential components (e.g., group discussion and/or role-plays); 41% included a parent component; 30% included peers without autism	range of 6-180 hrs of intervention, with the majority occurring weekly for 10–16 weeks	“significant evidence for the usefulness of social skills groups as an intervention for adolescents with autism” (p. 254)
Gates et al., 2017	SR and meta-analysis (MA ^c); 18 studies (no early intervention), 735 participants	Children and adolescents, average = 10.5 yr; IQ = 86-112	mixed group sizes; more than one study examined the SENSE Theatre [®] , Children’s Friendship Training, PEERS [®] for Adolescents, adapted Skillstreaming, or summerMAX; some provided didactic information about socially appropriate behaviors in social contexts (i.e., social knowledge), while others also provided social contexts for peer interactions and reinforcement when they occurred (i.e., social performance); 22% included peers without autism	majority involved 1- to 2-hr weekly sessions, with a range of 5-97 sessions overall	moderate improvements in social competence, reflected in data from parents, youth, observers, and tasks, but not teachers

Author, Year, Country	Type and Number	ASD Participants	Interventions	Intervention Frequency	Outcomes
Wolstencroft et al., 2018	SR, 10 studies; MA, 7 of the 10 studies; 352 participants	Children and adolescents, average age 9-20 yr; all but one study: no ID	both didactic and experiential instruction via manualized programs: SENSE Theatre®, cognitive-behaviour therapy-based social skills, PEERS® ^d for Adolescents, adapted Skillstreaming, summerMAX, and Children's Friendship Training; 90% included a parent component; 10% included peers without autism	range of 60 min/wk for 10 weeks to 70 min, 5 days/wk for 5 wks	large reductions in ASD-related social impairments and restricted/repetitive behaviour; large improvement in social communication; moderate improvement in social skills; better outcomes for interventions that included parents and were of greater duration or intensity
Zheng et al., 2021	SR and MA, 12 studies, 441 participants	Adolescents, age 11-19 yr; all but one study: no ID	all studies used PEERS® for Adolescents, some translated to Korean, Hebrew, Chinese, or Japanese; 100% included a parent component	most were weekly 90 min sessions for 14 weeks	large increase in self-reported social knowledge; moderate increases in social engagement (i.e., hosted and invited get-togethers) and parent-reported social functioning
Gilmore et al., 2022	SR, 16 studies, 1,119 participants	Adolescents, average age 11-17 yr, no ID	3-10 youth/group; didactic and experiential instruction via manualized programs: PEERS® for Adolescents, KONTAKT®, SENSE Theatre®, Social Tools and Rules for Teens (START), MASSI, Sociodramatic Affective Relational Intervention (SDARI), and SOSTA-FRA; 75% had a parent component, 25% included peers without autism	average was weekly 90 min sessions for 14 weeks	small decrease in social impairments; moderate increase in parent-reported social functioning; large increase in social knowledge; small increase in hosted get-togethers

Author, Year, Country	Type and Number	ASD Participants	Interventions	Intervention Frequency	Outcomes
Afsharnejad et al., 2023	SR and MA, 18 studies, 1,277 participants	Adolescents 11-19 yr; verbal IQ >70	Same interventions as Gilmore et al.	average was weekly 90 min sessions for 14 weeks	large increases in social knowledge, social skills, friendship quality, and hosted get-togethers; small decrease in behavioural and emotional challenges

^aSR = systematic review

^bID = intellectual disability

^cMA = meta-analysis

^dPEERS® = Program for the Education and Enrichment of Relational Skills

Summary

Overall, results support the use of group-based social skills instruction, especially when based on a manualized intervention approach such as PEERS® for Adolescents (Laugeson & Frankel, 2010), which was included in all six studies and has the most robust research support overall. Manualized interventions were almost always delivered by staff who were trained in the approach or formally certified as instructors. In addition, almost all most included parents or caregivers in the intervention and taught them to support social skill development outside of structured teaching sessions by, for example, helping the child or youth initiate or participate in play dates/get-togethers with peers, providing support during these activities, and reinforcing appropriate social behaviour when it occurred. Instruction was typically provided weekly for 10-14 weeks and, when group size was reported, it ranged between 3-10 children or youth. It is important to note, however, that none of the group-based social skills interventions in Table 15 were designed for autistic children or youth with co-existing intellectual disabilities. References and websites for named programs in Table 15 are provided in the Appendix of this section, as available.

Other Group-Based Interventions

Two additional studies published in the past ~10 years have examined the effectiveness of other types of group interventions for autistic children and youth. Hirschman et al. (2023) compared group vs individual occupational therapy for autistic toddlers (age 2-4) in an RCT that involved 20 children who were assigned at random to the two conditions. The study was motivated by a need to improve accessibility and reduce wait times without additional professional personnel or budget resources and without negatively affecting child outcomes. Both interventions took place in large room that had various play materials in it (e.g., balls, a barrel, beads and strings, dolls, a mattress). In the individual condition, which lasted between 13-19 weeks, an occupational therapist (OT) introduced a child to 2-3 items at time; allowed him/her to choose an activity; and encouraged him/her to join, cooperate and engage in mutual play. In the group condition, which lasted only 12 weeks, two OTs supported up to four children at a time to play with the same toys, which were organized into three experiential play stations in the same room. Each OT played with one or two children simultaneously and if a child played on their own for up to 5 min, a therapist approached them to engage. Results indicated that group therapy children waited half as long (average = 52 days) to commence therapy compared to individual therapy children (average = 109 days). Children in individual therapy attended more sessions (average = 11) compared to children in group therapy (average = 7) but no significant differences were found for changes between individual and group outcomes for adaptive behaviour, quality of life, and fine motor skills. In other words, children in the individual therapy condition made similar progress to those in the group condition. Furthermore, no differences were found between OTs' work satisfaction scores at the beginning of the study and 5 months thereafter. The study provides preliminary evidence that implementation of group OT for autistic toddlers is feasible and can result in reduced wait times, allowing for earlier intervention without increasing staff burden.

Howells et al. (2019) conducted a systematic review and meta-analysis of group-based organized physical activity interventions for school-aged autistic children (age 3-16). Eleven studies (379 participants) were included in the systematic review and seven were included in the meta-analysis (348 participants); autistic children both with and without ID were represented. Organized physical activity interventions included horse riding, martial art techniques, a soccer skills program, a multi-sport camp program, and an outdoor adventure camp program. Across all studies, there was a small but significant improvement in some aspect of children's social functioning, but no improvement in communication skills. Changes in gross motor and other physical activity-related skills were not reported. Nonetheless, the combined results suggest that group-based physical activity may provide opportunities for social skill development.³

GROUP-BASED SOCIAL SKILLS AND OTHER INTERVENTIONS: CONCLUSION

As was the case for group early intervention programs, most of the research on the effectiveness of group social skills interventions has focused on manualized approaches that were delivered by trained clinicians. It is important to note that no research has examined the effectiveness of social skills programs for children with intellectual disability and/or minimal language comprehension and verbal expression. Nonetheless, there is robust evidence that several manualized programs can result in improved social knowledge, functioning, and/or engagement for autistic children and youth without intellectual disability. The extent to which similar results can be obtained from the informal, less structured social skills programs that are typically offered in Child Development Centres is unknown. There is also preliminary evidence that group occupational therapy and physical activity interventions can be useful.

³ Note that this study was not included in any of the systematic reviews or meta-analyses of social skills interventions summarized in Tables 14 and 15.

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OTHER GROUP INTERVENTIONS

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APPENDIX, PART 2

References and/or Websites for Named Group Social Skills and Other Group Interventions

Children's Friendship Training:

- https://api.pageplace.de/preview/DT0400.9781135451523_A24427453/preview-9781135451523_A24427453.pdf

KONTAKT®:

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- <https://paa.com.au/product/kontakt/>

Multimodal Anxiety and Social Skills Program (MASSI):

- White, S. W., Ollendick, T., Albano, A. M., Oswald, D., Johnson, C. R., Southam-Gerow, M. A., Kim, I., & Scahill, L. (2013). Randomized controlled trial: Multimodal anxiety and social skill program for adolescents with autism spectrum disorder. *Journal of Autism and Developmental Disorders*, 43(2), 382–394
- No manual available.

PEERS® for Adolescents:

- Laugeson, E., & Frankel, F. (2010). *Social skills for teenagers with developmental and autism spectrum disorders: The PEERS treatment manual*. New York: Taylor & Francis Group.
- <https://www.semel.ucla.edu/peers/purchase-peers%C2%AE-manuals>

SENSE Theatre®:

- Corbett B., Key A., Qualls L., Fecteau, S., Newsom, C., Coke, C., & Yoder, P. (2016). Improvement in social competence using a randomized trial of a theatre intervention for children with autism spectrum disorder. *Journal of Autism and Developmental Disorders*, 46(2):658-672.
- <https://sensetheatre.com/>

Skillstreaming:

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- <https://www.skillstreaming.com/>

Social Tools and Rules for Teens (START):

- Vernon, T., Miller, A., Ko, J., & Wu, V. Social Tools And Rules for Teens (The START Program): Program description and preliminary outcomes of an experiential socialization intervention for adolescents with autism spectrum disorder. *Journal of Autism and Developmental Disorders*, 46(5):1806-23.
- No manual available.

Socio-Dramatic Affective Relational Intervention (SDARI):

- Lerner, M., Mikami, A., & Levine, K. (2011). Socio-dramatic affective-relational intervention for adolescents with Asperger syndrome & high functioning autism: Pilot study. *Autism*, 15(1), 21-42.
- No manual available.

SOSTA-FRA:

- Freitag, C. M., Jensen, K., Elsuni, L., Sachse, M., Herpertz-Dahlmann, B., Schulte-Ruther, M., Hanig, S., Gontard, A., Poustka, L., Schad-Hansjosten, T., Wenzl, C., Sinzig, J., Taurines, R., Geisler, J., Kieser, M., & Cholemkery, H. (2016). Group-based cognitive behavioural psychotherapy for children and adolescents with ASD: The randomized, multicentre, controlled SOSTA-net trial. *Journal of Child Psychology and Psychiatry*, 57(5), 596–605
- No manual available in English.

summerMAX:

- Lopata, C., Thomeer, M. L., Volker, M. A., Toomey, J. A., Nida, R. E., Lee, G. K., ... Rodgers, J. D. (2010). RCT of a manualized social treatment for high-functioning autism spectrum disorders. *Journal of Autism and Developmental Disorders*, 40(11), 1297–1310.
- No manual available

PART 3: MENTAL HEALTH INTERVENTIONS

It is well established that mental health conditions are more prevalent in autistic children and youth than in their neurotypical peers. For example, a recent systematic review conducted by researchers at Simon Fraser University's Children's Health Policy Centre (Schwartz et al., 2022) found autism prevalence rates of 39.6% for anxiety disorders (compared to 5.2% in the general population) and 10.6% for major depressive disorder (compared to 1.3% in the general population). The most recent prevalence estimate for obsessive-compulsive disorder (OCD) in autistic children and adolescents was 4%-9% (Lord et al., 2022), compared to 0.25–3% of children and adolescents in the general population (Jassi et al., 2023). This report summarizes research on interventions that have been designed or adapted for autistic children and youth with these three co-occurring conditions.

ANXIETY DISORDERS

There are several types of anxiety disorders, including generalized anxiety disorder (persistent worry about everyday challenges, out of proportion to the perceived threat), separation anxiety disorder (persistent fear of being without an attachment figure such as a parent), selective mutism (the inability to speak in specific social situations), specific phobia (extreme fear of specific stimuli, such as spiders or loud noises), agoraphobia (fear of situations or places that may cause feelings of panic), social anxiety disorder (extreme fear of social situations), panic disorder (extreme fear and discomfort due to a perceived loss of control), and several others that are less common. Because of the high prevalence of anxiety disorders in autism, numerous studies have been conducted to examine potential interventions, primarily those based on cognitive behavioural therapy (CBT), which has been shown to be effective in the neurotypical population. Some studies examined the effectiveness of novel CBT interventions while others examined the effectiveness of conventional CBT interventions that were adapted for autistic children and youth. Across studies, many different assessment measures were used to examine intervention effectiveness based on reports from various constituents, including self-reports (i.e., those that asked the autistic child/youth to rate their own anxiety before and after intervention); parent reports, and clinician/teacher reports. Some studies included participants with a range of anxiety disorders, while others were more narrow. Finally, experimental designs also varied across studies.

Research in this section will be summarized primarily through systematic reviews and metaanalyse (see pp. 15-16 for definitions). Table 16 displays the results of both types of reports that were published in English over the last 10 years.

Table 16: Systematic Reviews and Meta-analyses of CBT Interventions for Anxiety (in chronological order)

Author, Year (Type)	# of Studies/ Participants	Focus/Limits	Child Diagnosis (in addition to anxiety)	Child Age	Intervention Outcome	Comments
Sukhodolsky et al., 2013 (MA)	8/469	CBT	autism, no ID	7-17	small-medium	
Vasa et al., 2014 (SR)	8/408	Adapted CBT	autism, no ID	7-14	medium	
James et al., 2015 (MA)	41/1806	Adapted CBT	autism	4-18	large	no difference between 1:1 and group, no difference with/without parental involvement
Kreslins et al., 2015 (SR, MA)	10/470	Adapted CBT	autism + good verbal communication skills	7-17	medium-large	better outcomes for 1:1 than group
Ung et al., 2015 (SR, MA)	14/511	Adapted CBT	autism, no ID	7-17	medium	no differences between 1:1 and group
Hillman et al., 2020 (SR)	22/931	CBT; few adapted	autism; 21/22 studies, no ID	mostly, 6-16	medium-large	better outcomes for 1:1 than group; better outcomes with parent involvement
Perihan et al., 2020 SR, MA)	23/745	CBT, some adapted	autism, no ID	5-18	medium	better outcomes with parent involvement; better outcomes with longer duration
Sharma et al., 2021 (SR, MA)	19/833	Adapted CBT	autism + good verbal communication skills	<18	large	better outcomes for 1:1 than group; better outcomes for younger children
Perihan et al., 2022 (SR, MA)	6/165	Adapted CBT in school, small groups	autism, no ID	5-21	medium	
Schwartz et al., 2022 (SR)	12/unknown	CBT, many adapted	autism	6-18	large	
Wichers et al., 2023 (SR, MA)	20/921	Adapted CBT; group social skills training (GSST)	autism, most no ID or good verbal skills	5-18	CBT: medium; GSST: small	CBT: better outcomes for 1:1 than group; better outcomes with parent involvement

Key: SR = systematic review; MA = meta-analysis; CBT = cognitive behavioural therapy; ID = intellectual disability; SST = social skills training; large = large reduction in anxiety; medium = medium reduction in anxiety; small = reduction in anxiety

Summary

Without exception, research on the use of CBT adapted for autism found positive results, mostly in the medium-large range of effectiveness. Research on specific intervention variables was mixed, with better outcomes found for individual (i.e., 1:1) interventions in 4/6 synthesis studies and for interventions with parental involvement in 3/4 synthesis studies that examined these issues. It is important to note that, for the most part, the adapted CBT programs examined in the synthesis studies were designed to be delivered by professionals with expertise and training in this area (e.g., counsellors, psychologists, behaviour analysts with the necessary training). The Appendix to this report provides information about CBT programs that were included in one or more synthesis studies and are available either online and/or print form.

In addition, the most recent systematic review and meta-analysis (Wichers et al., 2023) examined the impact of group social skills training on anxiety symptoms, as reported in eight studies – all of which were included in the section on Group Social Skills Interventions. While not the primary focus of these interventions, a small reduction in anxiety was found as a secondary effect of social skills training, especially following implementation of the PEERS® for Adolescents program (Laugeson & Frankel, 2010).

Of note is that fact that both CBT and social skills interventions require good language comprehension and expressive communication skills and, even when not otherwise stated, almost all studies of both types area enrolled only autistic children and youth without intellectual disability or with good verbal communication skills. This is not to imply that autistic children and youth with intellectual disability and/or limited communication skills do not experience anxiety and require anxiety interventions; there is simply no research aimed at this subgroup, which constitutes approximately onethird of the total autistic population (Lyll et al., 2017).

DEPRESSION

Unlike anxiety disorders, research on non-pharmacological interventions for depression in autistic children and youth is very scarce. Only three systematic reviews have been conducted on this topic in the past 10 years. In the most recent and rigorous review, Wichers et al. (2023), who also examined anxiety (see Table 1), were unable to locate any studies with adequate experimental controls that examined interventions for depression in autistic children and youth. Menezes et al. (2020) used less rigorous criteria and located 20 studies, only 8 of which included autistic children or adolescents (age 8-18); the other studies were for autistic adults. The child- and adolescent-focused studies the Menezes review provided behavioural sleep training (1 study), group social skills instruction (4), or individual CBT (3). Two of the four social skills studies (Schiltz et al., 2018; Solomon et al., 2004), both of which used PEERS® for Adolescents, found a significant decrease in depressive symptoms as a result of intervention. One of the CBT studies also found a decrease in depressive symptoms, as did the sleep intervention. Menezes et al. concluded that “...the strength of the evidence remains generally poor” (p. 1).

Finally, Cameron et al. (2021) included participants up to age 21 with autism and/or intellectual disability and a diagnosis of depression. They were able to locate only 10 studies, four of which were non-experimental case reports only. Of the remaining six studies, only three involved autistic participants with average ages between 10-21 years. One examined the effectiveness of a Resilience Builder Program (Habayeb et al., 2017) and found no changes in depressive symptoms. The other two (McGillivray & Evert, 2014; Santomauro et al., 2016) examined the effectiveness of adapted CBT in a group format and found no difference between treatment and control groups with regard to decreased depression scores. Overall, Cameron et al. concluded that “no conclusions can be drawn with any confidence about the suitability or effectiveness of any particular...intervention for treating depression” (p. 312) in autistic children or adolescents.

OBSESSIVE-COMPULSIVE DISORDER (OSD)

While the repetitive, ritualistic behaviours associated with both autism and obsessive compulsive disorder (OCD) may appear to be topographically similar, the general consensus is that these are two distinct conditions that may co-occur. The obsessions and compulsions of OCD (e.g., repetitive hand washing, question asking, counting) are typically associated with significant anxiety and distress, whereas in autism, repetitive interests and behaviours tend to be associated with intense interest and pleasure. In OCD, compulsions have a clear purpose, usually linked to an obsession, and serve to neutralize the anxiety associated with the obsession, thus reinforcing the compulsive behaviours. However, in autism, repetitive behaviours typically provide reinforcement or self-stimulation and can also be soothing or used to modulate anxiety; they are not usually linked to a specific purpose or thought as in OCD. There is general consensus that, if OCD symptoms cause significant distress or life limitations, intervention may be appropriate. Six research studies that examined the effectiveness of interventions for autistic children and youth with co-occurring OCD and were published in English in the past 10 years are summarized in Table 17.

Table 17: Outcomes of OCD Intervention Research for Autistic Children and Adolescents (in chronological order)

Author, Year (Type)	# (Age/Yrs) of Participants	Intervention	Child diagnosis (in addition to OCD)	Intervention Outcome	Comments
Murray et al., 2015	22 (M 15)	CBT, ERP, parent involvement	autism, most no ID	small	2/22 OCD symptoms eliminated; 10/22 symptoms decreased; 10/22 no response
Vause et al., 2017	14 (8-12)	Individual, functionbased CBT, ERP, parent involvement	autism, no ID	medium-large	14/14 OCD symptoms decreased
Iniesta-Sepulveda et al., 2018	9 (11-17)	Intensive in-patient adapted CBT, ERP, parent involvement	autism, no ID	large	1/9 OCD ^a symptoms eliminated; 7/9 symptoms decreased, 1/9 no response
Vause et al., 2020	37 (7-13)	Individual, functionbased CBT, ERP, parent involvement	autism, no ID	large	No information about elimination or decrease
Jassi et al., 2021	34 (11-17)	Individual, adapted CBT, ERP, parent involvement	autism	large at 3 mo followup	12/34 OCD symptoms eliminated; 18/34 symptoms decreased; 4/34 no response
Jassi et al., 2023	172 (M 15)	Adapted CBT, ERP, parent involvement	autism	small-medium	No information about elimination or decrease

^a1/9 = 1 out of 9 children in the study

Key: CBT = cognitive behavioural therapy; ERP = exposure and response prevention; ID = intellectual disability; large = large overall reduction in OCD symptoms; medium = medium overall reduction in OCD symptoms; small = overall reduction in OCD symptoms

Summary

All of the OCD studies included initial psychoeducation to the participants and their parents about the relationship between anxiety and OCD behaviours. All studies also included exposure and response prevention (ERP) in addition to CBT. In general, ERP consists of a written plan for gradual exposure to environmental stimuli associated with anxiety (e.g., dirt on clothes) along with a plan for refraining from performing the associated compulsion (e.g., repetitive hand washing). Two studies used a combination of CBT and applied behaviour analysis (ABA), referred to as function-based CBT (fb-CBT), and both found this combination to be effective for the majority of participants. In general, the combination of psychoeducation + adapted CBT (or fb-CBT) + ERP seems promising, and may result in a reduction or (less often) complete elimination of OCD symptoms.

MENTAL HEALTH INTERVENTIONS: CONCLUSION

Various forms of adapted cognitive-behavioural therapy (CBT) have been found to be effective for treating symptoms of anxiety and, to a lesser degree, obsessive-compulsive behaviour in autistic children and youth with no intellectual disability and good verbal communication skills. Interventions for anxiety that involve parents/caregivers are generally more effective than those that do not and 1:1 interventions appear to be more successful than interventions delivered in a group format. Social skills training with the PEERS® for Adolescents program may have some positive impact on depressive symptoms in the same autism sub-group. Research on interventions for all three mental health conditions in nonspeaking autistic individuals and those with co-existing intellectual disability is virtually nonexistent. In the research literature, CBT has been delivered by psychologists, psychiatrists, or other graduate-level professionals with specific training in this area.

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Depression

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Obsessive-Compulsive Disorder

- Iniesta-Sepulveda, M., Nadeau, J., Ramos, A., Kay, B., Riemann, B., & Storch, E. (2018). An initial case series of intensive cognitive-behavioral therapy for obsessive-compulsive disorder in adolescents with autism spectrum disorder. *Child Psychiatry and Human Development*, 49, 9–19.
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APPENDIX, PART 3: PUBLISHED OR ONLINE AUTISM-SPECIFIC CBT RESOURCES

BRAVE-ONLINE: <https://www.brave-online.com/>

Cool Kids: https://aifs.gov.au/research_programs/evidence-and-evaluation-support/cfc-programprofiles/cool-kids

Coping Cat: <https://www.copingcatparents.com/>

Exploring Feelings:

- Attwood, T. (2004). Exploring feelings. Arlington, TX: Future Horizons.
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Facing Your Fears:

- Reaven, J., Blakeley-Smith, A., Nichols, S., & Hepburn, S. (2011). Facing your fears: Group therapy for managing anxiety in children with high-functioning autism spectrum disorders. Baltimore., MD: Paul Brookes Publishing.

Fun with Feelings:

- Garnett, A., Attwood, T., Ford, L., Runham, S., & Cook, J. (2020). Having fun with feelings on the autism spectrum: A CBT activity book for kids age 4-8. Philadelphia, PA: Jessica Kingsley.
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Secret Agent Society: <https://www.secretagentsociety.com/>