

Building Underdeveloped Sensory Motor Systems (BUSS) – A
service evaluation project exploring the efficacy of the model
as an early years groupwork programme for preschool
children who have been adopted

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Introduction

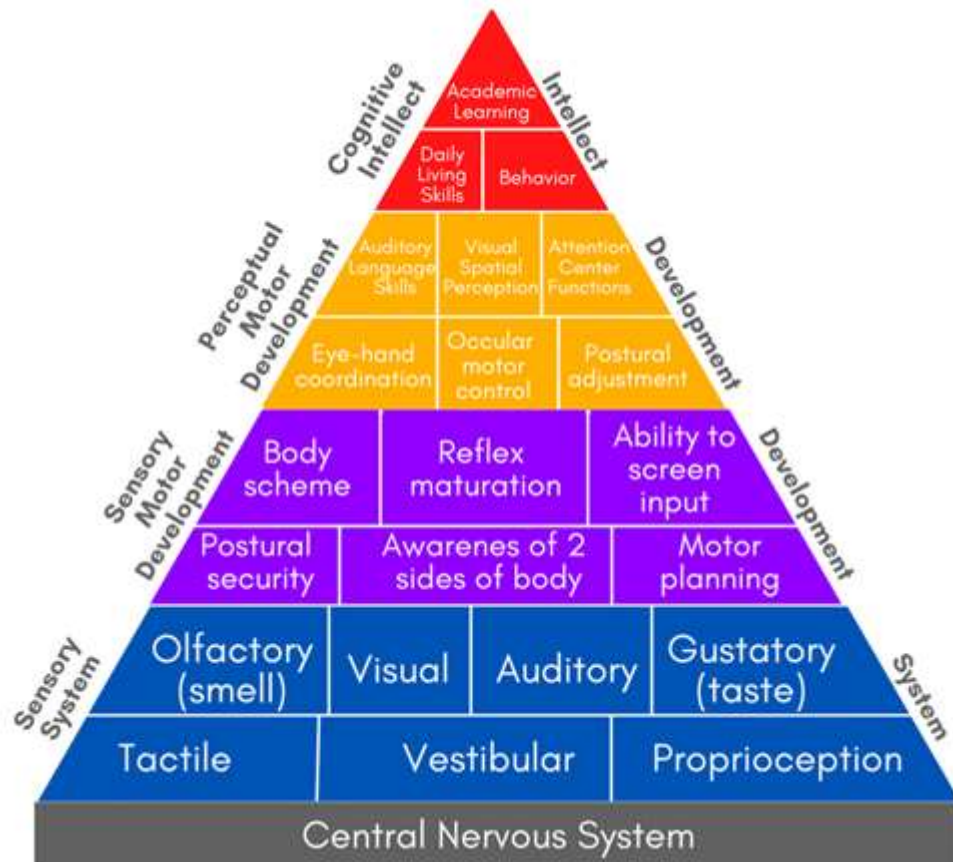
According to Ayres Sensory Integration theory (ASI, Ayres, 2005), the ability to integrate, organise and respond to sensory information from our surrounding environment is crucial for all aspects of human learning and development. From being in utero we are able to receive sensory information from a range of sources, and in the early years our brains progressively develop the ability to process and respond appropriately to sensory stimulation through interaction with the environment and the people around us. These interactions also form our view of the world, other people and ourselves, and impact our adaptive behavioural responses.

Children who experience developmental trauma miss out on the crucial sensory experiences that take place within the context of safe, nurturing relationships. This means they do not have the 'building blocks' their bodies need to perform everyday activities involving sensory processing, such as riding a bike, drawing, and concentrating. Difficulties with sensory processing can also negatively impact children's learning, bodily regulation, social participation, and emotional wellbeing (Armstrong-Heimsoth et al., 2021; Ayres, 2005; Chien et al., 2016; Dunn et al., 2016).

Sensory Integration Therapy (SIT) (Ayres, 2005), based on ASI, is a specialised intervention within occupational therapy that involves play-based strategies designed to develop the tactile, vestibular, and proprioceptive systems to improve sensory integration. According to the Pyramid of Learning (Williams & Shellenberger, 1996) shown in Figure 1, these three sensorimotor systems form the foundation for all other forms of learning and behaviour, meaning that difficulties in these systems must be addressed first before a child can engage in higher-level cognitive skills such as problem solving and self-regulation. SIT was originally developed to address the needs of children experiencing sensory impairments in the context of a Learning Disability or neurodevelopmental condition such as Autism, but has more recently been adapted for use with children who have experienced developmental trauma in recognition of the impact of abuse and neglect on sensory processing.

Figure 1.

The Pyramid of Learning.



Literature review

Research has consistently indicated that experiences of trauma have serious adverse effects on the developing brain (Hart & Rubia, 2012; Teicher & Samson, 2016). Studies have also highlighted impairments in areas of the brain responsible for sensory processing in children who have been traumatised (Rinne-Albers et al., 2013), and shown that this population are at greater risk of sensory processing deficits (Armstrong-Heimsoth et al., 2021; Yochman, 2021). There is also some evidence that specific domains of sensory processing are impacted differently according to type of maltreatment (Howard et al., 2020). As a result of such findings, clinicians have called for the development of treatment approaches which recognise and address the impact of trauma on brain development (van der Kolk, 2003).

Most sensory integration research to date has been carried out by Occupational Therapists working with autistic children and children with a Learning Disability, and the current evidence base for the efficacy of sensory interventions is inconclusive. Some previous

systematic reviews have shown positive outcomes of SIT in this population (Case-Smith et al., 2015), including improved behavioural regulation, attention, and socialisation (May-Benson & Koomar, 2010). Yet others have found limited effects of SIT (Lang et al., 2012) and other sensory based interventions (Case-Smith et al., 2015; Watling & Hauer, 2015). It has been argued that these conflicting findings are due to methodological issues including small sample sizes, inconsistency in the use of sensory integration terminology, a lack of fidelity to ASI principles, and differences in assessments, outcome measures and treatment protocols (Schaaf et al., 2018). However more recent reviews which have attempted to address these issues have concluded that the evidence for the efficacy of ASI therapy is strong (Schaaf et al., 2018; Schoen et al., 2019).

Research investigating the efficacy of sensory integration-based interventions for children with experience of developmental trauma is limited (Fraser et al., 2017). However existing studies have shown promising findings for the use of sensory interventions with this population when implemented alongside other treatment approaches (Fraser et al., 2017; Joseph et al., 2021). Various innovative interventions incorporating principles of sensory integration have been developed to support arousal regulation in traumatised children (for examples, see Joseph et al., 2021) but further empirical research with larger sample sizes is needed to determine the effectiveness of these programs.

The BUSS Model

The BUSS model was developed by Specialist Occupational Therapist and Play Therapist Sarah Lloyd whilst she worked in a therapeutic service between 2005-2013 with children who had experienced developmental trauma, and their carers. The model integrates the principles of ASI with theories of attachment and trauma such as the Neurosequential model of Therapeutics (Perry & Hambrick, 2008) to provide a targeted intervention which aims to fill in the gaps in the sensorimotor systems of children in care or who have been adopted. The BUSS approach emphasises the importance of children's relationships with their caregivers to their development and aims to equip adoptive parents and foster carers with an understanding of foundation sensorimotor systems, and a practical 'toolkit' of fun physical activities and exercises that can be done with their children to develop them. The approach has been adapted into a 12-week group program for newly adopted preschool children and their adoptive parents and is accessed through One Adoption West Yorkshire.

Preliminary evidence exploring the impact of the BUSS model indicates that it has a wide range of positive outcomes for foster and adoptive parents and their children (Grindheim, 2019; Haslam, 2020; Jones, 2021; Robinson, 2021). The outcomes for children have included improved bodily and emotional regulation (Grindheim, 2019; Jones, 2021; Robinson, 2021) and improved cognitive and language skills (Robinson, 2021), and the outcomes for parents/carers have included increased understanding of their children's needs and development (Haslam, 2020; Robinson, 2021). Whilst these findings provide strong support for the efficacy of the model delivered individually to families, it was felt that further research in the form of this project was required to explore the outcomes of the model delivered in an adapted group programme format.

The Service Context

One Adoption West Yorkshire (OAWY) is a regional adoption agency providing support for adopted children and their families living in Bradford, Calderdale, Kirklees, Leeds or Wakefield. Post adoption therapeutic support is accessed through the Adoption Support Fund (ASF), a government scheme which provides funding to local authorities and regional adoption agencies where an assessment has determined the need for specialist therapeutic services. The ASF is applied for by the local authority and therapeutic support is delivered by independent providers, local authority services or the National Health Service. Within OAWY, the multidisciplinary adoption support team consists of specialists from education, child psychology, play therapy and health.

Commissioning

This project was commissioned by Sarah Lloyd whilst she worked for One Adoption West Yorkshire. As the BUSS model has recently been adapted into a group format specifically for newly adopted children and their parents, it was felt that collecting structured feedback from adoptive parents on their experience of the group would be helpful in establishing whether the group is effective in improving adopted children's sensorimotor systems, and how to improve the delivery of the group program for future adoptive families.

Aims

Project commissioner Sarah Lloyd identified the following aims for the project: to identify whether the intervention is helpful and effective at improving children's emotional and bodily regulation, relationships, and learning; to identify ways to improve the intervention;

and to understand more about new adoptive parents' experiences and the role of the BUSS model in relation to these experiences.

Methods

Design

A qualitative methodology was used involving semi-structured interviews with adoptive parents. This approach allowed for the collection of more in-depth information on specific aspects of parents' experiences of the group, with the opportunity to also discuss other aspects not covered by the focused questions. Quantitative methods were not considered due to the focus of the project being about understanding parents' experiences of the group.

Whilst a quantitative method could have been chosen to address the aim of whether the intervention was helpful and effective, the key area of interest for the commissioners was to understand *how/in what ways* the intervention had been helpful and effective for parents. The information was felt to be best explored and captured through the interview format which would allow for free flowing and detailed responses. Also, as participants were already giving their time to attend an interview to address the other aims, it was not felt to be reasonable to ask them to complete alternative data collection measures for this specific aim.

Measures

An interview schedule was developed collaboratively with the commissioner and BUSS Director of Research and Clinical Psychologist Dr Jules Franklin. The schedule was designed to facilitate discussion of specific topics of interest, including how the group was accessed by parents, their experience of the group, changes in their child/children's sensorimotor systems and the role of BUSS in early adoption family life. The full interview schedule can be found in Appendix A.

Participants and recruitment

Adoptive parents attending the BUSS group in December 2021 and March 2022 were invited to take part in the project through conversation with either the commissioner or the project researcher during one of the group sessions. With their consent, potential participants'

contact details were provided to the researcher and they were sent participant information sheets (see Appendix D) by email. Seven adoptive parents provided their consent to take part, and arrangements were made for interviews to take place on Microsoft Teams at a mutually convenient time. Demographic information about participants was not collected as this was not felt to be relevant to the aims of the project. In total eight boys and two girls (a mixture of individual children and sibling groups) had attended the BUSS group and were referred to in the interviews.

Procedure

Participants were given the information sheet by email ahead of the scheduled interview and provided verbal consent at the start of each interview. The consent form was completed by the researcher and a copy emailed to each participant after the interview. The participant information sheet and consent form can be found in Appendix B. Interviews lasting up to one hour took place on Microsoft Teams and were recorded to be analysed later. Recordings were assigned a number to protect participants' anonymity and were stored securely and deleted once the content of each interview had been analysed. Participants names and their children's names were also anonymised during analysis to prevent identification.

Data Analysis

The applied method of rapid qualitative analysis was used to analyse interview data and identify key themes. This pragmatic approach is based on the Rapid Assessment Process model developed by Beebe (2001) to provide a more efficient and cost effective way to conduct qualitative health service research. Analysis involved assigning a domain name to each interview question, creating a summary document for each interview including key points raised under each domain and specific quotes, and then combining these interview summaries into a final summary for each domain.

A brief conceptual content analysis was also conducted to determine the frequency of concepts within the interview data.

Credibility checks were carried out through discussing the themes with two peers on the Leeds Doctorate of Clinical Psychology programme who had no prior involvement with the project.

Ethical Approval

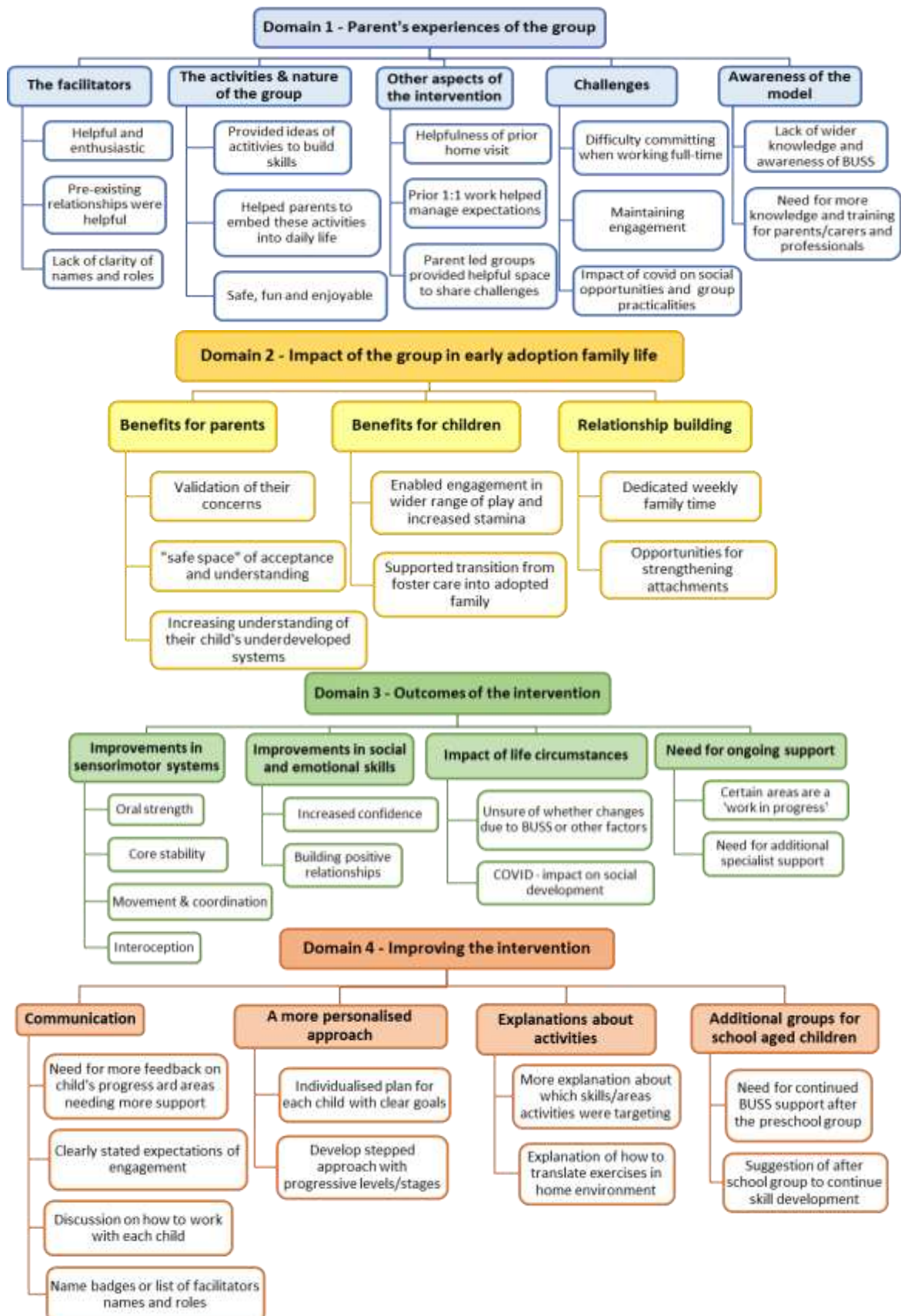
Ethical approval for conducting this project was granted by the School of Medicine Ethics Committee at the University of Leeds (DClinREC 21-003) on 6th January 2022.

Results

The key themes and subthemes resulting from analysis of the interviews are shown in Figure 2 and outlined below. Due to the limited scope of this report, this section focuses on the findings directly related to the primary aims of the project listed above. Additional findings can be found in Appendix B.

Figure 2.

Thematic Maps.



Parents' experiences of the group

The following five themes were identified from parents' responses when asked about their experiences of the group.

Experience of facilitators

Four parents described how helpful and enthusiastic the group facilitators were, and one parent talked about how their children's pre-existing relationship with one of the BUSS facilitators helped them feel more comfortable in the group.

"Everybody was an absolute delight to be involved with...I think the passion that exuded from everyone that was there was always really nice..." (participant 3)

Two parents described a lack of clarity over who the facilitators were and felt that not knowing their names and roles was a barrier to communication.

Experience of the activities and the nature of the group

Four parents talked about how the group provided them with ideas of simple activities they could do with their children to develop specific areas and helped them to implement these activities into their daily routine. These parents described how both themselves and their children found the group and the activities fun and enjoyable. Three parents also talked about the group feeling very safe.

"They really enjoy BUSS and the activities they do at BUSS so it's easier for us to implement them at home because they enjoy them, it doesn't feel like a chore" (participant 4)

Experience of other aspects of the intervention

Two of the parents who had received additional support from the BUSS team talked about how helpful this support had been for them and their children. One parent explained that their pre-BUSS group home visit had helped with their understanding of the intervention and how to implement the exercises, and with their children's transition into the group. Another parent talked about how the 1:1 support she had received prior to starting the group had helped her with managing her expectations of herself as a parent and of the intervention itself. She also shared that she had found the evening parent support groups a helpful space to share the challenges and pressures of the work.

Challenges

Two parents described some of the challenges of attending the group. One parent talked about finding it difficult to commit to the intervention alongside working full time, and another parent shared that the group started to feel repetitive towards the end and wasn't holding their child's engagement as well at this point. Two parents shared how their experience had been impacted by the COVID pandemic; one parent talked about having reduced opportunities to connect with other parents, and another described initially having to attend a foster carers group which they felt was confusing for the children.

Awareness of the model

Three parents talked about the lack of wider knowledge and awareness of the model, and the need for more adoptive parents, foster carers and professionals working with children looked after or adopted to know about and be trained in the approach.

Impact of the group in early adoption family life

Parents described several benefits of the BUSS group for themselves, their children, and for their relationship with their children.

Benefits for adoptive parents

Parents described how the group had been very validating for them in confirming their observations of their child/children's sensorimotor difficulties, and how they had benefitted from the acceptance and understanding of other adoptive parents in the group.

"it's a real safe space for me because...at some of the other groups we go to... it's perhaps a bit too challenging for the younger one or it's not quite where he's at and there's expectations from other parents that "oh is he not doing this or not doing that?" and I have to explain why, whereas at BUSS there's no need to do any of that, everybody gets it..." (participant 4)

Three parents also talked about how attending the group had taught them about what areas their child/children needed to develop and how to support this development at home.

Benefits for the adopted children

One parent described how taking part in the group and developing their skills had enabled their children to engage in a wider range of play activities, and to be able to play for longer.

“The improved core stability and those sorts of things have definitely helped with being able to do different games... and they can just last longer you know playing, and they don’t get as exhausted” (participant 2)

Another parent talked about how the group had supported his children’s transition from foster care into their adoptive family as it provided some continuity between the two settings and acted as a tie to their foster carer as they previously attended the group together.

Relationship building

Four parents described that the group had helped develop their relationships with their children as it provided dedicated family time together each week, and opportunities for bonding and strengthening attachments.

“...having something to go to together as a family, you know that’s an activity that we do together, has been valuable...” (participant 2)

“...it was definitely worth it, and it gave us some nice quality time to do something structured that was bringing them direct benefit, so we found it really useful and we were so pleased we did it and we were so pleased that somebody recognised that we needed to do it as well, so it most definitely was a positive experience...” (participant 3)

Outcomes of the intervention

The following four themes were identified in parents’ responses about the differences they had noticed in their child/children’s ability levels after taking part in the group.

Improvements in sensorimotor systems

All parents interviewed described significant improvements in their children’s development across multiple sensorimotor systems.

Oral strength

Five parents talked about improvements in their children’s oral strength, referring to skills such as blowing and improved speech.

“for example he couldn’t blow and I remember feeling so dejected because every single day we’d be trying to blow and then just suddenly he could and it just shows that that real

perseverance of every single day doing the same thing even though it feels like “what’s the point in this because he can’t do it?” just eventually pays off and he can now, he even managed to blow out the candles on a birthday cake twice last week!” (participant 1)

Core stability

Six parents described improvements in core stability, including noticing that their children could sit for longer without slumping, were more able to sit still, and appeared to have greater control over their upper bodies.

“...control over their body has definitely improved, so much better neck strength, more stable in themselves...” (participant 2)

Movement and coordination

All seven parents interviewed described improvements in movement and coordination, for example greater bodily control and coordination when running.

“He really wanted to go on the equipment...but it almost seemed like a bit of an ordeal for him... He couldn’t handle swings, he’d really struggle with the roundabout, so he’d just kind of wander round watching other kids, and now I just love seeing him get stuck in and climb the climbing frames and go down the slides and it not taking loads of coaxing...” (participant 1)

“They don’t fall down anywhere near as much as they used to do, and they are far more relaxed when reading books on their stomach...they’re better at going over obstacles, and going in a controlled fashion...better awareness of space when jumping, when hopping and things like that...we noticed big improvements...” (participant 3)

Interoception

Two parents also described improved awareness and communication in their children of the physiological messages in their bodies, for example their temperature and hunger/satiety.

“What I noticed was suddenly his ability to say “I’m cold, I’m hot” and I don’t think that was there as much before” (participant 6)

Improvements in social and emotional skills

Three parents shared that they had noticed an increase in their children’s self confidence in completing certain activities, and in their confidence being around other children.

“...very quickly he became confident with climbing slides and things like that whereas before other children his age would climb them and he would just hesitate...” (participant 6)

Parents also described that the group had helped them build stronger relationships with their children and had helped their children build trusting relationships with other adults.

*“...having somewhere she can actually build a relationship with adults she trusts that are also there to see her benefit from what they are doing is really good and really precious”
(participant 5)*

Impact of life circumstances on skill development

Three parents talked about having noticed significant improvements in their children’s development but being unsure whether these improvements were due solely to the BUSS intervention or to other circumstances such as their children starting nursery. Two parents also talked specifically about how the COVID lockdown had negatively affected their children’s social development, and how the BUSS group had helped them enjoy interacting with other children again.

The need for ongoing support

Four parents described how certain areas of their children’s development continue to be a ‘work in progress’, requiring ongoing input from parents and sometimes additional support from other professionals/services. For example, one parent talked about working with Speech and Language therapists to further develop their children’s oral strength and verbal communication.

Improving the intervention

When asked about how the group could be improved, parents provided valuable feedback and suggestions relating to the following five key themes.

Communication

Progress

Three parents talked about the need for more structured feedback and communication around their child/children’s progress in the group, and which areas needed particular focus and support from parents.

“Sometimes you’re in it, and its great in the hour that you’re in it, and you leave, and you think “how is it progressing?”, and it was sometimes difficult to see that progression...because we weren’t party to any of the assessment tracking or anything like that, for us we got to the end of 12 weeks and it was like “well it was great, it seemed useful, they seem to have benefitted from it” but it would have been really good to have seen that as a bit of a journey...” (participant 3)

Expectations

One parent shared that it would have helped to know the expectations of engagement in the group, as they often felt unsure whether they needed to encourage their children to do the prescribed activities rather than allowing them to choose to do other things.

“...if the kids are getting up and wanting to do something else, having some clear communication whether it was ok to go and just do something else ... if there were very clear stated expectations of how to engage in the activities I think that would have been better” (participant 2)

Working with the child

Two parents also described the need for group facilitators to understand each child’s personality and discuss with parents how best to work with and engage their child in the group.

“I felt like it was my job to take him round, partly because he just wanted me there ...but I wasn’t sure if that was how it was supposed to be or whether it would have been helpful to actually work together to help him learn that its ok to go away from me and do those exercises by himself with someone else, so maybe a bit more of a conversation around that” (participant 6)

“he’s very very shy and the more you try and bring him out of himself the more he closes down, and I’d find sometimes...it would be really uncomfortable to say, “can you back up a bit please?!” (participant 1)

Facilitators

Three parents made suggestions to improve the communication with the group facilitators. Two parents talked about making facilitators names and roles clearer either by using name

badges or providing a list with this information to each parent, and explaining to parents what support facilitators could provide during the group e.g. specialist advice. Another parent also mentioned that it would have been helpful to have had an opportunity to meet the facilitators before starting the group.

A more personalised approach

Two parents described how a personalised set of work or individualised plan for each child would have helped them understand what they needed to focus on with their children outside of the group. They felt that a personalised plan would provide clear goals for each child and would help to determine when enough development had been achieved through the group and it was appropriate to stop attending. One parent talked about how it might be helpful to develop a stepped BUSS approach with levels/stages where exercises/activities could become progressively more challenging as children's skills increase and felt this would help with their engagement and avoid repetition.

"...sometimes it didn't feel tailored as to what we could take away from it for our boys...it's something that I was expecting, almost like a prescription of what you should be doing at home...having a more structured set of homework would have been helpful..." (participant 3)

Explanations about activities

Two parents described needing more explanation about which skills or physical areas of the body each group activity was targeting, and whether it was ok for their children to do the exercise in a different way or not. Parents also talked about how it would be helpful to have more explanation of how the exercises could be translated into the home environment using everyday items/equipment.

Additional groups for school aged children

One parent described that she felt her daughter needed the continued support of the BUSS group for her physical and social emotional development, despite finishing the group and reaching school age. This parent talked about how the BUSS group had become an important part of her daughter's routine and a place where she had started to learn to feel safe and trust others through building relationships with facilitators. Therefore, she felt it would be beneficial for the BUSS group to be offered in an after-school format which could

provide continued support to school aged children without disrupting their learning during the school day.

Discussion

The results of this project showed that adopted children attending the BUSS group experienced significant improvements in their sensorimotor systems and social and emotional development. The group had been beneficial for the adoptive parents and their children in early adoption family life and also benefited the family system by providing dedicated time together each week, and opportunities to strengthen and develop their relationships.

Parents reported mostly positive experiences of the group for themselves and their children, and readily shared suggestions for improvements relating to increasing communication and information sharing with parents, personalising the intervention to each child, explaining the activities, and adapting the group for school aged children.

Although the current evidence base is limited for this population, the findings relating to the significant improvements noted by parents are consistent with the most recent reviews showing promising outcomes for sensory based interventions used alongside other treatment approaches for traumatised children (Fraser et al., 2017). The range of improvements reported across several areas of development is also consistent with the findings of previous BUSS research (Grindheim, 2019; Jones, 2021; Robinson, 2021). Furthermore, the positive experience of the group echoes the findings of Jones (2021), and the improved awareness and understanding of their child/children's needs reported by parents is consistent with the findings of Haslam (2020) and Robinson (2021).

Finally, despite the significant improvements, parents recognised the complexity of their children's difficulties and the need for further support alongside and after the intervention, an important point also raised in the previous study by Grindheim (2019). Also the need for more individualised support was raised, and this echoes a theme identified by Jones (2021) of foster carers wanting to provide ongoing BUSS support to their child in a more targeted way.

Limitations

A limitation of this project is that the positive outcomes reported by parents cannot be solely attributed to the BUSS group. Parents recognised this and highlighted the influence of other specialist interventions and life changes such as starting nursery which are likely to have also contributed positively to their child/children's development. A quantitative experimental research design with comparison groups could be considered in future evaluations, as this would allow for a more controlled investigation of causality between the intervention and identified improvements.

It is also important to recognise the role of bias in this project in the researcher, commissioner and participants who were a volunteer sample. It is likely that those with more favourable experiences of the BUSS group or more favourable experiences of adopting were more willing to take part in the research, meaning that the results may be positively skewed and not truly reflective of all adoptive parents' experiences of the group. However, all participants willingly shared their views about what did not work well for them in the group and some of the challenges they had experienced in adoption life which somewhat improves the validity of the findings. Also, despite the interview being positively nuanced, questions were checked as part of the ethical review process to ensure they were not leading and were sufficiently open ended to enable interviewees to answer honestly.

Dissemination

The findings of this project were summarised in a poster which was presented at the University of Leeds DClin 2022 Service Evaluation Conference (see Appendix C). The project findings will also be shared with the commissioner and the One Adoption team through a presentation.

Recommendations

- Discuss personal characteristics, attachment security, and expectations of engagement with parents prior to starting the group. Also discuss how parents and facilitators can work collaboratively to best support the child in the group setting
- Develop an individualised plan for each child which includes specific goals and targeted 'homework', and consider how to provide regular progress feedback to adoptive parents
- Provide brief explanations at the start of each activity to remind parents which areas/systems the activity is targeting. Also provide explanations of how activities could be done at home
- Improve ease of communication between facilitators and parents by providing name badges/a list of names and roles to each parent
- Consider developing a staged intervention approach with different levels of exercises or activities for children to work towards and achieve
- Continue providing the group but also consider offering an after-school BUSS group for children needing further support after attending the preschool group.

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Appendices

Appendix A – Interview schedule

1) Background information

- How did you access the BUSS programme (route to referral)?
- Did you have any concerns about your child's physical ability levels/relationships/learning prior to starting the programme?

2) Experience of the BUSS model intervention

- How would you describe the programme? What did it involve?
- What is your understanding of why you were doing the activities?
- Did you get enough information about BUSS to help you understand the programme?
- What recommended resources did you access? Did you find them useful?
- Was there anything the programme/staff could have done better?

3) Did you notice any differences as a result of the programme?

- Oral strength (eating e.g., managing food that needs more effort/chewing, dribbling, speech clarity, able to blow and suck)
- Core strength and stability (being able to sit up; able to sit at a table or in a chair without seeming to get tired quickly or needing to prop themselves up, happier having tummy time, commando crawling, regular crawl (with left leg moving with the right arm and vice versa))
- Gravitational Security (comfort level when their feet are off the ground, e.g., jumping or climbing or do they try and keep their feet quite close to the ground)
- Balance and co-ordination (walking, running, climbing – how able are they at these movements and how much they enjoy these, managing stairs, need to watch their feet when they are walking or doing anything, fine motor skills – e.g., cutlery, play doh, playing with cars, using crayons or pencils)
- Relating to you and others (how they seem on an emotional level or in how they're able to regulate themselves or use you to regulate)
- Child's ability to understand the messages they get from inside their body (E.g., knowing when they're hungry or full, needing to go to the toilet, temperature, tiredness etc.)

4) Has being involved in the BUSS programme been helpful in the early stage of your life together as a family? If so, how has it been helpful?

Appendix B – Additional findings

Access route

Participants were first asked how they accessed the group and responses were categorised under the themes of access through social worker and access through other routes. Of the parents who accessed the BUSS group through their social worker, one described personally requesting the group after it was recommended by a work colleague, one said the group had been recommended to them by their social worker, and three parents described that their child/children had already been attending the group whilst in foster care. Of the parents who accessed the group through other routes, one described coming across the model through accessing online BUSS training on an adoption website and then contacting the BUSS team after this to request support, and another was recommended the group as an outcome of a OAWY multidisciplinary meeting.

Prior concerns about the child/children

Five themes were identified in responses relating to parent's concerns about their child/children prior to starting the group. Three of these related to specific areas of difficulty; sensorimotor systems difficulties, social and emotional difficulties, and other difficulties. The other two themes refer to parental awareness of difficulties in specific areas, and experience of other people's responses/opinions in relation to observed difficulties.

Sensorimotor systems difficulties

This overall theme contained the subthemes of difficulties with movement and coordination, weak core strength, poor motor skills and poor oral strength.

All seven participants talked about their child/children having had significant difficulties across multiple foundation sensorimotor systems prior to starting the group. Four participants described difficulties with movements such as walking, running, and climbing, five described difficulties with core strength and stability, three described poor motor skills, and four described poor oral strength including issues with dribbling and speech sounds.

"...she walked like she was a 1 year old but she was 3..." (participant 5)

“they had a tendency to fall over quite often, didn’t quite know their position in space as well as you would expect for children their age...” (participant 3)

One parent also talked about noticing that physical tasks were less automatic and harder for her son than expected, requiring significant cognitive effort and concentration to carry out. Another parent also spoke about the impact of his adopted children’s early environment on their physical development, and the differences in the extent of delay they were experiencing, which he attributed to the differential treatment of the siblings by their birth mother.

Social and emotional difficulties

This theme contained the subthemes of interpersonal difficulties and emotion regulation difficulties. Two parents talked about how their children struggled to relate to themselves and those around them, for example their siblings and other adults, with one parent describing how her adopted daughter had no trust in adults. One parent also talked about how her daughter struggled to manage her emotions and described her behavioural responses as very “fight or flight”.

Other difficulties

Subthemes within this theme included developmental delay and behavioural difficulties. Four parents talked about their child/children experiencing delay across multiple areas of development, and one parent described how they had sought support for their children’s behavioural difficulties.

Parental awareness of difficulties

One parent described how they would not have picked up on their children’s physical difficulties if they had not been noticed and raised by professionals working with the children on other areas of their development.

“...it’s not something we’d really noticed but obviously you don’t know what you don’t know... but to somebody who knows what they are looking at, they weren’t putting their hands out to stop themselves falling, they were bashing into things and people more often than you’d expect. So there were the behavioural issues and then sitting alongside that there was the physical development perspective that we’d not noticed ourselves...” (participant 3)

Reactions of others

One parent talked about how other people including foster carers, family members and healthcare professionals had dismissed and normalised her son's difficulties with movement and coordination.

"a lot of the things he was doing were quite normalised by people... to give you examples, our little boy moved in with us when he was 9 and a half months and he could sit if you put him in a sitting position, but he couldn't lie down, he didn't have the confidence because he would just lose the balance, if he was on his back he hated it... he couldn't get out of those positions... but everyone was kind of like "yeah that's fine", the foster family, the doctors, I guess they wouldn't really know about that because they would look at him physically; he looks really good, has ok motor skills, but I don't think anyone ever really saw him moving..."

(participant 6)

Understanding of the purpose and aims of the intervention

Within this domain three themes were identified: level of understanding, the purpose of the intervention, and the need for more time and input outside of the weekly group.

Level of understanding

Four parents talked about having a good level of understanding of what the group involved and the purpose of the activities. One parent described a lack of understanding of how to measure her son's progress and about which areas he needed to continue to work on.

The purpose of the intervention

Five parents described the purpose of the intervention as being about developing their child/children's strength and skills in specific areas through targeted exercises, and two talked about how exercises would help to free up children's cognitive resources to enable them to be redirected towards carrying out other everyday tasks.

"...[the] systems are not developed well enough, so all of the child's concentration is going on to that... the purpose is to... intervene to build up some of those systems... so that they can get on with developing gross motor skills and fine motor skills so that they can start developing in a way that's more typical." (participant 2)

“...trying to build up their physical capabilities...particularly around that core strength aspect, so that they weren’t having to use their brain energy and processing power to do things that should just be coming normally and naturally to them” (participant 3)

Need for more time and input to build skills

Three parents talked about the necessity of incorporating the exercises learnt in the group into everyday life in addition to attending the weekly group and referred to how the group had been helpful in giving them ideas of activities they could do with their children to build their skills. One parent described how helpful it had been to have had support from the BUSS team to involve their children’s nursery in the intervention, and how well the nursery staff had engaged with the BUSS concepts and integrated them into their sons’ care.

“I don’t think going there an hour a week is enough, you know, for this to really impact them, we knew we had to do things at home with them and also work with nursery as well as nursery engaged with it, so I think between the three interventions of home, nursery and the actual buss session, I think it has really helped them.” (participant 3)

Resources accessed and their utility

Parents responses to the question about which resources they had accessed could be categorised as resources accessed prior to starting the group and resources accessed during the group.

Resources accessed prior to the group

Four parents talked about having read the BUSS model founder and project commissioner Sarah Lloyd’s book about underdeveloped sensorimotor systems, and two described having done their own reading and researching into the area. Other resources parents accessed included the online webinar, the BUSS information pack, and personalised videos sent during the COVID pandemic. The parent who had received the personalised videos talked about how for her this was the most helpful resource.

Resources accessed during the group

Three parents talked about being provided with a weekly summary sheet of information and resources ahead of each BUSS group, and other resources accessed included YouTube videos, the recommended reading, and a newsletter. Parents described all the resources provided as being sufficient, useful, and clear, although one parent mentioned that the YouTube video links often did not work and were too basic, which was a barrier to utilising them effectively.

Appendix D – Participant information sheet

Participant Information Sheet

Building Underdeveloped Sensory Motor Systems (BUSS) – A service evaluation project exploring the efficacy of the model as an early intervention for preschool children who have been adopted

You are being invited to take part in a service evaluation project. Please take time to read the following information carefully before deciding whether you wish to take part.

What is the purpose of the project?

This service evaluation project has three aims:

- To identify whether the BUSS intervention is helpful and effective at improving adopted children's emotional and bodily regulation, relationships, and learning
- To identify the strengths and limitations of the intervention with the view to making recommendations for future service delivery
- To understand more about adoptive parents' experiences in the first year of adopting, and the role of the BUSS model in relation to these experiences.

Who is organising/ funding the research?

This project has been organised by Sarah Lloyd, Occupational Therapist and developer of the BUSS model, and the University of Leeds. The research will be conducted by Danielle Smith, a student on the University of Leeds Doctorate in Clinical Psychology course.

Why have I been chosen?

You have been chosen as you have recently attended the BUSS intervention with your child. It is anticipated that approximately 8-10 other attendees of the intervention will also take part in this project.

What do I have to do?

If you decide to take part **you will be contacted by Danielle Smith (researcher) by phone** after the intervention has ended to agree a time and date for an interview. **The interview will take place virtually** on Zoom or Microsoft teams at the agreed time and date and will take **a maximum of 1 hour**. The interview will be informal and will involve open questions about your experiences of taking part in the BUSS intervention. **You can refuse to answer any questions if they feel too difficult**. Interviews will be audio recorded via zoom or Microsoft teams.

Do I have to take part?

It is up to you to decide whether to take part; **participation is entirely voluntary**. If you agree to take part and change your mind later, you will be able to withdraw from the project by emailing Danielle Smith up to a week after completing the interview (at which point your data will be deleted and will

not be included in the project report). After one week the interview data will be transcribed and thematically analysed and it will therefore not be possible to remove the data. If you decide to withdraw you do not have to give a reason for this and it will not affect any benefits or support that you are entitled to in any way.

What are the possible disadvantages and risks of taking part?

We anticipate that taking part will not cause any distress, however if any issues are raised which you would like to discuss with someone we can review your sources of support.

What are the possible benefits of taking part?

Whilst there are no immediate benefits, it is hoped that this work will provide a helpful opportunity for participants to share their experiences and ideas to improve the intervention for other adopted children and their parents.

Use, dissemination and storage of research data

Consent forms and interview recordings and transcripts will be stored electronically on a secure university storage area according to the university's data protection policy and in accordance with General Data Protection Regulations

(<https://dataprotection.leeds.ac.uk/wpcontent/uploads/sites/48/2019/02/Research-Privacy-Notice.pdf>). This information will only be accessible to the research team, and will be stored for up to 3 years after collection to allow sufficient time to potentially publish the results of the project. After this point the data will be destroyed.

What will happen to my personal information?

All the information that you provide will be kept confidential and stored securely as described above. In the project report the data will be presented on a collective level, ensuring that no individual can be identified. Where quotes are used these will be provided with an anonymised participant ID number.

Confidentiality would need to be breached if information disclosed during the interview indicated that anyone was at risk of harm. In this incidence concerns would be discussed with the project organiser Sarah Lloyd, and appropriate action taken.

If you need to access additional support, please contact Sarah Lloyd (email address below), or One Adoption West Yorkshire, on 0113 378 3535.

What will happen to the results of the research project?

The project report will be published on the University of Leeds Department of Clinical Psychology website which is openly accessible via www.dclinpsych.leeds.ac.uk/research and may also be published on the BUSS model website. No identifiable information will be included in the report.

Who has reviewed this study?

Ethical approval has been given for this study by the School of Medicine Ethics Committee at the University of Leeds (DClinREC 21-003).

If you agree to take part, would like more information, or have any questions or concerns about the study please contact Danielle Smith (umdsm@leeds.ac.uk).

Contacts for further information

Danielle Smith (researcher) – umdsm@leeds.ac.uk

Sarah Lloyd (BUSS model founder and specialist occupational therapist and play therapist) - sarah.lloyd@leeds.gov.uk

Dr Julie Franklin (BUSS Director of research/ Consultant Clinical Psychologist) - julie.franklin@bussmodel.org

Dr Ciara Masterson (Project supervisor at the University of Leeds) – c.masterson@leeds.ac.uk

Thank you for taking the time to read this information.

Appendix E – Final summary table

Themes	Sub themes/variations
Accessing the group	
Domain	
<i>Access route</i>	<p>Access through social worker:</p> <ul style="list-style-type: none"> - Parental request - Social worker recommended BUSS - Child/children were already attending in foster care (4,5,7) <p>Access through other routes:</p> <ul style="list-style-type: none"> - BUSS recommended by work contacts - Attended online BUSS training for adopters and direct contact made with Sarah - Recommendation of One Adoption MDT
<i>Prior concerns about the child/children</i>	<p>Physical difficulties in specific areas/systems:</p> <ul style="list-style-type: none"> - Difficulties with movement and coordination - Weak core strength - Poor motor skills - Poor oral strength and speech difficulties - Greater cognitive effort for physical activities - required high levels of effort and concentration <p>Social and emotional difficulties:</p> <ul style="list-style-type: none"> - Relational difficulties (2) - Difficulty regulating emotions <p>Other difficulties:</p> <ul style="list-style-type: none"> - Global developmental delay (4) - Behavioural difficulties <p>Parental awareness of difficulties:</p> <ul style="list-style-type: none"> - Parents made aware of children’s difficulties due to concerns being made by professionals <p>Reactions of others when concerns raised:</p> <ul style="list-style-type: none"> - Dismissiveness/normalising of relatives and doctors <p>Differences between siblings:</p> <ul style="list-style-type: none"> - Level of ability/delay explained by different input from caregivers
Experience of the BUSS model intervention	
<i>Understanding of the intervention – its purpose and aims</i>	<p>Level of understanding:</p> <ul style="list-style-type: none"> - Good basic understanding of purpose of exercises - Lack of understanding of how to measure progress/areas to continue to work on <p>Purpose of intervention:</p> <ul style="list-style-type: none"> - About developing strength and skills in specific areas through targeted exercises - Helps to free up children’s cognitive resources for other everyday tasks <p>Need for more time and input to build skills:</p> <ul style="list-style-type: none"> - Importance of incorporating exercises into everyday life in addition to the weekly group

	<ul style="list-style-type: none"> - Importance of involving other settings to support development e.g. nursery (3)
<i>Resources accessed and their usefulness</i>	Resources accessed prior to starting group: <ul style="list-style-type: none"> - Sarah's book - Self directed reading and researching - Online BUSS webinar - Information pack - - Recommended personalised videos sent over lockdown
	Resources accessed during group: <ul style="list-style-type: none"> - Summary sheet of info/resources for each session was useful - Youtube videos - Recommended reading - Newsletter helped with providing area of focus
<i>General feedback on the programme</i>	Supported parents with developing skills outside the group: <ul style="list-style-type: none"> - Provided parents with ideas of activities to develop specific areas - Helped with implementing these into daily routine - Helpful reminders to incorporate activities into routine
	Experience of facilitators input: <ul style="list-style-type: none"> - Facilitators were helpful and passionate - Pre-existing relationship with BUSS facilitator helped child - Lack of clarity of facilitators names and roles
	Experience of other aspects of the intervention: <ul style="list-style-type: none"> - Pre BUSS home visit was helpful - Parent led evening support groups were helpful to share challenges - 1:1 support from Sarah- helpful with managing expectations
	Experience of activities/group: <ul style="list-style-type: none"> - Activities were fun and straightforward to implement - Parents and children found the group fun and enjoyable - Felt very safe - Benefits were observed
	Challenges of the intervention: <ul style="list-style-type: none"> - Difficult to commit to due to working full time - Group started to feel repetitive towards the end and wasn't holding children's engagement - Impact of covid e.g. ability to connect with other parents (3), mixed group of adopters/fosterers (5) - Lack of awareness in professionals and parents/carers across different services and areas
	Benefits of the intervention in early adoption family life
<i>Benefits of the intervention in early adoption family life</i>	For parents: <ul style="list-style-type: none"> - Validation of their observations of difficulties - Acceptance and understanding from other adoptive parents in the group - Taught them about what areas their child/children need to develop and how to support the development at home
	For the adopted children: <ul style="list-style-type: none"> - Enabled the children to engage in a wider range of play activities and play for longer - Helped with transition to adoptive family if child attended in foster care (link to previous carer)
	Relationship building: <ul style="list-style-type: none"> - Dedicated weekly family time together

	<ul style="list-style-type: none"> - Provided attachment building/bonding opportunities between parent and child
Intervention outcomes	
<i>Comparing the child/children's specific ability levels before and after the programme</i>	improvements in specific physical abilities/areas/systems: <ul style="list-style-type: none"> - Oral strength, especially verbal communication - Core stability - Movement (running, walking, crawling, climbing) - Awareness and communication of physiological messages (e.g. temperature, hunger etc.)
	Improvements in social and emotional skills: <ul style="list-style-type: none"> - Increased confidence around other children - Increased self confidence - Stronger relationships with parents and other adults
	Impact of life circumstances on skill development: <ul style="list-style-type: none"> - Difficulty knowing what improvements were due to BUSS or other life circumstances e.g. starting nursery - Impact of covid
	The need for ongoing input by parents and additional input from other professionals/services: <ul style="list-style-type: none"> - Certain areas continue to be a 'work in progress' - Specific support being provided to continue development of certain skills e.g. SALT and nursery input
How to improve the intervention	
<i>Suggestions for improvements</i>	More 1:1 communication with parents about the group and their child/children: <ul style="list-style-type: none"> - Need for more feedback on child's progress - More communication of expectations of parents and children of engagement on set tasks (2) - Need for professionals to understand each child's interpersonal level and discuss with parents how best to work with and engage their child in the group (1,6)
	More personalised approach: <ul style="list-style-type: none"> - Personalised 'homework'/individualised plan based on needs (3,7) - "levels" of BUSS – stepped approach based on ability levels - Clearer goal based plan and criteria around discharge – when enough has been done in the group and work can be continued independently
	More explanations about activities: <ul style="list-style-type: none"> - More explanations of which skills/body areas each activity is targeting and whether a different way of doing the exercise is ok or not (2) - How to translate group exercises in home environment using home equipment (6)
	Communication with facilitators: <ul style="list-style-type: none"> - Need for badges/list stating names and roles for facilitators to enable communication for parents (6,7) - Explanation of what support facilitators can provide during the group (6,7) - "Getting to know you" session with staff before starting the group would have helped make the group more comfortable (1)
	Alternative options for school aged children needing further support after the group:

	- An after-school group would be a good option to continue skill building without disrupting learning
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