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Appendix A

An initial scoping search on APA PsycInfo for sunshine circle* resulted in seven articles, of which five were unrelated to the intervention. The same search on ProQuest returned five unrelated records. A scoping search of the same on Web of Science using Boolean operators resulted in no records, and without Boolean operators resulted in 27 unrelated studies. A scoping search using Google Scholar with the terms “sunshine circle” and “sunshine circles” resulted in 32 records. I noted that the search terms were often highlighted in article abstracts and not the title, falling under studies of group theraplay. Additional scoping searches of group theraplay were conducted on PsycInfo, resulting in 79 records, and Google Scholar, resulting in 541 records. A scoping search using Google identified a pilot study in Wales (Adenydd, n.d.) and peer-reviewed research on the Theraplay Institute website (The Theraplay Institute, n.d.). However, no new empirical research with comparators that was relevant to my target population and school-based settings was found.

Given the few existing peer-reviewed studies exploring sunshine circles, the population, intervention, comparison, outcome, setting, and study (PICOSS) framework (Boland et al., 2017) was employed. This supported me to develop a specific research question to locate articles to answer my question, as recommended by Bramer et al. (2018). Table A1 shows the key terms determined through the PICOSS framework, which resulted in the following specific question: ‘What is the effectiveness of sunshine circles/group theraplay in improving the social-emotional development and behavioural regulation among pre- and primary-aged children?'

Table A1

PICOSS Systematic Review Question Formulation and Related Search Terms

PICOSS Term	What this means for Sunshine Circles/Group Theraplay	Search Terms with Boolean Operators
Population	Pre- primary and middle school-aged pupils aged 6-13 years	

Intervention	Engaging in sunshine circles of group theraplay	(“sunshine circle*” OR “group theraplay” OR “school based theraplay”)
Comparison	Business as usual or individual theraplay	
Outcome	Increased social-emotional skill and behavioural regulation	
Setting	Preschools, nurseries, primary schools, early years settings	
Study	Peer-reviewed articles, grey literature inc. dissertations and theses	

As published research was available for both interventions, a search was conducted using a synonym for the intervention that incorporated the setting to account for the context-dependent nature of group theraplay and reduce irrelevant results (Smit et al., 2020). Search terms identified as synonyms of key terms in the research question (Table A1) using Boolean operators * and OR. The databases APA PsycINFO, Web of Science, Semantic Scholar, and ProQuest were identified as most relevant to education interventions and were therefore used in the search, with a time restriction of 2014-2026 to match the inclusion and exclusion criteria (Table A2). The time restriction reflects that 2014 was the year of the Head Start Study in the United States (later published in a journal in 2017), which was the first research on the sunshine circle intervention (The Theraplay Institute, n.d.). Additional restrictors for searching abstracts and titles, and for English-language articles, were applied to narrow irrelevant articles and reviews, although this had to be done retrospectively on Semantic Scholar, with additional restrictors for articles, dissertations, theses, psychology, and education to reduce irrelevant results. This database automatically screened three articles as irrelevant or duplicates. The Google Scholar search for sunshine circles, group theraplay, and school-based theraplay used the same time restrictor before screening.

To limit publication bias and further widen the evidence base for the systematic review (Paez, 2017), a grey literature search was conducted using the same time period restrictions and the abstract-only criteria using the ProQuest Dissertation and Theses Database. A hand search of the included papers' reference lists was also conducted to

ensure no relevant studies were missed. No additional papers were included from this search. A web search directed me to the Theraplay Institute website, where a further 36 papers were located. After eliminating duplicates and following the screening process using the inclusion and exclusion criteria, no further papers were included in this review.

Table A2

Inclusion and Exclusion Criteria

Inclusion criteria	Exclusion criteria
Study written in English	Study written in a language other than English
Participants must be aged between 3-13 years old	Participants under 3 and over 13 years old
Studies must be published from 2014	Studies were published before 2014
Must assess social-emotional and behavioural regulations skills	Does not assess social-emotional and behavioural regulations skills
Must use sunshine circles or group theraplay with peers	Does not use sunshine circles or group theraplay with peers
Must have a measure that includes an assessment of social-emotional and behavioural progress and/or teacher-student or peer relationships	Does not include a measure that assesses social-emotional and behavioural progress and/or teacher-student or peer relationships
Must be an empirical paper or study	Is not an empirical paper or study, e.g., review or on-going research
Must have a control group or comparison	Does not have a control group of comparison, e.g. case studies

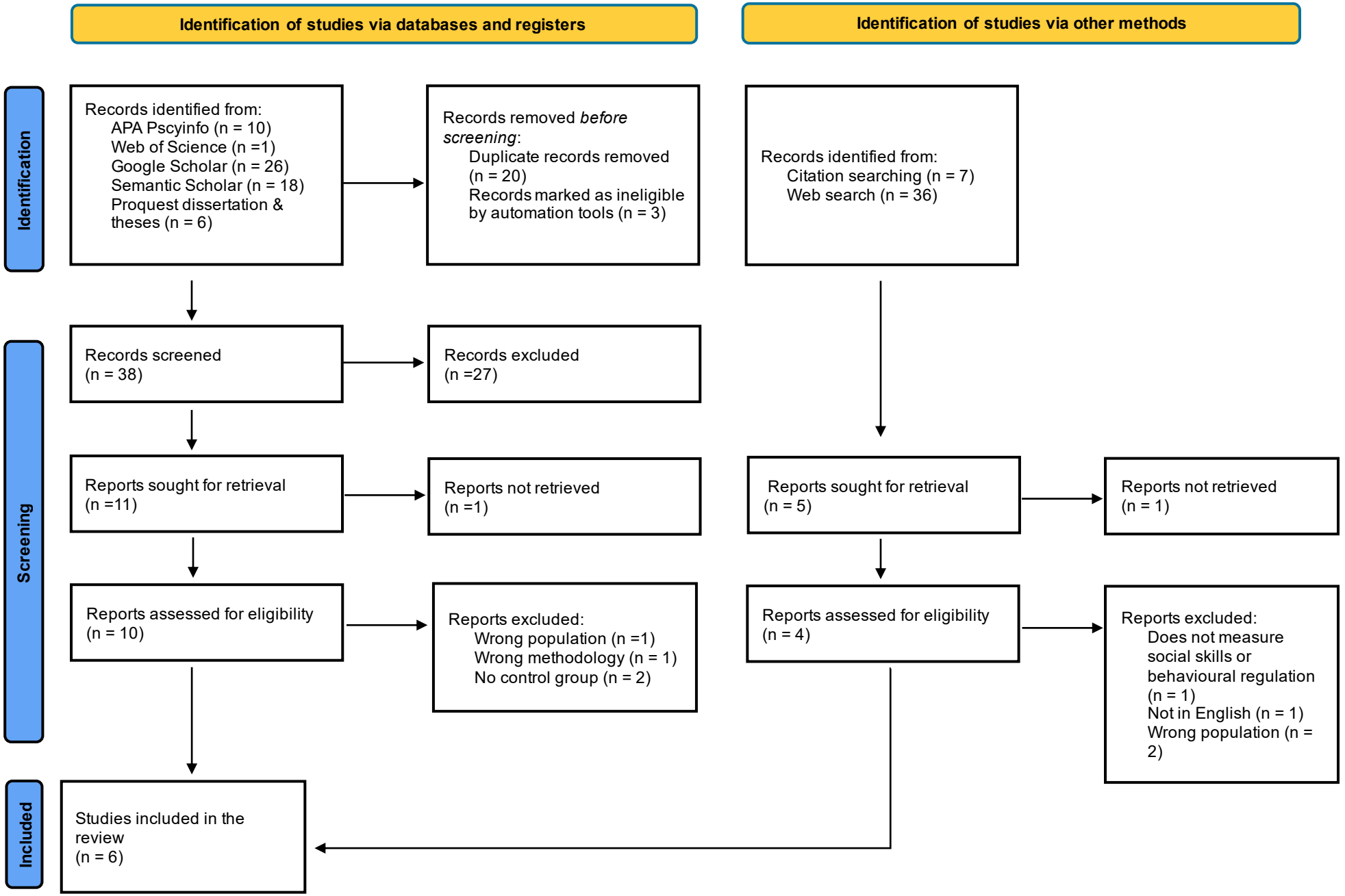
A total of 61 studies were retrieved through the initial database searches. Following the removal of 20 duplicate records and a further three studies identified by automated tools, the remaining records proceeded to the screening stage. Figure A1 illustrates the preferred reporting items for systematic reviews and meta-analyses (PRISMA) flow diagram (Page et al., 2021), detailing the study selection process employed in this review. During the initial

screening phase, titles and abstracts were systematically assessed to identify and exclude studies that met the predefined exclusion criteria.

Following the initial screening, 27 papers and one report were excluded, and the remaining 10 papers were successfully retrieved and assessed against the inclusion criteria, resulting in the removal of a further four papers. A hand search of reference lists and a web search, which led me to the Theraplay Institute website, did not yield any papers that met the criteria, leaving six papers, which were quality-assessed using the quality assessment for diverse studies (QuADS) checklist (Harrison et al., 2021). A summary of the checklist is provided in Appendix B. This quality assurance checklist was selected because it is a versatile tool suitable for evaluating a range of research methodologies, including both quantitative and qualitative studies (Harrison et al., 2021). QuADS uses a four-point Likert scale scoring system, providing a clear framework for comparing study quality, and has demonstrated strong reliability and usability within systematic reviews (Harrison et al., 2021). Finally, I wrote data extraction notes (Appendix C) to support the synthesis of the evidence in response to the specific systematic review question.

Figure A1

PRISMA (Page et al., 2021) Flow Diagram


Identification of studies via databases and registers
Identification of studies via other methods
Identification
Records identified from:
APA Pscyinfo (n = 10)
Web of Science (n =1)
Google Scholar (n = 26)
Semantic Scholar (n = 18)
Proquest dissertation & theses (n = 6)
Records removed *before screening*:
Duplicate records removed (n = 20)
Records marked as ineligible by automation tools (n = 3)
Records identified from:
Citation searching (n = 7)
Web search (n = 36)
Screening
Records screened (n = 38)
Records excluded (n =27)
Reports sought for retrieval (n =11)
Reports not retrieved (n =1)
Reports sought for retrieval (n = 5)
Reports not retrieved (n = 1)
Reports assessed for eligibility (n = 10)
Reports excluded:
Wrong population (n =1)
Wrong methodology (n = 1)
No control group (n = 2)
Reports assessed for eligibility (n = 4)
Reports excluded:
Does not measure social skills or behavioural regulation (n = 1)
Not in English (n = 1)
Wrong population (n = 2)
Included
Studies included in the review (n = 6)

From: Page MJ, McKenzie JE, Bossuyt PM, Boutron I, Hoffmann TC, Mulrow CD, et al. The PRISMA 2020 statement: an updated guideline for reporting systematic reviews. BMJ 2021;372:n71. doi: 10.1136/bmj.n71. For more information, visit: http://www.prisma-statement.org/

Appendix B

QuADs Criteria Table

QuADS Criterion	Francis et al. (2017)	Sancak (2019)	Siu et al. (2014)	Tucker et al. (2017)	Tucker et al. (2021)	Yazdanipour et al. (2022)
1. Theoretical or conceptual underpinning	3	3	3	3	3	3
2. Statement of research aim/s	3	3	3	3	3	3
3. Clear description of research setting and target population	3	3	3	3	3	3
4. The study design is appropriate to address the stated research aim/s	3	3	3	3	3	3
5. Appropriate sampling to address the research aim/s	2	2	2	2	3	2
6. Rationale for choice of data collection tool/s	3	3	2	2	3	3
7. The format and content of data collection tool is appropriate to address the stated research aim/s	3	3	3	3	3	3
8. Description of data collection procedure	3	3	3	3	3	3

9. Recruitment data provided	3	3	2	3	3	3
10. Justification for analytic method selected	3	3	2	2	3	3
11. The method of analysis was appropriate to answer the research aim/s	3	3	3	3	3	3
12. Evidence that the research stakeholders have been considered in research design or conduct	3	2	2	3	2	2
13. Strengths and limitations critically discussed	3	3	2	2	3	2

Appendix C

Data Extraction

Francis et al (2017)

Design	Participants & Setting	Intervention	Comparison / Control	Measures	Results	Limitations
Mixed methods study using repeated measures	20 Looked after Children (LAC) – 5-11 years from 9 primary schools	Weekly 30-minutes theraplay sessions group or individual, based on the complexity of need 8 months duration Led by an assistant psychologist and school staff	No control Standard population norms for SDQ used for comparison	Pre- and post-intervention Strengths and Difficulties Questionnaire (SDQ) (completed by teachers and some carers), semi-structured interviews with staff, and creative feedback activities with children.	SDQ results for the group intervention showed reductions in total stress scores from 12.18 to 9.36, with decreases across emotional, behavioural, hyperactivity, and peer relationship subscales, although changes were not statistically significant. Prosocial behaviour scores increased from 8.18 to 8.45. Qualitative findings indicated improved peer relationships, confidence, classroom engagement, cooperation, and reduced aggression. Group interventions appeared more beneficial than individual sessions, particularly for children with less complex need.	Small sample size Lack of a control group BUT 20 non-LAC children participated. Non-LAC had less complex needs and selected on the basis of likely to support the group. Data not collected for them and not identified as a control group. This limited causal conclusions. Reliance on a single quantitative measure (SDQ) may not have captured subtle social-emotional changes. Missing post-intervention data from three schools reduced the sample to 17 participants. Differences between teacher and carer reports highlighted possible observer bias. Limited follow-up data, time/resource constraints, and lack of full integration within school systems

						restricted evaluation of long-term effectiveness

Sancak (2019)

Design	**Participants & Setting**	**Intervention**	**Comparison / Control**	**Measures**	**Results**	**Limitations**
Experimental research design – static group pre-and post-test control group	28 preschool children – 60-72 months old (5-6 years old) private Kindergarten in Ankara, Turkey	8 weekly 30-45 minute group theraplay sessions following the four dimensions of theraplay	14 children that continued their routine educational program without intervention	Preschool and Kindergarten Behaviors Scale (PKBS-2), which was filled out by the children's parents.	PKBS-2 results showed statistically significant improvements in total social skills ($p = .001$, $r = .60$) and social cooperation ($p = .001$, $r = .59$), alongside significant reductions in problem behaviours ($p = .000$, $r = .65$) in the intervention group. No significant differences were found for social interaction skills. The control group demonstrated decreased social skills and increased problem behaviours over time.	Small convenience sample from a single kindergarten limits generalisability. Findings relied solely on parent-reported PKBS-2 data, increasing risk of informant bias. The short intervention period (8 sessions), absence of follow-up or placebo group. Possible uncontrolled classroom variables. These all limit conclusions about long-term effectiveness and causality

Siu et al. (2014)

Design	Participants & Setting	Intervention	Comparison / Control	Measures	Results	Limitations
Mixed methods approach – quasi-experimental	38 students (35 boys and 3 girls). 6 -13 years, mean age - 10.34. All participants: developmental disabilities, with 47% "Mild" & 53% & "Moderate". Teachers noted: children poor at initiating interactions and working cooperatively. Setting: Chinese special needs school.	Year-long Group Theraplay programme. Children participated in groups of 4–5, with weekly 30-minute sessions for at least 20 weeks. Sessions led by trained classroom teachers: focused on the Theraplay dimensions of structure, engagement, nurture, and challenge, emphasising nonverbal & playful interaction.	Participants assigned to an intervention or waitlist control group 15 students served as a waitlist control group.	Quantitative data were collected using the Social Responsiveness Scale (SRS), measuring social awareness, cognition, communication, and motivation. Teachers completing the scale were blind to group allocation. Qualitative data included teacher reflections and video analysis of peer interaction and responses to instruction.	The intervention group showed significant improvement in social communication compared with controls. Within-group analysis showed gains across all four SRS subscales. Qualitative findings suggested children became more positive and accepting toward peers, while teachers reported improved teacher–student relationships and better understanding of social cues. Independent coding confirmed 100% implementation fidelity.	Small sample size (23 in intervention group) limited statistical power and increased risk of Type I error. Findings may not generalise due to the largely male sample and specific disabilities represented. Lack of a placebo control means improvements may partly reflect increased adult and peer interaction rather than Theraplay alone. Teachers also reported the programme was demanding and required changes to usual classroom management approaches..

Tucker et al. (2017)

Design	Participants & Setting	Intervention	Comparison / Control	Measures	Results	Limitations
Quasi-experimental Teacher assignment was non-random – teachers selected study or control group	206 preschoolers (107 – intervention, 89 control), 12 teachers 3-4 year olds, Racially diverse sample 52% English language learners, All met guidelines for free or reduced meals	Sunshine Circles – teacher led Weekly 20-30 minutes Predictable structure, nurturing touch, large motor games and shared snack, opening and closing songs	Classes receiving education as usual using Head Start program without SC intervention	Quantitative (Student): Creative Curriculum GOLD, ASQ-3, ASQ-3-SE, and Preschool Behaviour Questionnaire (PBQ), administered in October, February, and May. Quantitative (Teacher): Teaching Pyramid Observation Tool (TPOT), completed by trained observers in spring. Qualitative: Semi-structured teacher interviews conducted at the end of the academic year.	Behavioural Improvement: PBQ results - large effect size (r = .59) for reductions in problematic behaviours, including significant decreases in anxious, hostile/aggressive & hyperactive/distracted behaviours. Social-Emotional Gains: GOLD - significant improvements for SC group in managing feelings, cooperating with limits, making friends & solving social problems. Developmental Skills: ASQ-3 results - small but significant gains in fine motor & problem-solving skills. Teacher Performance: SC teachers demonstrated highly significant improvements in pedagogical practice (TPOT scores) compared with controls, with large effect sizes (r = .71 and .80). Qualitative Findings**:** Teachers reported improved student self-regulation and a stronger classroom “working alliance”.	Non-random teacher assignment limited internal validity. All standardised measures were teacher-rated, increasing the possibility of rater bias. Researchers acknowledged the difficulty of controlling all variables in a real-world educational setting. Although the sample size was relatively large, extraneous factors could not be fully eliminated.

Tucker et al. (2021)

Design	Participants & Setting	Intervention	Comparison / Control	Measures	Results	Limitations
2-phase RCT	189 preschoolers 3-4 years, racially diverse, FSM, 49% dual-language learners, many from refugee families, many newly arrived Setting: midwestern US state – 10 classrooms: 6 state-funded half-day programs and 4 Head Start combining half0day preschool and half day childcare	15 weeks 20-30 mins sunshine circles teacher-led – focus: attachment-based play, structure, nurture, engagement & challenge	Randomly assigned to intervention (which received SC) or waitlist control group (Program as usual)	Teacher assessed in Sept, Jan and May using standardised instruments inc., ASQ-3, ASQ-SE, GOLD, DECA-P & PBQ Data analysed using ANOVA and Hedges's g effect size metrics to determine impact Teachers received training in using the tools and had access to a trainer throughout.	Socio-emotional health : large effects – improvement in intuitive self-regulation attachment (DECA) Behavioural improvements: significant decrease in concerns for SC group, girls showed greater reduction over time. Development + Academic gains: medium effect sizes for improvement in communication, problem-solving and personal-social skills. Small effect size for improvement in fine motor skills. Conclusion: SC cost-effective, flexible Tier 1 or 2 intervention – fosters safety and allows children to better manage their behaviour and engage in learning.	The study had 189 participants (min. of 86 required to detect a moderate treatment effect at an .80 power level). A large sample size cannot fully eliminate the risk of extraneous factors or informant bias. Teacher-rated measures and lack of blinding increased the risk of rater subjectivity. The 15-week duration and rapid developmental changes early in the school year may have influenced outcomes. The intervention relied heavily on staff retention and access to on-site training support, reducing real-world applicability. Inclusion of refugee children with potentially complex trauma backgrounds may have affected results, and behavioural data were limited to classroom observations rather than wider settings.

Yazdanipour et al. (2022)

Design	Participants & Setting	Intervention	Comparison / Control	Measures	Results	Limitations
Experimental design – pre- and post test, random assignment to intervention or waitlist groups	27 children aged 5-6 with hearing loss attending a rehabilitation centre	The intervention group received 10 Group Theraplay (GT) sessions held once a week for two and a half months. Each session lasted 40 minutes and followed the four Theraplay dimensions: structure, engagement, nurture, and challenge. Because the participants were hearing impaired, the sessions used a total communication method, combining formal signs, gestures, lip-reading, and speech.	Waitlist group (control) who received the centre's common intervention but not theraplay	Mothers completed the SEARS-Pre before and after intervention to measure self-regulation, social competence, empathy, responsibility, and emotional knowledge. The 42-item scale used a 4-point Likert scale (0–3), with higher scores showing stronger social–emotional resilience. Reliability was high (Cronbach's α = 0.86–0.90). Pure-Tone Average tests confirmed hearing eligibility.	Group Theraplay significantly improved overall social–emotional resilience. Significant gains were found in social competence (34%), empathy (33%), responsibility (27%), and self-regulation (20%). No significant improvement was found in emotional knowledge. The authors concluded that Theraplay supports attachment, emotional regulation, and social interaction through playful multisensory activities.	Small sample size (27 children) limits generalisability. Convenience sampling reduced representativeness. The short intervention period (10 sessions) may not reflect full effects. No follow-up data assessed long-term outcomes. Mothers completed outcome measures, creating possible informant bias. Future research should consider differences in severity of hearing impairment.