

Promising but Under-Tested: A Critical Narrative Review of Music Interventions for the Well-Being and Social Participation of Children with Visual Impairment

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Abstract. Children and adolescents with visual impairment (VI) generally have lower levels of social participation, weaker peer relationships, and higher risks of anxiety and depression and poor self-esteem compared to their sighted peers. As hearing is spared and, in some cases, enhanced early on, music has long been used to help these children live happily and be included in society. This paper provides a narrative analysis of peer-reviewed research on music-based interventions for children aged 0-18 with visual impairments in clinical music therapy, music education and structured listening. It is widely agreed that music has good developmental effects for this group of people, and activities in music can promote close outcomes such as attention, participation, emotions and group cohesion. However, this optimism is based on an unreliable method: only thirteen such dedicated studies have been identified, most of which are single-case designs, few use validated outcome measures, and none are randomised trials with children. The three live discussions in the review point out that what is measured does not reflect reality, and they put forward necessary conditions for future research.

Keywords: visual impairment, music therapy, psychological well-being, social participation, children.

1. Introduction

The damage to sight in childhood will have long-term effects. As much of the early social learning is mediated through sight—such as facial expressions, gestures, eye contact, and the spatial arrangement of play—children and adolescents who are blind or have low vision are, as a group, more susceptible to limited participation in social activities, fragile peer relationships, and internalisation difficulties compared with their sighted peers [1, 2]. They are not little problems, but rather very serious issues concerning the quality of life, and they are especially prominent in adolescence because of the strong desire for peer acceptance [3]. Therefore, it is urgent both clinically and in terms of education to know how to protect the psychological health and social participation of children with VI.

Among the candidate supports, music stands out. Hearing is generally normal in VI and, in the early stages of blindness, often enhanced; therefore, music can provide a non-visual medium for children with VI to participate in at the same time as, or even better than, sighted children [4, 5]. As a result, scholars and practitioners in music therapy, special education and developmental psychology have all agreed for a long time that music is an extremely natural and motivating medium for this group, which can promote communication, emotional expression, identity formation and social inclusion. The first reason for believing this is that many people have actually done something about it; there are many intervention reports and special charitable projects.

Intuitive appeal is not necessarily evidence. According to the peer-reviewed literature, music-based interventions - such as clinical music therapy, music education and structured listening - for children with Visual Impairment (VI) aged 0-18 and at all levels of severity present a mixed picture; although there are certain areas of agreement, there are also three significant and long-standing debates without clear answers, and the quality of the empirical data has not kept up with expectations. Based on the current evidence, music intervention in this field is promising and theoretically justified but has been extensively studied only in theory and not in practice; therefore, a separate stage of empirical investigation is required to differentiate genuine achievements from mere hopes.

2. The Psychosocial Situation of Children with Visual Impairment

The grounds for intervention are a reasonably consistent body of evidence showing that children with VI face an increased psychosocial risk. A systematic review found that vision impairment and ocular morbidity are linked to increased depression and anxiety in children; however, it also pointed out that most of the original studies are scarce, small in scale and vary in methodology [1]. Quantitative comparisons with population norms strengthen the participation dimension: Children with VI score significantly lower than reference samples in both overall and, most markedly, in the social-support-and-peers domain on standardised participation inventories, and this deficit worsens with increasing severity of vision loss [2]. Not only are they difficult in childhood. As participation, friendship and self-concept all develop cumulatively, early restrictions are likely to propagate forward, and thus adolescents and young adults with VI will carry these disadvantages into the transition periods of secondary school, higher education and employment, when social capital is required.

The mechanisms are partly social and partly developmental. Most of what sighted children learn about social interaction is learned by observing nonverbal cues, such as facial expressions, eye contact, body language, spatial distribution in group activities, etc.; a child unable to perceive these signals must infer them through other means or remain unaware of the activities where peer relationships are formed. Self-esteem and social integration are thus also fragile, and longitudinal data show that perceived social support, particularly from peers rather than parents, serves as an effective buffer against this vulnerability [3]. Based on the comprehensive study of support in schools, it has been found that students with visual impairments do not receive this support automatically but only through planned arrangements [6]. This is the context in which music is presented: a group of people with well-being and participation deficits who are often excluded from typical social and educational environments and for whom sight-dependent activities are not feasible, so an auditory and relational way can be offered for connection.

3. Scope and Method

This is a narrative review based on the principles of scoping synthesis rather than a systematic review in line with PRISMA standards, and therefore its conclusions should be weighted differently. Bibliographic databases and journal platforms covering music therapy, studies of visual impairment, special education, and developmental neuroscience were used to find relevant literature; terms for music intervention were combined with terms for visual impairment and well-being and social participation, and reference chaining was added from the field's only dedicated synthesis [7]. Priority was given to peer-reviewed empirical studies and reviews; programme descriptions and practitioner reports were used for context but not treated as evidence of effect, and claims based on a single unreplicated source were marked as such in the text. Due to a small amount of research data, differences in research design and measures of outcomes, as well as the fact that many are single-case studies, this review will clearly indicate the strength of the evidence rather than just whether it supports a certain direction, and distinguish consistently between results specific to children with visual impairment and results extended to other populations. The index metadata of the cited works was confirmed to avoid citation errors.

4. Why Music? Mechanisms and Theoretical Framing

Several overlapping reasons can be provided to explain why music is particularly suitable for children with VI, and each corresponds to a later point of contention. The first is development. The earliest human interactions are inherently musical in nature, organised by time, rhythm, dynamics, and timbre rather than by words, and influential accounts of infancy propose that this shared temporal organisation serves as the foundation for reciprocity and joint attention. When blindness disrupts the visual signal that early mutual gaze and expression are usually based on, musical interaction can serve as an alternative way for infants and caregivers to establish turn-taking, anticipation and shared

emotions. This serves as the explicit basis for exploratory work on music therapy with very young children who are blind and their sighted caregivers, and it has been reported that improvised songs and vocal play can help to recreate a sense of togetherness that has been lost due to vision loss [8].

Secondly, it is corrective and has a good body of evidence. In early blindness, the cortex is reorganized to recruit regions normally used for vision in auditory processing, and the behaviour is quite remarkable: early-blind individuals can distinguish pitch more finely than sighted people [4], and this enhanced auditory perception occurs in early but not late blindness, suggesting a developmental window rather than simply more practice [9]. Functional imaging links gains to cross-modal reorganization, and the occipital cortex is recruited for auditory and pitch processing instead of vision; thus, early-blind listeners may have a relatively detailed representation of musical sound. In line with the above, absolute pitch is rare in the general population and is significantly more common among blind musicians [5]; parent reports also show that blind children have a much higher interest in and ability for music than their sighted peers, with exceptional talents concentrated among those who have the least residual vision [10]. For many children with VI, in short, music is an area of demonstrated competence rather than one of deficit, and it is this relatively rare experience of being able to do something well, or even better than sighted peers, that is believed to support gains in self-esteem and identity.

Two further framings shape how interventions are designed. The first is relational: creative and improvisational traditions of music therapy use shared music-making to build non-verbal communicative relationships and to elicit intentional, self-directed action, and structured developmental frameworks now map musical behaviour in children with complex needs, including VI, across reactive, proactive, and interactive levels, treating music as a domain of development in its own right rather than merely a therapeutic tool [11]. The second is participatory and rights-based: rather than treating music as remediation for an individual deficit, a growing body of scholarship reconceives it as a medium of participation, relocating disability from the child to the inaccessible settings around the child and asking whether the musical situation itself can be made more inclusive [12]. This view aligns music intervention with broader arguments about the developmental and social benefits of active music-making for children and young people [13] and with rights-based frameworks such as the WHO International Classification of Functioning and the UN Convention on the Rights of Persons with Disabilities, under which access to cultural and artistic life is itself an end rather than only a means to symptom reduction. The tension between this participatory framing and the older remediation model becomes one of the field's central debates.

5. Evidence on Psychological Well-Being

The anchor for any appraisal is the scoping review by Somani and colleagues, the first systematic mapping of music-based interventions for people with VI [7]. From more than five thousand records it retained thirteen studies, eleven of them concerning children or adolescents, spanning interventions from improvised music therapy to passive listening. Its findings on well-being are sobering. Psychological well-being was an explicit outcome in only two to three of the thirteen studies, and—decisively for the present question—the only two studies that used validated psychological instruments were conducted with adults rather than children, both reporting short-term improvements in mood or symptom scales. These two trials show that rigorous designs are feasible in vision-impaired populations even though they have not yet reached children: one randomised patients with diabetic retinopathy to structured listening and recorded gains on a validated symptom checklist and quality-of-life scale, while the other randomised patients with glaucoma to relaxation music and found a short-term lift in mood alongside a measurable fall in intraocular pressure, though the mood advantage did not persist. For children specifically, well-being was not measured but inferred, read off observed behaviour such as reduced problem behaviour or increased emotional expression. The dedicated evidence for the psychological well-being of children with VI thus consists almost entirely of behavioural observation rather than of measured psychological outcomes. The distinction is not

pedantic: observed contentment or reduced disruption during a session is compatible with, but does not establish, an improvement in a child's underlying mood, self-esteem, or quality of life, and inferring the latter from the former is exactly the step that validated instruments exist to discipline.

The few more targeted studies must each be read with caveats that limit how much weight they can bear. A controlled study reported reduced aggression in visually impaired adolescents after twelve ninety-minute group music-therapy sessions, using a standard aggression questionnaire and analysis of covariance against a control group; the direction of the effect is plausible, but the study appeared in a low-tier publisher, so its precise statistics warrant caution and its direction rather than its magnitude should be cited [14]. The most rigorous trial anywhere in the field, a feasibility randomised controlled trial of self-administered music listening, found reductions in anxiety, depression, and stress on validated scales—but it was conducted with adults who had acquired vision impairment, and the gains were not sustained three months after the intervention ended, a reminder that engagement effects can decay once the music stops [15]. A recent pre-post study reported improvements in emotional well-being and executive function among visually impaired youth, with larger gains for culturally aligned than for Western repertoire; the cultural hypothesis is attractive, but a small sample, bespoke measures, and publication in a student-research journal make it hypothesis-generating at best [16]. Where stronger evidence exists, it is borrowed by analogy from adjacent populations—most often the Cochrane review of music therapy for autism spectrum disorder, which finds benefits for social and communicative outcomes [17]—and such evidence, however encouraging, is precisely not evidence about children with VI.

6. Evidence on Social Participation and Inclusion

Social outcomes are where the VI-specific literature is densest: eleven of the thirteen studies in the scoping review reported on social engagement, communication, or participation, and the overall tenor is favourable [7]. The most frequently cited primary study illustrates both the promise and the interpretive difficulty. In a within-subject design with six preschoolers, attentive behaviour was significantly higher during music-based than non-music sessions, yet broader group-participation behaviours—remaining with the group, following one-step directions, and orienting toward the speaker—rose during music without reaching significance, and the author pointedly framed the work to ask whether the active ingredient was music itself or the arousal, structure, and auditory salience that music happens to supply [18]. Honest counter-evidence exists alongside the positive reports. In a single-case design that progressed through baseline, a musical playground adaptation, and staff training, the adaptation reduced stereotypic behaviour but produced no change in the child's social interactions with peers or adults until the staff-development phase was added, leading the authors to conclude that musical adaptation may be helpful but is not, by itself, sufficient for social participation [19]. At the opposite end of the age range, qualitative work with ten caregiver-child dyads over ten weeks links dyadic music therapy to bonding, joint attention, and shared positive affect in children as young as one to four years [8].

Social outcomes may respond to music more readily than well-being does, for reasons that explain both the pattern of results and its limits. Group music-making coordinates participants through sound and shared pulse rather than through gaze and gesture, which lowers the specific barrier that disadvantages children with VI in visually organized play, and rhythmic entrainment supplies a non-visual structure within which turn-taking and joint action can occur almost without instruction. This is also why the benefits are easiest to demonstrate at the level of access and engagement and hardest to demonstrate at the level of durable relationships: music can reliably bring a child into a shared activity, but converting that presence into friendship depends on the surrounding social work that the augmented-toy study showed music does not perform on its own [25].

The broader and more recent literature is consistent with cautious optimism while sharpening its limits. A systematic review of forty-five studies of music research involving children with disabilities and typically developing peers found interventions most consistently effective for social outcomes

and singled out inclusive settings as the conditions under which gains were likeliest [20], and large-scale work on group singing associates choral participation with social inclusion and belonging in school children [21]. Newer studies extend the evidence into contemporary modes of delivery: online group music therapy proved feasible and was valued by parents of children and adolescents with VI [22]; ethnographic work in a special-needs secondary school documented choir, keyboard, and marimba participation as routes to inclusion and musical identity grounded in tactile and auditory ways of knowing [23]; and an interprofessional keyboard programme with a clearly specified protocol and a validated motor measure improved fine-motor skills and sustained motivation across a six-week course [24]. One adjacent study is instructive precisely because it complicates the optimism: sound-augmented toys reliably improved joint attention and exploration between children with VI and sighted peers but did not reliably produce richer or more reciprocal social interaction, demonstrating that auditory enrichment can secure access to a shared activity without, on its own, generating the deeper participation that is the ultimate goal [25]. Table 1 collates the design, sample, dose, outcomes, and evidentiary quality of the principal studies discussed across this and the preceding section; the pattern it reveals—single cases and small pilots, heterogeneous measures, and rare statistical testing—is as consequential for the field's claims as any individual result.

Table 1. Summary of representative music-based intervention studies with children and adolescents with visual impairment

Study	Design & sample	Intervention & dose	Outcomes assessed	Key finding	Evidence quality
Robb (2003)	Quasi-experimental, within-subject; 6 preschoolers (4–6 y)	Music vs. non-music sessions, ~30 min	Attentive behaviour	More attentive during music ($t(5)=5.81$, $p=.002$)	Small but quantified
Kern & Wolery (2001)	Single-case; 1 preschooler, congenital blindness	Playground musical adaptations + staff training	Social interaction, stereotypy	Stereotypy reduced; no social change until staff training	Single case; honest null
Metell (2015)	Qualitative; 10 children (1–4 y) + caregivers	Dyadic music therapy, ~10 weeks	Bonding, joint attention	Promoted bonding, shared positive affect	Rich but non-quantified
Hashemian et al. (2015)	Controlled pre–post; VI adolescents	12 group sessions $\times$ 90 min	Aggression (Buss–Perry)	Aggression reduced vs. control	Low-tier publisher; direction only
DeBoth et al. (2021)	Non-randomised pilot; 4 preschoolers	OT + music-therapy keyboard, 20 min $\times 2/\text{wk} \times 6 \text{ wk}$	Fine-motor; parent report	Motor gains; sustained motivation	Operationalized; tiny sample
Ahessy (2023)	Parent survey; families of 11 children	Online group music therapy	Parent-rated experience	Feasible; valued for bonding	Feasibility; parent report
Verver et al. (2020)	Experimental dyads; VI + sighted peers	Sound-augmented toys	Joint attention, interaction	Improved access, not richer interaction	Adjacent; instructive null
Somani et al. (2025)	Feasibility RCT; 81 adults, acquired VI	Self-administered listening, 30–60 min, $5 \times/\text{wk} \times 4 \text{ wk}$	Anxiety, depression, stress (HADS, PSS)	Reductions; not sustained at 3 mo	Strongest design; adults

7. The Measurement Problem

Running through this literature is a structural mismatch between what is measured and what ultimately matters. Music-specific studies of children with VI overwhelmingly assess proximal behaviours that are easy to observe within a session—attention, time on task, joint attention, engagement, remaining with the group, and caregiver-rated bonding—because these are what an observer can record directly and what brief interventions can plausibly move. The outcomes of greatest social importance, however, are distal and durable: quality of life, self-esteem, friendship,

sustained participation in school and family life, and inclusion. A positive proximal result is therefore necessary but not sufficient evidence for the claims the field actually wants to make, and the gap between the two is rarely bridged within a single study. The remedy is largely available rather than yet to be invented. The broader visual-impairment literature already supplies validated, norm-referenced instruments that music research could adopt off the shelf—generic quality-of-life and participation measures benchmarked against population scores [2], and validated anxiety, depression, and stress scales of the kind used in the one feasibility trial that did measure them [15]. Substituting such instruments for the ad hoc questionnaires and bespoke observation schedules that currently predominate, and reporting intervention dose, content, and fidelity transparently enough for replication, would by itself raise the evidentiary value of the next generation of studies more than any new technique. Equally important is transparent fidelity reporting: when protocol, dose, and the rationale for choosing particular music are left vague, even a well-measured positive result cannot be reproduced or pooled, and the field's own reviews repeatedly identify this under-reporting as a barrier to cumulative synthesis [7].

8. Synthesis: Consensus, Debate, and the Quality of the Evidence

Several points now command broad agreement. Music has a disproportionate salience for children with VI; music-based activity reliably improves proximal engagement, communication, and emotional expression; inclusive, group-based settings are valued routes to participation; and accessibility is best understood as an ecology of tactile access, verbal cueing, adapted environments, and adult support rather than as a property of music itself. Three substantive debates, however, remain genuinely unresolved. The first is causal: whether the enhanced auditory and musical capacities of blind children reflect blindness itself or merely greater musical practice. The evidence for an effect at least partly independent of training is that blind musicians acquire absolute pitch despite a later onset of formal training [5], that enhanced auditory perception follows early but not late blindness [9], and that within the VI population the degree of vision predicts musical development more strongly than the specific ocular diagnosis [10]; the question matters because a capacity rooted in early development invites different interventions than one produced by tuition. The second debate is about framing: whether intervention should be conceived as individual remediation or as the transformation of settings toward participation, a distinction that is not merely semantic, because it changes which outcomes count as success and therefore what a study should measure—an individual-remediation study will track symptoms and skills, whereas a participation study will track inclusion, relationships, and the accessibility of the setting itself [12]. The third concerns specificity: whether the observed benefits are attributable to music as such or to the arousal, structure, and predictability it provides—a doubt raised from within the strongest child study itself [18] and reinforced by the finding that auditory enrichment can grant access without producing richer interaction [25].

These debates persist not because the field is unusually fractious but because the evidence is too thin to settle them. The most consequential conclusion of the dedicated synthesis is methodological rather than substantive: of its thirteen studies, nine were single-case designs, only four reported any inferential statistical analysis, only two used validated outcome measures, and a meta-analysis was judged infeasible because the pooled sample would be far too small to support inference [7]. The two randomised controlled trials were both conducted with adults, so there is at present no randomised evidence in children with VI at all. Compounding the scarcity is a confound of attribution: VI frequently co-occurs with additional disabilities—profound and multiple learning difficulties, autism, motor impairment—so that effects reported for music and VI often cannot be separated from effects of music for the accompanying conditions; a gain plausibly driven by a child's autism or learning profile can then be misread as one attributable to vision loss, inflating the apparent VI-specific evidence. And where the most statistically convincing findings exist, they have been imported from autism and general child populations rather than generated within the VI literature. The evidence therefore does not show that music interventions are ineffective—the proximal signals are real,

repeated, and consistent across very different settings—but rather that the field has not yet produced the kind of evidence that could license confident causal claims about psychological well-being and social participation.

9. Gaps and Directions for Future Research

The above shortcomings directly indicate that the research plan has clear priorities. The most prominent deficiency is that there has been no randomised or properly controlled trial of children with VI; even a small, well-documented feasibility study or a replicated single-case experimental design would be considered a true step forward from the current baseline. Such work should use standardised, norm-referenced instruments to measure psychological well-being and social participation rather than bespoke schedules, and should report the degree and type of visual impairment; previously, studies have routinely failed to do so, and a minor revision would enable the results to be compared and pooled. Given that comorbidity is relatively high, the inclusion and exclusion criteria must be strictly limited to attribute any observed effects to primary vision loss. The field would also be further enhanced by comparative designs, as clinical music therapy, music education, and structured listening have never been tested head-to-head due to different mechanisms and resource demands, and attention should also be paid to the durability of outcomes; that is to say, there is direct evidence that gains may fade after the intervention is over. Its development and cultural coverage should also be expanded; the existing literature is strongest in early childhood and Western special-school settings and weakest in mainstream inclusion, adolescence and culturally diverse contexts, even though adolescence and peer relationships are exactly where psychosocial risks concentrate. Some of these requirements are low-cost; specifying the type and degree of vision loss, or using an already validated scale, costs nothing but organisation, so their general absence is a matter of custom rather than feasibility. Finally, protocols, dosage and the reasons for selecting music should be disclosed transparently enough for replication, and promising approaches can be turned into evidence rather than remaining isolated.

10. Conclusion

Across independent strands of scholarship, the consensus is stable and the caution is warranted in equal measure. Music is unusually meaningful and accessible for children with visual impairment, and music-based interventions reliably enhance the proximal behaviours—attention, engagement, emotional expression, bonding, and participation—that plausibly underpin well-being and inclusion. What the field has not yet produced is rigorous, child-specific evidence, measured with validated instruments and capable of supporting causal claims about the distal outcomes that matter most. On the present evidence, then, music intervention for children with visual impairment is best characterized as promising, theoretically well-motivated, and ethically attractive, yet still under-tested. Converting that promise into demonstrated benefit will require child-specific controlled trials that measure validated, durable outcomes; until such evidence exists, enthusiasm is best disciplined by a clear recognition of how much remains unknown.

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