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Research Article

The Effect Of Music Education On The Development Of Students With Autism Spectrum Disorders And Intellectual Disabilities: A Systematic Review Of The Literature

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ABSTRACT

This systematic review aims to highlight the positive impact that music education and music therapy programs have on the development of people with intellectual disabilities (ID) and autism spectrum disorders (ASD). The findings revealed that music interventions could successfully target psycho-motor, cognitive, emotional and social aspects. The research approach was carried out through the classification of the results obtained from the review of scientific articles, where after the review of 21 articles, 15 reviews of applied scientific articles and systematic reviews were included in this work. The framework of music interventions for the population with ID and ASD was reviewed. The results showed that singing, rhythm exercises and instrumental music classes can ease social communication barriers and reduce the number of behavioral problems in children with ASD. It shows that music therapy positively affects the emotional well-being of people with these disorders and reduces their behavior under pressure. It shows that music sessions were found to be effective in improving socialization, emotional well-being and verbal communication in people affected by ID. The literature emphasized the importance of person-centered interventions in a clinical and educational setting or in community settings helping people develop in different aspects. The effect of music education on people with intellectual disabilities shows that their cognitive function can be improved as well as emotional regulation; stress can also be controlled through music therapy. The findings of this review have reasonable implications as they may relate to practical research, policy and future scientific direction regarding music education and therapy for people with intellectual disabilities and autism spectrum disorders.

Key words: music education, music therapy, person with intellectual disability, person with autism spectrum disorder, psycho-motor, cognitive, social and emotional skills

Introduction

Music education has a major impact on the advancement and general life of people with intellectual disabilities (ID) and autism spectrum disorders (ASD). Research has consistently demonstrated evidence of the positive impact of musical therapies on multiple domains, such as cognitive, emotional, and social capabilities in this population (Boster et al., 2021; Gemma et al., 2020). Research demonstrates connections

among children's music action, their engagement psychomotor abilities, emotional and social development (Blasco-Magraner et al., 2021). It has also been reported that music therapy benefits are shown for children who have ID in the areas of physical development, communication, emotional development (Hooper, Wigram, Carson, & Lindsay, 2008). On the contrary, though the attention in the field is expanding, there is still a need for holistic reviews of the previous research to aid in developing and implementing practice and policy. As such, this systematic review will offer an in-depth review of interventions of music like education and therapy with special needs peoples. It aims to signify the existing knowledge and shed light on research gaps.

This systematic review is extensively linked to music therapy and special education, where the practitioners and researchers are giving special attention to practical techniques that help persons with intellectual disabilities. While synthesizing findings from different studies, this review aims to illuminate the effectiveness of these music interventions by presenting evidence of varying outcomes, such as cognitive development, fine motor co-ordination, concentration, self-confidence, emotional sensitivity, social skills, emotional well-being, and social integration.

This review will take into account the results of studies that explored music interventions to assist people with disabilities and any associated psychological conditions irrespective of their age, severity, or the setting that they are based upon. Research approaches have been considered, ranging from randomized clinical trials, quasi-experimental studies, and qualitative findings. The review is dedicated to interventions with engagements of music as an active service, like music education programs, music therapy sessions, and music-based activities, rather than the purely passive experiences of listening to music.

The objectives of this systematic review are twofold. First, it will include the research evidence on the effect of music intervention programs on the cognitive, psycho-motor, and social outcomes of individuals with disabilities.

Second, it will discuss the criticalness of the methodological rigor of the studies and give recommendations on future research directions for this topic. By attaining this rationale, this system analysis is supposed to foster knowledge development and practice in music education for persons with intellectual incapacities.

Methodology

A systemic methodology was used to find existing artworks on music treatment for people with Intellectual Disability (ID) and Autism Spectrum Disorders (ASD). Since it was a thorough approach, the search strategy was developed to identify relevant literature using databases such as Pubmed, Google Scholar, PsycINFO, Science Direct, and special education and music therapy journals. The Boolean operators' use was combined with keywords such as "music education," "intellectual disabilities," "music therapy," and "autism spectrum disorder" to filter search results. The research located in this literature review included studies that were tangentially related to the subject and spanned from 2004 to the present. This was after the screening; 21 out of the 40 qualified as scientific studies applied. The experiments on this issue evaluated what made music perception special in individuals with ID and ASD and its effects on social, emotional, and behavioral problems while undergoing music therapy. Among the results of general music therapies, the positive results were reported to have been observed more frequently than otherwise. In this case, robust RCTs were limited, and neither the applied therapies nor scientific research had standardized methods.

The procedure was based on the criteria of inclusion and exclusion.

Inclusion criteria:

Table1.

Inclusion Criteria	• Research works published in English or those with an English language abstract available are the ones to focus on. • Suppliers learned that those who had symptoms of ID and ASD or those who had been diagnosed with the condition. • Music effects in terms of ID, ASD and the studies on the subject • The text is given. • Experimental or observational research intended to find verifiable or tangible outcomes.
Exclusion Criteria	• *Source studies are not related to the disorder.* • *Non-music-related interventions* • *International standards of protocol, hospital reports, column articles, qualitative studies, case reports, and preliminary studies.* • *With no well-defined control group, the studies are the pointer to the confusion among the researchers.* • *Research that does not have the sub-diagnosis as ID or ASD or have a mixed group diagnosis does not recommend ABA as the main HE.*

We performed a manual literature search in the PubMed, PsycINFO, and Web of Science databases from 2004 inception until February 2024, using the following search terms:
Studies were analyzed only to see if they met the goals and requirements. The included articles were scrutinized through the peer-review process, had data about intervention outcomes, and concentrated on using music for people with ID and ASD. Research that included diverse groups, intervention types, and outcome measures was considered (in order) to reflect the broadness of this field of study.
Data extraction procedures require systematic procedures for extracting information from a selected group of studies, specifying study characteristics (e.g., authors, publication year), participant characteristics, intervention (e.g., duration, frequency), outcome measures, and findings. Two reviewers undertook this methodology to minimize the bias and ensure the validity of data extraction.
The quality assessment criteria were created to judge the methodological consistency of the reviewed studies. This implied evaluation of study design components like sample size, control group contrast, and outcome measurements followed by statistical analysis methods. The research was ranked according to the overall quality of its methods and the strength of its findings.
Table 1. General Characteristics of the systematic review studies on the effect of music intervention with ID and ASD people

Authors and year of publications	**Tittle**	**Characteristics of the study sample**	**Interventions**	**Findings**
Chun Huang, Shengyu Gu, 2022. (Elsevier)Science Direct	Effectiveness of music therapy in enhancing empathy and emotional recognition in adolescents with intellectual disabilities	Levels in adolescents with mild intellectual disabilities. Adolescents diagnosed with mild intellectual disabilities, divided into experimental and control groups	Utilization of Ethnic and Classical Music: Strategic manual that prescribed a careful selection of ethnic and classical music from composers such as Beethoven, Bach, Mozart, and Tchaikovsky. b) Musical Improvisations:, playing instruments, forming musical ensembles, and experimenting with sounds. 2. Empathetic Exercises: a) Role-playing with Music	This study positions music therapy at the forefront as an integral means for fostering empathy and enhancing emotion recognition among adolescents facing intellectual developmental challenges. In this article, we find that music has the greatest effect on social skills. Music enhances "cooperation", whereas the smallest effects were left on "self-control" and "assertion". The authors in the conclusions of the study can say that music therapy is a group intervention that can positively affect social skills.
Mansouri, A., & Naseri, A. (2023). Journal of Science and Research Archive, 9(2), 749-759.	Effects of music therapy on social skills of Educable children with intellectual disability	The statistical population included all female elementary students of special needs schools	The intervention was implemented in twelve 30-minute group sessions in compliance with ethical and hygiene principles.	The results of this study, along with those of similar previous research, suggest that music therapy has the potential to positively impact the social skills of children with intellectual disabilities.
Boster, J. B., Spitzley, A. M., Castle, T. W., Jewell, A. R., Corso, C. L., & McCarthy, J. W. (2021). PubMed	Music improves social and participation outcomes for individuals with communication disorders: A systematic review.	Participation outcomes for individuals with communication disorders who received arts-based interventions. A	A systematic search of the literature yielded 86 studies, which were coded and summarized in terms of participants, arts-based intervention, social and participation variables, outcome, and quality of evidence. The majority of identified studies (N = 71) utilized music	Results indicated that music-based interventions can improve social and participation outcomes, such as frequency of responses, initiation of communication, turn-taking, joint attention, and group participation for children and adults with autism spectrum disorder and developmental and acquired

				communication disorders;
Sudha M. Srinivasan Anjana N. Bhat 2023 (USA)	A review of "music and movement" therapies for children with autism: embodied interventions for multisystem development	Children with ASD	Embodied rhythm-based, multisystem interventions grounded in singing, music-making, joint action, and social synchrony. They provide their research work and highlighted team has developed an intense, 8-week, novel, embodied musical intervention that will be tested within a pilot, randomized controlled trial to assess its effects on the multisystem performance of children with ASDs	The Study has shown that rhythm-based interventions, including singing and music-making, have the potential to ameliorate social communication and behavior among children with ASD. Yet, supported by the available evidence, this statement lacks sufficient evidence, and the authors emphasize that further research is necessary. They suggest a pilot randomized controlled trial in which a novel rhythmic musical intervention would be tested regarding its immediate impacts on children with ASD, as the results would demonstrate the proof-of-concept for its efficacy.
Murphy, M. A., & McFerran, K. (2017)	Exploring the literature on music participation and social connectedness for young people with intellectual disability: A critical interpretive synthesis	Young people with an intellectual disability	Critical interpretive synthesis was used to examine 27 articles referencing the use of music for social connectedness. Areas of focus in the review are the nature of connections being fostered in music programs, the use of voice and collaboration.	The research identified on this topic and most of the work reported is music therapy based followed by music education, then community music. A fostering of wider networks for young people through music programs will be of benefit for those with a desire for greater social participation, for example, fostering 'social–musical pathways'

Table 2. General Characteristics of the Scientific applied studies on the effect of music intervention with ID and ASD people

Authors and year of publications	**Tittle**	**Characteristics of the study sample**	**Interventions**	**Findings**
Race A. Thompson & Katrina Skewes McFerran, 2015	Music therapy with young people who have profound intellectual and developmental disability:	Four young people with profound ID ranging in age from 10 to 15 years	Music therapy (MT) and toy play sessions with the same therapist in a 6-month period. Sessions were video-recorded and analyzed based on	The possibility that music therapy facilitates favorable conditions for the interactions between people has an impact on how to practice of music therapists who work in a school context. The results suggest a model of practice in which a brief course of sustained individual work is indicated at the beginning in order to determine the young people's individual predisposition and peculiar way to the music making
2024 Gerianne Smeet,Karin Volkers; Erik Scherder, Xavier Moonen	An Individual Music Intervention for Adults With Intellectual Disabilities and	People with intellectual disabilities (ID)	16 Music sessions Intervention within 8 to 10 weeks. Regular musical activities that participants already are	Music Therapy does create engaging conditions that motivate the exchange; therefore, After performing 16

	Challenging Behavior: Protocol for a Randomized Controlled Trial		involved	music sessions will be conducted by a music worker, a person who can play an instrument and is willing and capable of conducting musical sessions with a person with ID.
Svahn, M. (2023)	Musical communication and intellectual disabilities: A study on social interaction through music playing among preverbal individuals	5 students, ages 9-15 for children with moderate to severe intellectual disabilities,	Improvisational techniques based on the elements of Creative Music Therapy by Paul Nor doff and Clive Robbins The main user study consisted of six 15-20 minute- sessions, This study has investigated how a set of musical instruments made for playing together can affect social interaction initiatives among preverbal individuals	This study is offering insights into the applicability and experiences of an exclusive music intervention for this target group of an individual music intervention on wellbeing, depression, and challenge behaviors. The results of the present study demonstrate that music therapy intervention in the child's treatment program has a positive outcome in social interaction
Katagiri,J. (2009)	The effect of background music and song texts on the emotional understanding of children with autism.	12 students (mean age 11.5 years) with a primary diagnosis of autism	Participants were given a pretest and a posttest and received eight individual sessions between the pre- and posttests.	The findings revealed significant improvements in all participants' comprehension of the four specified emotions. All intervention conditions led to noteworthy enhancements in emotional understanding among participants, with background music yielding the most substantial improvements. Specifically, understanding of sadness, fear, and anger significantly improved to a greater extent than understanding of happiness.
Smeets, G. J., Volkers, K. M., Scherder, E. J., & Moonen, X. M. (2023).	Active music making and leisure activities for people with intellectual disabilities: A cluster randomized pilot study.	Twenty-nine participants living in four residential facilities for people with ID were randomized into a music or a leisure activities group intervention.	Sixteen weekly sessions of one hour were performed with six to eight participants per group	Active music making, as a specific form of leisure activities, seems to improve well-being, social acceptance and challenging behavior (CB). Moreover, in different (non-clinical) groups a significant effect of active music making has been found on self-esteem and executive functioning (EF)
Hillier, A., Greher, G., Poto, N., & Dougherty, M. (2012)	Positive outcomes following participation in a music intervention for adolescents and young adults on the autism spectrum.	Twenty-two adolescents and young adults on the autism spectrum took part in this study in two separate groups.	The music program called 'Sound Scape' was an eight-week program consisting of 90-minute weekly music sessions	Findings from this music intervention show that engaging with music can positively impact a range of psychological outcomes for those with ASD. Following completion of the music program participants showed significantly higher self-

				esteem, significantly lower self-reported anxiety
Johnson, E., & LaGasse, A. B. (2022)	Musical creativity in autism: Exploring growth through collaborative peer interaction.	This project used a quantitative comparison group intervention design with children	Participants independently completed a music creative product-making task during a 13-minute video inclusive of three sections they 1) imitating different rhythms and melodies 2) combining them in an improvisation, and 3) using the melodies and rhythms for five minutes	The results of this study provide initial evidences how learning experiences may be beneficial for some children with ASD to promote pro-social interactions in a music experience. Additional research is needed to fully understand the potential social and cognitive benefits for children with ASD when engaging in semi-structured PAL
Senkal, O. A., & Muhtar, Z. (2021)	Role of Orff music therapy in improving auditory processing skills in children with intellectual disability.	Twenty-nine children who have ID were subjected in a 6-week Orff Music Therapy program	Experimental, musical assessment. This assessment roughly identified the musical performance of children who have ID.	Relating to Orff Music Therapy which is a useful therapy method for children who have ID in relation to auditory processing skills. n this study, Orff Music Therapy stimulates attention-organization in association with the auditory processing skills of children who have ID
Dada, A. O., Adeleke, O. P., Aderibigbe, S. A., Adefemi, M. A., & Apie, M. A. (2021)	Music Therapy in Enhancing Learning Attention of Children with Intellectual Disability	Treatment Package on 24 children with intellectual disability	Pretest-posttest control experimental research design was adopted, six weeks using Music Therapy	The study finding is that music therapy is significantly effective in enhancing attention for Children with intellectual disability regardless of their sex or level of severity. It was concluded that attention deficit could be improved for children with intellectual disability.
Knapik-Szweda, S. (2015)	The effectiveness and influence of Vocal and Instrumental Improvisation in Music Therapy on children diagnosed with autism. Pilot Study.	The study presents the influence of music therapy on boys (5 and 9 years old) diagnosed with Autism	The sessions based on individual music therapy treatment and indirect approach took place once/twice a week. Creative Music Therapy by Paul Nordoff and Clive Robbins (Nordoff, Robbins 1971) and improvisational	The author emphasizes that despite the systematic music therapy with two children, the results have been positive, and can enrich the understanding of the phenomenon that is the impact of music therapy on the development of autistic children. However, the study is qualitative with the elements of quantitative research, therefore, the author does not generalize the results of studies on a larger population.

Music Interventions for People with Intellectual Disabilities and Autism Spectrum Disorders

The music therapy program in special schools and beyond for people with ID and ASD involves different techniques and methods intended primarily for their health improvement and development. The research findings indicate that singing, rhythm exercises, and music-making can effectively alleviate the primary social communication challenges and accompanying behavioral issues in children with Autism Spectrum Disorders (ASDs). Music therapy provides stimulating environments that encourage engagement. Following music therapy sessions led by a music professional, enhancements in emotional well-being, alleviation of

depression, and reduction in challenging behavior were observed. From the findings of studies abovementioned in the table we know that music therapy can serve as an effective approach to enhance the overall functioning of children with autism. Moreover, active music-making appears to enhance emotional well-being, social inclusion, and challenging behavior across different groups, highlighting its broader beneficial impact.

In a systematic review conducted by Boster et al. (2021), the power of music played a positive role in improving social and participation aspects among people with communication disorders was highlighted. The therapeutic role of this music is best illustrated by the effectiveness of such music interventions in helping people with intellectual disability address some of the social challenges they face in the community. Thus, Rushton et al. (2023) systematically reviewed empirical studies on music-assisted therapies aimed at treating individuals with severe learning disabilities. On the backs of their research, they conclude that music is adapted and customized to fit the individual needs of people with intellectual disability, and they encourage people across various levels of disability as an option.

Music interventions' target audiences are heterogeneous, accommodating a group of intellectually disabled individuals at different levels of intellectual disabilities ranging from mild to severe. A study conducted by Asiru (2022) centers around music therapy as an intermediation for individuals with mild or severe intellectual disabilities. Such results demonstrate the advantages of the intervention in distinct levels of intellectual disability irrespective of its degree. In line with this, Gemma and her colleagues (2020) conducted a study on music and how it benefits the development of youngsters with Down syndrome, a group of people with intellectual disability. A specific example that is the most impressive about this field and its capacity to adjust to individuals across the whole spectrum is music therapy.

Music intercessions are applied in clinical, educative, and community environments. De Witte et al. (2020) introduced music therapy as a provision for stress release in college students with mild intellectual disabilities. It was followed by the term when they could work out their clinical skills. Using the experiences of these people to build a plan of action will help make a system of rehabilitation with music therapy to reduce their stress and even increase their well-being. Moreover, Jonsellćs et al. (2023) conducted a more comprehensive literature review, investigating ways music may influence young people with severe/profound intellectual and multiple disabilities. It is revealed that music integration in settings like these can enrich social interaction and tap into the full potential of people with different disabilities.

The duration of the music therapy sessions is different as they are determined by the nature of the intervention, patient capacity, and resources. The research made by Juntunen and Sutela (2023) on the efficiency of group–musical integration for some disadvantaged groups, including people with low intelligence, presents a potential for long-term involvement and positive consequences. Furthermore, Hooper et al. (2008) provide an extensive literature review of the field of music and intellectual disabilities over the past decades. By studying the experimental writings, they (scientists) make the oldness of music cure as a form of intervention for people with intellectual disability to show that this timeless music serves.

According to the study by Dada et al. , 2021, the effects of music therapy on attention of children with intellectual disability are among that. Given the above findings, therefore, we would thus ascertain that Music is another alternative therapy that may be considered in the management of inattention bias ID children and no preference on gender or any other form of bias. Alternatively, the findings may be validated as another means of managing inattention bias ID persons. However, the following recommendations were drawn from this study, first one, Educators of children should involve in live and recording music in the management of inattention bias children, second one all Educator should incorporate music into the form of education at all levels and third government can promote by support music activities by hiring them as a music therapist.

Diverse theoretical frameworks and perspectives are evident in the different music intervention approaches and theories developed for people with intellectual disabilities, such as cognitive, behavioral, and socio-emotional theories. Furthermore, Boster and his colleagues (2021) pointed out that music enhances communication and social skills and cited social learning theories and cognitive development. Rushton et al. (2023) primarily expressed that music is a healing medium for those with profound disabilities through understanding music's sensory and emotional aspects. Theories of such models are seen as the source of information about the evolutionary processes. Thus, the models inform the development of interventions, which are further tailored to the needs of a particular intellectually disabled person.

Influence of Music Education on Individuals with ID and ASD

Various studies were conducted in which the effects of music education on people with intellectual impairments (ID) were investigated, resulting in differing meanings across different domains. Hooper et al. (2008) reviewed literature from 1943 to 2006, focusing on experimental research in music and intellectual disability. Research findings highlight that music therapy has several benefits, including enhanced cognition, emotion regulation, and better social skills.

Similarly, De Witte et al. (2020) conducted a research study on music therapy techniques to minimize stress levels in mildly mentally impaired adults, which projected the potential of music to soothe and diminish personal agitation and distraction from external stimuli. Recently, systematic reviews have examined music

research with disability populations. Among the music research are reviews with children with autism spectrum disorders (Accordino, Comer, & Heller, 2007; Gold, Wigram, & Elefant, 2006; Whipple, 2004). Other reviews have focused on intellectual disabilities (Hooper, Wigram, Carson, & Lindsey, 2008a, 2008b) and psychopathologies, including some children with disabilities (Gold, Voracek, & Wigram, 2004). In the Journal of Music therapy 2012, 335–364 in the article Music Research with Children and Youth with Disabilities and Typically Developing Peers: A Systematic Review show to us the results and information about children with disabilities and their typically developing peers as participants in music research and the ways researchers incorporate ideas from special education into research designs and reports. These studies add to the small, but growing database that describes the musical abilities of children with disabilities and provides experimental evidence of music as an effective intervention for children with disabilities. (Brown, L. S., & Jellison, J. A, 2012).

On a cognitive basis, it can clearly be understood that doing and playing music helps to foster intellectual function and improve the academic performance of the intellectually disabled. Several research studies by Hope et al. (2008) confirmed that educational music lessons improve executive functions like attention, memory, and language development and play a role in reading and related skills. The principle of this issue, as expressed in research by Boster et al. (2021), can be as follows: Music therapy, such as synchronization with singing, is beneficial for speech and communication for people with ID. It has also been found that the music treatment helps create the auditory processing and sensory integration skills that are core to the development of the sensory processing disorder (Johnels et al., 2023).

Another efficient side effect of music training on people with intellectual disability is the improvement of their emotional health, and this is since researchers De Witte et al., (2020) have proven that music therapy is the most influential method for people with mild ID to deal with anxiety and stress as well as it can help people having mild ID to cope with a problem and express their feelings by using non-verbal means of communication. Music inspires individuals with ID positive emotions, mood regulation, and psychological toughness (Gemma et al., 2020). Musical events subside to the emergence of one's autonomy and confidence, stimulated by self-esteem and self-efficacy (Rushton et al., 2023). Conversely, a different Chinese study from two authors (Chun Huang, Shengyu Gu, 2022) conducted an experimental study of 120 adolescents with mild intellectual disabilities. The participants were split into control and experimental groups. The assessment measures for empathy and emotion recognition through photography and pictograms and music activities were conducted before and after the experiment. As a result, the experimental group, which received nine months of music therapy in the form of sessions, has improved its ability to recognize almost all the emotions. Therefore, it can be assumed that music therapy has a positive effect on adolescents with intellectual disabilities and can serve as a long-term method of improving the ability to assess emotions. Therefore, music therapy can be considered an essential method as a long-term instrument to develop empathy and recognize their own and others' emotions in adolescents with intellectual disabilities.

To conclude, the presented rationale identifies music therapy as an effective method to enhance empathy and recognition of emotions with adolescents with intellectual developmental challenges. The bond between music and social relationships among the youth with an intellectual disability has been widely studied in the music therapy, community music, and music education. Music, especially music experienced together, can be important to them. More than any other age group, the youth use music extensively (Hargreaves and North, 2008). Pavlicevic, Ansdell, and Procter (2014), argues community music therapy's importance in helping to reach the goal — to enhance empathy and emotion recognition in adolescents with intellectual developmental challenges. Moreover, empathy in the "Pavlicevic-Ansdell-Procter" goal is interpreted more in the wider aspect as other social skills like collaboration. They suggest that music has a substantial impact on social skills, particularly cooperation, although its effects on self-control and assertion are smaller. Furthermore, they argue that music therapy, when integrated with education and family-centered approaches, can positively affect social skills in this population. Sudha M. Srinivasan and Anjana N. Bhat (2023) conducted a study based on Rhythm, Multisystem Interventions Based on Singing, Music Making, Joint Action, and Social Synchrony an intensive, 8-week music intervention that was tested as a pilot program to assess its effects on performance multisystem of children with ASD and provide that the use of music and movement interventions as a multisystem treatment tool for children with ASDs. Finally, they make recommendations for assessment and treatment of children ASD.

Music education among intellectually disabled people is sped up by developing the social skills one needs for all social interactions and interactions within the group. Boster et al. (2021) found this research regarding human communication by focusing on special cases, such as intellectual disability, that includes social and participatory music discovery. The information showed how music-based efforts could mediate social interaction as a connected society, where people engage, communicate, and have reciprocal behaviors, including mutual attention partnerships.

Discussion

The results of the systematic review show that music is prospective for people with intellectual disabilities (ID). Research like Rushton, Kossyvaki, and Terlektsi (2023) and Johnels, Vehmas, and Wilder (2023) prove

the excellent effect of a music-based intervention for individuals with severe and multiple learning disabilities. These interventions can be of different types; they include musical interaction and music-movement integration, which all have been linked with improved areas like communication, social interaction, and emotional state (Juntunen & Sutela, 2023; Boster et al., 2021). According to researchers Mansouri, A., & Naseri, A. (2023), studies indicate that music has a significant impact on socio-emotional skills, particularly cooperation, although its effects on self-control and assertion are smaller. However, it is important to consider that the effectiveness of music intervention can be influenced by the type of intervention, the characteristics of the participants, and the context of implementation.

The review is proof that the literature shows that music substantially impacts people with intellectual disabilities in terms of both development and overall well-being. Gemma, Pablo, and Cabedo-Mas (2020) systematically reviewed the role of music in the growing up process of children with Down syndrome, showing similar advantages linked to cognitive, emotional, and social development. In addition, Hoper et al. (2008) have brought to light a systematic review of literature on music and intellectual disability, covering the main principles and theories in music therapy practice for people with intellectual disability. It is in line with many earlier studies that reported the same findings as those in this review, thereby providing further support for the effectiveness of incorporating music interventions into educational and therapeutic interventions for people with ID.

This evidence has significant implications for practice, policy, and future research. Music therapy and music-assisted treatment should be incorporated into schools and various treatment settings for intellectually disabled persons, supported by the review's findings (De Witte et al., 2020; Asiru, 2022). This gives rise to the necessity of designing the guidelines and standards for applying music interventions in different settings, for instance, in schools, community centers, and clinical settings. Apart from that, policymakers and stakeholders should understand the role played by music education and therapy for intellectually impaired individuals' overall growth and health. Thus, they may push for more availability of such services.

However, with its valuable insight, this systematic review has some limitations that must be acknowledged. First, the heterogeneity of study designs and outcome measures across the considered studies may lessen the findings' comparability and usefulness in practical situations. In addition, the vast number of the studies included in this review were performed in specific environments or with particular individuals, which might make the findings non-representative of the overall population of individuals with intellectual disabilities. Future research should attempt to cope with these weaknesses using valid study designs, unified outcomes scales, and diverse participant groups. Besides that, longitudinal studies should be carried out to investigate the long-term application of music interventions on individuals with intellectual disabilities throughout their lives. Ultimately, conducting further studies to unveil the mechanisms behind the effectiveness of music as therapy in this group will shape the creation of specialized interventions and heighten outcomes.

Conclusion

In conclusion, a systemic review of music interventions for individuals with intellectual disabilities (ID) incorporated findings from various studies. It shed light on music classes' different approaches and positive influence on cognitive, emotional, and social skills among this age group. The review reveals substantial research investigating the impact of music-based interventions, including music therapy and music-movement integration, on the well-being and development of people with ID.

Furthermore, the survey stressed the significance of music education as a precious tool for advancing the notions of inclusion, self-expression, and quality living among intellectually handicapped people. By facilitating person-centered music interventions designed to address these individuals' unique abilities and likes, music educators and therapists can help boost the individuals to do more than they ever thought they could.

In summary, this systematic review supplements the current literature by wrapping up the mixed evidence of music therapy for people with intellectual disability. It adds much value in combining music education into learning and therapeutic settings for those with ID. In the future, more research and implementation should be done to develop understanding and practice in this field and raise the quality of music education for people with intellectual disabilities to a new level.

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