

The Role of Music Therapy in Supporting Intellectually Disabled Youth in Senegal

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How to cite this paper: Youm, R.B., Diarra, K., Pouye, M. and Tine, J.A.D. (2024) The Role of Music Therapy in Supporting Intellectually Disabled Youth in Senegal. *Health*, 16, 521-534.
<https://doi.org/10.4236/health.2024.165035>

Received: March 5, 2024

Accepted: May 27, 2024

Published: May 30, 2024

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Abstract

Introduction: Music therapy is a practice for helping and supporting people with intellectual and relational difficulties. This study illustrated the benefits of music therapy for young people living with intellectual disabilities (YLID) in an African context. **Methodology:** This study investigated six young individuals with intellectual disabilities who had undergone three years of music therapy. They were participants in the inclusive non-academic training program at the National School of Arts in Dakar from 2017 to 2019. Data collection utilized individual interviews with the youths, evaluation grids from teachers and psychiatrists. Guardians provided informed consent along with the assent of the young participants. **Results:** The six young were aged between 18 and 30 years old, with an average age of 24.6 years. Four of the YLID were male. Three young people with intellectual disabilities had delayed psychomotor development. Observations revealed the beneficial influence of music therapy on the health and well-being of young individuals. Music played a role in alleviating stress and anxiety among youth with intellectual disabilities (YLID), enhancing their mood and mental health. It assisted in navigating challenging situations and heightened alertness among YLID. Additionally, music therapy contributed to improvements in dyslexia, fine and gross motor skills, and memory development among intellectually disabled youth, ultimately facilitating their integration into society. **Conclusion:** In light of our results, music therapy makes a major contribution to the empowerment of YLID. Engaging in musical activities helps young people connect with others through instrumental expression and a sense of accomplishment. By facilitating music therapy, it becomes possible to combat discrimination and stigmatization, thus promoting the social inclusion of intellectually disabled youth. Therefore, it is important to promote music therapy in Senegal to meet the needs of YLID.

Keywords

Music Therapy, Young, Intellectual Disabilities, Senegal

1. Introduction

Art therapists and music therapists often work together in medical settings, offering complementary interventions to typical medical interventions, although each modality has distinct expertise, level of training and method for engaging patients [1]. Art therapy is a treatment technique that uses artistic mediation as a therapeutic tool. It uses creativity and artistic creation to develop psychotherapy or personal development [2]. Art therapy is a clinical intervention based on harnessing artistic potential and the creative process to improve quality of life. The primary aim is not to learn an artistic technique or to achieve aesthetic success, but rather to encourage the expression of painful or conflicting feelings that are too difficult to put into words [3]. In other words, art therapy is the accompaniment of people in difficulty (psychological, physical, social or existential) through their artistic productions: music, theater, literature, dance and so on. This work, which takes our vulnerabilities as its material, seeks less to reveal the unconscious meanings of the productions than to enable the subject to re-create himself, to create a new, in a symbolic journey from creation to creation. Art therapy is thus the art of projecting oneself into a work of art as an enigmatic message in motion, and of working on this work of art in order to work on oneself [4]. Art has the political potential to create change at both individual and systemic levels [5].

Above all, music is a unique means of sharing, of non-verbal and cross-cultural communication. It is universal. Its different components (rhythm, harmony, timbre, pitch, volume) are all elements that affect each human being in a specific way, according to his or her history and culture. For thousands of years, people have recognized the cathartic or sedative properties of music, which can bring about a sense of well-being [6]. It poses three problems: the first is music in its direct effects, the second is therapy in its version of “revealing” the unconscious, and the third is the exclusion of art therapy [4]. According to the Association québécoise de musicothérapie, music therapy “is a mode of intervention using music, aimed at promoting, maintaining and improving the client’s mental, physical, socio-affective and spiritual health. It results from the interaction between the client, the music and the therapist”. It is a relational process, and therefore a moving and flexible one, between three poles: the client, the therapist and the music. The polymorphous role of music is central to the definition of music therapy [7]. Music therapy is a care, assistance, support or re-education practice that involves treating people with communication and/or relationship difficulties. There are various music therapy techniques, adapted to the populations concerned: psycho-affective disorders, social or behavioral difficulties, sensory, physi-

cal or neurological disorders. Music therapy is based on the close links between the constituent elements of music and the history of the subject. It uses sound and/or musical mediation to open up or restore communication and expression within the relationship, in the verbal and/or non-verbal register [8]. The therapist can use “receptive” music, *i.e.* listening to recorded music, followed or not by discussion/verbalization, possibly combined with another medium (drawing, dance, etc.) or other techniques (visualization, for example). It can also use active music, *i.e.* direct musical production, singing and/or playing of an instrument by at least one of the people present, with or without the association of another medium. Songs, tunes or lyrics from existing pieces can be used, or new material created and improvised, or a combination of receptive and active music. There is usually some verbalization, depending on the patient, his or her pathology and age (whether newborn, elderly, intellectually impaired or schizophrenic, for example). Some choose not to verbalize at all [7]. Music has always been the prerogative of several communities or ethnic groups in Senegal, such as the “Lébous”, the “sérères”, the “diolas” and so on. All these ethnic groups have their own way of living, listening to and analyzing their own music, which gives it a specific dimension. This musical practice has always been carried out by griots, who are considered the custodians of oral tradition. However, music therapy remains a traditional practice in Senegal, particularly among the Lebous with their “ndeup” and the Diolas with their “fouyitoum”. Today, music is undergoing remarkable development, as is medicine, which is why the fields of psychiatry, psychology and speech therapy use music to improve certain conditions such as Alzheimer’s disease. This is what prompts Cocchio Christelle to assert that “music is of considerable interest in giving those who no longer have language a chance to rediscover themselves and interact with others” [9]. According to Habib and Besson (2008), repeated musical practice modifies the organization of cortical areas related to these functions on three levels: increasing the number of neurons involved, favoring their degree of temporal synchronization, and increasing the number and strength of excitatory and inhibitory synaptic connections [10] [11]. The sensory-motor activity of musical practice also leads to cerebral reorganization. Musical practice also modifies the density of white matter in the hippocampus, involved in long-term declarative memory [11] [12]. Musical practice also induces an increase in gray matter volume in the perirolandic areas of the inferior temporal gyrus and in visual regions, interconnected areas that integrate multimodal sensory information [13]. These expertise effects are also visible in children. A cross-sectional study of children aged 9 to 11 showed a superiority of gray matter volume in the sensorimotor cortex (related to motor practice) and occipital regions (related to reading sheet music) in musical children after an average of 4 years of practice, compared with non-musical children [14]. The music therapist draws on the person’s sensitivity, creativity and sense of playfulness. The main aim of the therapy is to improve quality of life and actualize the person’s potential. Music is the closest we can come to the intra-uterine experience, the “paradise lost” or the fantasy that refers to it [7].

Intellectual disability is defined by the World Health Organization as the significantly reduced ability to understand new or complex information, and to learn and apply new skills (disorders of intelligence). The result is a diminished ability to cope with any situation independently (social functioning disorder), a phenomenon that begins before adulthood and has a lasting effect on development. Impairments depend not only on the child's health problems or disorders, but also, and crucially, on the extent to which environmental factors contribute to the child's full participation in the community and full integration into society [15]. Intellectual disability is also defined as a deficit in intelligence and limitations in adaptive functioning appearing before adulthood. The resulting handicap depends not only on the presence of the intellectual disability, but also on environmental factors that do not favor the person's full participation in the community and full integration into society [16]. These functions are present from birth or early childhood, and result in limitations in the ability to carry out normal activities of daily living. Intellectual disability can be genetic or the result of a disorder affecting normal brain development. It is in fact a neurodevelopmental disorder in the same way as autism, learning disabilities or attention deficit disorder with or without hyperactivity [17].

Intellectual disability is measured by an IQ below 70 [18] [19]. It is classified into four categories:

- Mild impairment: IQ between 50 and 69 [19]. People with educational difficulties who are able to integrate into society independently as adults [20].
- Moderate impairment: IQ between 35 and 49 [19]. People with significant developmental delays in childhood, but with good communication skills and partial independence, who need different levels of support in adulthood to integrate into society [20].
- Severe impairment: IQ between 20 and 34 [19]. People in need of long-term support [20].
- Profound impairment: IQ below 20 [19]. People with limited communication, mobility and self-care skills [20].

The diagnosis of intellectual disability is based on three criteria:

- Impaired intellectual functioning;
- A deficit in adaptive behaviors, *i.e.* the ability to function independently in different areas of everyday life;
- And the intellectual disability must be present during the developmental period [21].

The etiology of intellectual disability can be either acquired or genetic. Acquired etiologies are: exposure to environmental factors during the prenatal, perinatal or postnatal periods can affect brain development, resulting in intellectual disability [22]. Fetal alcohol syndrome is by far the most common environmental cause [23] [24]. Other causes such as perinatal infections, newborn hypoxia, brain malformations, trauma and other conditions associated with prematurity are frequently associated with intellectual disability. The use of drugs or toxic substances during pregnancy, as well as exposure to teratogenic agents, are

also implicated in intellectual disability [25]. In addition, underlying socio-demographic factors such as malnutrition and consanguinity are also preponderant in intellectual disability [26]. These non-genetic factors account for approximately 20% of the etiology of intellectual disability [25]. Genetic factors are implicated in approximately 60% of intellectual disabilities [22] [27].

Intellectual disability affects 1% to 3% of the general population [16]. Its prevalence is almost twice as high in low- and middle-income countries as in high-income countries [28] [29]. Nearly 3000 children suffer from intellectual disabilities in Senegal. Figures from the Special Olympics NGO reveal that most suffer from Trisomy 21 [30].

Management of intellectual deficits depends on their severity. In most cases, it is multidisciplinary, involving a number of professionals: psychologists, psychomotor therapists, speech therapists. It is important to detect disorders at an early stage: we now know that the more stimulation a child receives, the better his or her chances of future autonomy. Schooling can then be adapted in specialized sections, aimed at helping children acquire new skills. Families and loved ones, who are often deeply affected by these disorders, can also receive psychotherapeutic care and contact dedicated associations to help them in their efforts [31].

What are the effects of music therapy on the mental health of young people with intellectual disabilities? In the perspective of a scientific approach, the aim of our study is to explore the effects of active music therapy in Senegal, where the terrain is rich in musical arts education.

2. Methodology

The study was carried out at the National School of the Arts in Dakar. It is located at the western end of the Cape Verde peninsula, on the shores of the Atlantic Ocean, and covers an area of 550 km², or 0.28% of the national territory [32]. The National School of the Arts was created by decree 95 - 936 of October 10, 1995. It is a middle, secondary and higher vocational training establishment whose main vocation is to provide academic training in the fields of performing arts, plastic arts and cultural activities. It also provides in-service training for public and private-sector employees and foreigners, by organizing refresher courses and seminars [33]. Training at the Etablissement is organized around nine training courses divided into three departments that integrate music [34].

The non-academic training program for young people with intellectual disabilities at the National School of the Arts was based on objectives set using a participatory method involving young people, parents and the teaching team. Different strategies were used to ensure that knowledge was passed on and well-being improved. To this end, the strategies adopted appear to be diverse and varied, considering the characteristics governing each young person's disorder, with a view to meeting the expectations set.

The first approach, called the elimination approach, moves from the most ac-

cessible tasks to the most complicated. It's an approach that appeals to the cognitive sphere because of the significant difficulties young people have in understanding, communicating and maintaining their attention in relation to a given situation. It allows young people to express themselves through the communicative properties of music. It should also be noted that some students are able to perform melodies with gestures that enable them to assimilate the different phases of the melody being performed. It is in this sense that the teacher embodies a strategy of incitement, so that the use of gestural aids and non-verbal communication can serve as cues. Faced with an intellectually-challenged learner who needs to be reassured, the teacher's approach and posture play a key role. He or she seeks to enhance the young person's self-esteem by creating a climate of trust and relaxation, and tries to free him or her from fear. This attitude enables young people to enjoy discipline, to work with motivation, and to give their all to improving their disorders.

Sessions were scheduled according to a timetable that enabled each teacher to teach his or her hours well. In the first year, music classes were held on Fridays (from 3:30 to 5:30 p.m.) and Saturdays (from 10 a.m. to 12 p.m.). Drumming and group music practice were taught on Wednesdays (11 am to 12:30 pm) and Thursdays (11 am to 12:30 pm) respectively. In the second and third years, music, singing, intonation, piano, flute and music theory were taught on Tuesdays (3:00 pm to 5:00 pm) and Fridays (3:30 pm to 5:30 pm). Drums and group music practice, including guitar, were taught on Saturdays and Thursdays respectively.

Repertoires of therapeutic works: each individual presents a maximum and specific receptivity to music created by a composer of the same typology as him/her. According to Leon Vannier: "typology is the observation of the human creature who carries within him signs that enable us to discern his predispositions and predestination". In another version, we could say that it enables us to diagnose the constitution, the temperament. Constitution is a man's constant, while temperament is his variable. He continues: "By the same name, the ancients designated a god, a star, a metal, an organic or chemical function, a social category with its particular mentality". Referring to this logic, he wrote 8 great human types that are the prototypes: Mars, Saturn, Apollo, Venus, Jupiter, Mercury, Moon and Earth. It's worth noting that the prototype scale corresponds in the same order to the 7 musical notes and the eighth, Earth being considered the octave of the Mars type. The repertoire is based on works by composers corresponding to the prototypes described by Vannier, and are classified according to their tonality.

Symphonie fantastique is also used. It is a program symphony written by the French composer Hector Berlioz in 1830. It is an important piece of the early Romantic period, and is popular with concert audiences worldwide. The first performance was at the Paris Conservatoire in December 1830. He highlights the constant recurrence in all movements of the symphony of the melody that launches the first allegro. The transitions from the state of dreamy melancholy,

interrupted by occasional bursts of aimless joy, to delirious passion, with its outbursts of fury and jealousy, its returns of tenderness, its tears, its religious consolations—all of this constitutes the subject of the first movement [35] (Figure 1).

This was a case study of young people living with intellectual disabilities followed music therapy from 2017 to 2019. The study population was defined according to Maurice Angers as “the set of elements of one or more characteristics in common that distinguish them from other elements investigated” [36]. It was made up of young people enrolled in the non-academic training program for young people living with intellectual disabilities at the National School of Arts in Dakar, parents of the young people included in the study and teachers. The purposive sampling technique was used. The participants included six YLID, their parents and five teachers. Data were collected using an individual interview guide for the young people, and evaluation grids for the teachers and psychiatrist. Data quality control was carried out by training interviewers, pre-testing tools, organizing data (segmentation and decontextualization), categorizing data contained in the text, coding the text and supervising data collection in real time. The variables in our study included sociodemographic characteristics, pathological characteristics of the young person, socioenvironmental characteristics and quality-of-life characteristics. The free and informed consent of the guardians was obtained, as was the assent of the young people. Data confidentiality and participant anonymity were respected.



Figure 1. *Idée fixe* melody by Berlioz.

3. Results

The pseudonyms given to our six case are YLID 1 to 6, in order to preserve their anonymity.

1) Case YLID 1 was female, 18 years old, 4th sibling. She was in 2nd grade. She suffered from epilepsy. The first seizures appeared at the age of 3. He has neurological sequelae from epileptic seizures.

2) Case YLID 2 was male, 26 years old. He was in 3rd grade. He suffered from delayed psychomotor development. The first epileptic seizures appeared at the age of 4.

3) Case YLID 3 was male, aged 30, 3rd sibling. He suffered from epilepsy and delayed psychomotor development. The first epileptic seizures appeared at the age of 2.

4) Case YLID 4 was male, 27 years old, 4th sibling. She was in 3rd grade. She suffered from dyslexia and learning delay. The first diagnosis appeared at the age of 7.

5) Case YLID 5 was female, 22 years old, 5th sibling. She suffered from trisomy 21.

6) Case YLID 6 was male, 25 years old. She suffered from delayed language acquisition and development. He presents autistic disorders.

The impact of musical practice on the health and quality of life of JVDIs is described below (see [Table 1](#)).

4. Discussion

Our study was carried out at the National School of Arts in Dakar. It involved six young people enrolled in the non-academic training program for young people living with intellectual disabilities (YLID) followed music therapy from 2017 to 2019. We had 4 male YLIDs against 2 female YLIDs, *i.e.* a sex ratio of around 2; as in the Bulle F study, in 2016 which had a sex ratio of around 1.2 - 1.9 [37].

In our sample, psychomotor developmental delay was diagnosed in 3 out of 6 YLIDs. Delphine. H and Vincent. DP in 2017, found that 59% of these young people suffered from developmental disorders and mental retardation [38]. The age of onset of seizures was in the range [2 years - 7 years] and it is similar to the results of Pagès in 2017 [18].

Our study showed that music therapy facilitated the accomplishment of certain tasks. It also facilitated the improvement of dyslexia and the development of memory. In 2010, Century worked on a case where a 7-year-old girl with cerebral palsy and practically non-verbal came to music sessions with pleasure and participated willingly, but sometimes took a rug as a bed, lay down, spread her legs and laughed a strange laugh; then she would get up, bang against the wall, screaming, then lay back down, spreading her legs and laughing. Periodically, she would place her hands on his penis and cry. Afterwards, she was generally less agitated and more serene. I am convinced that this child was sexually abused

Table 1. Impact of musical practice on the health status and quality of life of young people living with an intellectual disability.

		Impact	
On health status	On cognitive functions	Language	<ul style="list-style-type: none"> - Improve the YLIDs' speech quality, as they were able to communicate by expressing their needs. - The practice of music helped to restore the formidable dynamic of the desire to live and relate to others; - Improve dyslexia and memory development.
		Motricity	<ul style="list-style-type: none"> - Improve fine and gross motor skills; - Empower YLIDs in their daily routines, such as leisure activities, getting around, personal hygiene, asking for help with household chores, etc.
		Behavior and mood	<ul style="list-style-type: none"> - Reduction in impulsive and aggressive behavior among YLID; - Develop cognition and, more specifically, visual skills.
		Working memory	<ul style="list-style-type: none"> - Develop memory for reference to a past event, prospective memory for the ability to recall future actions already planned, and semantic memory for things already learned.
		On the treatment	<ul style="list-style-type: none"> - Better therapeutic result with good adhesion.
On quality of life	On the social front	Social integration	<ul style="list-style-type: none"> - Avoid misunderstandings, arguments, isolation, anxiety - Increase self-esteem and self-confidence of YLIDs; - Improve social relations between students and encourage YLIDs to converse with others, to care about their loved ones and to help them; - Promote the development and ease of life of YLID in the community through leisure activities.
		Social cognition	<ul style="list-style-type: none"> - Improve the social perception of YLIDs and reduce stigma; - Improve the processing of emotional information of YLIDs.
		On the professional front	<ul style="list-style-type: none"> - Acting on parameters such as attention, application in terms of know-how, good communication, social and professional autonomy, emotional stability, and exemplary behavior to create a favorable socio-professional climate for the integration of YLIDs.

and that music therapy allowed her to escape [5]. Century's result and our result can be confirmed by André Malraux's quote that "art is the shortest path from man to man" [39].

Musical practice improves the control of disorders related to general or fine motor skills. It is involved in the harmonization and organization of gestures or visuo-spatial functions. Our interviews with parents and young people made it possible to understand to what extent students adapt and become more independent in their daily activities, such as travel, personal hygiene, household chores, games, etc. Our result is illustrated by Century in 2010 who wrote: "(...) a lady who could not walk remained in a wheelchair, which she hated. When she was younger, she loved to dance; When I played for her music, a nurse supported her and she swayed rhythmically from one foot to the other. One day, gathering courage, she took several steps across the room. Another time, in the absence of the nurse, she was able to get up on her own and, leaning against the wall, take small steps. Music therapy triggered and motivated a previously impossible effort" [7]. The results from Saint-Pierre B in 2009 demonstrate the

same facts, Ms. Labbé affirming that music therapy can increase the self-esteem of the young people with whom she works, improve their quality of life, develop their listening skills and improve their relationships social. She also points out that music therapy can help with the development of cognitive and motor skills [40].

We observed that the music therapy sessions gradually calmed impulsive and aggressive reactions between young people. We also noted that communication between students, established by the teacher, allows young people to exchange ideas so that everyone can identify their shortcomings and limitations and try to improve them. Practical musical creativity sessions create a certain competition, as everyone does their best to do better than their peers.

In 2005, Eren worked with six adolescents aged 13 to 18 in a group music therapy setting; it reports improved social interaction and communication skills (making contact, eye contact, listening, self-expression, motor coordination, decision-making, and acceptance of differences) [41].

We showed that singing activities accompanied by gestures and dance reinforce the synchronicity between body and mind allowing young people to develop automatisms and enormous creativity. In other words, he manages to integrate different parts that make up the melody and to develop a certain level of attention, imagination and immense creativity. The ability to memorize therefore lies in the exploitation of perceived sensory stimuli, whether visual, auditory or gestural. It is a task that develops prospective memory in terms of the ability to remember already planned future actions and semantic memory in terms of things already learned [42]

According to parents, participation in music therapy sessions improved young people's response to treatment. Among the six young people studied, three were under treatment (antiepileptics, anxiolytics, mood stabilizers), but no relapse was observed. Interviews with parents showed that music therapy had a positive effect on treatment acceptance and their desire to feel better. Despite the pathologies linked to intellectual disability, none of the students took medication at school but they were all regularly monitored by their doctor (psychiatrist and neurologist). This confirms the positive effects of musical practice on the symptomatology of these YLIDs. The benefits of this program have been reinforced by the commitment of the parents and teachers involved. Our study also found that the stigmatization of these young people was mainly linked to ignorance. Their companions, students from other programs, were at first fearful when they met them in the schoolyard. But with cohabitation, they gradually got used to the YLIDs and friendly ties were formed. The public's perception of YLIDs has taken on a different connotation, one in the direction of reconsideration, thanks to the spirit of creativity, dexterity in playing an instrument and the accomplishment of academic tasks. We must avoid hindering the development of disabled people. According to Panchard Delphine, music is also a resource in times of stress, fatigue or agitation. Its influence on human beings seems to be mul-

tiple-faceted, it is therefore interesting to explore all directions, in particular its contribution in favor of people with disabilities [43].

The employability of YILDs is an important subject in social inclusion. Music therapy would be able to associate certain important criteria favorable to the integration of YLID in the workplace (listening, application of know-how, good communication, social and professional autonomy, emotional stability, adapted behavior). The same observation is made by Potvin who suggests that students who participate in an inclusive and individualized education program offered by a post-secondary institution as well as in professional training workshops in the community obtain better employability rates than others. Those who received training would also have higher income than those who did not access a postsecondary program [44]. According to Isabelle Martin, “work polarizes the entire economic, political and social scene and concerns each individual. It constitutes the first and fundamental organization of our civilization and gives meaning to each person’s existence” [45]. In this context, YLID training remains a major asset for good socio-professional integration.

5. Conclusions

In light of our results, we can affirm that music therapy has greatly contributed to the empowerment of YLID. Group music practice prepares them to communicate with others through instrumental expression, providing them with a feeling of satisfaction and confidence. Music therapy has made it possible to overcome discrimination and stigma, thus promoting social reintegration and acceptable and respectable living conditions for YLID. The behavioral change acquired through music-based training helps the YLID connect with society. The program gave YLID a different image, helping to change the very connotation of disability.

Education in the musical arts remains an essential pillar of human evolution and occupies a prominent place in the therapeutic field. It is a discipline that has always aimed to develop a positive attitude that can have a positive effect in various areas such as behavior change, speech disorders and improvement of motor disorders, which is why it is important to develop specific art therapy programs for YLID in Senegal.

Limitations of This Survey

The unavailability of young people’s medical-psychiatric files was the main limitation of this study.

State of Knowledge on the Subject

- The effectiveness of music therapy is explained by its ability to stabilize and/or eliminate certain disorders. It also helps to increase intelligence quotient.
- The originality of music therapy, in that it is natural and has no side-effects that could harm the vital prognosis of people with disabilities.

Our Study's Contribution to Knowledge

- This project demonstrated the positive impact of music therapy on YLID's language, motor skills, behavior and mood.
- Music therapy considerably improved the quality of life of YLID patients.

Acknowledgements

We thank the young people who participated in this project, their parents and all the teachers at ENA.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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