DOCTORAL PROGRAM

by Special Pedagogy

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ABSTRACT for a DISSERTATION

on the topic:

Typology of activities in music therapy for the inclusion of children with special educational needs

for awarding an educational and scientific degree "Doctor" in a professional field 1. 2. Pedagogy, doctoral program Special pedagogy

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Introduction

Music plays a crucial role in a child's holistic development, influencing academic, social, and linguistic facets (Kocabaş & Özeke, 2012). Speech and music share structural similarities, employing elements like phonemes and notes to construct meaningful expressions and melodies (Lerdahl & Jackendoff, 1983). Language and music learning processes exhibit parallels, with both involving the comprehension of foundational components—phonemes and syllables in language, and similar yet distinct elements in music (Saffran et al., 1999).

Early exposure to music and the acquisition of musical literacy can positively impact reading and language skills (Clausson & Thaut, 1997, as cited in Anvari et al., 2002). Phonological awareness, crucial for language development, shares auditory mechanisms with music perception. Both entail discerning individual units, recognizing variations in content and pace, and categorizing elements (Anvari et al., 2002).

A need arose to investigate the correlation between musical audibility and phonemic discrimination in children with typical and special educational needs.

First, the paper examines theoretical aspects related to the impact of music on general development, brain functions, motor skills, academic skills, cognitive skills, concentration, and behavior. It also explores the therapeutic and educational applications of music. Subsequently, it delves into musical audibility, reading processes, and the interaction between music and reading. Methodologically, the study provides details about the research sample, data collection tools, and procedures. Finally, the dissertation present research findings, statistical analyses, and comparisons with global literature, highlighting limitations and suggesting avenues for future research.

1. THE EFFECT OF MUSIC ON THE CHILD'S DEVELOPMENT

1.1 The Interplay of Music, Brain, and Movement

The intricate relationship between music, the brain, and movement underscores the profound impact of musical education on cognitive functions and neuronal brain activity in children (Parbery-Clark et al., 2012; Zendel & Alain, 2012). Studies by

Moreno and Besson (2005), Hyde et al. (2009), and Moreno et al. (2011) highlight the positive influence of musical education on overall brain development. Kelstrom's research (1998, as cited in Yoon, 2000) and Campbell's work (1996, as cited in Yoon, 2000) reveal that students engaged in music studies outperform their peers in comprehensive tests of basic skills, emphasizing the enduring benefits of music education on academic achievement.

The profound connection between rhythm and humans, starting before birth, shapes not only prenatal development but also postnatal communication and learning (Sakalak, 2004). Rhythm, a fundamental element of music, influences activities such as walking, heartbeat pulsing, and clapping (Makris & Makri, 2003; Alvin, 1961), highlighting its impact on motor function and the nervous system. The ear's crucial role in supporting motor functions, including body balance and coordination, emphasizes the direct link between the organs of hearing and motor skills (Sakalak, 2004). The symbiotic relationship between music and spatiotemporal perception further enhances the understanding of these connections (Gromko & Poorman, 1998). A multisensory approach to teaching rhythm, especially for children with special needs, proves essential for their development (Grant & Le Croy, 1986, in Kartasidou, 2004b).

In conclusion, the harmonious interplay of rhythm, music, and movement extends beyond physical activities, significantly impacting cognitive development and sensory integration. Further research is imperative to delineate the specific psychomotor and rhythmic skills involved in music and movement, catering to the diverse needs of both typical students and those with special needs (Kartasidou, 2004b). Understanding this intricate connection offers a holistic approach to education, fostering not only academic excellence but also the overall well-being of individuals.

1.2 Music's Impact on Cognitive Functions

The profound relationship between music and cognitive functions has been a subject of extensive international research, unveiling the intricate ways in which music influences various aspects of mental processes. Attention, a cornerstone of cognitive function, is significantly enhanced by exposure to music, as evidenced by studies on both prenatal

and preschool children (Shelter, 1985; Greer, Dorrow & Hanser, 1973 in Sergi, 1995). Particularly, systematic prenatal musical stimuli have shown a notable difference in attention levels among infants, setting the stage for the lifelong impact of early exposure to musical experiences. Moreover, the correlation between auditory perception, symbol recognition, and chronological age further elucidates the depth of music's influence on cognitive development (Gromko & Poorman, 1998).

Music's engagement with memory is equally profound, offering unique insights into its impact on short-term and long-term memory processes. Listening to music, whether vocal or instrumental, has been shown to influence word recall and digit memorization, with vocal music causing more discomfort than instrumental music (Salamè & Baddeley, 1989). The experiential nature of music contributes to the enhancement of memory, creating a dynamic and authentic learning environment that fosters engagement (Michels, 2003). Further studies on the effect of music on memory and attention in children affirm its potential to serve as a powerful educational tool, particularly for those with learning disabilities. Structured presentation, mnemonic strategies, and the integration of music into rule-learning processes emerge as effective methodologies, emphasizing the symbiotic relationship between music and cognitive functions. In conclusion, the essay delves into the harmonious integration of music and cognitive functions, showcasing its potential to revolutionize educational approaches and enhance the cognitive capabilities of learners.

1.3 Exploring the Correlation of Music with Language Learning

The intricate relationship between music and language is a multifaceted exploration, encompassing influences on text comprehension, language teaching, and the correlation between musical and reading skills. Early studies, notably Henderson, Crews, and Barlow's work in 1945 (Boyle & Coltheart, 1996), investigated the impact of popular and classical music on reading comprehension, revealing distinctions between music styles. Lowe's qualitative research in 2002 underscored the benefits of integrating music into language lessons, showing enhanced associations, predictions, and choices in both language and music domains. This collaborative research, conducted at an elementary school integrating art into education, demonstrated improvements in learning skills,

social aptitude, and creativity, exemplifying the enriching potential of a harmonious marriage between music and language education (Beane, 1995; Erickson, 1996).

The complex interplay between sound conditions, text comprehension, and short-term memory in the context of reading and music is meticulously investigated in a series of experiments. The studies reveal that, surprisingly, various sounds, despite their distracting nature, do not significantly impact text comprehension. Boyle & Coltheart's experiments (1996) underscore the intricate dynamics between auditory stimuli, linguistic tasks, and cognitive processes, providing valuable insights into the nuanced relationships between music and language. Employing various auditory conditions during sentence comprehension tasks, the study finds that the sounds, despite their distracting nature, surprisingly do not significantly impact text comprehension. Moreover, the investigation into error rates and reaction times reveals nuanced interactions, such as the differential effect of homophones and orthographically similar words (Morris & Jones, 1990, in Boyle & Coltheart 1996). Experiment 2, delving into the impact of sounds on short-term memory, highlights the substantial effect of vocal sounds, especially speech, on word recall. These experiments collectively underscore the intricate dynamics between auditory stimuli, linguistic tasks, and cognitive processes, providing valuable insights into the nuanced relationships between music and language.

Further studies, such as those by Hall (1952, in Hallam & Price, 1998), Bradley 1981, and Wisbey 1980 (in Douglas & Willatts, 1994), delve into the correlation between music and reading skills, demonstrating that exposure to music can improve text comprehension, especially benefiting students with below-average intelligence and dexterity. Douglas & Willatts' research (Douglas & Willatts, 1994) further substantiates these findings, revealing significant correlations between melodic perception, rhythmic perception, and various reading-related skills. A subsequent pilot study explored the practical applications of the music-reading correlation, showing that musical interventions led to improved reading scores. Register's recent research (2007) extended this exploration, revealing significant improvements in decoding, word knowledge, and text comprehension in response to passive and active musical activities,

particularly benefiting children with reading difficulties. These collective findings underscore the potential of music as a valuable tool in developing reading proficiency.

1.4 Correlation of Music with Mathematics

The intricate relationship between music and mathematics is a subject of growing interest, with studies suggesting that music not only enhances text comprehension but also improves mathematical performance. Historical roots trace back to Pythagoras, who acknowledged this association in the 6th century BC. Evidence from Shaw's research, as cited by Michels in 2003, hints at music being a potential "window into higher brain functions." Common skills between music and mathematics, such as rhythmic counting and finger movements during instrument playing, require mathematical calculations. Learning to play the piano, as demonstrated by Kosik in 1999, establishes a brain architecture akin to that involved in math and reading skills.

The international literature explores the correlation between music and mathematics, particularly in the context of behavior and academic performance. Research indicates that music can influence mood, physiological aspects, and even school behavior. Studies by Hallam & Price in 1998 reveal that listening to relaxing music positively impacted math performance for children exhibiting disruptive behavior, particularly those with ADHD. The presence of background music not only significantly improved math performance but also correlated with a reduction in rule-breaking behavior. This positive impact extended to college students, where relaxing music fostered a greater inclination to help others. However, the type of music appears crucial, as instrumental music demonstrated more positive effects on behavior and performance than vocal music. Despite these findings, further extensive research is deemed necessary to comprehend the long-term effects of music in classrooms and determine the most effective types of music for optimal results.

The correlation between music and mathematics is explored through a multifaceted lens, encompassing diverse studies that shed light on the impact of music on academic performance, particularly in the realm of mathematics. One intriguing avenue is the influence of music on behavior and math performance, with a focus on students with ADHD and typically developing children. Research by Abikoff et al. (1996) unveils

that children with ADHD exhibit more correct responses during math tests when listening to music, while typically developing children's performance remains similar across varied auditory conditions. Furthermore, a study by Scott (1970 in Hallam & Price, 1998) demonstrates that hyperactive children show increased productivity when listening to music during math activities, emphasizing the potential of music as a facilitator for focus and performance.

Expanding the exploration, Furnham & Strbac's research (2002) delves into the broader cognitive and academic functions influenced by music, encompassing memory, text comprehension, and mathematics. The study scrutinizes the impact of music on introverts and extroverts, revealing that both personality types perform better in silence than in the presence of music or noise. The research establishes a nuanced interplay between personality traits, sound conditions, and academic tasks, with extroverts demonstrating improved performance in the presence of music. The findings highlight the need for a tailored understanding of individual preferences and sensitivities, acknowledging that the relationship between music, personality, and academic performance is intricate and multifaceted.

1.5 Music's Dynamic Impact on Concentration, Therapy, and Socialization

The intersection of music and concentration has long intrigued researchers, delving into the impact of music on cognitive processes and focus. Hallam's comprehensive exploration (2010) investigates the effects of background music on various tasks, emphasizing its role in enhancing concentration. While some studies suggest that music might impair cognitive performance, Hallam highlights that it depends on the nature of the task, the individual, and the type of music. Contrary to common assumptions, music is not a universal distractor; rather, it can act as a cognitive stimulant, especially when individuals self-select their preferred music.

In a study by Furnham and Bradley (1997), the influence of music genre on cognitive performance is examined, revealing that different music styles have distinct effects on concentration. Classical music is found to enhance spatial-temporal reasoning and mathematical performance, whereas pop music may not yield the same positive

outcomes. The nuanced relationship between music and concentration is further emphasized by Lesiuk's research (2005), which explores the impact of music on workplace productivity. Results indicate that music can positively affect the quality and speed of work, fostering a more conducive environment for concentration. Collectively, these studies underscore the complexity of the music-concentration interplay, suggesting that the choice of music and the nature of the task play crucial roles in determining the cognitive effects of musical accompaniment.

In the realm of education, music therapy transcends its conventional boundaries, assuming a pivotal role as a therapeutic tool, as demonstrated by the extensive study conducted by Rickson and Watkins in 2003. Focused on adolescents grappling with aggressive behavior in a boarding school setting, the research investigates the influence of music therapy on prosocial behavior, aiming to mitigate aggression in students facing social, emotional, and learning challenges. Employing a combination of active music playing and listening activities, the intervention, guided by developmental behavior checklists, yields noteworthy outcomes. While results showcase enhanced autonomy and creativity, a nuanced revelation surfaces – improved interactions alongside a potential slight increase in disruptive classroom behavior. This study underscores the necessity of well-structured programs, particularly for students with ADHD, advocating for tailored interventions to optimize positive results.

In the multifaceted landscape of music therapy in education, active student participation takes center stage, empowering them to collectively decide on session activities. The anticipated outcomes span behavioral skills, including following instructions, turn-taking, and offering ideas, juxtaposed with the development of musical abilities such as maintaining a steady beat and playing instruments with control.

Referencing past research, the study reinforces the versatile therapeutic potential of music interventions, ranging from promising stability in emotional outcomes (Eidson) to varied efficacy in comparative studies (Haines), and from individual sessions addressing conduct disorders (Kivland) to fostering enhanced self-esteem in psychiatric patients (Henderson). (in Rickson & Watkins, 2003) Thaut's study further underscores the broad impact of different music therapy techniques on mood, perception, relaxation, and self-perception in psychiatric inmates, emphasizing the diverse and powerful

outcomes achievable through music interventions in education. (in Rickson & Watkins, 2003)

In the realm of socialization, music emerges as a powerful facilitator, fostering acceptance and interaction among children, regardless of disabilities. Integrating music into the classroom environment enhances student interaction and promotes diversity acceptance (Humpal, 1991, as cited in Duffy & Fuller, 2000). Musical improvisation contributes to improved relationships between children with developmental delay and their typically developing counterparts (Gunsberg, 1988, as cited in Gold, Voracek, & Wigram, 2004). Additionally, a case study incorporating music activities in early intervention showcases enhancements in speech quality and quantity, creating a social context for meaningful interactions among children with disabilities (Frick, 2000, as cited in Teachout, 2005). This collective evidence underscores the multifaceted contributions of music to social development, emphasizing its potential in creating inclusive and supportive educational environments.

2. MUSICAL AUDIBILITY

2.1 Pedagogical and Psychological Dimensions of Musical Audibility - Gordon's Tests

In the pursuit of understanding children's musical development, scholars and educators have delved into intricate concepts such as musical talent, achievement, ability, and receptivity. Edwin Gordon's contributions stand out, as he differentiates between music aptitude and achievement, with musical receptivity serving as a crucial indicator of a child's potential for musical learning (Papazaris, 1999; Stamou, Schmidt & Humphreys, 2006). Gordon's audiation concept enriches this understanding, emphasizing the transformative force that allows individuals to mentally experience and predict musical elements (Gordon, 2007; 2009). Audiation, intrinsic to both musical ability and achievement, sheds light on the dynamic nature of musical development until the age of 8-9 years, after which it becomes less influenced by the environment (Gordon, 2006).

Gordon further categorizes musical audibility into eight types and six sequential stages, offering a comprehensive framework for understanding how individuals engage with and process musical information (Gordon, 2007). This categorization includes activities such as listening to, reading, writing, recalling, and improvising music, representing various modes of interaction with auditory experiences. The sequential stages highlight the evolving nature of musical audibility, from keeping heard sounds to predicting upcoming tonal and rhythmic patterns in a musical piece.

The evolution of tests measuring musical receptivity is traced through the works of various researchers, with Gordon's contributions being noteworthy. His series of tests, from "Primary Measures of Music Audiation" to the "Advanced Measures of Music Audiation," tailored for different age groups and educational levels, have played a crucial role in assessing melodic and rhythmic patterns (Gordon, 1989, as cited in Gordon, 2003). These tests address key criteria for effectiveness, such as ease of administration, objectivity, and relevance for age and class comparisons (Papazaris, 1999). They contribute significantly to understanding musical receptivity across diverse developmental stages.

The application of Gordon's Music Audibility Tests in research has yielded valuable insights into musical receptivity among individuals with typical development and special needs. Guerrini's study (2005) on heredity and environment's influence on musical receptivity challenges the notion that parental musical receptivity determines that of their children, emphasizing the role of environmental factors. Chan's (2007) research with gifted Chinese children and the extension of Gordon's tests to populations with special needs, such as Atterbury's (1983) examination of rhythmic discrimination and Hopyan et al.'s (2001) investigation into individuals with Williams-Beuren syndrome, underscore the versatility and effectiveness of Gordon's tests in exploring musical receptivity across diverse populations and developmental profiles. These collective findings highlight the impact of environmental factors and specific components of musical receptivity on understanding music, affirming Gordon's enduring legacy in the field of musical education and psychology.

3 READING – PHONOLOGICAL AWARENESS

3.1 Dynamics of Reading Processes, Phonological Awareness, and Interventions

The journey of literacy acquisition is a multifaceted exploration, intricately woven with cognitive processes and linguistic intricacies. Reading, a complex mental function, involves the delicate interplay of decoding and comprehension, with phonological awareness emerging as a critical factor influencing the success of these processes (Porpodas, 2002). Decoding, encompassing symbol recognition and phonological translation, converges with comprehension, linked to semantic memory access (Porpodas, 2002). The nuanced relationship between decoding and comprehension unfolds challenges in reading, emphasizing the need for a holistic approach to address difficulties (Vellutino et al., 2004). The influence of linguistic and non-linguistic factors, particularly phonological processing, further complicates the intricacies of reading processes (Mann, 1984, as cited in Porpodas, 2002).

Phonological awareness, a metalinguistic skill, emerges as a linchpin in understanding reading complexities, exhibiting a profound association with decoding and comprehension functions (Landerl et al., 1997; Mark et al., 1997; Porpodas, 1999; Adams, 1994). The attempt to establish a causal link between reading comprehension and decoding remains a formidable challenge (Nation & Snowling, 2000), underscoring the intricate dynamics between linguistic and non-linguistic factors influencing reading difficulties.

The term "phonological awareness," emerging in educational practice during the late 1970s, represents a metalinguistic skill crucial for understanding the structural elements of words, particularly phonemes (Gillon, 2004; Porpodas, 2002). As a person's knowledge that spoken words can be broken into distinct sounds, phonological awareness progresses from larger units like syllables to smaller ones like phonemes (Anthony et al., 2003). This developmental progression, encompassing various levels like phonemic awareness and syllabic awareness, elucidates the multidimensional nature of phonological awareness (Porpodas, 2002). The classification of these levels provides a comprehensive framework for understanding the developmental stages of

phonological awareness, with phonemic awareness emerging as a crucial predictor of reading abilities (Hulme et al., 2002; Aidinis & Nunes, 2001).

In the realm of literacy research, the multifaceted relationship between phonological awareness and learning to read has garnered significant attention. Three distinct perspectives—causal links, learning-to-read facilitation, and a reciprocal relationship—underscore the complexity of this interplay (Porpodas, 2002). While some view phonological awareness as a prerequisite for reading (Mann, 1984; Treiman, Bradley & Bryant, 1985), others, led by Jose Morais, propose that learning to read fosters phonological awareness (Morais et al., 1979, 1986). A third perspective suggests a reciprocal relationship, wherein phonological awareness both influences and is influenced by reading (Hatcher, 1994; Roth & Schneider, 2001). These perspectives emphasize the need for tailored interventions, acknowledging the nuanced interplay between phonological awareness and the learning-to-read process.

Children with special educational needs, particularly those facing mild mental retardation, encounter specific challenges in reading acquisition (Cawley & Parmar, 1995; Channell, Loveall & Conners, 2013). Interventions focusing on phonological awareness, specifically phoneme-letter matching, emerge as a potent strategy for enhancing reading abilities in this population (Ehri et al., 2001). The effectiveness of such interventions is underscored by research highlighting their positive impact on both typically developing children and those with reading difficulties (Lundberg & Hoien, 1991; Dessemontet & Chambrier, 2015). Targeted phonological awareness interventions, especially in the phonemic domain, have shown significant improvements in the reading performance of children facing mild mental retardation (Dessemontet & Chambrier, 2015). Thus, understanding the intricate dynamics of reading processes and phonological awareness is crucial for designing effective and tailored literacy interventions for diverse learners.

4. MUSIC AND READING –

4.1 Music, Reading, and Phonological Awareness

The interplay between music, reading, and phonological awareness unfolds as a fascinating symphony of cognitive connections. Rooted in the belief that language may have a musical origin, the relationship between tone, rhythm, and their impact on speech prosody bridges linguistic and musical realms (Thaut, 2005; Marie, Magne & Besson, 2011). The exploration of tone perception's role in linguistic and musical understanding reveals a nuanced association, supported by studies linking specific tones with words through tonal perception (Ladefoged, 2003; Patel, 2010; Deutsch et al., 2004a, 2006). Delving into cognitive functions, music's influence on memory, attention, and academic skills, especially language, is established, indicating a causal effect of music education on tonal perception and reading (Yoon, 2000; McMahon, Rose, Parks, 2004; Kartasidou, 2004a; Moreno et al., 2009).

Surveys within typical populations and studies on disabled individuals showcase intriguing associations between musical skills, phonemic awareness, and reading performance. From preschoolers demonstrating a connection between musical tones and phonemic awareness to 1st-grade children showing rhythmic production's predictive role in reading, the correlation between music, speech prosody, and phonological awareness emerges (Lamb & Gregory, 1993; David, Wade-Woolley, Kirby & Smithrim, 2007; Cardillo, 2008; Pei, Wu, Xiang & Qian, 2016; Mengler et al., 2005; Corriveau et al., 2007; Forgeard et al., 2008; Tallal & Piercy, 1973; Benasich et al., 2006; Huss et al., 2011). This interconnectedness underscores the potential of music as a powerful tool for unlocking literacy skills in diverse populations. The symphony of insights unveiled through this exploration contributes to a deeper understanding for educators, researchers, and practitioners alike.

RESEARCH APPROACH

5.1 Research objectives – Research questions

The outlined research endeavors address critical gaps in the literature concerning the relationship between music, reading, and educational practices, particularly for children with special educational needs. The defined problem recognizes the dearth of specialized investigations into the interplay of reading and musical aurality in this specific population within the Greek context. While research in other countries has explored the relationship between music and reading in children with dyslexia, a notable void exists in Greek literature. Thus, the need to investigate the correlation of musical aurality and reading in both standard and special education children in Greece is emphasized, underlining the significance of cultural and linguistic context in these studies.

The research then adopts a multifaceted approach, combining quantitative and qualitative methodologies to comprehensively explore the integration of music therapy in education. The quantitative phase, driven by exploratory questions, aims to investigate the potential relationship between musical audibility and phonemic discrimination in children of typical development and those with special educational needs.

The following research questions will guide our quantitative research :

1. Is there a correlation between musical audibility and phonemic discrimination in the general population?
2. Is there a correlation between musical audibility and phonemic discrimination in children with typical development and children with special educational needs?
3. Does gender have an effect on musical listening and phonemic discrimination in children with typical development and those with special educational needs?
4. Is there a statistically significant difference between the two groups of children (typical development and special educational needs)?
5. Is there a statistically significant difference between children with mild intellectual disabilities and children with learning disabilities?

The subsequent qualitative component focuses on the perceptions and attitudes of general school teachers in Greece regarding the utilization of music therapy in the

school environment. By exploring the integration of new educational techniques and specifically music therapy within the curriculum, the study contributes to enriching knowledge, influencing educational practices, and prioritizing music therapy within educational institutions.

The following research questions will guide our qualitative research :

1. What are the views of general school teachers on the integration of new educational techniques into the school curriculum.
2. What are the views of general school teachers on the integration of music therapy into the school curriculum.
3. What do they think are the advantages and disadvantages of music therapy in schools.

By addressing gaps in the literature, this holistic research approach seeks to harmonize the realms of music, education, and inclusivity, fostering a more comprehensive understanding for practitioners and educators.

5.2 METHODOLOGY

5.2.1 Quantitative research

In the methodology chapter, the research aims to explore the potential relationship between musical acoustics and vocal discrimination in children, considering both typical development and special educational needs.

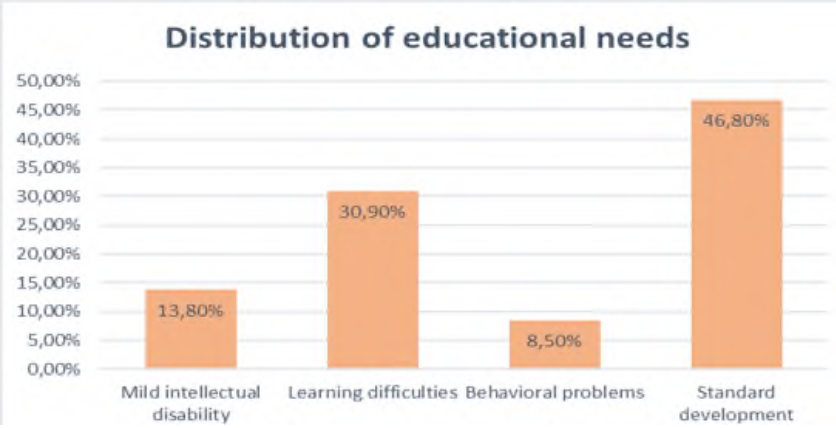
5.2.1.1 Participants

The quantitative approach involves a sample of 94 children, encompassing 44 typically developing children aged 5 to 8 and 51 children with special educational needs aged 5 to 9. The latter group includes diagnoses such as learning disabilities, ADHD, behavioral problems, and mild mental disability. The gender distribution within the sample reveals that 53.2% were boys and 46.8% were girls, showcasing a balanced

representation (Graph 1).

Graph 1: Distribution of gender

The age distribution spans from 5 to 9 years, with the majority falling into the 7-year-old category. The grade distribution indicates that the majority of children are in the second grade of primary school. The breakdown of educational needs includes 13.8% diagnosed with Mild Mental Retardation, 25.5% with Learning Difficulties, 3.2% with Behavioral Problems, 5.3% with ADHD, and 5.3% categorized as 'other' or unspecified, with 46.8% being typically developing. To facilitate data analysis, categories were refined, combining certain groups and specifying those with Speech Problems. Ultimately, 13.8% had Mild Intellectual Disability, 30.9% had learning disabilities, 8.5% had behavioral problems, and 46.8% were typically developing (Graph 2). This meticulous participant breakdown ensures a thorough examination of the research questions within the diverse participant pool, laying the foundation for a comprehensive analysis of the data.



Graph 2: Distribution of educational needs

5.2.1.2 Data collection process

In the methodology chapter, the data collection process for the research on the relationship between musical acoustics and vocal discrimination is outlined systematically. The survey, conducted during the 2021-2022 school term in the Prefectures of Larissa and Magnesia, employed a consistent research procedure. Tests were administered in a comfortable and quiet environment, either in an isolated school room or at the subject's home. The necessary equipment, including a sound system or portable CD player, the PMMA test CD, answer sheets, pens, pencils, and manuals, was utilized to ensure standardized testing conditions. The PMMA test, focusing on music audibility, took approximately 20 minutes for each child, followed by the "phonemic discrimination" subtest of the L-a-T-o psychometric criterion, lasting about 10-12 minutes.

The statistical analysis of the data involved the use of the SPSS 23.0 statistical package, providing a robust examination of variables such as gender, age, grade, and educational background. Descriptive statistics, t-tests, ANOVA, and Pearson correlation coefficient (r) were employed to gain insights into the relationships within the dataset.

5.2.1.3 Statistical analysis

While the results and conclusions of the study offer valuable insights, the researcher acknowledges certain limitations. Notably, the relatively small sample sizes for specific educational needs categories, such as Mild Intellectual Disability and Behavioral Problems, present challenges in drawing definitive conclusions and generalizing findings. Additionally, the adaptation of Gordon's hearing test in a Greek population introduces a limitation regarding the reliability index of the rhythmic component. Despite these limitations, the research methodology provides a robust framework for understanding the complex relationship between musical acoustics and vocal discrimination.

5.3 Qualitative Research

The qualitative research methodology is expounded, aiming to provide an in-depth exploration of how general school teachers perceive and approach the integration of music therapy within a single inclusive school environment.

5.3.1 Research sample and methodological approach

The research sample comprises 15 teachers from Greek public primary and secondary schools, covering various subjects, including music. A qualitative methodological approach is chosen to delve deeper into teachers' perspectives, particularly regarding novel educational techniques, support for students with Down syndrome, and the integration of music therapy. The interview method is employed, with semi-structured interviews guiding discussions. The rationale for this qualitative approach lies in the study's objective to shed light on an underexplored field: the opinions of general education teachers on incorporating music therapy into the curriculum.

5.3.2 Data collection tool

The data collection tool, semi-structured interviews, adds flexibility to the research process, allowing deviations from the predefined question sequence. Two distinct axes guide the questioning: Teachers' views on teaching children with special needs (Axis 1) and Teachers' opinions and suggestions for the integration of music therapy in the

educational process (Axis 2). These axes cover topics from school inclusivity to instructional methods for special needs students, as well as perspectives on the feasibility and challenges of implementing music therapy.

5.3.3 Data collection process

Conducted between November 2022 and May 2023, the interviews, averaging 30 minutes each, occurred in person at the schools of participating teachers. The data collected underwent content analysis, structuring and coding according to key themes for in-depth analysis. The researcher's role is highlighted as pivotal, emphasizing the importance of maintaining an approachable demeanor to foster trust and encourage participants to freely express their opinions.

Throughout, **ethical considerations** were paramount, ensuring transparency, participant voluntarism, and confidentiality of personal data.

To enhance **validity**, questions were carefully formulated for clarity and neutrality, incorporating open-ended queries to capture diverse perspectives.

Reliability is upheld through a consistent and well-structured research design, with participant identities anonymized for unbiased data analysis.

This qualitative research design, with its meticulous attention to ethical considerations and methodological rigor, aims to unearth valuable insights into teachers' perceptions of music therapy integration in inclusive education, contributing a nuanced understanding to this underexplored area.

6. RESULTS

6.1. Quantitative research

6.1.1 Descriptive statistics

The quantitative research methodology is employed to analyze the performance of children with special educational needs in various music audibility tests. Descriptive statistics, presented in Table 1, reveal the average scores for children with special educational needs in the Phonemic discrimination test (27.70), Tone test PMMA

(28.14), Rhythmic test (24.50), and overall music audibility test PMMA (52.64). A comparative analysis with typically developing children illustrates higher average scores in all three tests, with the most substantial difference observed in the Rhythmic test (3.48 points difference), followed by the Phonemic discrimination test (3.39 points difference).

Table 1: Performance of children with typical development and with special educational needs in Phonics distinction of L-a-T-o and in PMMA (Tonic – Rhythmic – Total)

		Sample	Minimum price	Maximum price	Average term	Typical deviation
Total Phonemics	Specialist	50	18	35	27.70	3.845
	Typical	44	24	35	31.09	3.002
Rhythmic PMMA	Specialist	50	14	36	24.50	5.603
	Typical	44	16	36	27.98	5.196
Tonic PMMA	Specialist	50	17	39	28.14	6.347
	Typical	44	13	39	29.68	7.021
Total PMMA	Specialist	50	34	73	52.64	11.177
	Typical	44	37	75	57.66	11.121

Furthermore, a nuanced examination of two subcategories within the sample, children with Mild Intellectual Disability and those with Learning Disabilities, is conducted. The average scores for children with Mild Intellectual Disability and Learning Disabilities are presented in Table 2. A notable difference emerges in the average performance between children with Mild Intellectual Disability and typically developing children in phonemic discrimination, with a significant gap of approximately 6 units. Additionally, a significant difference is identified in the Rhythmic part of the PMMA, with an approximately 5-unit difference.

Table 2: Performance of children with Mild Intellectual Disability and Learning Difficulties in Phonics distinction of L-α-T-ω also in PMMA (Tonic – Rhythmic)

	Educational need	N	Mean	Std. Deviation	Std. Error Mean
Total Phonemics	Mild Mentality Disability	13	25.46	3.620	1.004
	Apprenticeships difficulties	24	28.50	3.811	.778
Rhythmic PMMA	Mild Mentality Disability	13	22.54	4.960	1.376
	Apprenticeships difficulties	24	25.17	4.914	1.003
Tonic PMMA	Mild Mentality Disability	13	27.00	7.638	2.118
	Apprenticeships difficulties	24	28.58	5.702	1.164

However, a smaller discrepancy is observed in the average scores between typically developing children, children with Mild Intellectual Disability, and children with Learning Disabilities in the Tonal part of the PMMA. Specifically, children with Learning Disabilities differ by approximately 1 unit from typically developing children, while children with Mild Intellectual Disability differ by approximately 2 units from typically developing children. This quantitative approach provides a detailed understanding of the performance disparities among these groups, contributing valuable insights to the field. The tables referenced in the section provide a clear visual representation of these comparative findings. The study's robust methodology and statistical analyses enhance the credibility and depth of the research findings.

6.1.2 Testing mean values with t-test

Mean values between typically developing children and children with special educational needs are meticulously examined using the t-test. The objective is to discern

significant differences in mean scores across various research tests. The t-test results indicate statistically significant disparities in the phonemic discrimination test L-a-T-o and the Rhythmic part of Gordon's Music Acceptance Test ($p < 0.01$). However, in the comparison of mean scores for the Tonal part of the PMMA ($t = -4.793$, $df = 92$, $p = 0.266 > 0.01$) and the overall Music Audition Test ($t = -2.178$, $df = 92$, $p > 0.01$), no statistically significant differences are observed, as illustrated in Table 3. Furthermore, a paired t-test between subgroups of children with special educational needs—those with mild mental disabilities and those with learning difficulties—does not reveal a statistically significant difference in Phonemic Discrimination and Gordon's Music Audibility Tests.

Table 3: Control of average values of children with typical development and children with special education needs with the t-test

	t-test for Equality of Means		
	t	df	p
Total Phonemics	-4.793	90.769	.000
Rhythmic PMMA	-3.106	92	.003
Tonic PMMA	-1.118	92	.266
Total PMMA	-2.178	92	.032

These findings, presented in the table, offer a quantitative insight into the nuanced performance variations between these groups, contributing to a comprehensive understanding of music perception in children with diverse educational needs.

6.1.3 Correlation of variables

The correlation of variables is explored using the Pearson r correlation coefficient, providing valuable insights into potential linear relationships between different musical perception aspects in children with special educational needs. The analysis reveals statistically significant correlations across the entire sample, particularly a moderate

correlation between Phonemic Discrimination and the Rhythmic part of the PMMA music audibility test (r=0.508, p=0.000< 0.01) as shown in Table 4. Furthermore, significant moderate correlations are identified between Phonemic Discrimination and the Tonal part (r=0.502, p=0.000< 0.01), as well as Phonemic Discrimination and the PMMA total score (r=0.548, p=0.000< 0.01), adding depth to the understanding of the interplay between these variables.

Table 4: Correlations between the Phonemic discrimination of L-a-T-o and PMMA (Tonic – Rhythmic – Total) to the entire sample population

	Rhythmic	Tonic	Total PMMA
Total Phonemics	.508**	.502**	. 548**

**. Correlation is significant at 0.01 significance level (2-tailed)

*. Correlation is significant at 0.05 significance level (2-tailed)

Upon examining correlations within specific educational need groups, it is found that children with mild mental retardation exhibit no statistically significant correlation between Phonemic Discrimination and the Tonal, Rhythmic, or Total PMMA scores. In contrast, children with learning disabilities display statistically significant moderate correlations between Phonemic Discrimination and the Tonal part (r=0.532, p=0.003< 0.01) and Phonemic Discrimination and the Total PMMA score (r=0.472, p=0.010< 0.01), while no significant correlation is found with the Rhythmic part (Table 5).

Table 5: Correlations between the Phonemic discrimination of Λ-a-T-ω and PMMA (Tonic – Rhythmic – Total) in Learning Disabilities

	Rhythmic	Tonic	Total PMMA
Total Phonemics	.319	.532**	.472**
Rhythmic		.648**	.902**
Tonic			.913**

**. Correlation is significant at 0.01 significance level (2-tailed)

*. Correlation is significant at 0.05 significance level (2-tailed)

The section also sheds light on the correlations among children with behavioral problems, revealing statistically significant and extremely strong relationships between Phonemic Discrimination and the Rhythmic part (r=0.860, p=0.006), Phonemic Discrimination and the Tonal part (r=0.819, p=0.013), as well as an extremely strong relationship with the PMMA Total score (r=0.850, p=0.007) as indicated in Table 6.

Table 6: Correlations between the Phonemic discrimination of L-a-T-o and PMMA (Tonic – Rhythmic – Total) in children with behavioral problems

	Rhythmic	Tonic	Total PMMA
Total Phonemics	.860**	.819**	.850**
Rhythmic		.950**	.988**
Tonic			.987**

**. Correlation is significant at 0.01 significance level (2-tailed)

*. Correlation is significant at 0.05 significance level (2-tailed)

Finally, among typically developing children, a statistically significant small correlation is observed between Phonemic Discrimination and the Rhythmic part (r=0.356, p=0.018< 0.01), alongside moderate relationships with the Tonal part (r=0.478, p=0.001< 0.01) and the total score of PMMA (r=0.468, p=0.001< 0.01) (Table 7). These findings contribute to a nuanced understanding of how different educational needs may influence the correlation patterns in musical perception among children

Table 7: Correlations between the Phonemic discrimination of Λ-a-T-ω and PMMA (Tonic – Rhythmic) in typical development.

	Rhythmic	Tonic	Total PMMA
Total Phonemics	.356*	.478**	.468**
Rhythmic		.649**	.877**
Tonic			.935**

**. Correlation is significant at 0.01 significance level (2-tailed)

*. Correlation is significant at 0.05 significance level (2-tailed)

6.1.4 Analysis of Variance (ANOVA)

The Analysis of Variance (ANOVA) serves as a robust statistical tool to uncover nuanced patterns and differences in children's performance across various aspects of musical perception based on their educational needs. The initial examination of the variables' normal distribution, confirmed by the Kolmogorov-Smirnov Test , establishes a foundational step for subsequent analyses. A one-way ANOVA highlights the significant impact of Mild Intellectual Disability, Learning Disabilities, and Typical Development on children's performance in the Phonemic Discrimination test (L-a-T-o) (F(3,90)=10.470, p=0.000). Notably, the absence of a statistically significant effect for the educational need category "Behavior Problems" prompts further exploration.

Distinctive differences emerge as Learning Disabilities outperform Mild Intellectual Disability, and Typical Development surpasses Mild Intellectual Disability in Phonemic Discrimination scores (MD=-2.987*, MD=-5.629*, respectively). The subsequent ANOVA analysis delves into Tonal and Rhythmic scores of the PMMA, as well as the Total PMMA score, unveiling that only Mild Intellectual Disability and Typical Development significantly affect the Rhythmic part of PMMA ($F(3,90)=4.498$, $p=0.005$). This nuanced exploration extends to a two-way ANOVA, examining the interaction of gender and educational needs on Phonemic Discrimination. Notably, gender proves not to be a statistically significant factor, while educational needs significantly interact with Phonemic discrimination performance ($F(1,90)=26.381$, $p=0.000<0.05$). Intriguingly, a significant interaction between gender and educational need is identified, affecting Phonemic Discrimination differently in girls with special educational needs compared to those with typical development (Table 8).

Table 8: Effect of gender-educational need on the phonemic discrimination of L-a-T-o

Gender * Educational need		
Gender	Educational need	Average
Boy	Specialist	28.687
	Typical	30.278
Girl	Specialist	25.944
	Typical	31.654

Furthermore, additional two-way ANOVAs scrutinize the impact of gender and educational needs on the Rhythmic part, Tonal part, and Total PMMA score. While gender appears non-significant, educational needs exert a substantial influence on the Rhythmic part ($F(1,90)=10.253$, $p=0.002$), particularly discernible in the performance difference between girls with special educational needs and those with typical development. These comprehensive analyses contribute valuable insights into the multifaceted interplay between educational needs, gender, and musical perception among children.

6.2 Qualitative research

6.2.1 Demographic characteristics and Introductory data

In the qualitative research section, the dissertation presents and analyzes findings derived from interviews with a diverse sample of teachers from various academic disciplines. The research sample includes individuals with expertise in music, special education, philology, general education, German language, biology, physical education, and informatics. The demographic characteristics of the 15 participants reveal a balanced gender distribution, with 8 females and 7 males, spanning age categories from 31 to over 50 years. The majority of participants fall within the age groups of 31-40 and 41-50.

Educationally, most teachers hold master's degrees, with one participant having a doctorate and three possessing equivalent qualifications. Teaching experience ranges from less than 5 years to over 30 years, with the majority falling within the 5-15 years and 16-30 years categories. In terms of special education experience, all participants have 0-5 years of experience, except for one with 5-15 years. Employment status varies, with 10 participants in permanent positions and others working as substitutes.

The participants' relationship with music is primarily of an amateur nature, except for music teachers, for whom music is a subject of expertise. Interestingly, the majority of teachers had no prior involvement with music therapy, except for two instances where participants had attended relevant seminars and one teacher who incorporated selected music pieces into their lessons. This comprehensive exploration of demographic characteristics and introductory data sets the stage for a nuanced understanding of teacher perspectives on music therapy integration into the educational environment.

6.2.2 Perspectives on teaching children with special needs

In this section, teachers' perspectives on instructing children with special needs are explored. Nine out of fifteen teachers acknowledged the presence of students with various special needs in their schools, categorizing these needs into areas such as special learning problems, pervasive developmental disorders, anatomical/sensory

difficulties, mental retardation, and autism. Notably, more than half of the respondents affirmed that their schools were inclusive, implementing strategies like parallel support, individualized teaching, and efforts to provide equal opportunities.

Regarding the existence of special education teachers, approximately half of the participants confirmed their presence, specifying their roles in subjects like mathematics and philology. These teachers offered parallel support to students facing learning challenges, facilitating inclusive education within regular classroom environments. In terms of response to music lessons, teachers noted positive engagement and enthusiasm among students with special needs, highlighting the value of incorporating music in the curriculum.

Concerning students with Down syndrome, the responses indicated a rarity of their presence in mainstream schools. Nonetheless, one teacher shared insights into their teaching approach, employing patience, continuous repetition, visual aids, and technology to support the student's satisfactory participation in the learning process. Overall, the findings underscore the efforts made towards inclusive education and the positive impact of music in engaging students with diverse learning needs.

6.2.3 Opinions - suggestions for the integration of music therapy

The exploration of educators' perspectives on the integration of music therapy in the school environment, particularly for students with special needs, reveals a nuanced and generally positive outlook. The majority of educators acknowledge the presence of students with diverse special needs in their schools, emphasizing the implementation of inclusive education practices. Individualized teaching and support, as well as efforts to create an accessible learning environment, are highlighted as integral components of inclusive education.

While educators report positive responses from students to music lessons, indicating the cognitive and emotional benefits of music in their development, there is limited experience with students having Down syndrome in mainstream schools. Specific

challenges and integration difficulties for this particular group are not extensively discussed, leaving room for further exploration and consideration in future studies.

Despite these challenges, educators express widespread support for the integration of music therapy into the curriculum. They advocate for specialized music teachers with proper training, permanent positions, and sufficient hours to effectively support students' progress. The advantages of music therapy, such as promoting participation, relaxation, emotional expression, and self-confidence, are highlighted. However, educators also recognize potential challenges related to time constraints, resource limitations, and the need for well-trained staff.

Colleagues' opinions align with a positive attitude toward music therapy, considering it essential, especially for students with special needs. The need for informed decision-making, training, and reshaping the school curriculum to incorporate new practices that help children with special needs integrate into the school environment and develop their abilities is emphasized.

In conclusion, educators are enthusiastic about the potential benefits of music therapy in schools, particularly for students with special needs. They recognize the importance of addressing challenges through proper planning and support and emphasize the need for informed decision-making and training to successfully integrate music therapy into the educational curriculum.

6.3. Results and claims

The examination of results and claims concerning the impact of music, particularly through music therapy methods, on the education of children with disabilities underscores its significant and varied benefits. Music, as a medium of sound and rhythm, is recognized for its profound effects on the human brain, body, emotions, and ideas. It possesses the unique ability to inspire, calm, energize, and liberate individuals. Beyond its role as a teaching tool and medium, music, especially in therapeutic contexts, proves invaluable for the education of children with special needs.

Music's effectiveness as a teaching tool for children with special needs lies in its rich creative interaction and multisensory experience. Through music, children engage tactile, auditory, and visual systems, providing a holistic bodily experience that enhances learning. The non-verbal communication facilitated by music becomes crucial for those facing challenges expressing emotions or processing words. Moreover, music acts as a powerful motivator, pushing children beyond their comfort zones and positively influencing behavior and skill development.

The distinction between music therapy and music education is emphasized, with music therapy focusing on acquiring non-musical skills and promoting emotional and personal development. Music therapy, defined as a systematic intervention process, aims to achieve individualized goals through the use of music elements, contributing to physical, emotional, mental, social, and cognitive needs. The inclusive nature of music therapy is highlighted, asserting its potential to facilitate the inclusion of children with disabilities in both educational and societal contexts.

While the research indicates a generally positive climate among educators regarding the implementation of music therapy in inclusive education, it acknowledges the limited knowledge in this evolving field in Greece. Despite music therapy's extensive global study spanning over 70 years, its development in Greece is still in progress, signaling the need for further exploration, awareness, and integration of music therapy methods in educational settings.

7. DISCUSSION – CONCLUSIONS – CONTRIBUTIONS

7.1 Discussion

The discussion on the two research studies presented provides valuable insights into the significant impact of music on the development and well-being of children, particularly those with special educational needs. The first study's correlation between phonemic discrimination and musical audibility underscores the role of musical experiences in shaping crucial language and reading skills in young children. This correlation indicates

that tonal and rhythmic aspects of music can contribute significantly to a child's phonemic awareness.

The second study delves into educators' perspectives on integrating music therapy into the school curriculum, revealing an overall positive attitude toward this approach. Educators acknowledge the potential of music therapy to positively affect students emotionally, cognitively, and motorically. While their readiness to embrace music therapy is evident, challenges such as infrastructure improvement and the need for trained music therapists must be addressed for effective integration.

The synthesis of these studies highlights the central role of music in education, particularly for children with special needs. Music therapy emerges as a powerful tool capable of enhancing various aspects of these children's lives, from communication and socialization to emotional well-being and cognitive development. The findings emphasize not only the potential benefits but also the willingness of educators to support the integration of music therapy into the educational landscape.

To unlock the full potential of music therapy in education, a collaborative effort involving governments, educational institutions, and communities is essential. Recognizing music therapy as a legitimate profession through legislative measures and providing resources for training and implementation are critical steps. Educators, as advocates, can contribute significantly to the inclusive education cause, ensuring that music therapy becomes an integral part of the educational experience for all children.

In conclusion, these studies advocate for a broader perspective on music therapy, positioning it not just as a creative outlet but as a transformative therapeutic and educational tool. The findings serve as a compelling call to action, urging stakeholders to collaborate and create a more inclusive and enriching educational environment for every child, particularly those with special educational needs.

7.2. Contributions

This study contributes to music therapy in schools by emphasizing the role of music in child development, providing insights into educational needs, and offering practical implementation recommendations.

To Theory:

- Validated theories on Music's influence on Greek children's development.
- Found significant correlation between musical audibility in children and phonological awareness.
- Demonstrated transferability of theoretical framework in various contexts.

To Practice:

- Noted positive responses to music therapy in education.
- Identified obstacles faced by educators in implementation.

7.3 Recommendations

After conducted the above study it is recommended that:

- In order to increase understanding of the positive impact of music therapy, various initiatives such as workshops, academic papers, and educational programs are being implemented in Greece.
- It is essential to cater to individual requirements, acknowledging that different people have distinct needs.
- To ensure successful implementation, obstacles like the improvement of infrastructure and the training of competent music therapists need to be tackled. It is imperative that the Greek government allocates necessary resources to support these endeavors.
- Effective collaboration involving government bodies, academic establishments, and local communities is vital in fostering meaningful discussions and shared knowledge on this subject.

- Furthermore, official acknowledgment through legislation, availability of training materials, and advocacy efforts by educators play a crucial role in this endeavor.

7.4 Limitations of the research

The discussion of the two research studies acknowledges certain limitations that warrant consideration for a nuanced interpretation of their findings. In the first study on phonemic discrimination and musical audibility, the limitation of a relatively small sample size of young children raises concerns about the generalizability of the results. A broader and more diverse sample would enhance the study's external validity, providing a more representative understanding of the relationship between musical experiences and phonemic awareness. Additionally, the geographical specificity of the study conducted in Greece emphasizes the need for caution in directly applying these findings to diverse cultural and educational contexts. Further research across different regions is crucial to assess the generalizability of the observed correlation.

The second study, exploring educators' perspectives on music therapy, also presents notable limitations. While the focus on educators is valuable, the exclusion of other stakeholders such as parents, students, or music therapists limits the comprehensiveness of the study. A more holistic view, including diverse perspectives, would contribute to a richer understanding of the potential challenges and benefits associated with integrating music therapy into the curriculum. Moreover, the study identifies challenges related to infrastructure and trained personnel but falls short in proposing concrete solutions or strategies to address these issues. Understanding potential remedies is crucial for the successful implementation of music therapy in educational settings.

Both studies highlight the impact of music on education, especially for children with special needs, but the identified limitations underscore the necessity for cautious interpretation and future research. A more extensive and varied participant pool, consideration of cultural and regional variations, and a holistic exploration of the educational landscape would contribute to a more robust foundation for implementing music-based interventions in educational contexts.

7.5 Suggestions for future research

The section on suggestions for future research in the discussed studies opens up promising avenues for enhancing our understanding of the role of music in education, particularly for children with special educational needs. Recognizing the limitations of the studies, the call for more extensive and diverse participant pools in future research is crucial for obtaining more robust and generalizable findings. This recommendation aligns with the need to explore the intersectionality of gender and educational needs in the context of musical audibility and phonemic discrimination, potentially providing more nuanced insights into these relationships.

The proposal to expand the scope of research to include more comprehensive assessments of variables like phonemic discrimination and phonological awareness addresses the need for continuous examination of these relationships. Moreover, the call for exploring the impact of music education on individuals with special educational needs through targeted programs presents an exciting opportunity to understand the potential long-term benefits of music interventions in academic development.

The emphasis on disseminating research findings and raising awareness among educators about the value of music in education aligns with the broader goal of integrating music programs into teaching practices. The call for collaboration between educators, including kindergarten teachers and music instructors, highlights the interdisciplinary nature of this research area, emphasizing the need for concerted efforts to design and implement tailored music programs.

In addition to the research recommendations, the incorporation of music therapy methods, such as songwriting and Therapeutic Rhythmic, is a noteworthy suggestion. These methods, with their therapeutic benefits, can play a significant role in addressing the emotional, social, and cognitive needs of individuals with disabilities or disorders. The essay effectively concludes by emphasizing the transformative potential of music education and therapy in creating a more inclusive and enriching educational experience for all children.

7.6 Reflection of the researcher

The researcher's reflection on the conducted study provides valuable insights into the challenges and significance of investigating the application of music therapy methods in inclusive education, particularly for children with Down syndrome. The choice of this specific topic reflects the researcher's recognition of the underexplored terrain within the Greek context concerning the recognition and utilization of music therapy in education. The study's focus on the opinions of educators adds a crucial perspective, shedding light on the current state of awareness and readiness for adopting music therapy methods.

The researcher's acknowledgment of the dearth of domestic literature and research data on this topic in the Greek context underscores the importance of this study in contributing to the existing body of knowledge. The meticulous examination of a selected bibliography enhances the study's reliability, emphasizing the researcher's commitment to a rigorous and well-informed exploration of the subject. The study not only highlights the potential benefits of music therapy methods for children with Down syndrome but also serves as a catalyst for future research endeavors in this area.

The researcher's openness to further engagement with the issue of music therapy and its application in inclusive education reflects a commitment to ongoing exploration and understanding. The profound interest in the topic, coupled with the broad scope of the field, suggests that the study is a stepping stone for future inquiries that could contribute to the development of effective educational approaches. Overall, the researcher's reflection underscores the importance of addressing the research gap and encourages continuous efforts to enhance our understanding of music therapy in the context of inclusive education.

PUBLICATIONS RELATED TO THE THEME OF THE DISSERTATION:

1. “Interventional activity in secondary education with the aim of raising students awareness of issues of creating, controlling and deconstructing

stereotypes" – Vaia Tzoka, p. 1021 - International conference for the promotion of educational innovation in Larisa – October 2021 ISBN: 978-618-5562-06-9 (vol A΄)

2. "Music and reading difficulties in Special Education" – Vaia Tzoka – p. 923 - International conference for the promotion of educational innovation in Larisa – October 2022 ISBN: 978-618-5562-11-3

3. "Music and reading for people with mobile disabilities" – Vaia Tzoka – p. 1236 - Education and Arts: Traditions and Perspectives - third scientific - practical conference in Sofia, 2022 ISSN 2738-8999

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