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Role of Educational Therapy
Based Interventions in
Dementia Treatment

Addressing Cognitive, Emotional and
Developmental Needs with Music Based
Educational Therapy

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Paper 1**A Short Review of Psycho-Educational Therapy (PsyEdTx)**

Kok Hwee CHIA EdD, BCET, BCSE
Principal Therapist
Paediatric Therapy Centre, Singapore

Citation: Chia, K. H. (2024). A short review of psycho-educational therapy (PsyEdTx). *The Asian Educational Therapist*, 1(2), 3-10.

Abstract

Psycho-educational therapy (PsyEdTx) is a type of therapeutic approach that combines elements of psychotherapy with education. Generally, it is applied to help patients better understand themselves and, more importantly, to manage their specific mental health issues or socio-emotional challenges. However, it has also been used to treat learning and developmental challenges too. In this paper, a brief historical development of PsyEdTx from the beginning of the late 19th century AD through the 20th century AD and into the early 21st century AD is provided. The author has examined the differences among the three domains of PsyEdTx, psychoeducation (PsyEd) and educational therapy (EdTx). In addition, he also elaborated briefly on what PsyEdTx has to offer. Finally, the author went on to introduce the Cattell-Horn-Carroll theory of broad and narrow cognitive abilities and how PsyEdTx has utilized the theory to its advantage in diagnostic assessment and understanding of an individual's cognitive pattern of strengths and weaknesses so that better treatment plans can be designed, intervention programs customized and appropriate educational strategies selected to meet the unique needs of individuals with learning disabilities, developmental disorders and/or behavioral challenges.

Key Words: CHC Theory/Model, Cognitive Abilities, Educational Therapy (EdTx), Psychoeducation (PsyEd), Psycho-educational Therapy (PsyEdTx)

What is Psycho-Educational Therapy?

Psycho-educational therapy (PsyEdTx for short) is a therapeutic approach that combines psychological counseling or therapy with education. Its aim is to provide individuals with knowledge and skills to better understand and manage their emotional, behavioral, or mental health issues. The approach in this form of therapy often focuses on teaching coping strategies, communication skills, and self-awareness to help individuals improve their mental wellness and overall quality of life (i.e., sense of coherence). It can be particularly useful for individuals dealing with conditions such as anxiety, depression, or ADHD.

The Historical Development of Psycho-Educational Therapy

The origin of PsyEdTx has a rich history that has evolved over time. Its historical development can be divided into the following seven phases (see Figure 1):

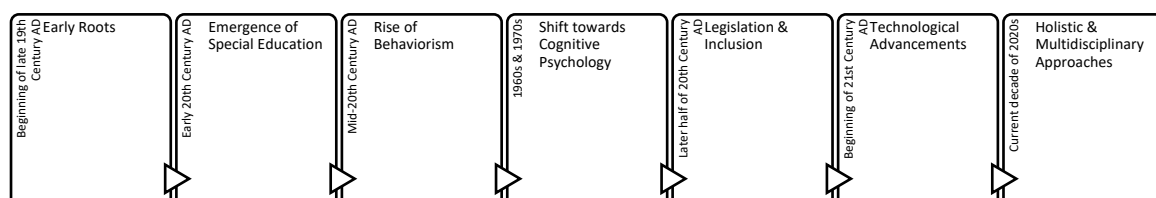


Figure 1. Historical Development of PsyEdTx

Phase 1. Early Roots (Beginning of the late 19th century AD)

The origins of psycho-educational therapy can be traced back to the late 19th century when pioneers, such as Jean-Marc-Gaspard Itard (b.1774-d.1838), a French physician born in Provence (Itard, 1801, 1806), who is

perhaps best known for his work with Victor of Aveyron, and Maria Tecla Artemisia Montessori (b.1870-d.1952), an Italian physician and educator, who is also best known for her philosophy of education and her scientific writing on pedagogy (Montessori, 1965). Both Itard and Montessori had worked with individuals with intellectual and developmental disabilities. Their respective approaches laid the foundation of PsyEdTx for understanding how tailored instruction could benefit such populations (Itard, 1802; Montessori, 2013).

Phase 2. Emergence of Special Education (Early 20th century AD)

In the early 20th century, the field of special education (SpEd) began to take shape. Institutions for individuals with disabilities were established, and educators started to experiment with various teaching methods to address the unique needs of these students with special needs.

Phase 3. Rise of Behaviorism (During the mid-20th century AD)

The mid-20th century saw the dominance of behaviorism in the field of psychology. This influenced PsyEdTx as it emphasized observable behaviors and led to the development of behavior modification techniques. The work of Burrhus Frederic Skinner (b.1904-d.1990), an American psychologist, behaviorist, author, inventor, and social philosopher (HBA, 2021; Skinner, 1948, 1972; Smith & Woodward, 1996), was particularly influential in this regard. The Edgar Pierce Professor of Psychology at Harvard University (1958-1974), Skinner was considered the father of behaviorism.

Phase 4. Shift towards Cognitive Psychology (1960s-1970s AD)

In the 1960s and 1970s, there was a paradigm shift towards cognitive psychology. This shift brought about a greater emphasis on understanding the cognitive processes involved in learning and problem-solving, leading to more individualized and cognitive-behavioral approaches to psycho-educational therapy.

Phase 5. Legislation and Inclusion (Later half of the 20th century AD):

Throughout the latter half of the 20th century, legislation like the Education for All Handicapped Children Act (EAHCA or EHA; PL 94-142), a federal law that was enacted in 1975 requiring all public schools in the United States to provide equal access to education for children with disabilities (now renamed as Individuals with Disabilities Education Act-2004). Since the implementation of the EHA (later IDEA), inclusive education has been widely promoted with the provision of federal funding for special education services. This legal framework has helped to shape the field of PsyEdTx by emphasizing the rights and needs of individuals with disabilities.

Phase 6. Technological Advancements (Beginning of the 21st century AD)

The 21st century brought significant technological advancements, enabling the use of assistive technologies and innovative teaching methods to enhance PsyEdTx. Virtual reality, online learning, and personalized educational software have expanded the possibilities for tailored interventions.

Phase 7. Holistic and Multidisciplinary Approaches (Current decade of 2020s AD)

Today, the PsyEdTx has evolved into a holistic and multidisciplinary field. It integrates elements of psychology, education, counseling, and therapy to address a wide range of learning and emotional challenges faced by individuals of all ages.

In summary, the PsyEdTx has a diverse and evolving history, shaped by changing educational philosophies, psychological theories, legislation, and technological advancements. It will continue to change by adapting to the unique needs of learners, aiming to provide tailored support and promote optimal educational and emotional outcomes.

Psycho-Educational Therapy vs Psychoeducation

The psychoeducation (PsyEd) refers to the process of providing individuals (especially the caregivers) with information and education about psychological and mental health topics. It aims to increase their understanding of mental health conditions, symptoms, treatment options, coping strategies, and ways to improve overall well-being of those who are under their care. The PsyEd is often used in therapy and support settings to empower individuals with their caregivers (often they are the family members and may include teachers) and vice versa to better manage their mental health and make informed decisions about their care.

The PsyEd for parents and teachers and the PsyEdTx for clients with special needs serve different purposes as shown in Table 1 below:

Table 1. Comparison between PsyEd and PsyEdTx

	Psychoeducation	Psycho-Educational Therapy
Abbreviation	PsyEd	PsyEdTx
Target Audience	It is aimed at parents and teachers who interact with individuals with special needs, such as children with learning disabilities, autism, or behavioral challenges.	This therapy is designed for individuals with special needs themselves, such as children or adults with developmental disorders, emotional issues, or cognitive challenges.
Purpose	The goal is to provide knowledge and information about the specific condition or needs of the individual. It helps parents and teachers understand the condition better, its impact on the individual, and effective strategies for support and intervention.	Psychoeducational therapy aims to provide therapeutic interventions and support to clients with special needs. It focuses on improving their emotional well-being, coping skills, and overall functioning.
Content	Psychoeducation for parents and teachers typically covers topics like the nature of the condition, its symptoms, best practices for teaching or caregiving, and available resources.	The content of psychoeducational therapy can vary widely based on the individual's needs but may include social skills training, emotional regulation techniques, cognitive-behavioral strategies, and specific interventions tailored to the client's condition.

In summary, the PsyEd for parents and teachers primarily provides knowledge and guidance to support individuals with special needs, whereas PsyEdTx directly works with clients to address their emotional and developmental challenges. Both are valuable in helping individuals with special needs lead fulfilling lives, but they serve different roles within the support system.

Psycho-Educational Therapy vs Educational Therapy What is the difference?

Very often, the field of PsyEdTx is mistaken or confused with that of the educational therapy (EdTx). The respective developmental histories of both fields also overlap such that it is at times difficult to draw a clear line of demarcation between the two (see Chua & Chia, 2023a, 2023b). The EdTx is a specialized form of therapy that focuses on helping individuals, typically children and adolescents, who are experiencing learning challenges or difficulties (Chia, 2000). The goal of EdTx is to address and overcome these challenges by providing targeted interventions and personalized support (see Kaganoff, 2001, for detail).

There are several differences between psycho-educational therapy (PsyEdTx) and educational therapy (EdTx). In the PsyEdTx, it combines the elements of both psychotherapy and education to address emotional, behavioral, and psychological issues that may be affecting a person's ability to learn and succeed in an educational setting. It also focuses on understanding and addressing underlying emotional and psychological factors that can impact learning, such as anxiety, depression, trauma, or attention disorders. Moreover, psycho-educational therapists often work with individuals who have learning disabilities or emotional challenges that affect their academic performance.

EdTx, on the other hand, primarily focuses on the educational aspects of learning difficulties. It is designed to help individuals overcome specific learning challenges and improve their academic skills. Educational therapists work on developing strategies and techniques to enhance a person's learning abilities. This can include remediation of learning disabilities, improving study skills, and adapting teaching methods to an individual's unique learning style.

While EdTx may address some emotional aspects related to learning difficulties, it typically does not delve as deeply into psychological or emotional issues as psycho-educational therapy.

The key distinction between PsyEdTx and EdTx lies in the scope and focus of each respective therapy. The PsyEdTx addresses emotional and psychological factors impacting learning, while EdTx is primarily concerned with improving academic skills and addressing specific learning challenges. The choice between the two may depend on the individual's needs and the nature of their difficulties.

What Psycho-Educational Therapy offers

As a specialized form of therapeutic approach combining elements of psychotherapy with education, the PsyEdTx can be used to help individuals better understand themselves and also to manage their specific mental health issues or emotional challenges. The key offerings of PsyEdTx are listed in Table 2 below with a brief explanation each:

Table 2. What PsyEdTx has to offer

No.	What PsyEdTx offers	Explanation
1	Education	Psycho-educational therapy provides individuals with information and knowledge about their mental health condition or the challenges they are facing. This includes understanding the symptoms, causes, and potential triggers of their issues.
2	Skill Building	It helps individuals develop practical skills and coping strategies to manage their symptoms or emotional difficulties. These skills can include stress management, problem-solving, communication, relaxation techniques, and more.
3	Self-Awareness	Psycho-educational therapy encourages self-awareness by helping individuals recognize their thought patterns, emotions, and behaviors. This self-awareness can lead to more effective self-regulation.
4	Normalization	Psycho-educational therapy encourages self-awareness by helping individuals recognize their thought patterns, emotions, and behaviors. This self-awareness can lead to more effective self-regulation.
5	Empowerment	Psycho-educational therapy empowers individuals to take an active role in their own well-being. It gives them tools and knowledge to make informed decisions about their mental health and seek appropriate help when needed.
6	Prevention	In some cases, psycho-educational therapy may focus on prevention, teaching individuals how to recognize early signs of mental health issues and take steps to address them before they escalate.
7	Group Support	Psycho-educational therapy may be offered in a group setting, allowing individuals to connect with others facing similar challenges and provide mutual support.

The specific content and goals of PsyEdTx can vary from individual to individual as they depend on individualized needs and the nature of their mental health concerns. This approach is often used in conjunction with other forms of therapy or treatment, such as cognitive-behavioral therapy (CBT), dialectical behavior therapy (DBT), or medication, to provide a more comprehensive approach to mental wellness care.

Introduction of the CHC Theory into Psycho-Educational Therapy

Briefly, the Cattell-Horn-Carroll theory of cognitive abilities (also known as CHC Theory in short), was first introduced in the 1960s and 1970s by several researchers, most notably the following three pioneers in the development of the CHC theory: (1) Raymond B. Cattell (b.1905-d.1998), a British-American psychologist, known for his psychometric research into intrapersonal psychological structure; (2) John L. Horn (b.1928-d.2006), an American scholar, cognitive psychologist and a pioneer in developing theories of intelligence; and (3) John B. Carroll (b.1916-d.2003), an American psychologist known for his contributions to psychology, linguistics and psychometrics. The CHC theory is a comprehensive concept or framework that aims to explain and categorize the various cognitive abilities that humans possess (Canivez & Youngstrom, 2019; Schneider & McGrew, 2018).

The CHC theory has become an important concept in the PsyEdTx as it has provided a more refined and detailed understanding of cognitive abilities. It identified different broad and narrow cognitive factors, such as fluid intelligence (Gf), crystallized intelligence (Gc), processing speed (Gs), and working memory (Gwm), among others.

The importance of the CHC theory in the PsyEdTx lies in its ability to help educators and clinicians in their assessment and understanding of an individual's cognitive pattern of strengths and weaknesses. By assessing these specific cognitive abilities, therapists and educators can design better treatment plans, tailor intervention programs and select appropriate educational strategies to meet the unique needs of individuals, especially those with learning disabilities or developmental disorders as well as behavioral challenges.

In essence, the CHC theory has revolutionized how professionals in the field of psychology and education approach screening procedure, assessment protocol, treatment plan design (e.g., as in the Learning Activity System; see Chia et al., 2013) and early intervention program implementation by providing a more nuanced and comprehensive framework for understanding cognitive functioning (Proctor, 2010).

The Application of CHC Theory in Psycho-Educational Therapy

The CHC theory of cognitive abilities can be applied in PsyEdTx to assess and address a wide range of cognitive and learning difficulties in individuals. Below are some ways in which the CC theory can be applied:

1. *Assessment and Diagnosis*: The CHC theory provides a comprehensive framework for assessing an individual's cognitive strengths and weaknesses (Chua & Singh, 2022; Olvera & Gomez-Cerrillo, 2011). Psychologists and therapists can use CHC-based assessments to diagnose specific cognitive deficits, such as working memory, processing speed, or verbal comprehension, which can guide in the design of a treatment plan.

2. *Individualized Treatment Plans*: Once cognitive pattern of strengths and weaknesses has been identified, therapists can design individualized treatment plans to customize individualized education programs to meet an individual's unique profile (Chua & Singh, 2022). For example, if a child has a deficit in working memory, the PsyEdTx might focus on strategies to improve this area.

3. *Targeted Interventions*: The CHC theory can inform the selection of appropriate interventions and strategies. For instance, if a child struggles with reading comprehension due to a weakness in phonological processing (a CHC factor found in the broad abilities of Ga-Auditory Processing), interventions can be designed to improve phonological skills.

4. *Progress Monitoring*: Regular assessment using CHC-based measures can track an individual's progress during therapy. This allows psycho-educational therapists to adjust their intervention programs and goals/objectives as needed to ensure optimal outcomes.

5. *Educational Planning*: The CHC theory can inform the development of Individualized Education Plans (IEPs) for students with learning disabilities (Chua & Singh, 2022; Proctor, 2010). It helps educators as well as therapists tailor instruction to meet a student's/client's specific cognitive needs.

6. *Identifying Giftedness*: The CHC theory can also be applied to identify gifted individuals by recognizing their exceptional cognitive abilities in specific areas (Warne, 2016). This can lead to more appropriate educational placements and enrichment as well as enhancement programs.

7. *Career Counseling*: Understanding an individual's cognitive strengths can aid in pastoral care and career guidance (Beinicke, 2017; Metz & Jones, 2013). For example, a young adult with strong spatial reasoning skills (a CHC factor that can be found in either Gf or Gv) might be guided toward careers in engineering or architecture.

8. *Rehabilitation*: In cases of brain injury or cognitive decline, CHC-based assessments can guide cognitive rehabilitation programs to help individuals regain their lost or impaired cognitive functions (Khalilabadi, Tajrobeh Kar, & Moghadam, 2020; Kotyba et al., 2022).

9. *Parent and Teacher Education*: Educating parents and teachers about the CHC theory can empower them to better support their children or students with learning difficulties (Lynch & Warner, 2013). It can lead to more effective teaching strategies and parental involvement.

In summary, the CHC theory of cognitive abilities offers a valuable framework for assessing, diagnosing, and treating cognitive and learning difficulties in the PsyEdTx. By understanding an individual's cognitive profile, psycho-educational therapists can tailor interventions and support to maximize his/her potential for improvement.

Current Topics of Interest in Psycho-Educational Therapy

With the advancement of science and technology (especially in medicine and Artificial Intelligence) in the new millennium of this 21st Century, the field of PsyEdTx is also growing and changing rapidly to catch up and tap on new discoveries (e.g., how neuroscience has unwrapped the mysteries of the human brain) and inventions (e.g., cloud-based video conferencing such as Zoom, Google Meet, Skype, Voov, etc.), with key hot topics of interest that are being pursued in research and also for further development in the field. These selected topics of interest are listed in Table 3 below:

Table 3. Hot Topics of interest in PsyEdTx

No.	Topic of Interest	Description
1	Online & Teletherapy	The integration of technology in therapy, especially given the rise of online and teletherapy services.
2	Mental Health in Schools	Focusing on addressing mental health issues among students and creating supportive environments in educational settings.
3	Trauma-Informed Care	Approaches that recognize and address trauma as a critical factor in mental health and learning.
4	Neurodiversity	Embracing and supporting individuals with diverse neurological profiles, including ADHD, autism, and dyslexia.
5	Social & Emotional Learning (SEL)	Strategies to enhance emotional intelligence, self-awareness, and interpersonal skills among students.
6	Cultural Competence	Ensuring therapists are culturally sensitive and aware of the unique needs of diverse populations.
7	Parent-Teacher Collaboration	Promoting effective communication and collaboration between parents and educators to support children's mental health.
8	Resilience Building	Techniques and interventions to help individuals, especially children, develop resilience in the face of challenges.
9	Assessment & Diagnosis	Ongoing research into improved assessment tools and diagnostic criteria for various educational and psychological disorders.

Conclusion

The field of PsyEdTx is still evolving and will continue to grow and change over time, so there may have been new developments or paradigm shifts in emphasis in the next few decades to come. It is always important for professionals in the field of PsyEdTx to continue to read, write and attend or participate in conferences, symposia, forums, workshops ... to keep themselves abreast of the latest knowledge and advancement made in this specialized domain of therapy.

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Paper 2

Why do We need Music-based Educational Therapy?

Juang Sheng CHUA M.Mus, B.Mus, B.Sc (Bus Admin), Cred.DDAT
Registered Educational Therapist
Merlion Paediatric Therapy Clinic, Singapore

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Abstract

Music-based educational therapy is crucial for addressing various cognitive, emotional, and developmental needs in individuals, particularly children and adolescents. This therapeutic approach harnesses the power of music to enhance learning, improve communication skills, regulate emotions, and promote social interaction. By incorporating musical elements such as rhythm, melody, and harmony into educational interventions, music-based therapy facilitates multisensory experiences that engage different areas of the brain, fostering holistic development. Moreover, music provides a non-verbal means of expression, making it accessible to individuals with communication difficulties or those on the autism spectrum. Additionally, music-based educational therapy offers a creative outlet for self-expression, boosting self-esteem and confidence in participants. Overall, integrating music into educational therapy not only enhances cognitive and emotional functioning but also cultivates a nurturing and inclusive environment for learning and growth.

Keywords: Cognitive development, Educational intervention, Emotional regulation, Music-based therapy, Social interaction.

Introduction

The recent United Nations Children's Fund (originally known as the United Nations International Children's Emergency Fund; UNICEF) report providing a comprehensive statistical analysis reveals that approximately 240 million children worldwide live with disabilities. The report, released on November 9, 2021, highlights the significant challenges faced by these children, affecting various aspects of their well-being such as health, education, and protection. This is even more so for children with special educational needs.

Children with special educational needs face numerous challenges (see UNICEF, 2021): (1) they are 24 percent less likely to receive early stimulation and responsive care; (2) 42 percent less likely to acquire foundational reading and numeracy skills, and (3a) 25 percent more likely to suffer from wasting and (3b) 34 percent more likely to experience stunting. Additionally, they are also (4) 53 percent more likely to exhibit symptoms of acute respiratory infection, (5) 49 percent more likely to have never attended school, and (6) 47 percent more likely to be out of primary school, with higher percentages for lower and upper secondary school. Furthermore, they are (7) 51 percent more likely to report feeling unhappy, (8) 41 percent more likely to feel discriminated against, and (9) 32 percent more likely to face severe corporal punishment. Nevertheless, the experience of special educational needs varies significantly, indicating a spectrum of risks and outcomes influenced by factors such as the type of disability, geographical location, and access to services. Hence, it underscores the critical need for educational therapy through its properly designed assessment-based individualized targeted interventions to address these inequities (UNICEF, 2021).

What is Educational Therapy?

Educational therapy has been defined by Chua and Xie (2024) as "a personalized and targeted approach to support children and adolescents with learning difficulties or special needs" (p. 7) and its focus is "on addressing academic challenges, fostering cognitive skills, and enhancing overall educational performance. The key components of educational therapy encompass a combination of assessment, intervention, and collaboration between educators,

therapists, and parents” (Chua & Xie, 2024, p. 7). Even earlier, Radecki (1984) defined educational therapy as “an activity that ranges in practice from academic tutoring to psychotherapy. The qualifications, skills and techniques used by educational therapists seem so broad and varying that the profession seems difficult to define when compared to teaching or a particular school of psychotherapy” (p. 7). The definition of educational therapy was reviewed by Fogelson, Slucki and Werbach (1994) in their attempt to refine it in an article *The Parameters of Educational Therapy* published in a special issue of *The Educational Therapist*: “the population served by educational therapists is comprised of young children, adolescents and adults who are referred for the evaluation and remediation of learning problems. This includes, but is not limited to, dyslexia, poor school performance, test anxiety, reading/writing/language/math problems, attention deficit disorder, and school placement” (cited in Mosk, 2004, p. 4). Werbach (2002) refers educational therapy to “the clinical aspect of special education” that encompasses the assessment, intervention, and correction of learning difficulties. Educational therapists operate within various educational settings such as private practices, schools, hospitals, or public agencies.

However, since the founding of Association of Educational Therapists (AET) in 1978 (see Chua & Chia, 2023a, 2023b, for the historical development of educational therapy), “the definition of educational therapy has undergone a series of changes” (Mosk, 2004, p. 4). “The term *educational therapist* has replaced the terms therapeutic tutor, psychopedagogue, special teacher, reinforcement therapist, clinical teacher, remedial therapist, language therapist, multidisciplinary teacher, and learning therapist as the person who remediates learning problems” (Webach, Kornblau, & Slucki, 2010, p. 43).

In 1985, the AET Executive Committee approved and published a *Code of Ethics and Standards for Professional Practice*, which emphasizes the primary aim of educational therapy as optimizing learning and school adaptation, acknowledging the interconnection of emotional, behavioral, and learning challenges. The AET Code, which has been recently revised (see Marshall & Rotter, 2023, for the updates), delineates the role of an educational therapist within the educational realm, working with individuals experiencing learning disabilities and difficulties. Educational therapists are proficient in various areas, including formal and informal educational assessment, synthesizing information from various sources including specialists and parents, designing and implementing tailored remedial programs for academic and behavioral issues, addressing social and emotional dimensions of learning challenges, fostering supportive relationships with individuals and stakeholders involved in their educational journey, and facilitating effective communication among individuals, families, schools, and professionals (AET, 1985).

In 1986, the World Health Organization (WHO) in its publication of the *International Classification of Diseases-9th Edition-Clinical Modification* (ICD-9-CM), officially recognized educational therapy under its Procedure Code 93.82 which includes (i) education of bed-bound children and (ii) special schooling for the handicapped (also see Chua & Chia, 2023a, 2023b, for further information).

Between 1986 and 2023, much has happened during the gradual process of establishing educational therapy as a legitimate treatment approach for students with special educational needs. For instance, Marshall and Rotter (2023) stated that “[E]ducational therapists *do not* diagnose and administer cognitive, intelligence, or psychological tests (unless otherwise qualified to do so).” This statement of *forbiddance* is not mentioned for the first time, but has been debated among the educational therapists before, with two camps, *for* and *against* (also see Chua & Singh, 2022; Fedo, 2011; Ficksman & Adelizzi, 2010; Marshall, 2019).

More recently, Schubert (2023) asserts that the process of academization in the field of educational therapy in Germany has begun, particularly with the introduction of university degrees (both undergraduate and post-graduate levels) in integrative educational therapy and psychology of learning. This introduction has led to significant changes in the professional landscape. Professionals with these degrees demonstrate a more sophisticated understanding of their roles, thanks to their comprehensive university education and the legitimization of their academic titles. Before these degree programs were established, the field of educational therapy lacked regulation, as already mentioned by Radecki (1984), leading to a variety of providers and the emergence of the “after-school market” phenomenon.

How Educational Therapy can help Children with Special Educational Needs

Educational therapy can help children with special educational needs in the following ways:

1. Tailored Instruction (e.g., Kaganoff, 2019; Marshall & Rotter, 2023): Educational therapists design personalized learning plans tailored to each child's unique strengths and challenges, helping them overcome obstacles in their learning journey.
2. Skill Development (Ficksman & Adelizzi, 2010; Marshall & Rotter, 2023): By focusing on specific academic, social, and emotional skills, educational therapy enables children to build competencies at their own pace, fostering confidence and independence.
3. Addressing Learning Differences (Ficksman & Adelizzi, 2010; Marshall & Rotter, 2023): Educational therapists understand the diverse learning styles and needs of children with special educational needs, providing specialized techniques and strategies to accommodate these differences effectively.
4. Supporting Emotional Well-being (e.g., MacDonald, 2013; Marshall & Rotter, 2023): Children with special educational needs may face frustration, anxiety, or low self-esteem due to their learning challenges. Educational therapy offers a supportive environment where they can express themselves, develop coping mechanisms, and build resilience.
5. Collaboration and Advocacy (Ficksman & Adelizzi, 2010; Marshall & Rotter, 2023): Educational therapists collaborate with educators, parents, and other professionals to ensure that children receive comprehensive support. They also advocate for inclusive educational practices and resources that benefit children with special educational needs on a broader scale.

By providing targeted interventions and fostering a supportive environment, educational therapy can empower millions of children with special educational needs worldwide to reach their full potential in education and beyond.

Music-based Treatment: An Extension from Educational Therapy

According to Chua and Xie (2024), music-based treatment is not something new but has already been practiced by the ancient Greeks and Egyptians (who recognized the power of music to influence emotions and sought its curative powers) since the Classical Antiquity, which spanned from the 8th century BC to the 5th century AD, through the Middle Ages (when music-based treatment was employed in hospitals and monasteries) and until the 20th century, when formalized music-based treatment practices emerged. World War I and II saw music therapists using music to help wounded soldiers cope with physical and emotional trauma (see Chua & Xie, 2024, pp.16-19, for detail). The mid-20th century witnessed the establishment of academic programs in music therapy, solidifying its status as a therapeutic discipline. Research in the late 20th century provided scientific validation for the efficacy of music-based interventions. Today, the music-based treatment has evolved gradually to become a specialized field known as music therapy. However, it must not be confused with another form of music-based treatment approach known as music-based educational therapy.

Music-based educational therapy is an extension from educational therapy by incorporating music as a therapeutic tool in the educational process. While both approaches aim to address learning and developmental challenges, music-based educational therapy specifically utilizes music interventions to enhance cognitive, emotional, social, and behavioral skills. Music-based educational therapy is a therapeutic approach that utilizes music and musical activities to address various developmental, emotional, cognitive, and social challenges in children and adolescents with and without special educational needs (Chua & Xie, 2024; also see Yinger & Gooding, 2015, for more information). This form of therapy integrates the inherent qualities of music, such as rhythm, melody, and harmony, to achieve therapeutic goals and enhance the overall well-being of individuals (MacDonald, 2013).

According to Chua and Xie (2024), the key difference between music-based educational therapy and educational therapy lies in the incorporation of music within the therapeutic process. Music-based educational therapy integrates various musical elements such as rhythm, melody, harmony, and lyrics to achieve therapeutic goals, whereas traditional educational therapy may rely on more conventional methods such as tutoring, counseling, or behavioral interventions without a specific focus on music. Additionally, music-based educational therapy often involves trained music therapists who have expertise in both music and therapy techniques, whereas educational therapy may be conducted by educators or therapists with a different specialization.

What is Music-based Educational Therapy and What are Its Benefits?

Music-based educational therapy is a form of therapy that utilizes music as a tool to address cognitive, emotional, and social needs (Chua & Xie, 2024). Chua and Xie (2024) have explained briefly their seven reasons, as

elaborated in the next few paragraphs below, why this music-based treatment is beneficial to all students, with and without special educational needs.

Multisensory engagement (Johnels et al., 2023) is the first reason. Music engages multiple senses simultaneously, making it an effective tool for individuals with diverse learning styles or sensory processing differences. The second reason is enhanced memory retention (Ferreri & Verga, 2016; Wallace, 1994). The rhythmic patterns and melodies in music can help improve memory retention, making it easier for individuals to recall information and concepts learned during therapy sessions. Thirdly, emotional regulation is facilitated through music (Saarikallio & Baltazar, 2018). Music has the power to evoke emotions and can be used to help individuals identify, express, and regulate their emotions in a safe and supportive environment (Saarikallio & Baltazar, 2018). These are the first three very important benefits of music-based educational therapy for students with and without special educational needs.

In addition, the fourth reason is improved communication skills are fostered (Boster et al., 2021; Brand, E., & Bargil, 2010; Passanisi et al., 2015). Music encourages verbal and nonverbal communication (Passanisi et al., 2015), allowing individuals to practice skills such as turn-taking, listening, and expressing themselves through song lyrics or musical improvisation. Social connection is the fifth reason (Loi et al., 2022). Group music-making activities promote social interaction and collaboration, fostering a sense of belonging and community among participants (Loi et al., 2022; Odena, 2023).

The sixth reason is that stress reduction is achieved (Knight & Rickard, 2001; Schwilling et al., 2015; Umbrello et al., 2019). Listening to or creating music can have a calming effect on the nervous system, reducing stress and anxiety levels in individuals undergoing therapy. Seventhly, motivation and engagement are also heightened (Martin, Collie, & Evans, 2015). Music-based activities are inherently enjoyable and can increase motivation and engagement in therapy sessions, particularly for individuals who may struggle with traditional forms of learning or communication.

Moreover, the eighth reason is that group music-making activities promote social interaction and collaboration, fostering a sense of belonging and community among participants (Bolger, 2015; Loi et al., 2022; Odena, 2023). These activities create opportunities for individuals to connect with others in a shared experience, enhancing interpersonal relationships and building a supportive environment. Through collaborative music-making, participants develop communication skills (Passanisi et al., 2015), empathy, and a sense of cohesion within the group (Odena, 2023).

Next reason is listening to or creating music can have a calming effect on the nervous system, reducing stress and anxiety levels in individuals undergoing therapy (Knight & Rickard, 2001; Krout, 2007). Music serves as a powerful tool for relaxation and emotional regulation (Saarikallio & Baltazar, 2018), offering a therapeutic outlet for processing difficult emotions and experiences. Incorporating music into therapy sessions can help individuals manage their stress more effectively, promoting overall well-being and resilience (Krout, 2007; MacDonald, 2013).

Lastly, music-based activities are inherently enjoyable and can increase motivation and engagement in therapy sessions (Martin, Collie, & Evans, 2015), particularly for individuals who may struggle with traditional forms of learning or communication. The intrinsic pleasure of music motivates individuals to actively participate in therapeutic interventions, fostering a positive attitude towards treatment and goal attainment. Moreover, music transcends language and cultural barriers, making it accessible to a diverse range of individuals and enhancing inclusivity in therapy settings.

Overall, the music-based educational therapy offers a holistic approach to addressing various developmental, cognitive, and emotional needs, making it a valuable tool in educational and therapeutic settings (see Chua & Xie, 2024, for more detail).

What is Music Therapy?

Often music-based treatment is confused with music therapy, but both are not the same. As for music-based educational therapy, it is just one of the many forms of music-based treatment. It is not the same as music therapy.

Music therapy is a form of therapy that uses music to address physical, emotional, cognitive, and social needs of individuals (Chua & Xie, 2024). It is facilitated by a trained music therapist who uses various musical activities, such as listening, singing, playing instruments, and composing, to help improve overall well-being (MacDonald, 2013) and address specific therapeutic goals. It can be effective for people of all ages and with various conditions, including mental health disorders, developmental disabilities, neurological conditions, and chronic illnesses.

The Differences between Music Therapy and Music-based Educational Therapy

Though music therapy and music-based educational therapy share similarities, they have distinct differences. The author of this paper has identified 10 differences between the two forms of therapy as shown in Table 1 below:

Table 1. Differences between Music Therapy and Music-based Educational Therapy

Differences	Music Therapy	Music-based Educational Therapy
1. Purpose	It focuses on addressing emotional, cognitive, social, and physical needs through music.	It aims to enhance learning and academic skills through music.
2. Goal Setting	Goals are often individualized and centered around personal growth or rehabilitation.	Goals are usually targeted towards specific academic or developmental milestones.
3. Clinical Approach	It utilizes therapeutic techniques such as improvisation, songwriting, and listening exercises to achieve therapeutic outcomes.	It incorporates educational methodologies such as structured lessons, repetition, and assessment tools to facilitate learning.
4. Target Population	It can be beneficial for individuals of all ages with a wide range of cognitive, emotional, and physical abilities.	It primarily targets children and adolescents who may have learning disabilities, developmental delays, or other educational challenges.
5. Certification Requirements	Practitioners typically hold certification from accredited music therapy programs and adhere to established clinical standards.	Practitioners may have backgrounds in both music and education, with varying levels of formal certification or training.
6. Setting	It is often conducted in clinical or therapeutic settings such as hospitals, rehabilitation centers, or private practices.	It is implemented in educational environments such as schools, special education programs, or community centers.
7. Evaluation Methods	Assessment focuses on subjective improvements in emotional well-being, social interaction, and overall quality of life.	Assessment emphasizes academic progress, learning outcomes, and skill acquisition.
8. Collaboration	It collaborates with other healthcare or wellness professionals such as psychologists, speech therapists, and occupational therapists to offer or provide holistic care.	It collaborates with teachers, allied educators, school administrators, and parents to support academic goals and educational plans.
9. Session Structure	Sessions may be more flexible in structure, allowing for improvisation and exploration based on the client's needs.	Sessions are often structured with clear objectives, lesson plans, and defined learning outcomes.
10. Outcome Measurement	Outcomes are measured in terms of improvements in emotional expression, communication skills, coping mechanisms, and overall well-being.	Outcomes are measured in terms of academic progress, skill development, and achievement of educational goals.

In summary, both music therapy and music-based educational therapy utilize music as a therapeutic tool to address various psychological, emotional, cognitive, and physical needs. The main similarity between the two lies in their use of music to achieve therapeutic goals, such as improving communication (Passanisi et al., 2015), enhancing motor skills, reducing stress (Knight & Rickard, 2001; Krout, 2007), and promoting emotional well-being (MacDonald, 2013). However, the main difference lies in their primary focus and context. Music therapy primarily focuses on the therapeutic process itself, utilizing music interventions led by a trained music therapist to address individualized goals within a therapeutic relationship. On the other hand, music-based educational therapy integrates music into educational settings, aiming to support academic and developmental goals while also addressing emotional and behavioral needs. While both approaches harness the power of music for healing and growth, music therapy is more clinically focused, while music-based educational therapy is more educationally oriented.

Music-based Educational Therapy as Supplementary Support in Counseling

The use of music in educational therapy also serves as valuable supplementary support in counseling (Gladding & Mazza, 1983). According to Chua and Xie (2024), this is attributed to three main factors (pp. 13-14): Firstly, music-based educational therapy offers a distinctive avenue for individuals to express and delve into their emotions without using words, offering a secure and imaginative outlet for therapeutic exploration. Secondly, incorporating music into counseling sessions can boost engagement and motivation, especially for those who find traditional talk therapy methods challenging or struggle to articulate themselves verbally. Lastly, power of music to trigger memories, emotions, and physical responses can facilitate profound self-reflection and understanding, making it an invaluable tool in assisting clients in navigating and processing their thoughts and emotions during counseling sessions.

Music-based educational therapy provides numerous advantages for both clients and therapists across diverse areas (see Chua & Xie, 2024, pp. 13-14, for detail). Initially, it serves as a platform for expressing emotions, enabling individuals to articulate intricate feelings non-verbally. This aids in exploring and processing emotions within a supportive setting. Additionally, music assists in reducing stress, effectively lowering anxiety levels (Knight & Rickard, 2001; Krout, 2007). By incorporating music into therapy sessions, relaxation and comfort are promoted, encouraging client involvement. Furthermore, music serves as a tool for improved communication (Boster et al., 2021; Brand & Bar-Gil, 2010; Passanisi et al., 2015), especially beneficial for those who struggle with verbal expression. Educational therapists utilize music to foster communication (Passanisi et al., 2015), establish rapport, and strengthen the therapeutic alliance (also see Odena, 2023, for further detail). Moreover, music-based activities stimulate cognitive functions such as memory and problem-solving, particularly advantageous for clients with cognitive impairments or neurological conditions. Additionally, music therapy fosters self-awareness and insight by exploring the meaning behind lyrics and the emotions evoked by musical compositions. This heightened self-awareness supports personal growth and development. Group music therapy sessions also encourage social connection, fostering a sense of community and belonging while enhancing social skills and interpersonal relationships (Bolger, 2015; Loi et al., 2022; Odena, 2023). Furthermore, music therapy encourages creative expression, empowering clients to explore new communication avenues and develop coping mechanisms (Passanisi et al., 2015).

In summary, music-based educational therapy complements traditional therapeutic approaches, enriching the counseling process by providing alternative pathways for self-expression (Kepule & Strode, 2020), emotional regulation (Saarikallio & Baltazar, 2018), and personal growth (Chua & Xie, 2024). It is particularly effective for clients who may not respond as well to verbal interventions (i.e., talk therapy) alone.

Harmonizing Educational Therapy through Music: Challenges and Opportunities

Music-based educational therapy offers valuable benefits for various students, both with and without special educational needs. However, it is essential to acknowledge certain limitations that may affect its universal efficacy. One primary challenge lies in the diverse nature of individual responses to music (Chua & Xie, 2024). While some students may find therapeutic value in music, others may not resonate with the same genres or styles, limiting the effectiveness of the music-based treatment.

Moreover, the accessibility and availability of musical instruments and trained educational therapists in music can be a barrier, especially in underfunded educational institutions. Students with special educational needs in resource-constrained environments may not have equal opportunities to engage in music-based educational therapy, creating disparities in its application.

For children with special educational needs, the effectiveness of music-based educational therapy can be influenced by the type and severity of their condition. Tailoring music interventions to address specific needs requires expertise, and not all educational settings may have access to specialized therapists qualified in music. Additionally, some issues related to special educational needs may hinder active participation in musical activities, affecting the overall impact of the music-based educational therapy. Furthermore, cultural and individual differences in musical preferences can be challenging to navigate. A therapy program heavily centered on a specific musical genre or cultural context may not resonate universally, potentially excluding some students with special educational needs.

While music-based educational therapy holds promise, Chua and Xie (2024) have argued that its universal application faces challenges related to individual preferences, resource constraints, accessibility, and the diversity of disabilities. Recognizing and addressing these limitations is crucial for maximizing the benefits of the music-based educational therapy across a broad spectrum of students with special educational needs.

Limitations of Music-based Educational Therapy

Chua and Xie (2024) have identified 10 limitations of the music-based educational therapy for both typically developed students and students with special educational needs (pp. 15-16). These are briefly listed as follows:

1. *Individual Variability*: Music preferences and responses vary widely among individuals, making it challenging to create a one-size-fits-all approach in music-based educational therapy.
2. *Resource Dependence*: Access to musical instruments, technology, and trained therapists may be limited, hindering the implementation of music-based treatment in some educational settings.
3. *Cultural Sensitivity*: Music preferences are often influenced by cultural backgrounds, and the appropriateness of certain musical elements may vary. It is essential to ensure cultural sensitivity in the selection of music.
4. *Generalization Challenges*: The transfer of skills learned in music therapy to broader educational contexts can be difficult, requiring careful planning and coordination with traditional teaching methods.
5. *Attention and Engagement*: Maintaining the attention and engagement of all students during music-based treatment sessions can be challenging, particularly for those with attention-related disorders.
6. *Communication Barriers*: For students with language or communication disorders, expressing themselves through music may not necessarily address their core challenges in verbal communication.
7. *Limited Research Base*: While there is evidence supporting the benefits of music-based educational therapy, there is still a need for more extensive research, especially for specific populations and conditions.
8. *Staff Training*: Ensuring that educators and therapists are adequately trained in both music and educational therapy requires resources and ongoing professional development.
9. *Logistical Issues*: Scheduling and coordinating music therapy sessions within the school curriculum can be logistically challenging, potentially limiting the frequency and duration of sessions.
10. *Sensory Sensitivities*: Some students, particularly those with sensory processing disorders, may find certain musical elements overstimulating or uncomfortable, requiring careful consideration in educational therapy planning.

Conclusion

Music-based educational therapy stands as a vital tool for addressing diverse cognitive, emotional, and developmental needs in individuals, especially children and adolescents. Through its unique ability to enhance learning, improve communication skills, regulate emotions, and promote social interaction (Loi et al., 2022), music-based treatment offers a holistic approach to development. By harnessing the musical power of multisensory experiences and non-verbal expression, this therapeutic modality creates inclusive environments that foster self-expression (Kepule & Strode, 2020), boost self-esteem, and cultivate confidence. Integrating music into educational therapy not only enhances cognitive and emotional functioning but also nurtures an environment conducive to learning and growth.

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Paper 3

Ecosystemic Wellness (ESW) in Young Children within the Context of Educational Therapy (EdTx)

Wujing LIU Dip.Fin.Informatics, MIAoTh, MIACT
Registered Educational Therapist
Merlion Paediatric Therapy Clinic, Chengdu

Kok Hwee CHIA EdD, BCET, BCSE
Principal Therapist
Merlion Paediatric Therapy Clinic, Singapore

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Abstract

This paper investigates the concept of Ecosystemic Wellness (ESW) in young children (ESW-YC), particularly in the realm of educational therapy (EdTx). The concept of ESW-YC concerns children's overall well-being, influenced by the interconnected environments they engage with. Within EdTx, this approach strives for a comprehensive strategy, considering a child's ties to various settings—family dynamics, social interactions, school, and community support—to holistically foster their development. The ESW in EdTx highlights the interconnectedness of a child's well-being with the environment and support systems. This innovative approach recognizes the multi-dimensional nature of a child's growth - cognitive, conative, socio-emotional, and sensory elements. By integrating customized interventions that account for each child's unique ecosystem, educational therapists strive to cultivate resilience, self-regulation, and a positive self-concept in young learners. Ultimately, this method establishes a robust base for supporting children, especially those with special needs, enabling them to flourish academically, emotionally, and socially amidst their intricate web of relationships and environments.

Key Words: Ecological Systems Theory, Ecosystemic Wellness (ESW), Educational Therapy (EdTx), Young Children

Introduction

Ecosystemic wellness (ESW) in young children (ESW-YC) refers to their overall well-being influenced by the interconnectedness of various environments they experience. When the term *ecosystemic wellness for young children* (ESW-YC) is put within the context of educational therapy (EdTx), it refers to fostering a holistic approach that considers the interconnectedness between a child and their environment through the process of providing supportive, nurturing environments within educational settings that address not only the child's individual needs but also the broader context - family dynamics, social interactions, school environment, and community support - to promote the child's overall well-being and development. This approach acknowledges the impact of various systems on a child's growth and aims to optimize their learning experiences within these interconnected systems.

ESW is just a part of the Wellness Science, which "is an interdisciplinary field that comprises the study and promotion of holistic well-being, encompassing every aspect of life" (Camulli, 2023, p. 3). Wellness Science aims to comprehend the complex relationship between different elements influencing an individual's well-being and contentment. It is grounded in scientific principles and real-world uses, often examining four primary wellness aspects: physical, mental, emotional, and social health. Camulli (2023) added, "This burgeoning field integrates knowledge from psychology, biology, nutrition, exercise physiology, and other disciplines to develop a comprehensive understanding of what it means to live a balanced and fulfilling life" (p. 3). As the value of proactive health management and preventive actions gains traction within societies, Wellness Science becomes pivotal in

both research and application. It directs individuals and communities toward optimal health results and an improved quality of life.

Application of Ecosystemic Theory on Wellness in Young Children

Bronfenbrenner's (1977, 1989, 2000) ecological systems (or ecosystemic) theory offers a comprehensive framework for understanding the multifaceted influences on an individual child's development (also see Liu, Xie, & Deng, 2023, pp. 59-67). In the case management system of educational therapy, this theory is instrumental as it recognizes the interplay between various environmental systems impacting a child's learning journey (Liu, Xie, & Deng, 2023).

When the ecosystemic theory is applied in the field of wellness or what is termed as ecosystemic wellness (ESW), there is a profound impact on various ecological subsystems as briefly described below:

1. **Microsystem (Intrapersonal & Interpersonal):** The ESW influences a young child's well-being (intrapersonal) as well as his/her relationships (interpersonal) within the child's immediate environment. A healthy ecosystem fosters positive mental health and relationships.
2. **Mesosystem:** This relates to connections and interactions between different microsystems. The ESW enhances the quality of these connections, leading to smoother transitions and support across various settings like home, school, and community.
3. **Exosystem:** External environments indirectly affecting young children. The ESW in this context might involve supportive policies, access to resources, and community services, thereby positively impacting these children's experiences.
4. **Macrosystem:** Societal and cultural norms, values, and systems. The ESW can influence broader social attitudes towards the environment, sustainability, and the well-being of all living beings including these young children.
5. **Chronosystem:** This refers to changes and transitions over time. The ESW can influence the impact of historical events or developmental changes, contributing to the overall stability and resilience of the system across time.
6. **Technosystem:** Though not a part of Bronfenbrenner's (1989) ecological systems theory (see Figure 1), technological aspects can also impact a young child's ecosystemic well-being (see Liu, Xie, & Deng, 2023, for more detail). The ESW might involve leveraging technology responsibly to support sustainability, minimize environmental impact, and enhance the overall well-being of the ecosystem.

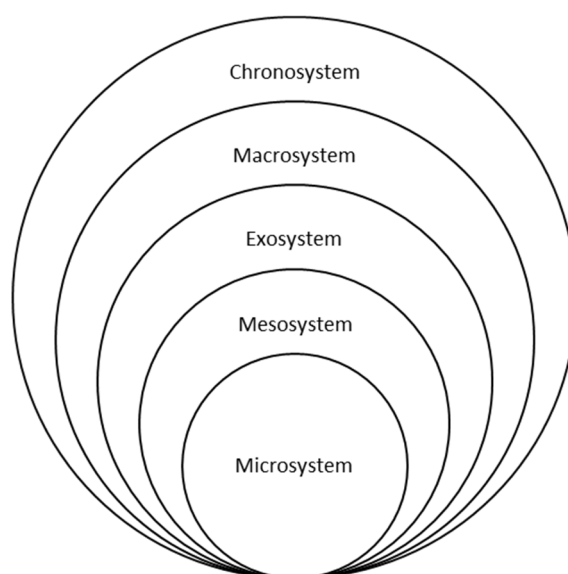


Figure 1. Bronfenbrenner's Ecological Systems Theory/Model

In essence, the ESW plays a crucial role in nurturing an individual child, his/her relational as well as societal well-being across various interconnected ecological subsystems (see Liu, Xie, & Deng, 2023, for more detail).

Why Ecosystemic Wellness is important for Young Children

There is no doubt that wellness itself is essential for young children to grow up healthily. Fabin and Mould (2009) explore the pivotal phase in the early development of healthy young children by integrating crucial theories, policies, and practices relevant to professionals engaging with infants and toddlers. Central to their holistic view of young children's growth, Fabin and Mould (2009) have encompassed the four domains of wellness: physical, mental, emotional and social (see Figure 2).

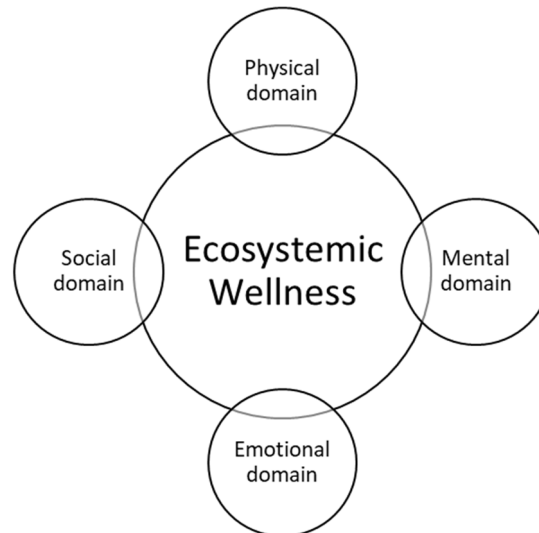


Figure 2. The 4 Domains of Ecosystemic Wellness

According to Xie and Chua (2020), for a young child to become a good or healthy all-rounder, s/he must grow up to become an *optimally developed* - coined by Frankl (1959) - or matured individual. Therefore, the authors of this paper have proposed seven reasons why ecosystemic wellness is crucial for a healthy development of young children:

1. Holistic Development (Lally, 2023; Wagner, 2009): Exposure to various natural environments helps in the holistic development of young children by engaging their senses, enhancing cognitive abilities, and nurturing creativity.
2. Physical Health (Chaddock-Heyman et al., 2014; Ortega, Ruiz, Castillo, & Sjöström, 2008): Interacting with nature encourages physical activity, reducing the risk of obesity and improving overall health.
3. Mental Well-being (McAuley & Davis, 2009; Renzaho & de Silva-Sanigorski, 2014): Being in natural settings promotes mental well-being, reducing stress, anxiety, and attention fatigue commonly seen in urban environments.
4. Environmental Awareness (Otto & Pensini, 2017; Summers et al., 2012): Early exposure to ecosystems fosters environmental awareness, teaching young children the importance of conservation and sustainability.
5. Social Skills (Bagdi & Vacca, 2005; Renzaho & de Silva-Sanigorski, 2014): Exploring natural environments encourages social interaction, teamwork, and cooperation among young children, fostering their social skills and empathy towards others and the environment.
6. Learning Opportunities (Ellyatt, 2022; Roffey, 2008): Ecosystems offer diverse learning opportunities, providing a hands-on approach to subjects like biology, ecology, and environmental sciences, fostering a love for learning.
7. Resilience and Adaptability (Krasny, Lundholm, & Plummer, 2010; Ungar, 2021): Interacting with nature teaches young children about resilience, adaptability, and problem-solving as they navigate natural challenges and changes in ecosystems, developing crucial life skills.

Encouraging ESW in young children creates a foundation for their overall well-being, education, and understanding of the world around them (Brown & Westaway, 2011).

How Ecosystemic Wellness can impact on Young Children

The ESW-YC can impact on young children in the following four different domains, i.e., physical wellness (Chaddock-Heyman et al., 2014; Ortega, Ruiz, Castillo, & Sjöström, 2008), mental wellness (McAuley & Davis, 2009; Renzaho & de Silva-Sanigorski, 2014), emotional wellness (Bagdi & Vacca, 2005; Oattes, Kosmerly, &

Rogers, 2018) and social wellness (Bagdi & Vacca, 2005; Renzaho & de Silva-Sanigorski, 2014), and are briefly described with three examples for each of the four domains as follows:

Physical Wellness:

1. Nutrition & Health: Access to a healthy ecosystem impacts their diet, reducing risks of obesity and illnesses, promoting physical growth.
2. Safety & Environment: A secure ecosystem ensures fewer accidents, allowing for physical activities that foster strength and development.
3. Sleep & Rest: A stable ecosystem encourages better sleep patterns, vital for growth and overall physical health.

Mental Wellness:

1. Stress Regulation: A supportive ecosystem aids in stress reduction, helping children develop coping mechanisms and resilience.
2. Cognitive Stimulation: Diverse and rich environments foster cognitive development, enhancing learning and problem-solving abilities.
3. Exploration & Curiosity: An encouraging ecosystem nurtures exploration, fueling curiosity and supporting mental growth and creativity.

Emotional Wellness:

1. Supportive Relationships: A nurturing ecosystem facilitates strong emotional bonds, fostering a sense of security and trust.
2. Emotional Expression: A safe ecosystem encourages emotional expression, aiding in emotional intelligence development and self-regulation.
3. Validation & Acceptance: A validating ecosystem promotes self-worth, boosting confidence and emotional well-being.

Social Wellness:

1. Peer Interaction: A well-balanced ecosystem allows for positive peer interactions, aiding in social skill development and teamwork.
2. Community Engagement: Involvement in a supportive community fosters a sense of belonging and social responsibility.
3. Cultural Diversity: Exposure to diverse ecosystems cultivates respect for different cultures, enhancing social adaptability and empathy.

The interconnectedness of these four domains, i.e., physical, mental, emotional and social, within a child's ecosystem significantly shapes their holistic well-being during their formative years.

Ecosystemic Theory offers Support to Young Children with Special Needs

Bronfenbrenner's (1977, 1989, 2000) ecological systems theory (EST) offers a comprehensive framework to understand and support the development of young children with special needs in the context of educational therapy (EdTx). This theory delineates the multifaceted influences that shape a young child's growth within nested environmental systems. For young children with special needs, its application in ecosystemic wellness proves invaluable.

At the microsystem level, the immediate environment of a child with special needs plays a pivotal role and it includes his/her family, peers, and educators. Educational therapists can collaborate closely with families in what has been termed as 'therapeutic alliance' (Zetzel, 1956, 1970) to create tailored interventions that align with the child's unique needs. By fostering a supportive and inclusive microsystem, young children experience a nurturing environment crucial for their growth.

Moving to the mesosystem, the interconnections between various microsystems become crucial. A trans-disciplinary collaboration (see Córdoba, 2009, for detail) between therapists, educators, and healthcare providers ensures a holistic case management approach to the child's development (Liu, Xie, & Deng, 2023). This

coordination ensures that the needs of a child with special needs are consistently addressed across different settings, promoting continuity and reinforcement of learning and support strategies.

The exosystem involves broader social structures indirectly influencing a child with special needs. Policies, community resources, and cultural beliefs significantly impact the accessibility and quality of services available. Interestingly, the exosystem, within ecological systems theory (EST), involves external settings that indirectly impact an individual or system. Nature, such as forests, waterfalls, or mountains, can influence the exosystem through recreational areas, tourism, natural resource policies, or even environmental regulations, all of which can have indirect effects on communities and individuals (including young children) within that ecosystem (Pedretti-Burls, 2007). Pedretti-Burls (2007) argues that “[H]umans’ need for nature is linked not just to the material exploitation of the environment but also to the influence of the natural world on our emotional, cognitive, aesthetic, and spiritual development” (p. 19). This assertion stems from Wilson’s (1984) Biophilia Hypothesis, positing that human identity and fulfillment are intertwined with our connection to nature. For the sake of readers’ interest, this hypothesis proposes the existence of an innate human requirement and inclination, rooted in genetics, to connect with living organisms beyond the human species. Educational therapists advocating for inclusive policies and promoting community awareness should enhance the support with available natural resources to these children with special needs (also see Lehohla & Hlalele, 2012).

Finally, the macrosystem encompasses cultural values, societal norms, and broader ideologies (Rogers et al., 2021). Embracing diversity (Ryan, 2013), fostering inclusivity (Liu, Xie, & Deng, 2023; Ryan, 2013), sustainability (Liu, Xie, & Deng, 2023; Sorkos & Hajisoteriou, 2021), and advocating for equitable educational opportunities (Smith et al., 2017) within this system are critical for the optimal growth and development of children with special needs.

In summary, Bronfenbrenner’s (1977, 1989, 2000) ecological systems theory (EST) serves as a guiding framework in educational therapy for children with special needs. By comprehensively addressing the micro-, meso-, exo-, and macro-system levels, educational therapists can create an ecosystemic approach that maximizes the potential for these young children’s wellness and development (Liu, Xie, & Deng, 2023).

Conclusion

Ecosystemic wellness (ESW) in young children (ESW-YC), within the realm of educational therapy (EdTx), embodies a holistic approach that intertwines a child’s environment, his/her social and emotional development, and the educational support s/he receives. Though ESW in EdTx is very new, this approach underscores the interconnectedness of a child’s well-being with his/her surroundings, emphasizing the symbiotic relationship between the child, his/her family, school, and broader community.

The EdTx that is focused on the ESW acknowledges the multifaceted nature of a child’s growth. It recognizes that addressing cognitive (mental/intellectual), conative (behavioral/volitional), socio-emotional (socio-affective), and sensory (sensorimotor) aspects simultaneously fosters a more comprehensive and sustainable path towards a child’s overall wellness. By nurturing a supportive ecosystem that encompasses educational interventions, family involvement, peer interactions, and community support, educational therapists create an environment conducive to a child’s flourishing.

This approach highlights the significance of personalized, tailored treatment programs and/or individualized education plans (intervention sessions) that consider each child’s unique ecosystem. By integrating various elements of a child’s life into therapeutic strategies, educational therapists can effectively cultivate resilience, self-regulation, and a positive self-concept in young learners.

Ultimately, the ESW within the EdTx context forms a robust foundation for fostering the growth of children with special needs, enabling them to thrive academically, emotionally, and socially within their intricate network of relationships and environments.

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Paper 4

Navigating the Labyrinth: Understanding Dementia's Effect on the Brain and the Role of Educational Therapy-Based Interventions in Dementia Treatment

Guo-Hui XIE Ed.D, M.Ed, B.EdSt, B.Ed, FCP, FCoT, BCET, BCSE
Principal Educational Therapist
Merlion Paediatric Therapy Clinic, Singapore

Meng-Kiat TAN M.Ed, M.Sc, BFP, FCA (ICAEW, UK), FCA (ISCA, S'pore)
Neuroscientist
Merlion Paediatric Therapy Clinic, Singapore

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Abstract

Dementia presents a profound challenge to cognitive function, impacting various regions of the brain, including the frontal, parietal, temporal, and occipital lobes, as well as the hippocampus. This paper explores the specific effects of dementia on these brain regions, the interplay of acetylcholine (ACh) and brain-derived neurotrophic factor (BDNF), and the implications for cognitive decline and memory loss. Current research suggests that dementia-related changes in the brain involve cortical thinning, neuronal loss, and alterations in synaptic connectivity, leading to impairments in memory, executive function, spatial awareness, and visual processing. Of particular significance is the role of the hippocampus in memory formation and retrieval, which is often one of the earliest brain regions affected by dementia pathology. In addition, educational therapy is also mentioned as a promising approach to dementia treatment by providing tailored interventions to address cognitive deficits and enhance remaining cognitive abilities. By incorporating strategies such as cognitive stimulation, memory training, problem-solving exercises, and multisensory learning techniques, educational therapy aims to optimize brain function and improve overall quality of life for individuals living with dementia. Moreover, educational therapy interventions can be adapted to suit the specific needs and preferences of each individual, promoting personalized care and maximizing therapeutic benefits.

Keywords: Acetylcholine, Brain-derived neurotrophic factor, Cortical lobes, Dementia, Educational therapy-based intervention, Hippocampus

Introduction

Millions of people worldwide suffer from dementia, which is a condition marked by rapidly progressive neurological decline (Geschwind, 2016; Geschwind et al., 2008; Josephs et al., 2009) in a person's mental capability severe enough to interfere with the activities of his/her daily living (Mattson, 2004). It is not a specific disease but rather a group of symptoms (Webster, 2021) associated with a decline in memory (especially in remembering, storing and recalling), reasoning (or impairment in judgment), and other cognitive skills (e.g., language difficulties) as well as changes in behavior.

As a neurological disorder, dementia can affect different parts of the brain (Brand & Markowitsch, 2008; Sandilyan & Dening, 2014) involved in memory, language, reasoning, and decision-making: hippocampus, frontal lobe, temporal lobe, parietal lobe and occipital lobe. Depending on which parts of the brain are affected, different types of dementia can result. Alzheimer's disease, which "accounts for 60-80% of dementia cases" (Alzheimer's Association, 2024, para. 2), is the most common type of dementia, but there are other types such as vascular

dementia, Lewy body dementia, and frontotemporal dementia (see Bolla, Filley, & Palmer, 2000, for detail) in the nosology of dementia. According to Chiu (2005), “the current classification is very limited in its structure to assist in further understanding the concept, clinical features, neuropathology and therapeutics of dementia” (p. S17).

Each of the four types of dementia (Bolla et al., 2000; Carr, 2017; Chiu et al., 2006) as mentioned above has its own set of symptoms and causes:

1. Alzheimer’s disease (Keith et al., 2023; Scheltens et al., 2021): The symptoms include the following: memory loss (especially recent memories), difficulty with problem-solving and planning, confusion about time or place, challenges with language, e.g., finding the right words), and changes in mood and personality. The exact cause of Alzheimer’s disease is not fully understood yet, but it is believed to involve a combination of genetic, environmental, and lifestyle factors. Abnormal protein deposits in the brain (amyloid plaques and tau tangles) are characteristic features (see Morishima-Kawashima & Ihara, 2002, for detail).

2. Vascular dementia (Korczyń, Vakhapova, & Grinberg, 2012; Lee, 2011; O’Brien & Thomas, 2015): The symptoms include the following: problems with reasoning, planning and judgment, slowed thinking, difficulty concentrating, memory loss (though often less pronounced than in Alzheimer’s disease, and mood swings and depression. This type of dementia can be caused by conditions like high blood pressure, high cholesterol, diabetes, smoking, and obesity, which damage blood vessels in the brain, leading to strokes or small vessel disease (Iadecola, 2013).

3. Lewy body dementia (Sanford, 2018; Walker et al., 2015): The symptoms include the following: visual hallucinations, fluctuations in alertness and attention, Parkinson’s-like symptoms (e.g., rigid muscles and tremors), REM sleep behavior disorder (acting out dreams), and memory loss and cognitive decline. The exact cause of this type of dementia is unknown. However, it is characterized by the presence of abnormal protein deposits (Lewy bodies) in the brain (Mayo & Bordelon, 2014). Genetic factors and environmental influences may contribute to its cause, too (Sanghvi et al., 2020).

4. Frontotemporal dementia (Antonioni et al., 2023; Ulugut & Pijnenburg, 2023): The symptoms include the following: changes in personality and behavior (e.g., apathy or disinhibition), difficulty with language (which includes speaking, understanding, reading, or writing), impaired judgment and reasoning, and memory loss may not be as prominent in the early stages. This type of dementia is caused by progressive nerve cell loss in frontal and/or temporal lobes of the brain (Sivasathiaseelan et al., 2019). Genetics also plays a significant role in some cases, while in others, the cause is idiopathic or unknown (see Fenoglio et al., 2018, for more detail).

As briefly described above, the symptoms of dementia can vary in severity and may overlap between different types of dementia. Other conditions affecting brain function and structure can have diverse causes, including genetic predisposition, environmental factors, infections, autoimmune reactions, and neurodegenerative processes. Each condition requires specific diagnostic evaluation and appropriate management.

Hippocampus

The hippocampus is located in the medial temporal lobe of the brain. It is a crucial structure in the brain that is involved in memory formation and consolidation as well as spatial navigation (Kitamura & Inokuchi, 2014; Kühn & Gallinat, 2014) and emotional regulation (Zhu et al., 2019). It plays a crucial role in converting short-term memory into long-term memory and is involved in various aspects of learning and memory consolidation (Eichenbaum, 2017). Understanding how the hippocampus is impacted by dementia (Bettio, Rajendran, & Gil-Mohapel, 2017) is crucial because the hippocampus plays a key role in memory formation and retrieval (Teyler & DiScenna, 1985). Dementia often leads to cognitive decline, including memory loss, and the hippocampus is one of the brain regions most affected by conditions like Alzheimer’s disease (Rao et al., 2022), which is the most common cause of dementia. By understanding how dementia affects the hippocampus, researchers and therapists can develop better strategies for early detection, treatment, and management of the condition.

In Alzheimer’s disease, abnormal protein deposits, such as beta-amyloid plaques and tau tangles, accumulate in the hippocampus (Rajmohan & Reddy, 2017). These deposits interfere with neuronal communication and disrupt synaptic function, impairing the hippocampus’s ability to encode new memories and retrieve existing ones. Consequently, individuals with Alzheimer’s often experience difficulty in learning new information and recalling past events.

The progressive neurodegeneration seen in dementia leads to the loss of neurons and synaptic connections within the hippocampus (Arendt, 2009). As neurons degenerate, the volume of the hippocampus decreases, which can be observed through neuroimaging techniques like MRI scans. This shrinkage further impairs memory function and contributes to the cognitive decline characteristic of dementia.

Additionally, inflammation in the hippocampus is common in dementia (Stefaniak & O'Brien, 2015). Chronic inflammation exacerbates neuronal damage and accelerates cognitive decline. Immune cells in the brain release inflammatory molecules in response to the presence of abnormal proteins and cellular damage, contributing to ongoing neurodegeneration.

Furthermore, vascular dementia, another common form of dementia, can also affect the hippocampus (Du et al., 2002; Nishio et al., 2010). Reduced blood flow to the brain due to conditions like strokes or small vessel disease can damage hippocampal neurons, leading to cognitive impairment.

In summary, the hippocampus is profoundly affected by dementia through various mechanisms including protein deposition, neurodegeneration, inflammation, and vascular damage. These pathological changes disrupt the crucial role of hippocampus in memory formation and spatial navigation (Kitamura & Inokuchi, 2014; Kühn & Gallinat, 2014), contributing to the cognitive decline observed in individuals with dementia.

The Four Lobes of the Brain

Dementia impacts the four lobes of the brain; each cortical lobe is responsible for various functions critical to our cognitive and emotional well-being. Understanding how dementia manifests in these lobes provides insight into the complexity of the condition and aids in developing targeted interventions and support strategies.

The brain consists of four main lobes (Casillo, Luy, & Goldschmidt, 2020): the frontal lobe, parietal lobe, temporal lobe, and occipital lobe. Each lobe serves distinct purposes and houses specialized regions responsible for different aspects of cognition and behavior. In dementia, these lobes undergo progressive deterioration, leading to a decline in cognitive abilities and behavioral changes.

All the four cortical lobes work together in complex ways to facilitate cognitive functions, sensory processing, and motor control (Casillo, Luy, & Goldschmidt, 2020). Damage or dysfunction in any of these areas can lead to specific cognitive, sensory, or motor deficits, highlighting the importance of each lobe's specialized functions in overall brain function and behavior (Gaetz, 2004).

1. Frontal Lobe

The frontal lobe is located at the front of the brain. It plays a crucial role in executive functions such as decision-making, problem-solving, planning, and emotional regulation (Chayer & Freedman, 2001). It also houses the primary motor cortex, responsible for voluntary muscle movement. This cortical lobe plays a crucial role in executive functions, including decision-making, problem-solving, and impulse control (Chayer & Freedman, 2001). In dementia, particularly in conditions like frontotemporal dementia (FTD), degeneration of the frontal lobe results in alterations in personality, disinhibition, apathy, and impaired judgment (Snowden, Neary, & Mann, 2002). Individuals may exhibit socially inappropriate behaviors and struggle with planning and organizing tasks.

Frontal lobe dysfunction is a hallmark feature of various types of dementia (Neary et al., 1988), including Alzheimer's disease, frontotemporal dementia, and vascular dementia. The frontal lobes play a crucial role in executive functions, such as decision-making, problem-solving, planning, impulse control, and social behavior regulation. When affected by dementia, these functions deteriorate, leading to significant cognitive and behavioral changes. One prominent effect is impairment in executive functions (Voss & Bullock, 2004). Individuals may struggle with planning and organizing daily tasks, initiating activities, and maintaining attention on tasks. Decision-making becomes compromised, leading to poor judgment and difficulty adapting to new situations. This can result in a decline in overall independence and functional abilities. Furthermore, changes in personality and behavior are common manifestations of frontal lobe dysfunction in dementia (Chow, 2000). Patients may exhibit disinhibition, impulsivity, apathy, or socially inappropriate behaviors. They may also experience mood disturbances, such as depression or irritability. These alterations can strain interpersonal relationships and impact the individual's quality of life. Additionally, language difficulties can arise from frontal lobe involvement, although they are more

pronounced in frontotemporal dementia (Hardy et al., 2016; Peelle & Grossman, 2008). This can manifest as reduced verbal fluency, difficulty finding the right words, or comprehension deficits.

As dementia progresses, the frontal lobe atrophy worsens, exacerbating cognitive and behavioral symptoms (Broe et al., 2003; Neary et al., 1988). Care strategies often focus on compensatory techniques and behavioral interventions to support individuals in maintaining their independence and managing their symptoms (Sørensen et al., 2006). While treatments may alleviate some symptoms temporarily, there is currently no cure for dementia (Grand, Casper, & MacDonald, 2011), highlighting the urgent need for continued research and improved interventions to address frontal lobe dysfunction and its impact on individuals with dementia and their caregivers.

2. Parietal Lobe

The parietal lobe, positioned at the top and back of the brain, integrates sensory information from various modalities, including touch, pressure, temperature, and pain (Fogassi & Luppino, 2005). It houses the primary somatosensory cortex, which receives and processes tactile information, as well as the association areas responsible for spatial awareness and attention. This cortical lobe is involved in processing sensory information, spatial awareness, and perception (Fogassi & Luppino, 2005). Dementia affecting this lobe, such as in Alzheimer's disease or posterior cortical atrophy (PCA), leads to difficulties in spatial orientation, navigation, and recognizing objects or faces. Individuals may experience challenges in understanding spatial relationships and may struggle with activities requiring hand-eye coordination.

The parietal lobe plays a crucial role in various cognitive functions, including spatial awareness, perception of stimuli, interpretation of sensory information, and integration of sensory input with memory and language (Fogassi & Luppino, 2005; Valler & Coslett, 2018). In dementia, particularly in conditions like Alzheimer's disease and frontotemporal dementia, the parietal lobe undergoes significant structural and functional changes. One of the hallmark features of parietal involvement in dementia is spatial disorientation (Valler & Coslett, 2018). Patients may have difficulty navigating familiar environments, getting lost easily, or misjudging distances. This impairment stems from the role of parietal lobe in processing spatial information and integrating it with sensory input. Additionally, individuals with parietal involvement in dementia may experience deficits in attention and concentration (Neufang et al., 2011). They may struggle to maintain focus or shift attention between tasks due to disruptions in the parietal networks responsible for attentional control. Furthermore, sensory processing abnormalities (Özata Değerli & Altuntaş, 2023) can occur, leading to sensory misperceptions or difficulty distinguishing between different sensory modalities. For instance, patients may have trouble recognizing objects by touch or interpreting visual information accurately. Language disturbances can also manifest, particularly in the comprehension and production of complex sentences (Kirshner et al., 1984; Potkins et al., 2003). This difficulty arises from the parietal lobe's involvement in higher-order language processing and semantic integration.

On the whole, dementia-related changes in the parietal lobe result in a myriad of cognitive impairments, including spatial disorientation, attention deficits, sensory processing abnormalities, and language disturbances. These impairments significantly impact an individual's daily functioning and quality of life, highlighting the importance of understanding and addressing the parietal involvement in dementia management and care strategies.

3. Temporal Lobe

The temporal lobe, situated on the sides of the brain, is primarily involved in auditory processing, language comprehension, memory formation, and emotion regulation (see Wong & Gallate, 2012, for detail). It contains the hippocampus, critical for memory consolidation (Pronier, Morici, & Girardeau, 2023), and the auditory cortex, responsible for processing sound. This cortical lobe is vital for memory formation, language processing and comprehension (Bi et al., 2011; Meyer et al., 2005), emotion regulation (Brockway et al., 1998) and some aspects of visual perception. In dementia, particularly in Alzheimer's disease and frontotemporal dementia, degeneration of the temporal lobe is so significant that it leads to various cognitive and behavioral changes (Bozeat et al., 2000; Silveri, 2007) as a result of memory loss, language difficulties, and emotional disturbances (Chan et al., 2001). Individuals may have trouble recalling recent events, finding the right words, and regulating their emotions.

One primary significant impact is on memory function. The hippocampus, a structure within the temporal lobe, is responsible for forming and consolidating memories (Eichenbaum, 2017). In dementia, this area is often one of the first to deteriorate, leading to deficits in short-term memory and difficulty in forming new memories. As the disease

progresses, long-term memories may also be affected, impacting an individual's ability to recall past events and information. Language processing is another significant function of the temporal lobe (Bi et al., 2011; Meyer et al., 2005), particularly in the left hemisphere, that is impacted in dementia. Damage to this area can result in language difficulties, such as aphasia, where individuals struggle to find the right words, comprehend language, or express themselves coherently. Emotional changes are commonly noted in patients with dementia, partly due to the involvement of the temporal lobe (Kumfor et al., 2014). As the disease advances, individuals may experience mood swings, apathy, or heightened emotional responses. This can significantly impact their quality of life and relationships with others. Additionally, visual perception may be affected (see Mori et al., 2000, for more detail), particularly in cases where the disease progresses to involve areas responsible for processing visual information within the temporal lobe. This can lead to problems with object recognition, spatial awareness, and visual-spatial navigation.

In general, the involvement of the temporal lobe in dementia leads to a wide range of cognitive and behavioral symptoms, profoundly impacting an individual's daily functioning and quality of life as the disease progresses. Early detection and appropriate interventions are crucial in managing these symptoms and improving the patient's overall well-being.

4. Occipital Lobe

The occipital lobe, located at the back of the brain, plays a crucial role in processing visual information. It contains the primary visual cortex, which receives and interprets visual stimuli from the eyes, and higher-order visual association areas responsible for object recognition, spatial processing, and motion perception. This cortical lobe is primarily responsible for processing visual information. While dementia primarily affects other lobes, visual disturbances can occur in conditions like dementia with Lewy bodies (DLB) or posterior cortical atrophy (PCA) (Metzler-Baddeley et al., 2010). Individuals may experience visual hallucinations, difficulty recognizing objects or faces, and problems with depth perception (Renouf et al., 2018).

While dementia primarily affects cognition, memory, and behavior, it can also impact the occipital lobe, leading to various visual disturbances and impairments (Armstrong & Kergoat, 2015; Fymat, 2019). For instance, as dementia progresses, structural changes occur in the brain, including the occipital lobe. These changes can manifest as visual impairments such as difficulties with depth perception, contrast sensitivity, color perception, and motion detection. As a result, patients with dementia may experience visual hallucinations or misinterpretations of what they see due to disruptions in the function of the occipital lobe. Additionally, changes in this occipital region can influence mood and behavior. Visual disturbances and difficulties (e.g., visuospatial dysgnosia) may lead to frustration, stress, anxiety and/or depression (known as SAD Syndrome; see Xie & Wang, 2021, for detail) in individuals with dementia. Furthermore, damage to the occipital lobe can exacerbate other cognitive symptoms of dementia. For example, impaired visual processing can hinder a person's ability to recognize faces or objects (known as prosopagnosia), which may contribute to confusion and disorientation (i.e., perceptual distortion and thought disorder) (Warren et al., 2024). It can also affect visuospatial awareness (i.e., visuospatial dysgnosia), making it challenging for individuals to navigate their surroundings safely (Davous et al., 1996; Ricker, Keenan, & Jacobson, 1994). Moreover, because the occipital lobe is interconnected with other brain regions involved in memory and executive function, its dysfunction can further exacerbate cognitive decline in dementia patients.

In summary, dementia can affect the occipital lobe, leading to a range of visual impairments and disturbances, which in turn can impact cognitive function, behavior, and emotional well-being. Understanding these effects is crucial for developing interventions to improve the quality of life for individuals living with dementia.

Interplay of Acetylcholine and BDNF in Dementia: Unraveling the Neurological Nexus

The interplay between acetylcholine (ACh) and brain-derived neurotrophic factor (BDNF) is crucial for maintaining cognitive function (Girotra et al., 2022; Hachisu et al., 2015). ACh is a neurotransmitter involved in various cognitive processes, including memory and learning, while BDNF is a protein that operates within the synapses, facilitating communication between nerve cells, and supports the growth, survival, and function of neurons.

In dementia, particularly in conditions like Alzheimer's disease, there is a disruption in this interplay. Reduced levels of ACh are observed due to the degeneration of cholinergic neurons, which are responsible for releasing ACh. This reduction in ACh leads to impaired neurotransmission, contributing to cognitive decline. Additionally,

BDNF plays a role in synaptic plasticity and neuroprotection. Reduced BDNF levels are also observed in dementia, potentially due to decreased production or impaired signaling (Ng et al., 2019). This decrease in BDNF further exacerbates neuronal damage and impairs synaptic function, worsening cognitive deficits as noted in patients with dementia. Therefore, the dysregulation of both ACh and BDNF, either individually or through their interplay, contributes to the pathophysiology of dementia, leading to cognitive decline and other symptoms associated with the condition.

Although the precise causes of dementia remain not fully understood or largely are yet unknown, several elements, such as abnormalities in neurotransmitters and deficiencies in neurotrophic function, have been found to be involved in the neurodegenerative condition. Acetylcholine (ACh) (Mseulam, 2013; see Figure 1) and brain-derived neurotrophic factor (BDNF) (Gao et al., 2022) stand out among them as important participating culprits that may provide insights into and avenues for intervening in the tale of dementia.

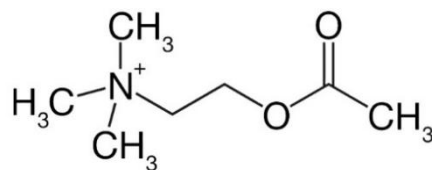


Figure 1: Chemical structure of acetylcholine

1. ACh: The Neurotransmitter that Supports Cognitive Functions

According to Hasselmo and Sarter (2011), the neurotransmitter ACh, a chemical messenger excitatory in nature that transmits signals between neurons in the brain, is essential for cognitive functions such as *memory, thinking, learning and attention*. ACh is mainly synthesized within *cholinergic neurons* from *choline* and *acetyl coenzyme A* (which comes from the sugar molecule glucose). These cholinergic neurons are highly concentrated in the *basal forebrain*. The basal forebrain houses the major cholinergic output of the central nervous system (see Figure 2). Within the basal forebrain, the *nucleus basalis of Meynert* (NBM) is a significant source of ACh (Koulousakis et al., 2019).

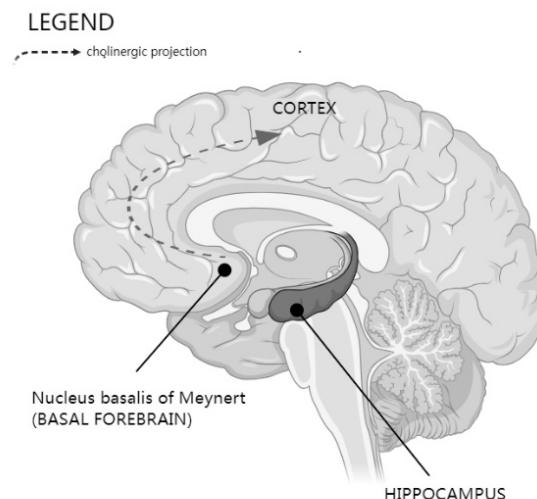


Figure 2: The cholinergic projection from basal forebrain

These cholinergic neurons project extensively into hippocampus and almost all layers of the cerebral cortex, influencing cortical activation during wakefulness and rapid eye movement (REM) sleep (Hasselmo & Sarter, 2011). Following neuronal activation, acetylcholine is subsequently encapsulated into vesicles and released into the synaptic cleft (see Figure 3), where it attaches to cholinergic receptors on postsynaptic neurons to transmit signals linked to memory and learning (Gasnier, 2000).

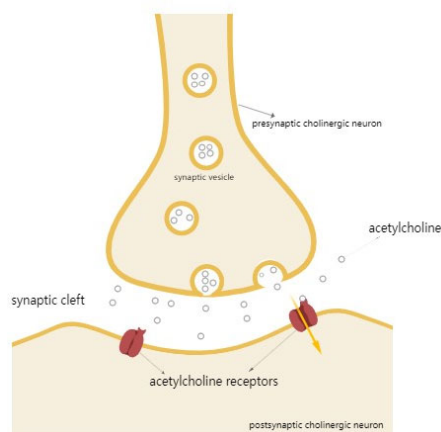


Figure 3: Acetylcholine in synaptic vesicles released into synaptic cleft

Postmortem studies of AD brains have consistently revealed a significant loss and dysfunction of cholinergic neurons at the basal forebrain (Gratwicke et al., 2013). It contributes to the cognitive decline observed in the disease.

Other widespread consequences of ACh deficiency in dementia include the following:

- a) Memory impairment: ACh is intricately involved in hippocampus-dependent learning. Cholinergic neurons densely innervate the hippocampus, influencing both episodic and semantic memory. According to Hasselmo and Sarter (2011), disrupted ACh signaling impairs the hippocampus, a crucial memory area, making it harder to encode, consolidate, and retrieve information.
- b) Executive dysfunction: Planning, thinking, and decision-making abilities are impacted by ACh decrease, which impacts frontal lobe function (Logue & Gould, 2014).
- c) Attention deficits: Lower levels of ACh make it harder to focus and block out distractions, which makes it harder to multitask and causes cognitive fatigue (Parikh & Bangasser, 2020).

2. BDNF: The Architect of Neurogenesis, Neuroplasticity and Neuronal Survival

Another important participant is brain-derived neurotrophic factor (BDNF), a protein functioning as a 'nerve nourishment' to stimulate neurogenesis, neuronal repair and synaptic plasticity (Wurzelmann et al., 2017). BDNF is also implicated in mood regulation which low levels have been linked to depression, suggesting a potential role in mental health.

According to Allen et al. (2013), BDNF is primarily produced by neurons themselves, with the highest levels found in the hippocampus, cortex, cerebellum, and brainstem. BDNF is widely expressed throughout the brain, with particularly high levels in regions implicated in learning and memory, such as the hippocampus and cerebral cortex. It plays a crucial role in synaptic plasticity, the ability of synapses to strengthen or weaken in response to experience (Schindowski, Belarbi, & Buée, 2008). This neurotrophin promotes the formation of new synapses, enhances synaptic transmission, and increases neuronal excitability, thereby facilitating learning and memory processes. Importantly, BDNF levels are tightly regulated by neuronal activity, with synaptic stimulation leading to increased BDNF expression and release.

Deficiencies in BDNF, even if not the initial trigger for disease onset, can escalate neurodegeneration, synaptic dysfunction, neuronal loss, cell demise, and cognitive decline, leading to symptoms of neurological disorders like dementia and AD (Giacobbo et al., 2019). Multiple mechanisms, including oxidative stress, inflammation, and neurodegeneration, contribute to this decline (Zuccarini & Cattaneo, 2009). Reduced BDNF levels, as noted by Bekinschtein et al. (2014), correspond to diminished neuroplasticity, impairing cognitive function and memory by limiting the brain's adaptability and learning capacity. Wurzelmann et al. (2017) have further highlighted that decreased BDNF levels correlate with reduced neurogenesis in the hippocampus, inhibiting the brain's ability to replace damaged cells and promote healing. Additionally, insufficient BDNF increases neuronal susceptibility to damage and death, intensifying neuronal vulnerability (Zuccarini & Cattaneo, 2009), and are associated with both normal and pathological aging as well as psychiatric disease such as dementia (Miranda et al., 2019).

3. The Intertwined Relationship of ACh and BDNF in Dementia

ACh and BDNF have a complex feedback loop that results from their nuanced interaction. This goes beyond a simple parallel relationship. Research (e.g., Glowacka et al., 2022; Hachisu et al., 2015; Yoon et al., 2022) indicates that ACh increases the expression of BDNF genes, which raises BDNF levels and improves neuronal health. This process is known as *ACh-stimulated BDNF production* (Pang & Lu, 2004). However, cholinergic neurons are supported in their survival and function by BDNF, which subsequently indirectly raises ACh levels (Niewiadomska et al., 2011). In other words, this implies that dementia is a vicious cycle. On the contrary, cholinergic projection decline which reduces ACh cause a fall in BDNF levels (Pang & Lu, 2004). Memory and cognitive functions are impacted by such decreased ACh resulting from neurodegeneration while neurons at the hippocampus as neurogenesis will be reduced (Wurzelmann et al., 2017). Heightened susceptibility to injury hastens the deterioration of neurons and exacerbates cognitive ageing.

The Interplay between Educational Therapy, BDNF and Acetylcholine

Pharmacological therapeutic approaches, such as acetylcholinesterase inhibitors like donepezil, are known to increase BDNF levels and promote synaptic plasticity (Korabecny et al., 2019). However, the focus of this paper is on non-pharmacological intervention strategies like physical exercise, cognitive training, and social engagement, which fall under the umbrella of educational therapy (ET) in dementia treatment. According to Chua and Chia (2023), “[U]nder the purview of the World Health Organization (WHO), ET has been officially recognized and classified under the diagnostic code 93.82 since 1986 in the International Classification of Diseases, Clinical Modifications-Ninth Edition-Clinical Modification, Volume 3 (ICD-9-CM, Vol. 3) (World Health Organization, 1986)” (p. 5). ET involves personalized strategies addressing cognitive and emotional challenges. It can be adapted to help individuals maintain cognitive function through tailored exercises, memory aids, and communication techniques, thereby improving their quality of life and potentially slowing cognitive decline.

These educational therapy-based interventions (ETbl), including physical exercise, cognitive training, and social engagement, have been shown to enhance cholinergic function and improve cognitive outcomes in dementia patients (Del Arco et al., 2007). Several fMRI studies (e.g., Lima et al., 2014; Nguyen et al., 2019; van Praag et al., 2000) have shown that enriched environments with these activities activate brain regions associated with the cholinergic system, promoting cognitive skills, memory, learning, attention, synaptic plasticity, and neural connectivity.

Activities such as participating in educational programs, learning new skills, solving puzzles, and regular aerobic exercise also increase BDNF expression and enhance cholinergic function (Cotman & Berchtold, 2002; Novkovic et al., 2015; van Praag et al., 2000). Additionally, social support and engagement contribute to increased BDNF expression and improved neuronal health (Cao et al., 2017).

These non-pharmacological ETbl activities are integral parts of dementia treatment programs, playing a significant role in increasing cholinergic transmission and BDNF levels (Fabel et al., 2009) by promoting neuronal survival and synaptic plasticity (Cotman & Berchtold, 2002). By understanding the cognitive roles of different brain regions affected by dementia, educational therapists working with these patients can develop targeted interventions to optimize learning and cognitive functioning. These interventions include enhancing memory encoding and retrieval, improving executive functions, enhancing sensory integration and spatial reasoning abilities, providing memory aids and language therapy techniques, and offering visual support and rehabilitation.

In addition, there are five other examples (see Marim et al., 2013; Thinnes & Padilla, 2011, for additional information) of how ETbl activities can be applied in dementia treatment focusing on different parts of the brain as follows:

1. The hippocampus plays a crucial role in memory consolidation (Pronier, Morici, & Girardeau, 2023). The ETbl activities aim at enhancing memory encoding and retrieval can be beneficial.
2. Frontal lobe impairment may affect executive functions (e.g., planning and decision-making) (Hodges et al., 1999). The ETbl strategies focus on improving organization and problem-solving skills.
3. Parietal lobe involvement can lead to difficulties with spatial awareness and sensory processing (Jacobs et al., 2011; Zhang et al., 2023). Hence, the ETbl activities aim to enhance sensory integration and spatial reasoning abilities.

4. Temporal lobe damage can impact memory formation and language processing (Hodges et al., 1999). Therefore, memory aids and language therapy techniques are incorporated in ETbl activities.
5. Occipital lobe dysfunction (see Uhlhaas et al., 2008) may result in visuospatial disturbances (e.g., visuospatial dysgnosia) and impairments in visual processing (Pal et al., 2016), indicating the need for visual support and rehabilitation to be included as ETbl activities in the dementia treatment program.

By understanding the interplay between BDNF and ACh, the cognitive roles of the different regions of the brain and how dementia affects them, implementing ETbl activities in dementia treatment can help to optimize learning and cognitive functioning for such patients.

Limitations of Educational Therapy in Dementia Treatment

However, non-pharmacological approaches such as educational therapy-based interventions (ETbl) for dementia treatment (Marim et al., 2013; Thinnes & Padilla, 2011), while beneficial, have their limitations, too. Here are just five examples to explain the limited application of ETbl activities as follows:

1. Hippocampus Damage (see Gulyaeva, 2019): Dementia often involves hippocampal damage, affecting memory formation and retrieval. ETbl activities may struggle to address memory deficits caused by hippocampal dysfunction.
2. Temporal Lobe Deficits (see Snowden et al., 2018): The temporal lobes, including the hippocampus, play a crucial role in memory and learning. Damage to these areas can hinder the effectiveness of ETbl activities aimed at cognitive enhancement.
3. Frontal Lobe Dysfunction (see Neary et al., 1988): Dementia frequently involves frontal lobe dysfunction, impacting executive functions like planning, organizing, and decision-making. ETbl activities may not fully address these deficits, limiting its effectiveness in improving daily functioning.
4. Parietal and Occipital Lobe Involvement (Brand & Markowitsch, 2008): Dementia can also affect the parietal and occipital lobes, impairing sensory processing, spatial awareness, and visual perception. ETbl activities may struggle to address these impairments adequately.
5. Progressive Nature of Dementia (Geschwind, 2016; Geschwind et al., 2008): Dementia is often progressive, leading to ongoing decline in cognitive function. While ETbl activities can provide short-term benefits, its long-term efficacy may be limited as the disease advances.

In summary, while educational therapy-based interventions can offer some benefits for individuals with dementia, its effectiveness may be constrained by the specific deficits associated with hippocampal and lobar dysfunction, as well as the progressive nature of the disease. Complementary approaches, such as pharmacological interventions and support for caregivers, may be necessary to provide comprehensive care for individuals with dementia.

Conclusion

In summary, dementia presents a multifaceted challenge involving the interplay of neurotransmitter dysfunction, neurotrophic support deficits, and regional brain degeneration. From the vulnerability of cholinergic neurons in the basal forebrain to the diverse manifestations across the four lobes of the brain, the complexity of dementia underscores the importance of comprehensive understanding and targeted educational therapy-based interventions. By elucidating the roles of acetylcholine, BDNF, and lobar involvement, researchers and healthcare professionals are better equipped to develop innovative treatments and personalized care strategies. Through collaborative efforts focused on preserving cognitive function, addressing behavioral symptoms, and providing tailored support, we can strive towards enhancing the quality of life for individuals affected by dementia as well as the psychosomatic wellness of their caregivers.

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Paper 5

Navigating Educational Therapy: A Case Study of a 10-year-old Boy with Autism

Harjit SINGH PDCSS (Protect & Rehab), HCIAu, CIAu, Cred.SNCP, Cred.SNET, MIACT
Educational Therapist & Special Needs Community Practitioner
Merlion Paediatric Therapy Clinic, Singapore

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Abstract

This short paper explores the journey of Alex (not his real name) and his parents as they navigate the challenges of Autism Spectrum Disorder (ASD) diagnosis and management. Initially, the child's parents sought professional guidance due to Alex's difficulties in social interactions and communication. A comprehensive evaluation confirmed his diagnosis using standardized assessment tools. The family embarked on understanding and managing Alex's unique needs, particularly within educational therapy. Utilizing a 7-step case management system, the author of this paper delves into the experiences, challenges, and successes encountered by the child and his parents throughout the process.

Keywords: Autism spectrum disorder, ASD diagnosis, Educational therapy, Case management system, Social interactions.

Introduction

Alex (not the real name), a 10-year-old boy diagnosed with autism spectrum disorder (ASD), is navigating the case management system (CMS) of the educational therapy (EdTx) (see Liu, Xie, & Deng, 2023, for detail) with his parents, Mr and Mrs Mark and Sarah (not the real names). This case study sheds light on the challenges or problems they face and the strategies employed and/or solutions suggested to enhance Alex's educational therapy experience.

Background

Alex's parents sought professional guidance when they noticed his difficulties in social interactions, repetitive behaviors, and challenges in communication. A comprehensive evaluation done by a psychologist in private practice confirmed his diagnosis of ASD through the administration of the Autism Diagnostic Observation Schedule-Second Edition Module 2 (ADOS-2 Module 2; Lord et al., 2012) and the Autism Diagnostic Interview-Revised (ADI-R; Rutter, LeCouteur, & Lord, 2003). The family then embarked on the journey of understanding and managing Alex's unique needs, particularly within the framework of the educational therapy.

Steps taken in the Case Management System within Educational Therapy

The Case Management System (CMS) within the context of educational therapy (EdTx) (see Figure 1) involves the following seven key stages (also see Liu, Xie, & Deng, 2023, for more detail):

Step #1. Case measurement, i.e., screening (e.g., the Prodromal Screener for Autism Spectrum Condition/PS-ASC; Merlion Paediatric Healthcare Group, 2023) and assessment (e.g., ADOS-2 and ADI-R) to prepare a Case Review Report (CRR) for Alex.

Step #2. Case consultation, i.e., reviewing of screening and assessment results (see Kempson, 1978, for detail) reported in the CRR to determine the issues of concern, and sharing the findings reported in the CRR with the consultees, usually the primary caregivers (i.e., Alex's parents) and/or the client (i.e., the child himself).

Step #3. Case collaboration, i.e., upon verbal and/or written agreement by the consultees (i.e., caregivers and/or client) and relevant professionals (e.g., an educational therapist, a speech-language therapist and an occupational therapist) are assigned to look at the case, where “[D]iscipline-specific contributions are discussed in a multidisciplinary context” and “[A]ll clinicians have an obligation to maximize client autonomy and participation in decision-making” (Zuscak, Peisah, & Ferguson, 2016, p. 1107).

Step #4. Case treatment design, i.e., developing a one-year individualized treatment program (ITP) with its annual aim, semestral goals and 4-term objectives from which the individualized education plans (IEPs) will be derived (White, 2022; Yell & Stecker, 2003). The criteria for the ITP and IEP are set by the agency that is managing the case.

Step #5. Case treatment implementation, i.e., based on what has been provided and recommended in the ITP, the professionals assigned to follow up the ITP with their respective IEPs will carry out their own intervention plans as well as to monitor the child’s progress throughout the intervention period, e.g., the speech-language therapist will focus on social communication skills in the IEP, while the educational therapist will work on the child’s learning skills in another IEP (see Johnston, 1984, for an example of an ASD case).

Step #6. Case evaluation, i.e., at the end of the intervention period (usually after three months or one term of 10 weeks), a formative assessment is done to determine if the target outcomes of the respective IEP have been attained (VanDerHeyden, Witt, & Gilbertson, 2007; Wesson, 1982).

Step #7. Case alignment, i.e., this takes place at the end of a respective IEP (Yell & Stecker, 2003; also see Johnston, 1984, for an example of an ASD case) and it typically involves reviewing and ensuring that the goals and objectives set for the client align with his/her specific needs and educational requirements (Flannery & Hellemn, 2015). It is a process of verifying that the strategies, accommodations and services outlined in the IEP are consistent with Alex’s ITP and intended to support his/her academic and developmental progress .

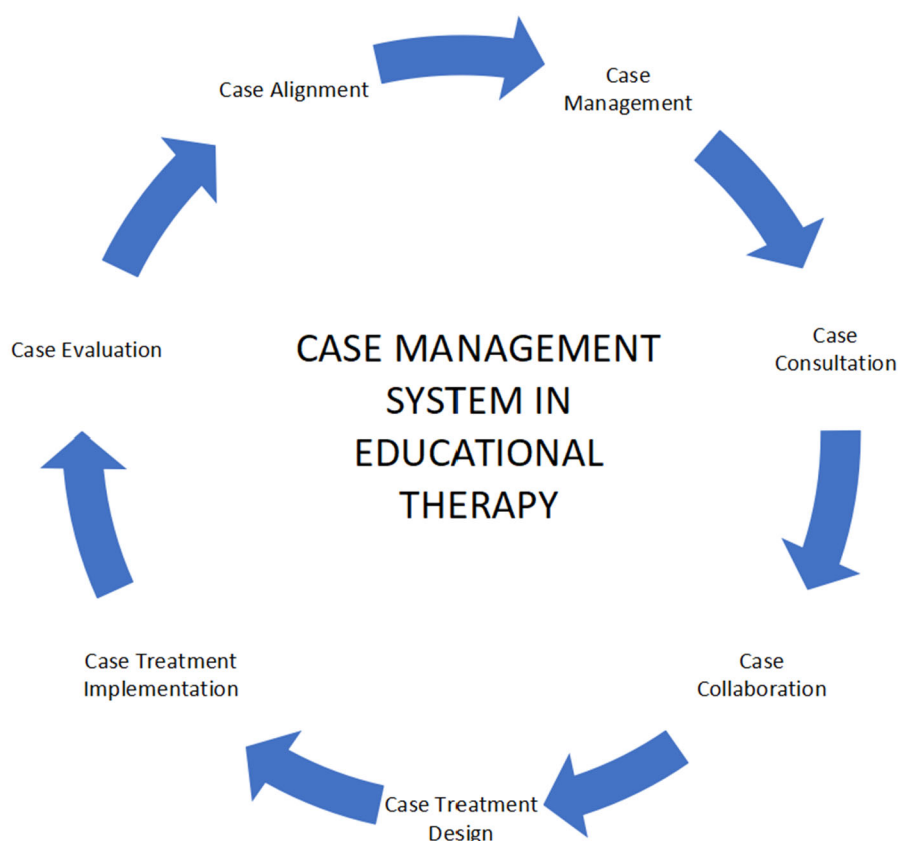


Figure 1. Case Management System in Educational Therapy

Challenges in the Case Management System within Educational Therapy

Challenge #1. Individualized Treatment Program (ITP) Development:

Key problem: Designing an individualized treatment program (ITP) for Alex poses challenges due to the heterogeneity of ASD symptoms and individual differences between or among children with ASD (Pua et al., 2021; Uljarević et al., 2017). Tailoring interventions to address specific needs, communication styles, and sensory preferences is crucial.

Author's suggested solution: A multidisciplinary approach, including input from teachers, speech therapists, occupational therapists, and behavioral specialists, is needed. Regular dynamic assessments and treatment adjustments to the ITP based on the child's progress can enhance its effectiveness.

Challenge #2. Individualized Education Plan (IEP) Development:

Key problem: Crafting an individualized education plan (IEP; Jozwik, Cahill, & Sánchez, 2018) tailored to Alex's needs proved challenging due to the diverse nature of ASD (see Johnston, 1984, for an example of an ASD case).

Author's suggested solution: Collaborative efforts between Alex's parents, teachers, and special education professionals were essential in developing a customized plan (i.e., IEP) that addressed his specific learning requirements.

Challenge #3. Communication Barriers:

Key problem: Alex's limited communication skills posed hurdles in expressing his needs and understanding instructions (Koegel & Ashbaugh, 2017).

Author's suggested solution: Implementing augmentative and alternative communication (AAC) tools, such as visual schedules and communication boards, facilitated effective communication both at home and in school or classroom.

Challenge #4. Social Integration:

Key problem: Alex struggled with social interactions (a challenging issue often seen in children with ASD), leading to feelings of isolation among his peers (Little, 2017).

Author's suggested solution: The inclusion of social skills training in his therapy plan (i.e., ITP and/or IEPs) and collaboration with a peer support system promoted a more inclusive environment, fostering positive relationships among students.

Challenge #5. Sensory Sensitivities:

Key problem: Alex exhibited sensitivities to sensory stimuli, impacting his ability to concentrate in a traditional classroom setting (see Robertson & Simmons, 2013).

Author's suggested solution: The integration of sensory-friendly accommodations, including a quiet space and sensory tools, enhanced his comfort and focus during learning activities.

Challenge #6. Consistent Monitoring and Adjustment:

Key problem: Regularly assessing Alex's progress through dynamic assessment (e.g., Autism Behavior Checklist/ABC; Krug, Arisk, & Almond, 1980) and adjusting interventions proved essential but resource-intensive.

Author's suggested solution: Establishing a close partnership between parents and educators enabled continuous monitoring, allowing for prompt adjustments to the educational therapy plan as needed. This is also known as therapeutic alliance (Hougaard, 1994).

Outcomes and Recommendations

Through concerted efforts from all stakeholders (i.e., the client, the primary caregivers, the teachers and the therapists) involved in the case management system (CMS) of the educational therapy (EdTx) (see Liu, Xie, & Deng, 2023, for more information of the process) that was provided for Alex, the child showed notable progress in his academic and social development. His parents actively participated in psychoeducational workshops conducted by the child's assigned therapist and/or counselor (Chia & Chia, 2015) to better understand and support his needs, while his school/class subject teachers received ongoing professional development to enhance their capacity to address diverse learning styles of children with ASD.

Parents of special needs children often face unique challenges and stressors that can impact their mental health and well-being (Benn et al., 2012; Pachița & Gherguț, 2023). Hence, it is better for these parents to go for

psychoeducational workshops. Psychoeducation provides them with valuable information, coping strategies, and support to better understand their child's condition, navigate the healthcare system, manage their own emotions, and advocate effectively for their child's needs (Tapias et al., 2021). It can also help them develop realistic expectations and build resilience, ultimately improving their overall quality of life and their ability to provide effective care for their child.

Recommendations for the CMS in EdTx include continued training for teachers on ASD awareness, increased resources for sensory-friendly accommodations, and fostering a more inclusive and understanding the child's school culture and/or class subculture (see Horsman, 2022, for more detail).

Conclusion

Alex's case underscores the importance of a collaborative and holistic approach in navigating the case management system (CMS) within the context of educational therapy (EdTx) for a child with autism like him (see Liu, Xie, & Deng, 2023, for detail). By addressing the unique challenges faced by both the child (client) and parents (primary caregivers), with professional input from the therapist and counselor, in a collaborative consultation or therapeutic alliance (see Chia & Chia, 2015, for more detail) a more supportive and inclusive learning environment can be established, promoting the overall well-being and development of Alex – a child with ASD.

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Titbits for Educational Therapists

FOOD FOR THOUGHT ...

- ***The Five Domains in Educational Therapy***

The professional field of educational therapy typically covers a range of domains aimed at addressing academic and learning challenges. There are five key domains, each with three subdomains respectively, in the specialized field of educational therapy, and they are briefly described below:

1. Cognitive Domain:
 - a) Memory: Short-term memory, long-term memory, working memory.
 - b) Processing: Visual processing, auditory processing, processing speed.
 - c) Executive Functioning: Planning and organization, time management, impulse control.
2. Academic Domain:
 - a) Reading: Phonemic awareness, decoding, comprehension.
 - b) Writing: Handwriting, spelling, composition.
 - c) Mathematics: Number sense, operations, problem-solving.
3. Attention and Focus Domain:
 - a) Sustained Attention: Ability to maintain focus over time.
 - b) Selective Attention: Ability to focus on specific stimuli while ignoring distractions.
 - c) Divided Attention: Ability to focus on multiple tasks simultaneously.
4. Social-Emotional Domain:
 - a) Self-regulation: Emotional regulation, stress management, self-control.
 - b) Social Skills: Communication, cooperation, empathy.
 - c) Self-esteem: Confidence, self-efficacy, self-worth.
5. Behavioral Domain:
 - a) Motivation: Intrinsic motivation, extrinsic motivation, goal-setting.
 - b) Task Persistence: Perseverance, resilience, grit.
 - c) Behavioral Self-Management: Self-monitoring, self-reinforcement, self-correction.

- ***Can Board-Certified Educational Therapists assess and diagnose learning disabilities or disorders?***

Board-certified educational therapists are often qualified to assess and diagnose certain learning disabilities or disorders within their scope of practice. Here are some pros and cons:

Pros:

1. Expertise: Educational therapists have specialized training and expertise in understanding learning difficulties and designing appropriate interventions.
2. Holistic approach: They often take a holistic approach, considering not just academic factors but also emotional and behavioral aspects.
3. Familiarity with educational systems: They are well-versed in the educational system and can provide tailored recommendations for accommodations and support within that framework.

Cons:

1. Scope limitations: Some educational therapists may not have the extensive training or legal authority to formally diagnose certain disorders. They may need to refer clients to other professionals for formal diagnosis.
2. Legal constraints: In some jurisdictions, only certain professionals, such as psychologists or medical doctors, have the legal authority to diagnose specific disorders.
3. Lack of medical expertise: Educational therapists may not have medical training to identify underlying medical conditions that can contribute to learning difficulties.

In summary, while board-certified educational therapists can provide valuable assessments and interventions for learning difficulties, they may not always have the authority or expertise to formally diagnose certain disorders. Collaboration with other professionals may be necessary for comprehensive evaluation and support.

- ***Role Differentiation between Educational Therapists & Educational Diagnosticians: Similarities & Differences***

Both educational therapists and educational diagnosticians work in the field of education, but they have distinct roles:

Similarities:

1. Both focus on assessing and addressing learning difficulties in students.
2. They collaborate with educators, parents, and other professionals to develop individualized plans to support students.
3. Both aim to improve academic performance and overall educational experience for students.

Differences:

1. Educational therapists primarily work directly with students to provide targeted interventions and support, often utilizing specific therapeutic techniques to address learning challenges.
 2. Educational diagnosticians focus more on conducting comprehensive assessments to identify learning disabilities, developmental delays, and other educational needs. They may not provide direct intervention but instead provide recommendations and support for educators and parents based on their evaluations.
 3. Educational therapists often have backgrounds in counseling, psychology, or special education, whereas educational diagnosticians typically have training in educational psychology, assessment, and special education law and regulations.
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- ***What is Art Educational Therapy?***

Art educational therapy is a form of therapy that combines art-making with psychological techniques to address emotional, cognitive, and behavioral challenges. It is used to enhance communication, improve self-esteem, manage stress, and promote personal growth and development.

Here are 10 strategies commonly used in art educational therapy, along with examples of activities:

1. *Expressive Art Techniques*: Encouraging clients to express themselves through various art mediums such as painting, drawing, sculpture, or collage.
Example Activity: Creating a visual journal where clients express their feelings and thoughts through images and words.
2. *Symbolism Exploration*: Exploring the symbolism behind the art created by clients to gain insight into their unconscious thoughts and emotions.
Example Activity: Drawing or painting a personal symbol representing a current challenge or aspiration.
3. *Narrative Art*: Using art to tell stories or create narratives that help clients explore and make sense of their experiences.
Example Activity: Creating a series of drawings depicting significant life events and discussing the story behind each image.
4. *Mindfulness Art*: Incorporating mindfulness practices into art-making to promote relaxation, reduce anxiety, and increase self-awareness.
Example Activity: Engaging in mindful coloring, focusing on the sensory experience of applying color to paper without judgment.
5. *Gestalt Art*: Utilizing art to explore the here-and-now experience and foster awareness of the present moment.
Example Activity: Creating a piece of art that represents the client's current emotions and sensations in the body.
6. *Therapeutic Metaphor*: Using art as a metaphorical tool to explore and understand complex emotions or conflicts.
Example Activity: Sculpting clay to represent internal struggles and then reshaping it to symbolize the process of growth and transformation.

7. *Emotion Regulation Techniques*: Using art to identify, express, and regulate emotions in a safe and creative way.

Example Activity: Creating a series of abstract paintings to explore different emotions, focusing on color and texture to convey intensity.

8. *Art-Based Problem-Solving*: Using art-making as a means to explore and generate solutions to personal or interpersonal challenges.

Example Activity: Collaboratively creating a visual representation of a problem and brainstorming possible solutions through art.

9. *Body-Mind Integration*: Incorporating movement and somatic experiences into art-making to connect the mind and body.

Example Activity: Using dance or movement to create lines and shapes on a large canvas, exploring how physical expression can inform artistic creation.

10. *Artistic Exploration of Identity*: Using art to explore aspects of personal identity, such as cultural background, gender, or sexuality.

Example Activity: Collaging images and words that represent different facets of the client's identity and discussing the significance of each element.

These strategies and activities can be tailored to meet the specific needs and goals of each client, providing a versatile and effective approach to therapy.

- **Stress + Anxiety + Depression = SAD Syndrome**

Stress (S), anxiety (A), and depression (D) often interplay, forming what is commonly known as the stress-anxiety-depression syndrome (SADS). This syndrome is characterized by a complex interaction between these three factors, each exacerbating the other in a vicious cycle.

Stress serves as a trigger, activating the body's fight-or-flight response. When stress becomes chronic or overwhelming, it can lead to anxiety as individuals constantly anticipate future threats or catastrophize events. Anxiety, in turn, further exacerbates stress by heightening physiological arousal and perpetuating the perception of threat.

Depression often accompanies chronic stress and anxiety. Prolonged exposure to stress hormones can disrupt neurotransmitter balance, leading to depleted levels of serotonin and dopamine, which are associated with mood regulation. Feelings of hopelessness, worthlessness, and low energy characteristic of depression can intensify the experience of stress and anxiety, creating a self-reinforcing cycle.

Challenges in managing SADS arise due to its multifaceted nature:

1. *Complexity of Diagnosis*: Symptoms of stress, anxiety, and depression overlap significantly, making it difficult to distinguish between them. Misdiagnosis or underdiagnosis is common, leading to inadequate treatment.

2. *Treatment Resistance*: Conventional treatments targeting one aspect of SADS may be insufficient due to the interconnected nature of stress, anxiety, and depression. Addressing one component without considering others often yields limited effectiveness.

3. *Individual Variability*: SADS manifests differently in each individual, requiring personalized approaches to treatment and management. What works for one person may not work for another, necessitating a comprehensive assessment of each person's unique circumstances.

4. *Stigma and Perception*: Stigma surrounding mental health disorders may prevent individuals from seeking help or adhering to treatment regimens. Addressing societal attitudes and promoting mental health awareness are crucial in overcoming this barrier.

5. *Relapse and Recurrence*: SADS is often chronic and recurrent, requiring long-term management strategies to prevent relapse. Maintenance therapies, lifestyle modifications, and ongoing support systems are essential in sustaining recovery.

In conclusion, understanding the intricate interplay between stress, anxiety, and depression is vital in effectively managing SADS. Overcoming the challenges associated with this syndrome requires a holistic approach that addresses its multidimensional nature and acknowledges the individuality of each person's experience.

• **A Comprehensive Approach to Supporting Clients with SAD Syndrome**

The Holistic Support Approach (HAS) is a comprehensive way to address the multidimensional nature of Stress-Anxiety-Depression Syndrome (SADS) and also to acknowledge a client's individuality typically involves the following:

1. Mindfulness and Relaxation Techniques:

- a) *Mindful Breathing*: Engage in deep breathing exercises, such as diaphragmatic breathing or box breathing.
- b) *Progressive Muscle Relaxation*: Practice tensing and relaxing different muscle groups, starting from your toes and working up to your head.
- c) *Yoga*: Participate in yoga classes or follow online tutorials for gentle stretching and relaxation.

2. Physical Activity and Exercise:

- a) *Walking or Jogging*: Take a brisk walk or go for a jog in nature to boost endorphins and reduce stress.
- b) *Dance Therapy*: Attend dance classes or simply dance to your favorite music at home to elevate mood and alleviate symptoms of depression.
- c) *Strength Training*: Incorporate strength training exercises using bodyweight or weights to improve overall physical health and well-being.

3. Nutritional Support:

- a) *Balanced Diet*: Consume a variety of fruits, vegetables, whole grains, lean proteins, and healthy fats to support brain function and mood regulation.
- b) *Hydration*: Drink plenty of water throughout the day to maintain hydration levels, which can impact mood and cognitive function.
- c) *Supplementation*: Consider adding supplements like omega-3 fatty acids, vitamin D, and magnesium, which have been linked to improved mood and reduced anxiety.

4. Therapeutic Interventions:

- a) *Cognitive Behavioral Therapy (CBT)*: Engage in structured therapy sessions to challenge negative thought patterns and develop coping strategies.
- b) *Art Therapy*: Explore creativity through painting, drawing, or other artistic expressions as a means of processing emotions and reducing stress.
- c) *Music Therapy*: Listen to or create music as a way to express emotions, relax the mind, and enhance mood.

5. Social Support and Connection:

- a) *Support Groups*: Participate in support groups either in-person or online to connect with others experiencing similar challenges and receive encouragement.
- b) *Quality Time with Loved Ones*: Spend time with friends and family engaging in activities that bring joy and foster a sense of belonging.
- c) *Volunteer Work*: Get involved in volunteer opportunities to give back to the community and establish meaningful connections with others.

6. Sleep Hygiene:

- a) *Establishing a Routine*: Maintain a consistent sleep schedule by going to bed and waking up at the same time each day, even on weekends.
- b) *Creating a Relaxing Environment*: Create a calm and comfortable sleep environment by minimizing noise, light, and electronic distractions.
- c) *Limiting Stimulants*: Avoid consuming caffeine and other stimulants close to bedtime to promote better sleep quality.

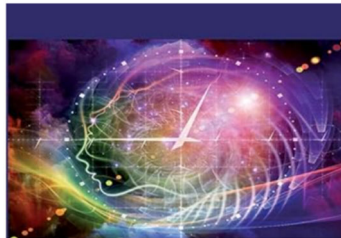
7. Self-Care Practices:

- a) *Meditation*: Set aside time each day for meditation to quiet the mind, reduce stress, and enhance self-awareness.
- b) *Journaling*: Write down thoughts, feelings, and experiences in a journal to process emotions and gain insight into triggers.

- c) *Engaging in Hobbies*: Dedicate time to activities you enjoy, whether it is gardening, cooking, reading, or crafting, to cultivate a sense of fulfilment and pleasure.

Contributed & shared by members of the International Association of Counselors & Therapists-Singapore Chapter

BOOK REVIEWS

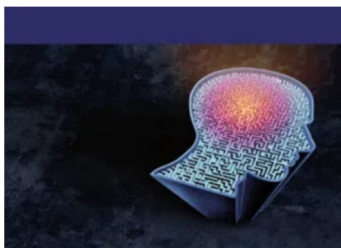


Jennifer Erin Camulli
Guo-Hui Xie
**Tuberous Sclerosis Complex
with Syndromic Autism**
A Case review of an Autistic Savant Artist

 **LAMBERT**
Academic Publishing

Camulli, J. E., & Xie, G. H. (2020). *Tuberous sclerosis complex with syndromic autism: A case study of an autistic savant artist*. Beau Bassin, Mauritius: Lambert Academic Publishing.

"Tuberous Sclerosis Complex with Syndromic Autism: A Case Study of an Autistic Savant Artist" by J.E. Camulli and G.H. Xie offers a comprehensive exploration of the intersection between tuberous sclerosis complex (TSC) and syndromic autism based on their case study of an autistic savant artist. Through meticulous research and clinical insights, the authors shed light on the complex relationship between these two conditions, providing valuable information for clinicians, researchers, and families affected by TSC and autism spectrum disorders. This book serves as an indispensable resource for understanding the underlying mechanisms, diagnostic challenges, and potential therapeutic interventions for individuals with TSC and syndromic autism.



Boon Hock LIM
Guo-Hui XIE
Ban Meng LEE
**Russell-Silver Syndrome
with Syndromic Autism**
A Diagnostic Case Study of a Young Adult

 **LAMBERT**
Academic Publishing

Lim, B. H., Xie, G. H., & Lee, B. M. (2019). *Russell-Silver syndrome with syndromic autism: A diagnostic case study of a young adult*. Beau Bassin, Maritius: Lambert Academic Publishing.

In this compelling case study, Lim, Xie, and Lee delve into the complex intersection of Russell-Silver Syndrome (RSS) and syndromic autism through the lens of a young adult patient. Through meticulous examination and analysis, the authors provide an insightful exploration of the diagnostic challenges and clinical manifestations inherent in this rare co-occurrence. Drawing on a combination of medical expertise and psychological insight, the book offers valuable insights into the intricate interplay between genetic predispositions and neurodevelopmental disorders, shedding light on potential pathways for tailored interventions and holistic patient care. An indispensable resource for clinicians, researchers, and educators seeking a deeper understanding of rare syndromes and their associated complexities in diagnosis and management.

