

# ENGLISH SUMMARY

This study was designed to establish if it is possible to assess attention as music therapy in a reliable and valid manner.

Music processing is a complex function that recruits several brain structures in both hemispheres, according to the characteristics of the music, the musical expertise of the therapist the developmental characteristics of the individual, and the task (Levitin & Tirovolas, 2009; Tirovolas & Levitin, 2011). Some of the processes related to music such as musical attention, categorization, memory and feature detection have been described to be higher cognitive functions in music, involving specific neural networks (Levitin, 2012). Attention is an important function in human development, taking part in several processes of cognitive functioning. Previously thought to be a unitary process, it is currently better defined as a processing system (Spikman & Van Zomeren, 2010), implicating several brain structures and systems. According to its function and operating mechanisms, Cohen (2014), presents a classification of attention types including: focused, selective, divided, sustained, and effortful attention. In psychology and neuropsychology, both quantitative and qualitative methods for assessing attention have been widely used.

In Music Therapy, even though attention is a frequent reason for referral and indeed a treatment goal, there is a lack of reliable or valid methods of assessment of attention when working with children with learning disabilities or developmental challenges. Research evidence points to the potential to examine and develop attention skills through music therapy. In terms of specialized modules of attention for music processing, Janata, Tillmann, and Bharucha (2002), found that the areas recruited when attending to music are not specific for music, but general areas implicated in several processes including attention. Analyzing the attentional response to music, Koelsch (2009) mentions that listening to music automatically captures activity in attention networks. Furthermore, when comparing music stimuli and spoken or play stimuli, music stimuli has shown to have better capacity to recruit attention networks (Wolfe & Noguchi, 2009), and improve attentive behaviors (Robb, 2003). Other researchers, while restating the enhancement of cortical arousal when attending to auditory stimuli, have also found that attention to familiar music generates a stronger response of cortical arousal, which is at the base of attention (De Jong, Toffanin & Harbers, 2010; Saupé, Widmann, Bendixen., Müller & Schröger 2009; Meltzer, Reichenbach, Braiman, Schiff, Hudspeth, & Reichenbach (2015). Two assessments of attention using music are found in the literature: The Music Based Attention Assessment for patients with traumatic brain injury (Jeung, 2013), and the Music Attentiveness Screening Assessment (Waldon, Lesser, Weeden & Messik, 2016)

This research study uses knowledge from the areas of neuropsychology, music psychology, music therapy assessment and clinical practice to design the Attention

Profile in Music Therapy assessment tool (APMT) and conducts a pilot study to establish reliability and validity of the of the tool.

The APMT is an assessment designed in Spanish Language, taking into account the context of clinical music therapy in Latin America. Its goal is to provide a baseline profile of children's attentional skills, as displayed in the music therapy setting. The structure of the assessment is similar to some commonly used session structures in clinical practice. Musical materials chosen take into account emerging knowledge from music psychology research regarding auditory processing and attentional functions, and include music composed for the assessment, children's familiar music, and improvisation. APMT items are classified into attention categories and complementary scales. The attention categories include: alert, divided, selective and sustained attention. The complementary scales include: motivation, relationship, overall performance, and impulsivity.

The first version of the APMT was used in a small pilot study, to obtain information regarding clarity of instructions, and content validity. Adjustments were implemented taking into account the researcher's experience, and feedback from other music therapists.

A second pilot study including 40 participants from Colombia and Argentina was conducted to examine inter-rater reliability, internal consistency, concurrent validity and construct validity of the second version of the APMT.

Results indicate that APMT is a reliable assessment tool. Inter-rater reliability scores using Fleiss Kappa and Krippendorf's alpha statistics ranged between 0.73 and 0.76 for the nominal variables. Coefficients for the ordinal variables, using Krippendorf's alpha ranged between 0.90 and 0.97. Inter-rater reliability between pairs of raters (clinician performing the assessment and each external rater), using weighted kappa statistics, ranged between 0.60 and 0.99. Cronbach's of the final item pool following Factor Analysis procedures was 0.739 indicating internal consistency.

Construct validity of the APMT, was evaluated through Exploratory Factor Analysis indicating multi-dimensionality of the data as evidenced by the extraction of several factors. Exploratory Factor Analysis identified six factors which were labeled using the construct of attention functions from the Mirsky attention model (Mirsky & Duncan, 2004) as themes: encode, stability, focus/execute, shift, sustain, and stability/control. Correlations between the Evaluación Neuropsicológica Infantil - ENI (Rosselli et al. 2004) and the APMT are not conclusive. Therefore, it is not possible to establish concurrent validity of the APMT. Sample size and data collection difficulties, characteristics of the tasks from both assessments, and differences concerning information gathering assessment models and collaborative assessment models were highlighted as possible difficulties to establish concurrent validity in the pilot study.

APMT will be adjusted according to pilot study results. Consequently, studies to establish validity and reliability of the adjusted version are recommended. According to this pilot study findings, a different approach to establish concurrent validity of the APMT is recommended, using the attention battery from the Mirsky Model, as well as comparisons with results on neuropsychological assessments framed on the qualitative approach.