

## INTERACTION CYCLE PSYCHOPEDAGOGICAL THE BODY AND SOUND AS STIMULATORS OF RELATIONAL PROCESSES IN YOUNG PEOPLE WITH SPECIAL EDUCATIONAL NEEDS

**Slavisa Lamounier**<sup>1</sup>

**Paulo Ferreira-Lopes**<sup>2</sup>

<sup>1</sup>Portuguese Catholic University – School of Arts and CITAR

[slavisa.lamounier@gmail.com](mailto:slavisa.lamounier@gmail.com)

<sup>2</sup>Portuguese Catholic University – School of Arts and CITAR

[pflopes@porto.ucp.pt](mailto:pflopes@porto.ucp.pt)

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### 1. INTRODUCTION

Inserted within the scope of the development of the digital musical instrument, called Digital Sock - a tool which sonic control is performed through the movement of the feet, and the interactional process involving the sound control, this document records the first results obtained from the analysis of the psych pedagogical interaction cycle that investigates the relationship between body and sound, with the new instrument as a stimulating device for communicational processes.

The analysis of the psycho-pedagogical interaction cycle was organized in two main phases:

a) The first phase refers to a psych pedagogical intervention with youngsters with special educational needs, in which we investigate how body movement and sound stimulus can benefit the development of communication and expression in children and young people with different diagnoses in special education.

b) The second phase refers to a Case Study, conducted with a 21-year-old man diagnosed with Autism Spectrum Disorder (non-verbal). This phase aims to analyze the stimulating capacity of Digital Sock during relationships and is subdivided into two other stages:

a) *sound and motor sensitization*, in which we perform different directed activities, involving the body and the sound, in search of the creation of a relational link between intermediate / participant;

b) *sound narratives and Digital Sock*, when we explore different body and musical narratives involving the Digital Sock.

The methodology used to collect / analyze data was participatory observation (in context) and content analysis (audiovisual material collected during the sessions). In the Case Study, we also collect written testimonials from the participant about their experience during the sessions.

The interpretation of the data was performed through the analysis of the movements, taking into account the spontaneous choice of the sound, sensory or sensory-musical stimulus, the gestural manifestation prioritized during the interactional processes and the main theories studied, among them: the formation of the gesture scenic (Laban, 1978); (Godard, 1995, after Michel, M. & Ginot, I., 1995); the idea that the body, being a means of communication of its own, is able to position itself critically in the face of everyday events (Katz & Greiner, 2005); the integration of music and body movement (Dalcroze, 1920); the playful practice (Lapierre, 1982), creative improvisation (Nordoff and Robins, 1977, 2007, 1971) and the belief that sound and music allow peer communication (Benzon, 1981).

In this article we will address the psych pedagogical intervention in its two phases, highlighting the methodology used, the data collected and the analysis performed. In the final part of the article, we will give an account of the results and conclusions of this paper.

## 2. ANALYSIS OF THE PSYCHOPEDAGOGICAL INTERACTION CYCLE

### 2.1 The Body and Sound: identifying interactions and new languages

The first phase of the practical intervention - "The Body and Sound: identifying interactions and new languages" aimed to investigate how body-sound stimulation could benefit the development of communication and expression in children and young people with different diagnoses within the scope of special education.

The intervention took place in June of 2016 and was invigorated in a multi-sensory environment, conceived with diverse sensorial stimuli (sounds, colors, lights, images, among others) that can be used individually or in combination - Sala Snoezelen.

The children and young people who participated in the intervention constituted a "sampling of convenience [to] use a group of individuals that is available or a group of volunteers" (Carmo & Ferreira, 1998, p.197) and were divided into two groups, organized by their ages:

- Group 1: the first group consisted of two eight-year-old boys (one with Attention Deficit Hyperactivity Disorder and another with Specific Language Impairment).
- Group 2: the second group was conceived by five youngsters between 12 and 24 years old (three with Trisomy 21 and two with Autism Spectrum Disorder).

We had a participatory sample of seven children / young people.

The methodology chosen for the development of this study prioritized participant observation and systematic observation as a research technique. The procedures used to document the data obtained involved a book of records, photographs and videos. A data sheet was developed to facilitate the annotation of the data observed in context. This worksheet has been organized into four key criteria and refers to the main activities developed:

*Table 1: Data Sheet - Phase 01 – Psycho Pedagogical Interactive Cycle*

| CRITERIA                | ACTIVITIES                              |
|-------------------------|---|
| free stimulation        | exploring space                         |
| initial interaction     | directed activities                     |
| interaction maintenance | maintenance or disposal of the activity |
| completion of tasks     | termination and resumption of activity  |

The interpretation of the data obtained in this first phase of the practical intervention revealed that:

a) **Initial choice of instrument (criteria 01 and 02):** most of the participants had as their initial choice an artifact already known and handled previously. This data showed that the construction of the gesture is closely linked to the individual experiences, and its manifestation is a momentary conclusion of stored memory.

b) **Maintenance / Disposition of the choice and transition between activities (criteria 03 and 04):** with regard to this item it was possible to observe a gestural tendency - with motor intentionality, sound or both (when conjugated with each other). This data shows the duality between body and sound: the body, while facilitating the understanding of the musical components through their

articular patterns, is stimulated musically during the interactional processes, being the expressive gesture, the particular representativity of the sonority apprehended.

## **2.2 Case Study: Musical Narratives and the Digital Sock**

### **2.2.1 Digital Sock**

Built with wearable technology, the Digital Sock has the sound control achieved through the movement of the feet. It was conceived in two versions, the first with sound samples (sampled sounds) and the second, a synthesizer (sinusoidal sound wave).

In the Case Study we used the first version of the instrument. Designed as a stimulating instrument for musical scenic narratives, the heel and finger sensors (pressure sensors) are responsible for producing sampled sounds (sound landscape). The sensors applied in the metatarsal region (also pressure), aim to modulate the sound projected by these two sound channels.

### **2.2.2 Case Study**

The second phase of the practical intervention, called "Musical Narratives and Digital Sock" refers to a Case Study, conducted with a 21-year-old man diagnosed with Autism Spectrum Disorder (non-verbal). This phase aims to analyze the stimulating capacity of Digital Sock during relationships and is subdivided into two other stages:

- a) sound and motor sensitization, in which we perform different directed activities, involving the body and the sound, in search of the creation of a relational link between dynamiser / participant - five encounters
- b) Digital Sock and narratives sound, when we will explore different corporal and musical narratives involving the Digital Sock - three encounters.

The sessions, held between November 2017 and March 2018, took place in rooms prepared to meet the objectives assumed at this stage of the research. Thus, the first five encounters (sensitization phase) occurred in dance halls, prepared with psychomotor material and with sound material. The last three meetings, aimed at the creation and elaboration of sound narratives and experimentation of the Digital Sock, took place at the School of Arts of the Portuguese Catholic University, in a studio equipped with a piano and a harpsichord, in which we added other sound stimuli and tools used for construction of sensory narratives.

The methodology used, similar to the first phase, prioritized participant observation and systematic observation. The criteria established for this second phase of the research are strongly anchored in the authors studied and relate to an action based on improvisation as a technical procedure, on the body-sound relationship as a means of expression and on playfulness as a pedagogical practice.

*Improvisation*, as a technical procedure, allowed an adequacy between the objectification of action and the individuality of the subject. It was possible during the whole intervention to change strategy whenever a loss of connection or abandonment of a proposed activity was observed. This facilitated relationships and allowed interest in the proposed activities to be maintained longer.

*Ludicity*, as a pedagogical model, showed to be able to cause greater involvement during the accomplishment of the tasks, increasing the capacity of simulation and resolution of problem situations. Activities involving psychomotor materials, such as activities with balls (in different sizes) and trampoline, provoked immersive reactions when experienced, becoming preferred (and often necessary) in moments of tension and excitement.

The *body-sound relationship* as a means of expression has shown to be able to stimulate creative processes and the development of critical and reflexive thinking. All the activities developed during the meetings prioritized the body-sound relationship.

The analysis of the interaction process focused on two musical narratives constructed during sessions with the Digital Sock, other sound instruments and psychomotor artifacts:

**a) narrative 01** - body-instrument-instrument-body, being:

body (participant); instrument (Digital Sock), another instrument (Piano and arch as psychomotor artifact) and body again (mediator)

**b) narrative 02:** body-instrument-body being:

body (participant); instrument (Digital Sock) and body again (mediator)

The analysis of **narrative 01**: (body-instrument-instrument-body) had as its chosen sound, the sound of the sea and the whistle of a ship (Digital Sock) and a composition at the piano (composed and interpreted by an artist who participated in the action). The body-sound relationship, as a result of this action, was represented by the participant (with the support of the mediator and a bow) by means of the swinging of the trunk, in a movement that resembled a boat to sail. In **narrative 02**: (body-instrument-body) the sound chosen for the Digital Sock was the sound of the heart to the heel and birds to the tip of the foot. On hearing the sound, the participant, stimulated by the mediator, reproduced with his hands the heartbeat in response to the sound heard.

The analysis of the narratives showed that the message propagated by the sock (the sonority) was understood as a reaction to the sound heard during the exercise (with individual encoding and decoding) and expressed through the eyes of the hands, facial expression and body balance - subtle movements, more visible than the broad movements.

### 2.3 Final Considerations

The analysis of the movements performed during the intervention showed that the interactional process happens in stages, and they concern the anticipation of the gesture (perception and observation of the medium), experimentation (handling, reflection, codification and decoding of perceived codes) and performance ideas, message). In all the cases studied (phase 01 and 02) it was possible to notice that, at different moments, the participants acted in these three stages, alternating the order with which it happened and the intensity propagated. This empirical data agrees with our theoretical perception about the study of scenic movements (Laban, 1978) and (Godard, 1995, postmodern of Michel, M. & Ginot, I., 1995), in which we conceive three attitudes with which the gestures are built: inner attitude (perception), psychological attitude (experimentation) and dialogic attitude (relationships).

By combining the activities involving the body and various stimuli (sensory and sound) we promote an explosion of sensations that are transmitted and perceived during the handling of the instruments, felt by the body itself and expressed during the relationships. Sound, in its complexity of timbres, cadence and rhythms, reaches different meaningful scales that are imprinted in our body, being, therefore, a stimulator of the interactional processes (Benenzon, 1981).

As a performance technique, creative improvisation (Nordoff and Robins, 1977, 2007, 1971) proved to be efficient because it allows adaptation during intervention with different diagnoses. Without rigidity in the acting procedure and based on dialogue, improvisation, when coupled with a playful practice (Lapierre, 1970) allows the creation of an interactive environment of great learning and drive for creative processes, which helps us to conclude that use of body and sound action strategies when used in a creative environment can contribute to the development of the expressive capacity of young people and children with Special Educational Needs (SEN), namely Autism Spectrum Disorder.

The sound landscape (Schafer, 1991), found in the Digital Sock, was able to stimulate the composition of sound narratives by means of a mechanism of activation of the individual memory, being this sound, expressed by means of a gestural semantics. During the construction of the musical narratives with the Digital Sock, we observed that the known sounds (heartbeat, sea, birds and ship whistle) worked with valves to activate the stored information flow. Upon being triggered, this information was corporately identified, deciphered, grouped and restructured into concepts (personal meanings) so that they could be transmitted through the observed body movements. This process, which we call the interactional cycle, is composed of a cyclical current of meaning-making and is what defines the communicational process. In this sense, it is possible to affirm that the Digital Sock has characteristics that favor the decrease of the communicational and relational damages of young people with Autism Spectrum Disorder. These instrumental peculiarities are not limited to the instrument's sound composition, but also affect its physical nature. Smooth and comfortable thanks to the material that the structure (Neoprene) and easy handling, due to the intuitive sound control, the Digital Sock allowed a fun, creative and meaningful experience, not only for the participants, but also great learning for the mediator

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