

Adaptive tools and methods to improve children's learning to play

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Key words: development of children with disabilities, play, education, rehabilitation.

1. Children with disability and play activities

Every child with disability has the right to play like any other child. This right is guaranteed also by the *Convention on the Rights of Persons with Disabilities*, which includes as a guiding principle the respect for the evolving capacities of children with disabilities [9]. Play is in fact a fundamental mean for children's development and it constitutes the primary way to acquire cognitive, social and relational skills (see Vygotskij [8]). However, in contrast with the psycho-pedagogical paradigm (see Piaget [7]) according to which the child is the main actor of his/her own development, in the case of the child with impairments the clinical objectives are dominant in the educational and rehabilitation projects, almost changing the way childhood is perceived: in particular the natural expression of playfulness is underestimated. Therefore, in brief, children with impairments are hostages of their own diagnoses: they are primarily disabled, and then, perhaps, children. Indeed, because of their functional limitations, children with disabilities find several difficulties in beginning; developing and carrying out play activities in a natural way (see Besio [2,3]).

Children with severe cognitive impairments show problems in communicating and interacting with their peers. Usually, they do not develop enough imaginative items to sustain play with their peers and often prefer playing with younger children. Their play activities mainly consist of repeating the same patterns of actions finding many difficulties in more complex and articulated types of play such as symbolic or rule-based activities.

Autistic children's functional limitations hinder their enjoyment of play activities: they generally lack spontaneous interest in the world around them and focus on single objects in an almost locked-in situation rather than on what their peers do. Due to this behaviour autistic children hardly ever share their play experience with other children or adults unless being specifically prompted to do it.

Visually impaired children have no chances to participate in many play activities that their peers enjoy. Visual elements are in fact fundamental in most group activities: to facilitate an active participation these elements must be replaced by audio and tactile suggestions that visually impaired children can receive. The acquiring of spatial and motor skills, even through play at a young age allows them to become autonomous adults, and enjoy every kind of play activity and even play sports.

Children with motor impairments, almost paradoxically, enjoy activities that involve movement even passively, like when other people push their wheelchair to go fast and slow as if it was a bicycle. Their ability to play, however, is generally affected by the severity of motor functional limitations and the possible association with other types of impairments.

For all these cases, that are very general examples, the common risk is that these children lose interest in the world outside of them and give up on enjoying their freedom and their right to play in spite of the efforts made by adults in the familiar, educational and rehabilitation context.

2. Three ways to introduce children with disabilities to play

Even in the case of child with disability, play must primarily hold an entertaining function and only secondarily should it work as a background of educational and rehabilitation purposes organized by professionals. However, it is necessary to see play as a crucial activity in the

clinical, educational and rehabilitation practices so that even for children with impairments play can be the lead for the cognitive, emotional and social development of the child.

The development of a complete playful intention, in the case of a child with disabilities, is conquered through the following three ways.

1) Change the old education and rehabilitation paradigms. It is important to recognize that play is the main source of creativity and expression of the personality also for children with disabilities. The starting point should be the ability to understand, interpret and give value to children's proposals even in case of serious impairments. For this aim it is necessary to establish a virtuous adult-child dialogue. The adult should know the communication code of this dialogue by art so to address the specific functional limitations of the child. A model of intervention based on children's preferences and behaviours should be shared among education and rehabilitation professionals. This obviously implies a deep knowledge of the functional limitations related to the expressed impairments and forces the educator to develop a competence in creating a "pedagogical interaction" and act in the Zone of Proximal Development of the disabled child.

2) Adopt and use tools and contexts that facilitate playful behaviours. They concern the fields of: assistive technology ("special toys", adapted solutions); universal design (expert choice among the materials already on the market); design for all (products and environments that can be enjoyed by a broader audience) (Besio [1]).

3) Ensure the evolution of the complexity of the play abilities in children with disabilities. Usually a long repetitive process is necessary for these children to acquire new skills and when these skills are consolidated it often happens that they only want to keep repeating the same play situations over and over. The challenge for rehabilitation professionals then consists of handling with great accuracy the balance between the necessary exercise and the autonomous initiative of the child. The challenge also consists of checking with theoretical and practical knowledge the degree of prompt that is offered to the child and to master with specific attention the prompt fading process that returns autonomy to the main actor and ensures the overall development of the child with disability.

3. Broadening spaces of freedom

Many researchers have addressed these three ways from different perspectives giving specific importance to factors such as the environment, the educators, the rehabilitation professionals and the adults in general in facilitating play competence [4]. However an issue still remains open: how to describe and rule the prompts that professionals offer to children during play in order to produce an evolution in the play activity? How to describe and rule the prompt fading process that favours a greater autonomy in children's play? Is it possible to build a detailed classification of adult prompts during play activities involving children with disabilities? How to use this classification for educational and rehabilitation purposes? Our team recently conducted a pilot study involving four children affected by cerebral palsy at the "Fondazione Don Gnocchi" rehabilitation centre, Milan [6]. The goal was to investigate play sessions mediated by robots and guided by therapists. The study's aim was to answer questions regarding the role of rehabilitation professionals in making children acquire play skills for a specific activity. The analysis of the therapists' diaries and of video materials allowed singling out two categories of physical and verbal prompts given to children: a) a contribution aimed at helping the child in the problem solving process; b) a contribution aimed at keeping the child's attention focused on the activity.

As a result it was possible to notice how the use of prompts related to problem solving decreased from the first to the last play session in terms of number and intensity while the prompts related to attention remained constant throughout the sessions. Two findings regarding the notion of playfulness [5] can be derived from the study: on one hand the sessions do not constitute a sufficiently engaging playful activity for these children and the activity calls for continuous attention reminders by therapists. On the other hand though, it is possible to

conclude that the play activity proposed is effective for the acquisition of play competence because these children require less and less support by the therapists and learn how to play.

4. Conclusions

The connection between play and disability is not yet a well-defined research field, and for this reason there is still lack of a shared epistemological systematization in this domain. This work brings a contribution in this direction from a theoretical perspective and also proposes a possible assessment of professionals' role in letting technologies ease the acquiring of play skills derived from an empirical study.

The path traced by the pilot research will be further validated and developed with additional experiments that are currently underway. Although the findings are promising, clearly the main focus of research in the field of play and disability cannot be related just to collecting experimental results. It must be aimed at the establishment of an international network of researchers and practitioners who gather and disseminate knowledge and skills to all the subjects involved in the life context of the child with disability including families, rehabilitation and education professionals and also medical doctors.

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