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EDITORIAL

Teaching Communication Skills in Children and Adolescents with Severe To Profound Neurodevelopmental Disorders through Aided-Alternative and Augmentative Strategies

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Children and adolescents with severe to profound neurodevelopmental disorders (e.g., attention deficit hyperactivity disorders, autism, cerebral palsy, rare genetic syndromes) may have intellectual, motor, and sensorial delays. Additionally, they may experience communication difficulties and exhibit isolation, passivity, and withdrawal. Challenging behaviors (e.g., aggression, impulsivity, stereotypic movements, and tantrum behavior) may occur. Their clinical conditions may seriously hamper their social desirability, image, and status with deleterious outcomes on their quality of life [1-4]. To tackle this issue, one may refer to assistive technology-based rehabilitative programs (AT) [5,6]. Thus, AT-based interventions include any technological aid combined with specific tools and/or devices with adapted software capable of reducing and minimizing the existing gap between the individual abilities and the environmental requests [7-10]. Among AT-based treatments, aided-alternative and augmentative strategies (AAC) may be envisaged, which pursue the primary goal of enhancing and fostering communicative skills [11,12].

Different solutions are embedded within the aided-AAC strategies, depending on the individual's functioning and the rehabilitative goals [13]. For instance, a picture exchange communication system (PECS) protocol may be considered [14]. Otherwise, a vocal output communication device (VOCA) may be implemented [15]. Furthermore, a systematic comparison between PECS and VOCA to demonstrate the experimental control in children or adolescents with neurodevelopmental delays and communication disorders should be detailed [16]. Else, computerized hierarchical systems may be suggested to support independent request and choice of preferred items for leisure or academic purposes [17,18]. The hierarchy is justified by the need of minimizing unintentional responses [19]. Moreover, one may include literacy access through a keyboard emulator [20]. Smart-phones, GSM systems and adapted software may be adopted to ensure the communication with distant partner [21,22]. Tablets, IPAD, and IPOD are technological devices capable of enabling individuals with severe to profound developmental delays with an adapting responding and/or decreasing a challenging behavior contingently similarly to a microswitch-cluster technology [23,24].

Regardless of the technological option, AT and AAC-based interventions represent crucial educational and rehabilitative resources to promote self-determination and independence of children and adolescents with significant impairments. Thus, by using an AT-based device and/or aided AAC equipment, a participant with developmental disorders would play an active role towards the environment. Positive participation and constructive engagement could be relevantly fostered. Caregivers' burden should be meaningfully decreased accordingly [25]. Beneficial effects of the intervention on the participant's quality of life would be emphasized [26]. Although no specific rules exist, one may outline some helpful guidelines to consolidate the learning process. First, a plausible and adaptive behavioral response should be identified, which should be already available in the individual's repertoire, easily exhibited without

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effort. Second, a positive and highly rewarding stimulation to be contingently delivered should be adequately selected. Third, a suitable technological solution should be designed. Fourth, a systematic collection of the sessions once the program was started should be considered. Fifth, maintenance, follow-up, and generalization phases should be included. Whenever the aforementioned features were carefully respected, one may consistently argue that a child or an adolescent with neurodevelopmental disorders may favorably communicate with peers and other partners [27].

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