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TEACHING SOCIAL SKILLS IN SMALL GROUPS OF CHILDREN WITH MULTIPLE DISABILITIES: MOTOR AND INTELLECTUAL DISABILITIES. AN INTERVENTION PROGRAM

Christina Lappa[1i]
Constantinos Mantzikos[2]
[1]MSc, PhD, Post Doc,
Department of Special Education,
University of Thessaly,
Volos, Greece,
Hellenic Open University,
Patras, Greece
[2]Special Education Teacher,
Kindergarten of Vlachogianni,
Elassona, Greece

Abstract:
Few studies have been conducted in Greece, which focus on the education of children with multiple disabilities (motor and intellectual disabilities, ID). Four children between the ages 9 and 15 with multiple disabilities (motor and ID) were selected to be taught social skills. The aim of this qualitative study was to provide training with regard to cognitive and communication skills and more specifically conversational skills to the four children in order to allow them to engage in conversational exchanges with their peers. Participants were evaluated for their mental capacity and assigned to two groups according to their ability. The intervention combined a table game (puzzle pairs), small-group teaching of structured questions with their answers, modeling, error correction, social praise and tangible reinforcement. A within-subject withdrawal design was used to show the acquisition of knowledge and of the ability to converse through conditions of baseline, teaching, probes and generalization measures. All participants learned to engage in structured conversations. This knowledge generalized and maintained to different settings after 3 and 7 months. A social validity measure affirmed these improvements in their ability to converse.

Keywords: social skills, children with multiple disabilities, motor and intellectual disabilities, teaching in groups, generalization, intervention program

[i] Correspondence: email xlap@sed.uth.gr

1. Introduction

According to the Individuals with Disabilities Education Act (IDEA), which is a United States law last revised in 2004, multiple disabilities are clearly a distinct category of disability. In this piece of legislation, the term "multiple disabilities" refers to concomitant impairments (such as intellectual disability-blindness, intellectual disability-orthopedic disorders, etc.), the combination of which causes such severe educational needs that they cannot be accommodated by implementing a special education program that addresses only one of the difficulties the individual faces. Students with multiple disabilities are an extremely small population and usually have a combination of two or more difficulties and disabilities.

The term "multiple disabilities" does not simply refer to two concomitant disabilities, but to a combination of physical, sensory and/or cognitive disabilities the interaction of which causes severe learning and communication difficulties. Thus, in multiple disabilities, any difficulty faced by a student accentuates the impact of other disabilities by working cumulatively, and if appropriate education is not provided, the combination of disabilities is expected to lead to a low quality of life (UNESCO, 2009). However, if appropriate educational interventions are planned and implemented for each student within an educational framework which takes into account the student's special needs, his/her quality of life will be improved (UNESCO, 2009).

The term "motor impairment" is very broad and ambiguous. Some people prefer to use the term "Developmental Coordination Disorder". Therefore, in terms of terminology, there is a considerable lack of uniformity when it comes to defining motor impairments (Polemikou, 2010). In early childhood, the most common form of motor impairment is cerebral palsy (Krägeloh-Mann & Cans, 2009).

Papanis, Giavrimis and Vicky (2009) define "motor impairments" as neurological impairments, and orthopedic or musculoskeletal disorders. The main types of motor impairments are: neurological impairments (cerebral palsy and spina bifida), and orthopedic or musculoskeletal impairments (muscular dystrophy and poliomyelitis). Motor impairments are a diverse group of impairments and often coexist with other disabilities, difficulties and constraints. Their special feature is that they are usually immediately noticeable, as they are apparent, and the person-carrier displays the characteristics of the impairment (Dimitropoulos, 2000).

The mismatch between a person's ability to perform motor tasks and the demands of his/her environment makes it difficult for him/her to participate and complete certain tasks, and results in limitations in everyday life, activity performance and social participation (Almqvist & Granlund, 2005; Jones, Morgan, Shelton, & Thorogood, 2007). These difficulties and the resulting limitations may remain unchanged, intensify or diminish depending on personal characteristics and environmental factors, such as the support available, reasonable adjustments, and every kind of ecosystem and social barriers faced by the person with motor impairments (Almqvist & Granlund, 2005).

Intellectual Disability (ID) is a condition of impaired or incomplete development that does not permit the individual to compete in society. It is a condition diagnosed before age 18, usually in infancy or prior to birth, that includes below-average general intellectual function, and a lack of the skills necessary for daily living. ID is determined by individual standard assessment providing ratings below 70 (100 being the population average), and the impaired ability to adapt to the demands of normal life. ID affects about 1 to 3 percent of the population (Luckasson, et al., 2002).

It is remarkable that the education of individuals with motor impairments and multiple disabilities is a field that has not yet been extensively researched (Komianou & Nteropoulou-Nterou, 2012). Children with multiple disabilities often have significant difficulty and a delay in learning conventional forms of communication, such as speaking, or are unable to develop communication skills and communicate with their environment, without the support of specialized interventions. Communication is a high priority goal for students with multiple disabilities, as they need to express their needs and desires, establish social relationships, receive and give information, develop social proximity, as well as take on social responsibilities (Schlosser & Sigafoos, 2006).

Social skills are specific and recognizable skills that contribute to developing a socially competent behavior (Hops, 1983), and allow the individual to engage in social interactions and relationships that are necessary for healthy emotional functioning and psychological adjustment (Guralnick, 1986). Of course, there is no consensus on the definition of social skills (Wilkins & Matson, 2007). According to Gresham, Sugai and Horner (2001, as cited in Soulis, Fotiadou, & Xristodoulou, 2014), social skills are divided into (a) peer-related skills, (b) self-management skills, (c) cognitive skills, (d) social compliance skills and (e) skills for asserting one's rights. According to Weiner (2004), social skills can be divided into the following categories: a) social-cognitive skills; b) communication skills; c) prosocial behavior and d) emotional adjustment skills. Social skills appear to be inseparably linked to the quality of life. The difficulty in establishing relationships and the absence of social contacts (Soulis, & Floridis, 2006) impede the life of the individual. Lack of social skills leads to limited interpersonal relationships and social acceptance, and difficulties in academic and professional development (Chadsey-Rusch, Drasgow, Reinoehl, Halle, & Collet-Klingenberg 1993; Nota & Soresi, 1997). Special education scholars believe that teaching social skills to individuals with disabilities is the only way forward, as they increasingly realize that social skills are connected to the independent living (Breen, Haring, Pitts-Conway, & Gaylord-Ross, 1985; Pappa, 2008).

According to the Cross-Thematic Curriculum Framework (CTCF), communication skills (speaking, listening, reading, writing, argumentation, dialogue, etc.) are key interdisciplinary skills that are necessary for effective learning and permeate all subject areas. (CTCF, 2003). According to Schuchardt, Maehler and Hasselhorn (2011) and Sparrow, Balla and Cicchetti (1984) communication skills are often divided into the following subcategories: expressive communication, receptive communication and written communication. Expressive communication involves the

ability to communicate one's needs to other people, while receptive communication is the ability to understand and respond to others' communication. Both expressive and receptive communication include verbal and non-verbal behaviors (van der Schuit Segers, van Balkom, & Verhoeven 2011a; 2011b; Verhoeven, Steenge, van Weerdenburg, & van Balkom, 2011). Written communication often incorporates both expressive and receptive communication, but requires reading and writing skills.

Communication skills include conversational skills, starting and ending a conversation in an appropriate manner, actively participating in a conversation, communicating verbally and non-verbally and carefully following a conversation. Conversational skills refer to the ability of the individual to start and maintain a conversation with other people (Kelly, 1982). They consist of conversation questions, personal statements, emphasizing and acknowledging comments, lengthy and delayed exchanges, eye contact, emotion and tone, and the content of the conversation (Bradlyn, Himadi, Crimmins, Christoff, Graves, & Kelly, 1983; Kelly, 1982; Kelly, Furman, Phillips, Hathorn, & Wilson, 1979; Kelly, Wildman, Urey, & Thurman, 1979; Minkin et al., 1976; Stalonas & Johnson, 1979; Urey, Laughlin, & Kelly, 1979; Wildman, Wildman, & Kelly, 1986).

According to Barnett (1987), the transmission of meaning from person to person requires a social exchange framework. These exchanges start very early in the child's life. According to Wilkins and Matson (2007), conversation questions are any questions that the interlocutor makes with the aim to elicit information from the other person. Effective communication requires asking and answering conversation questions.

When there are multiple disabilities, communication is a process that is determined by a variety of factors (intrapersonal and interpersonal), but also by external influences (Arthur-Kelly, Foreman, Bennet, & Pascoe, 2008). The development of communication involves interaction. Of course, because of motor impairment and other concomitant impairments (for example, intellectual disability) these individuals often have little experience with social exchange on their own initiative, responding to third party communication initiatives or dealing with their natural world and communicating within it (Skjørten, 1989). The main goal of education for individuals with multiple disabilities (motor and ID) is to improve their quality of life and make them capable of managing their needs with as little help as possible (Stroggilos, Tragoulia, & Kaila, 2010). To this purpose, the environment should include routines that allow children to predict events and make decisions. Through interactions in natural environments, children with multiple disabilities can develop concepts and language skills that will allow them to act in the environment (Pogrund & Fazzi, 2010).

An important category of social skills is also cognitive skills (Gresham, Watson, & Skinner, 2001). Basic social and cognitive skills need to be taught to children with disabilities in order for them to grow into adults that can live autonomously in the community, establish relationships and be active members of the communities in which they live (Dellasoudas, 2005).

Cognitive skills are all the cognitive processes that help children acquire knowledge, obtain information from their environment and eventually learn to estimate, remember, measure, compare and understand the causes and results. According to Bloom (1956, as cited in Anderson & Krathwohl, 2001) cognitive skills fall into six categories: knowledge (recall, remembering without necessarily understanding), comprehension (without necessarily making a connection to something else), application (use of acquired knowledge to solve a problem), analysis (decomposition of a concept into its basic components), synthesis (composing new information from diverse information) and finally, evaluation (judging the value of things and methods in order to apply them in the appropriate context).

Students with multiple disabilities (motor and ID) participate equally in the education process, and the same cognitive goal is set for them as for their peers. But because of the difficulties they face in terms of mobility and speech due to intellectual disability, there is a need for differentiation in the process of conquering the cognitive goal and in the learning outcomes (way of assessing the achievement of the goal) (Stroggilos et al., 2010).

For thus, the aim of this intervention was to help four children with multiple disabilities (motor and ID) to gain cognitive skills and to better socialize among themselves through training them to listen and respond to each other within a context of structured conversations.

Consequently, the research questions that this study attempted to answer were the following:

1) Is it possible for individuals with multiple disabilities to be educated in a group and acquire cognitive and conversational skills?
2) Is it possible for individuals with multiple disabilities to generalize their newly acquired skills in new environments?

2. Method

2.1 Participants

Four children 9 to15 years of age with multiple disabilities (motor and ID) from a special primary school participated in this study. Participants were evaluated initially for their mental capacity with the Wechsler Intelligence Scales for Children (WISC III) and were divided and assigned into two groups. Since the participants were diagnosed with motor impairments (brain injury, cerebral palsy) we were unable to administer the Practical Scales of the WISC III. Table 1 shows the mental scores for each child.

All participants were selected because they had some speech which allowed them to engage in simple conversations but they never engaged in verbal exchanges with their peers. None of the participants asked any questions during baseline conditions (before training was initiated). The targeted skills were listening to peers, asking and answering questions.

Table 1: The ages and WISC III scores of all participants

Groups	Names	Age	Intelligence Quotients WISC III
1	Vaios	10	49
	Kosmas	15	42
2	Marina	11	31
	Kleisthenes	8	66

2.2 Ethical Issues

The first author requested the permission of the school principal and the parents of the children to conduct this study. Furthermore, the names of the participants have been changed to conceal their identity.

2.3 Setting

All experimental sessions took place in the school of the children. The venue of the participating children was a morning special school. In this school environment a quiet room was allocated for the whole duration of this intervention. During all experimental conditions, each group was brought into the designated room and seated at a U shaped table setting. A video camera on a tripod was positioned facing the group of subjects. The experimenter turned on the camera, placed the puzzle pieces of a table game on the table and gave the instruction "Talk about what you see!"

2.4 Materials and Procedure

The independent variables of the present study were the verbal models of the first researcher, the corrections of errors, the puzzle pieces of the table games, the verbal praise and the final reward for good participation.

During baseline four puzzle pieces of a table game were available showing animals, their food and dwellings and the direction was given in each group of subjects to talk about what they saw.

During training eight sets of puzzle pieces were placed on the table and again the direction to talk about what they saw was given. Initially the experimenter provided models of all questions and answers, and as training proceeded, she provided models of appropriate exchanges only when members of the group could not respond. Training lasted from 1 to 3 sessions depending on the learning rate of each group. The questions were taught in this given order: "What is this?", "What does it eat?" and "Where does it live?" Each session lasted approximately 15 minutes, that is, around the time it took to complete the questions on all puzzle pieces. For the hole duration of training verbal praise for appropriate exchanges was given as well as a final reward to each subject for good participation.

During initial and subsequent probes only the puzzle pieces of the table games and a final reward for good participation were available. Since the initial and subsequent probes involved no training they lasted less than 15 minutes. After the initial probe was conducted in the two groups, the sessions were interrupted for five months. The subsequent probes were conducted in the following manner. The second

follow up probe was done three months after the first follow up probe at the same school venue. These follow up probes were conducted to evaluate the level of maintenance of the taught skills.

Two generalization measures followed: the first measure was conducted with the use of pictures of the taught animals on a computer and the second measure was a real life contact with four different farm animals familiar from their training. During the first generalization measure, each group of participants was brought and seated in front of a computer screen which with the click of the return button projected novel photographs of all the animals presented during the training and subsequent probe phases of the experiment, and the familiar direction was given to talk about what they saw.

During the second generalization probe each group of participants were brought outside their school to a designated area where some live farm animals (rabbit, lamb, goat, cat, dog and duck) were presented, and the same verbal direction was given to talk about what they saw. During all generalization probes no verbal models, corrections, verbal praise and final reward for good participation were offered.

2.5 Experimental Design

A within-subject quasi-experimental withdrawal design across conditions of baseline, training, probes and generalization measures through four subjects was used to show the acquisition of the ability to converse and its generalization. Withdrawal designs evaluate the gradual removal of parts of the package of the intervention on the maintenance of the acquired behavior and whether the acquired behavior is maintained at different conditions (Kazdin, 2011; Rusch & Kazdin, 1981).

2.6 Dependent Variables and Measurements

Data were collected and graphed on each individual participant. The dependent measure was the mean number of prompted contextual, unprompted contextual and non-contextual exchanges per card per session. As prompted and unprompted contextual exchanges were counted, we measured any contextual exchanges (words, phrases or sentences) which were audible, comprehensible, referring directly to the proceeding exchange of a peer in the group. Only prompted, unprompted and non-contextual exchanges were represented in the results of this study. Data collection lasted eleven months for the children at the special school.

2.7 Inter-Observer Agreement (IOA)

All sessions were recorded on video and scored by two trained observers (the experimenter and another observer). Inter-observer agreement was scored for each response (point by point) and was calculated as the number of agreements, minus the number of disagreements (whether an exchange was related without prompt), over the total number of exchanges. All session were scored for inter-observer agreement and the mean agreement found was 93%.

2.8 Social Validity Measures

The first author has done a social validity measure in order to verify the improvements and increases in conversational ability reported above, as social verification is a prerequisite for assessing social skills, according to Storey (1992). One group of 10 special primary education teachers were assembled and shown video excerpts of baseline and end of treatment performance from each of the two groups of participants. After each viewing in random order of baseline and end of treatment excerpts of each group, the teachers were asked first to evaluate and mark their answers on provided forms, whether or not and in which excerpt (the first or the second) the conversants participated more or equally in the discussion, and second to rate the level of improvement (large, if they showed substantial improvement, moderate, if they showed some improvement and small, if they showed little improvement in conversational ability). In general, the evaluators affirmed the above reported improvements in the participants' the ability to converse.

3. Results

Results appear as the mean number of prompted, unprompted and non-contextual exchanges per card across consecutive sessions for each subject in his/her group during all experimental conditions. The abscissa represents consecutive sessions and the ordinate the mean number of prompted, unprompted and non-contextual exchanges per card. The vertical lines represent changes in experimental conditions between baseline, training, initial probe, subsequent probes and generalizations measures. The closed circle corresponds to prompted contextual exchanges; the open circles to unprompted contextual exchanges and the closed triangle correspond to non-contextual exchanges per card.

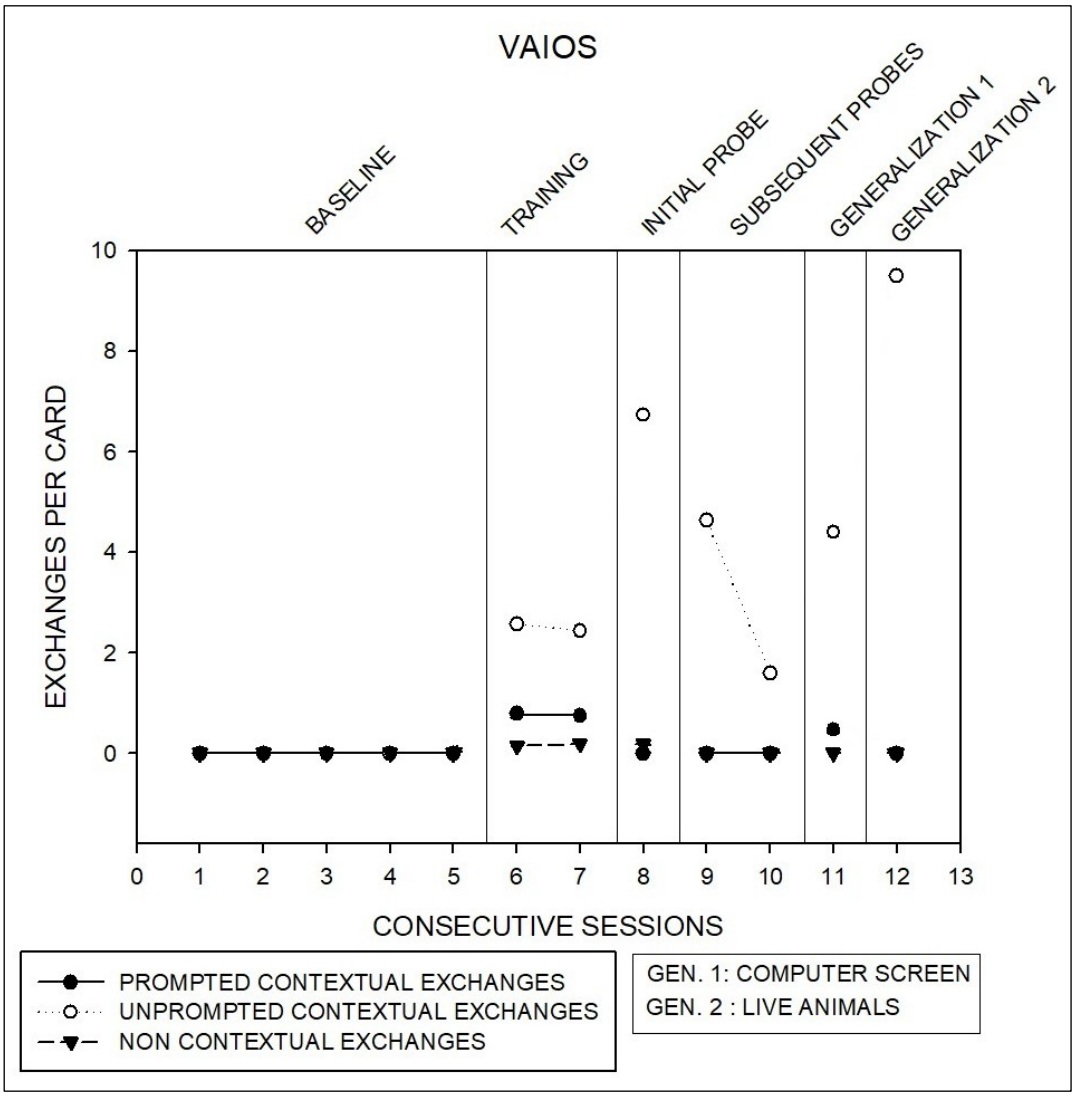

Figure 1: The mean number of prompted, unprompted and non-contextual exchanges per card across consecutive sessions for Vaios

During the baseline conditions in his sessions, Vaios does not show any signs of exchange. In the training sessions, he acquires his first unprompted contextual exchanges (Range: 2.57- 2.44), while those with help are very few. In the initial probe, Vaios marks a spectacular increase in his exchanges in relation to his last training (6.73 unprompted contextual exchanges per card). Five months later, in his first subsequent probe he makes almost 4.64 unprompted contextual exchanges per card. Three months later, in the second subsequent probe, he shows a decrease in exchanges relative to the last training (1.6 unprompted contextual exchanges per card). In his first generalization, he again shows an increase in his exchanges relative to the last training (4.4 unprompted contextual exchanges per card) and reaches approximately the same level as in his first subsequent probe, while showing a remarkable increase in the second (9.5).

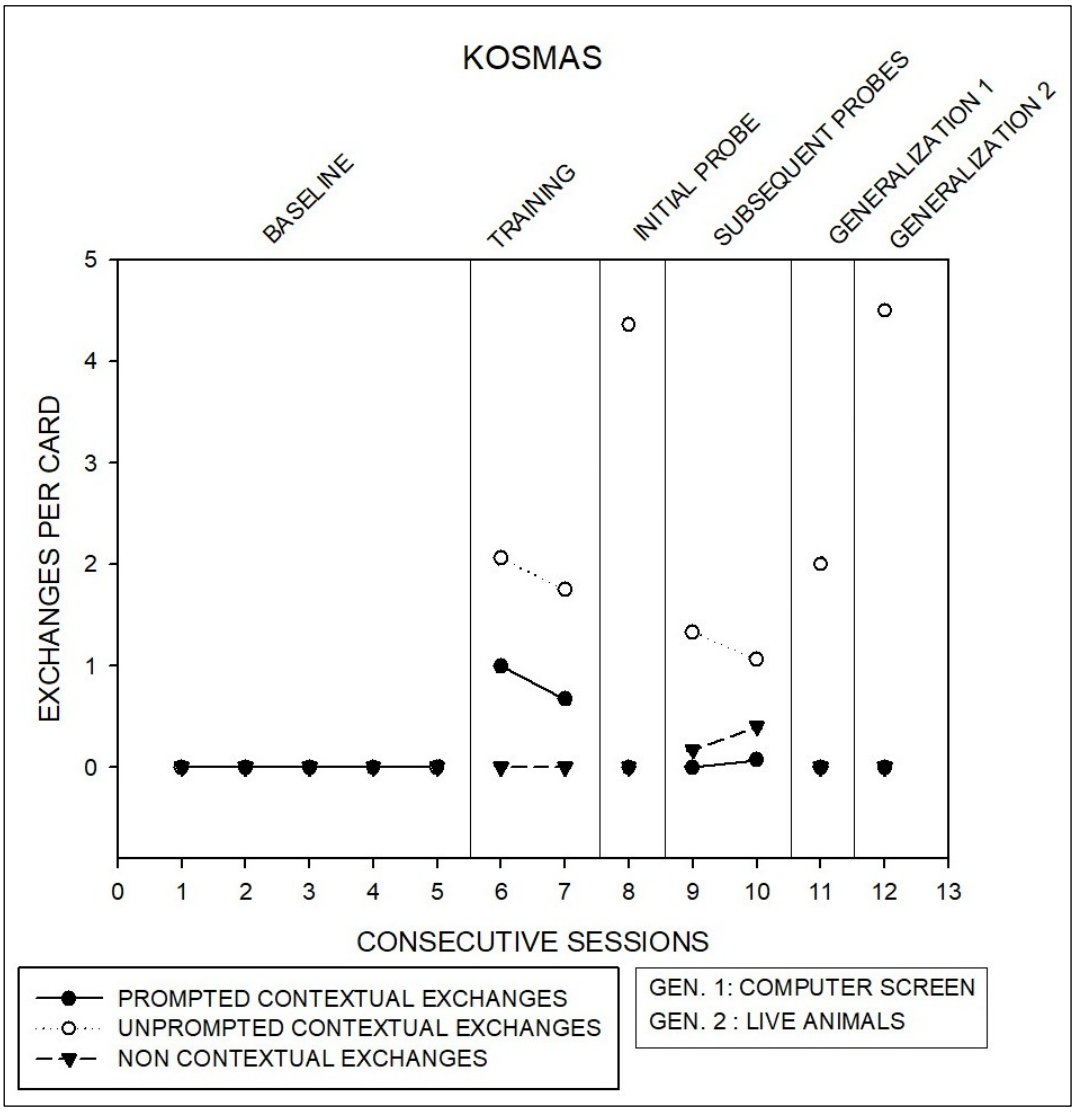

Figure 2: The mean number of prompted, unprompted and non-contextual exchanges per card across consecutive sessions for Kosmas

Kosmas during the sessions in his baseline conditions has no exchanges whatsoever. During the training, he acquires his first unprompted contextual exchanges averaging 2.06. In his initial probe he improves his performance due to his last training and increases his unprompted contextual exchanges (4.36 unprompted contextual exchanges per card), while reducing them with prompt. Five months later, his first subsequent probe follows. Here he demonstrates a reduction in his exchanges in regard to his previous probe (1.33 unprompted contextual exchanges per card). Three months later, in his second subsequent probe his exchanges are further reduced compared to his previous performance (1.06 unprompted contextual exchanges per card). In the generalization with the video, his exchanges increase in relationship with the last subsequent probe (2 unprompted contextual exchanges per card) and further increase in the generalization with the animals (4.5).

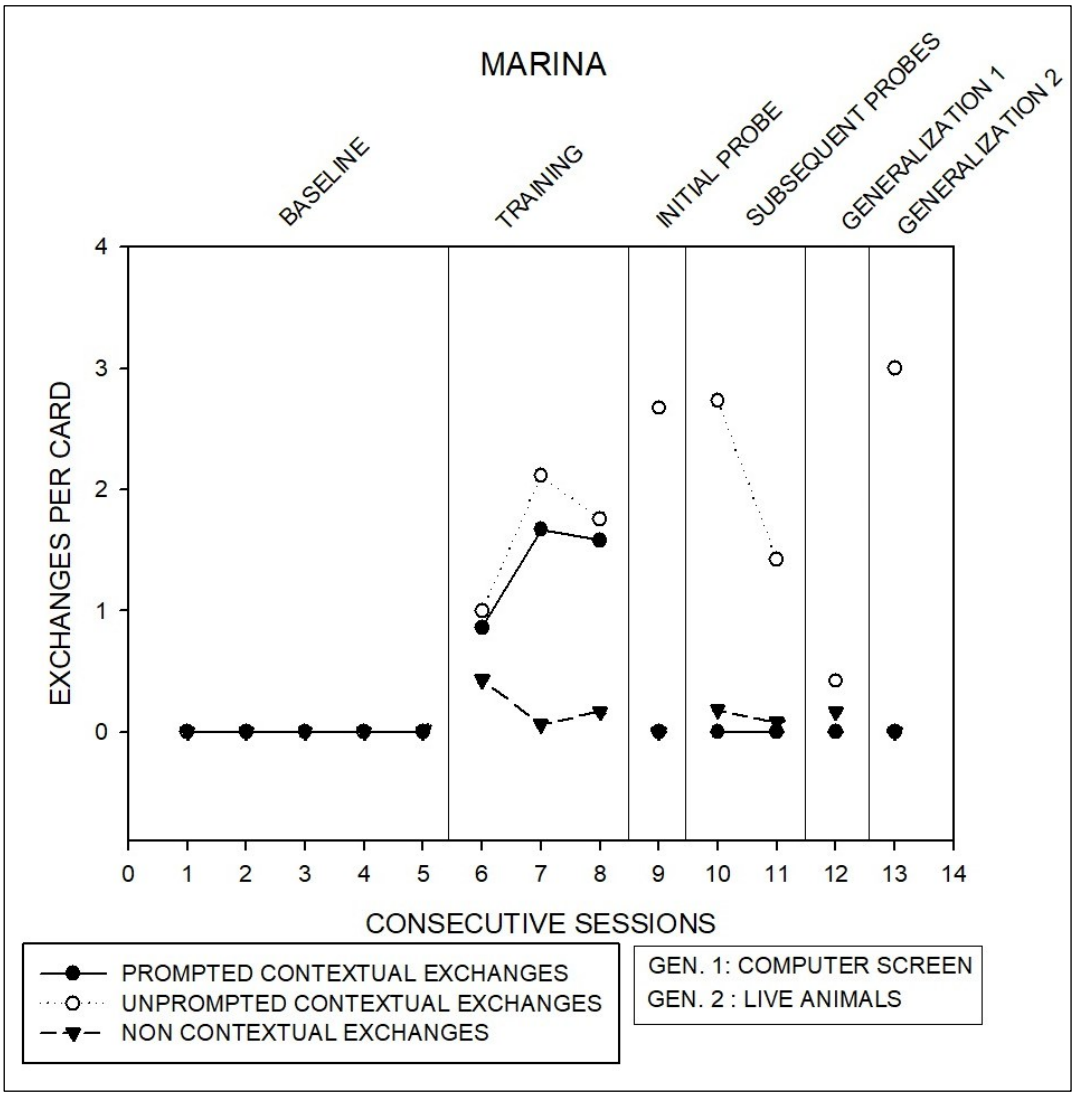

Figure 3: The mean number of prompted, unprompted and non-contextual exchanges per card across consecutive sessions for Marina

During the baseline conditions in her sessions, Marina is not able to exhibit any signs of exchange. Throughout the training, she is able to acquire her first unprompted contextual exchanges (Range: 3.33-1). In the initial probe, she scores 2.67 in unprompted contextual exchanges per card. Five months later, in her subsequent probe she manages to keep the same level of exchanges relative to her initial probe (2.73 unprompted contextual exchanges per card). In the second subsequent probe, Marina's exchanges are reduced due to the epileptic seizures she suffered at that time and which disoriented and disorganized her (1.42 unprompted contextual exchanges per card). In the generalization, Marina's exchanges are considerably reduced (0.42 unprompted contextual exchanges per card), which indicates her inability to generalize without prior training on the subject. However, the animals in her second generalization mobilize her and she manages to discuss with the other child in her group (3 unprompted contextual exchanges).

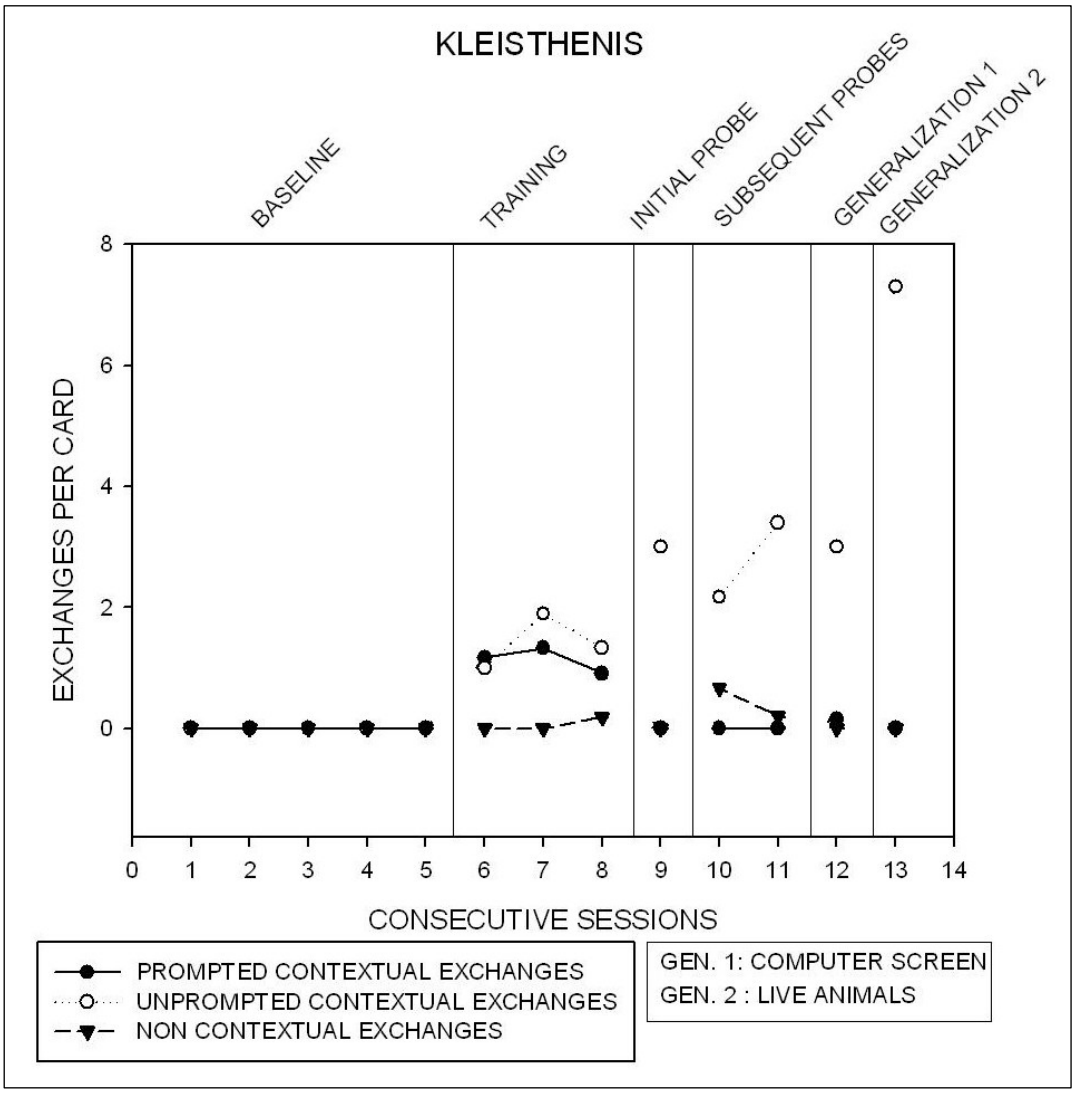

Figure 4: The mean number of prompted, unprompted and non-contextual exchanges per card across consecutive sessions for Kleisthenes

During the baseline conditions in his sessions, Kleisthenes does not show signs of exchange. In training, however, he participates and manages his first unprompted contextual exchanges (Range: 1.89-1). In the initial probe, Kleisthenes makes a marked increase in his unprompted contextual exchanges in relation to his last training (3 unprompted contextual exchanges per card). Five months later, in his first subsequent probe, Kleisthenes has quite a few exchanges, many more than his last training, however fewer than in the initial probe (2.17 unprompted contextual exchanges per card). In the second subsequent probe, eight months following the initial probe, Kleisthenes increased his exchanges (3.4 unprompted contextual exchanges per card), which demonstrates that the child has acquired both the competence of answering questions including knowledge of the cognitive subject. The generalization that follows is at the same high level (3 unprompted contextual exchanges per card) compared to the second subsequent probe, showing a very small decrease due to the different and unknown stimuli. In the generalization, when dealing with animals, Kleisthenes

demonstrated a noteworthy increase in the unprompted contextual exchanges per card (7.3).

4. Discussion

The aim of this study was to show whether individuals with multiple disabilities (motor and ID) can be educated in small groups and acquire cognitive and conversational skills, and manage to generalize newly acquired skills in new environments.

Literature shows that there is no child, regardless of their intellectual level, that cannot communicate (Arthur, 2004; Coupe & Goldbart, 1988; Ware, 1994). This means that there is no child who is not able to learn. It's just that in the case of children with multiple disabilities, attention should be given to the quality of learning and the way of teaching. The concept of learning for these children is associated with the acquisition of experiences through their presence in an activity, their active participation, sensory engagement and concentration of their attention (Brown, 1996, as cited in Bayers, 1999). Therefore, these children should be given the opportunity to have access to subject areas of the common curriculum that can act as a framework for enriching their experiences (Bayers, 1999).

As early as 1975, Bronfenbrenner demonstrated that well-structured and knowledge-oriented programs deliver the best results. What needs to always be taken into account is that the more severe the disability is the more structured teaching is needed in everyday life (Sirén, 2000, as cited in Brodin, 2005). This is because through a structured education the student will learn to manage and fulfill his needs. This will progressively lead individuals with multiple disabilities to achieve their autonomy (O 'Brien, 1990).

More specifically, the present study demonstrated that the children with multiple disabilities (motor and ID) who participated in this intervention gained cognitive skills and learned to exchange with each other in structured conversations aided by table games, modeling and verbal praise and generalized this ability to converse in novel situations. It has also been observed that, although students with motor impairments face motor difficulties of different form and severity, which negatively affect their ability to interact with their environment and thus prevent participation and opportunities for exploring the social and school environment, expression through activities as well as all-round psychosocial development, they can be educated within a school and in a variety of subjects, if appropriate adjustments are made. The participants of the study acquired the ability to listen to what their peers were saying, to ask related questions and to provide contextual answers related to the topic of the conversation. Furthermore, they generalized these skills to new situations and new stimuli. Overall, they participated more during the untrained novel situations of the generalization measures, possibly because these new situations were more interesting to them and presented conditions in which they could exhibit their newly acquired skills. In the presence of related stimuli on the computer and the presence of

living animals, they discussed more vividly possibly because these stimuli were of higher interest to them than the puzzle pieces.

The present study shows that children with multiple disabilities (motor and ID) can be trained in conversational skills, thus acquire the ability to communicate with peers, help their peers to communicate with them and establish relations among themselves. According to Gordon, Feldman and Chiriboga (2005) children with disabilities, especially those with severe disabilities usually face serious difficulties in developing friendships. Teaching social skills represents a dynamically effective approach to successful inclusion of children with disabilities (Gresham, 1981) and furthermore provides them with opportunities to create friendships. Learning appropriate conversational skills can be an important first step in building a friendship (Dotson, Leaf, Sheldon, & Sherman, 2010). Communication is very important for people with disabilities, as it allows them to express their needs and wishes, and to interact with other people in society. Thus, learning objectives for children with multiple disabilities should focus on the development of skills, participation and relationships (Snell & Brown, 2011; Soodak & Erwin, 2000). To achieve these goals, teachers should implement additional support practices in order to provide a meaningful and personalized curriculum within the context of a natural and inclusive environment.

Since effective communication is important for quality of life, as it allows individuals with multiple disabilities to express their desires and choices, receive and give information, and, most importantly, develop and maintain relationships with others, it was decided to teach three general questions. The decision to teach general questions was made with the scope to achieve broader generalization, because such questions can be applied to many different areas of interests by children with disabilities. Teachers of students with disabilities are advised to teach general questions, since they provide these students the ability to increase their knowledge of different aspects of their environment. In the present study participants were able after their training in general questions to generalize the ability to converse with others different than the trained stimuli, to other pictures of animals on the computer and to live animals in natural conditions. Even of more importance is the fact that this broad generalization was accomplished with a somewhat easy and short intervention. The present intervention which combined teaching in groups, table games, directions and reinforcement from the experimenter achieved broad generalization of the trained skills with maximum economy, that is, with very few training sessions. Furthermore, the increases in the number of exchanges for most participants continued and were maintained at high levels during the subsequent probes and during the two generalization conditions.

In short, individuals with multiple disabilities can be educated. Teachers need to accurately assess the current performance level of students, clearly define the skill they will teach, divide the skill into smaller steps if necessary, provide clear motivation, feedback and support to students, use strategies that promote retention and generalization and evaluate students' performance often and directly (Heward, 2009). If

teachers make adaptations and use child-led strategies that are consistent with the child's communication efforts, they will have many opportunities to teach functional skills without disrupting the flow of social interaction or regular classroom activities. When teachers plan activities based on children's interests, children may remain focused on the activity for longer periods of time, which means that more opportunities for skills development may arise (Harjusola-Webb & Robbins, 2012).

It is important to mention that only four individuals with multiple disabilities (motor and ID) participated in this study. Future studies may use a more representative sample and explore additional factors (for example, gender, intellectual age/ intelligence quotient, previous "experience", and environment) in order for the results to be more representative.

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About the Authors
Christina Lappa is an Academic Tutor- Advisor of Special Education at the Hellenic Open University (Patras, Greece). She has a Master of Science in School Psychology from L'Aquila University (Italy) and she has received her Ph.D. in Special Education from the Department of Special Education at the University of Thessaly (Volos, Greece). Furthermore, she has done her Post-Doctoral research on special education at the University of Thessaly. She has teaching experience in children and adults with disabilities and/or special educational needs in Greek public schools and universities. She has also published many research articles in the field of educational psychology and special education. Her research interests mainly focus on intellectual disabilities, autism spectrum conditions, developmental disabilities, genetic developmental syndromes, multiple disabilities, special education, inclusive education, disability models, European and non-European education policies, environmental education, differentiated teaching, applied behavior analysis, social skills, pedagogical practices and curriculums in general and special education and co-teaching practices.
Constantinos Mantzikos is a special education teacher. He has received his BSc on special education from the Department of Special Education at the University of Thessaly (Volos, Greece). He has several years of teaching experience in children with disabilities and/or special educational needs in Greek public schools. Currently, he works at the kindergarten of Vlachogianni (Elassona, Greece). His research interests mainly focus on autism spectrum conditions, intellectual disabilities, Attention Deficit Hyperactivity Disorder (ADHD), developmental disabilities, inclusive education, special education, differentiated teaching, European and non- European education policies, home-school collaboration, disability models, school climate, school culture, and co-teaching practices.

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