

## The effect of a Greek traditional dance programme on the social skills of children with autism spectrum disorder

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### Introduction

Autism spectrum disorder (ASD) is a neurodevelopmental disorder, observed more often in boys than in girls (Baio, 2014), and distinguished in three levels in terms of social communication and stereotypical behaviours that individuals with ASD present (Diagnostic and Statistical Manual of mental disorders; DSM-5, 2013). Although the exact cause of ASD remains unknown, it is widely accepted that genetic causes are responsible (Muhle, Trentacoste & Rapin, 2004; Rutter, 2005); however, environmental factors matter as well (Johnson & Myers, 2007). During the last decades, a high rise in the percentage of people with ASD has been noticed. Despite the fact that during 2000 there was only 1 out of 150 children diagnosed with ASD, the ratio was increased during 2008 to 1 out of 88 and in 2014 this number reached 1 out of 59 children (Centers for Disease Control and Prevention, 2018).

ASD has various negative consequences concerning individuals' social development, such as poor social skills (difficulties in creating and maintaining social relationships), behavioral disorders and problems in social interaction and communication (Newschaffer et al., 2007; DSM-5, 2013). Moreover, they have no facial expressions and no eye contact with parents, teachers, peers, and they enjoy moments of loneliness as well as fail to accept and exchange compliments (Johnson & Myers, 2007; Jordan, 2000; Vandereijcken, Hoogduin, & Emmelkamp, 2008). Furthermore, they face difficulties in understanding verbal or no verbal language, in comprehending and expressing feelings as well as facial expressions, in asking or answering questions and in the conception of sarcasm or metaphor (Beidel, Turner & Morris, 2000; Celani, Battacchi, & Arcidiacono, 1999; White, Keonig, & Scahill, 2007). Finally, they lack motivation in social interaction, and are characterized by apathy for other people, difficulty

### Abstract

It is well known that individuals with autism spectrum disorder (ASD) have deficits in their social skills. However, movement programmes have been found to enhance their social development. The aim of the present study was to examine the effect of a Greek traditional dance (GTD) programme on the social skills of children with ASD. Eight 6-14-year-old children with ASD participated in the study and were randomly classified into the control group (CG), who took part only in the physical education lessons, and the experimental group (EG), who apart from physical education participated in an 8-week TGD programme of two sessions/week. Children's social skills were assessed with the Educational Evaluation Tool for children with autism in the field of Social Skills (Apteslis et al., 2012) that was administered to participants' teachers. Due to both the small sample size and the great heterogeneity of children with ASD, the participants were faced as eight case studies classified into two groups (EG; CG). According to the results, children of the EG presented higher improvement in social skills compared to those of the CG. The above findings are encouraging; however, further research with a larger sample size and a GTD programme of longer duration is necessary if sound conclusions are to be drawn.

**Key words:** autism, intervention program, dance

in understanding and implementing social rules, and weakness in expressing empathy (Jordan, 2000; Newschaffer et al., 2007).

One of the factors that can positively contribute to the social development of children with ASD is movement programmes, since they have been found to trigger reduction of antisocial behaviours, aggression, distraction, carelessness and sedentary lifestyle of children, while, at the same time, they improve sensory seeking, sensory sensitivity, social motivation, communication, cooperation and self-control (Bahrami, Movahedi, Marandi, & Sorensen, 2016; Bass, Duchowny, & Llabre, 2009; Garcia-Gomez, Risco, Rubio, Guerrero, & García-Peña, 2014; LaGasse, 2014; Movahedi, Bahrami, Marandi, & Abedi, 2013; Pan, 2010; Zhao & Chen, 2018).

Moreover, several researchers have found that therapeutic dance programmes (Boettinger, 1978; Edwards, 2015; Ellis, 2016; Hildebrandt, Koch, & Fuchs 2016; Kalish-Weiss, 1982; Koch, Mehl, Sobanski, Sieber, & Fuchs 2015; Mateos-Moreno & Atencia-Dona, 2013; Parteli, 1995; Sanglack Goochan Atigh, Akbarfahimi, & Alizadeh Zarei, 2017) as well as dance/movement programmes (Hartshorn et al., 2001; Koehne, Behrends, Fairhurst & Dziobek, 2016; Nelson, Paul, Johnston, & Kidder 2017) can increase the positive behaviors and improve the social interaction of children with ASD.

Traditional dance develops social skills (Wardle, 2000); thus, it would be a useful educational means for children with ASD. However, to our knowledge, there is not any published study investigating the effect of a traditional dance programme on the social skills of children with ASD so far. Based on the above, the aim of the present study was the examination of the effect of a Greek Traditional Dance (GTD) programme on the social skills of children with ASD.

## Methods

### Participants

Eight children (six boys, two girls), aged between 6-14 years and diagnosed with ASD by accredited medical-pedagogical centers, participated in the study. All of them lived in East Attica, Greece, and were students of a special education school. Participants' parents/guardians were informed about the purpose and the procedures of the study, and were asked to give their written consents before the pre-measurements.

For the purposes of the study, participants were randomly divided into experimental (EG) (n=4) and control group (CG) (n=4). The CG attended only the lesson of Physical Education (PE) that was offered by the curriculum of the school, whereas the EG participated in the GTD program, apart from the PE provided by the curriculum.

### Social Skills Measures

For the assessment of participants' social skills, the Educational Evaluation Tool for children with autism in the field of Social Skills (Apteslis, Mitropoulou, & Tsakpini, 2012) was used. This tool is based on (a) the method used for the evaluation of the sociability in the program 'Treatment and Educational of Autism and related Children Communication Handicapped' (TEACCH; Olley, 1986), and (b) teaching and methods for the evaluation of social skills proposed in the relevant literature (Jordan, 2000; Jordan & Powell, 2000; Quill, 1995). According to the TEACCH program, children's sociability must be studied/examined in the following fields: proximity/closeness, eye contact, parallel activity, social response,

cooperation, social initiative, keeping order, following rules and reciprocity. Based on the above, the tool is focused on the three following points:

- a) Spontaneous communicative behaviour (communication, communicative intention)
- b) Acceptance and assessment of various communicative systems, which promote communicative functions
- c) Generalization of communicative behaviours in different space-time contexts that increases child's daily-life autonomy and constitutes a prominent educational goal (Apteslis, Mitropoulou, & Tsakpini, 2012).

#### Procedure

The Educational Evaluation Tool for children with autism in the field of Social Skills was administered to the participants' teachers in October 2019 (pre-measurement) and December 2019 (post-measurement). Pre-measurements took place before the start of the GTD program and the post ones immediately after its end.

#### Greek Traditional Dance Programme

The GTD program was applied for an 8-week period, twice a week (from October 2019 to December 2019) and each session lasted 40 minutes. Taking into consideration the specific characteristics of children with ASD, the design of the GTD programme was based on individualized teaching, so that it would correspond to the needs and particularities of each child (Arzoglu et al., 2013; Costonis, 1978; Loman, 1995; Wengrower, 2010). Two teaching methods were used in combination: (a) the imitative, and (b) the music-movement one. In the imitative method, the teacher shows the dance and the student(s) imitate(s) his/her movements (Demas, 2004; Mathe, Koutsouba & Lykesas, 2008; Masadis, Filippou, Derri, Mavridis, & Rokka, 2019; Reppa, 2011).

In this study, the imitative approach was used with mirroring, since it has been applied by many researchers in dance programmes and is thought to be effective on individuals with ASD (Hildebrandt et al., 2016; Koch et al., 2015; Scharoun et al., 2015; Wengrower, 2010). In mirroring, the teacher is opposite the student, performing movements, which are imitated by the student, moving to the same direction as the teacher. On the other hand, music-movement approach belongs to the creative teaching methods, using experimentation, exploration, observing, free movement, creativity, spontaneity and improvisation (Lykesas & Zachopoulou, 2006; Venetsanou, Donti, & Koutsouba, 2014), while it has also been used in GTD (Lykesas & Koutsouba, 2008; Lykesas, Koutsouba, & Tyrovola, 2009, 2010; Lykesas, Dania, Koutsouba, Nikolaki, & Tyrovola, 2017; Lykesas, Giosos, Theocharidou, Chatzopoulos, & Koutsouba, 2018).

At the beginning and at the end of each GTD session, creative dance activities as well as rhythmic and music-movement activities took place. In the main part of the session, GTD were taught using the imitative approach and mirroring, as it is reported above. The selection of the Greek traditional dances was based on dance morphology and typology as this has been applied on GTD (Tyrovola, 2001) providing the opportunity for the classification and categorization of Greek traditional dances and an understanding of how Greek music-dance tradition is structured overall (Koutsouba, 2007) since its concern is not on quantity (the number of dances), but on the knowledge of how the dances are formed (Tyrovola & Koutsouba, 2006).

### Statistical analyses

Taking into account the small size sample and the large heterogeneity that characterizes children with ASD, the eight participants in the present study were examined as eight case studies classified into two groups (EG, CG).

### Results

The progress of each participant's social skills between pre- and post-measurements in all dimensions of the Educational Evaluation Tool for children with autism in the field of Social Skills is presented in the Table 1.

**Table 1.** Descriptive statistics of the participants' scores on the Educational Evaluation Tool for children with autism in the field of Social Skills in pre- and post -measurement by group

	EG								CG							
	Pre measurement				Post measurement				Pre Measurement				Post measurement			
	I. X.	X. P.	A. M.	X. M.	I. X.	X. P.	A. M.	X. M.	P. G.	A. P.	A. B.	G. G.	P. G.	A. P.	A. B.	G. G.
Total Score	29.3	34.3	32.2	35.6	39.5	52.4	44.4	45.7	29.2	9.3	58.4	47.7	29.2	10.3	66.8	58.8
Closeness	7	7	6	9	10	11	9	11	6	3	11	9	5	3	14	14
Eye Contact	06	5	2	1	6	6	3	2	5	1	5	4	6	1	6	7
Parallel Activity	2	2	3	6	4	4	4	8	13	1	6	7	3	1	7	7
Social Response	8.1	11.1	8.1	8	11.3	15.8	10	10.5	8	2.3	14.7	10	8	3.3	16	11.6
Social Initiative	0.4	0.4	1.1	0.8	0.4	1	1.4	1.14	0.5	0	1.7	1.1	0.5	0	2	1.28
Rules	1	2	1	0	2	4	2	0	3	0	5	3	0	0	5	2
Reciprocity	4	5	9	9	5	8.6	13	11	4.6	1	13	12	4.6	1	14	14
Adaptation to change	0.8	1.8	2	1.8	0.8	2	2	2	1	1	2	2	1	1	2	2

Starting with children's total scores, a noticeable improvement of the four children participated in the EG can be observed. Specifically, X.M. showed 28% improvement, I.X. 43%, X.P. 52%, and A.M. 37%. In the CG, improvement is noticed in three out of four children (10% - 23%); whereas one student, P.G., presented the same score in both measurements. As far as children's closeness is concerned, all the participants of the EG improved their closeness by 22% - 57%. The highest improvement was accomplished by X.P. (57%), while the lowest was exhibited by X.M. (22%). In the CG, A.P. had the same score in pre- and post-measurement, while P.G.'s score decreased by 16% in the post measurement. Finally, A.B. and G.G. improved by 27% and 55%, respectively. Regarding eye-contact, I.X. achieved the same

score in pre- and post-measurement; whereas, the rest of the participants of EG improved their scores. More specifically, the improvement rate for each participant was: 20% for X.P., 50% for A.M. and 100% for X.M. In the CG, A.P. had the same score in the pre- and post-measurement; whereas, three children improved their scores, namely P.G. and A.B. by 20%, while A.B. by 75%.

In the Parallel activity subscale, all the participants of the EG showed improvement in the post measurement. Specifically, X.M. and A.M. improved by 33%, while I.X. and X.P. by 100%. On the other hand, the majority of the children of CG appeared to have maintained their scores in the pre- and post-measurement. Only A.B. showed 16% improvement. As regards the Social Response subscale, 24%-42% improvement of all the children of EG is noticed; whereas, in CG, P.G. had the same score in pre- and post-measurement, A.B. and G.G. showed a small improvement (around 8% and 9%, respectively), while, A.P. improved by 42%. In the Social Initiative subscale, three participants of the EG showed improvement. Specifically, X.M. improved by 34%, X.P. by 138%, and A.M. by 24%; whereas, I.X. received the same score in pre- and post-measurements. In the CG, just two children improved. Specifically, A.B. improved by 16% and G.G. by 12%; whereas, A.P. received a zero score in both pre- and post-measurement, and P.G. had the same score in both measurements.

Regarding Rules, three children of EG improved by 100% in the post measurement; whereas, X.M. had a zero score in both measurements. In the CG, all the children maintained their scores in pre- and post-measurements. In the Reciprocity subscale, the improvement of all the children of EG in the post measurement is obvious. More specifically, the improvement rate for each participant was: 22% for X.M., 25% for I.X., 72% for X.P. and 44% for A.M. On the contrary, only two children of the CG improved by 7% (A.B.) and 16% (G.G.), while the other two children received the same scores in pre- and post-measurement. Finally, in the Adaptation to change subscale, two children of the EG had the same score in both measurements (I.X., A.M.), while the other two (X.M., X.P.) improved by 11%. In contrast, all the children of the CG maintained received the same score in pre- and post-measurement.

## Discussion

The aim of the present study was to examine the effect of a GTD program on the social skills of children with ASD. Pre- and post-measurements were administered to all participants, in order to determine whether the level of social skills of children in the EG would be better than those of the CG, as a result of the programme. Starting with the pre-measurements, it was revealed that children of both groups presented a low level of social skills, a finding that is in alignment with several previous studies focusing on children with ASD (Kasari, Locke, Gulsrud, & Rotheram-Fuller, 2011; Koning & Magil-Evans, 2001). At the present study, the majority of children received by their teachers very low scores especially in the following social-skills subscales: Rules, Social Initiative, reciprocity, eye-contact. Moreover, the heterogeneity of children with ASD was also revealed, with A.P. presenting the lowest scores and A.B. receiving the highest scores in every subscale.

Regarding children's social skills development, according to the total score of the Educational Evaluation Tool of kids with autism in the field of Social Skills, both groups (EG, CG) showed improvement in their social development, with the exception of one child in CG, who did not show any change on social skills between pre- and post-measurement.

However, children of the EG presented much higher improvement (28-52%) than those of the CG (10-23%). As far as the subscales are concerned, the implementation of the GTD programme triggered a high improvement of EG in the following: Eye contact, Parallel Activity, Social Initiation, and Rules. It should be noticed that, in the Rules subscale, three out of four children of EG reached 100% improvement. Moreover, in the Social Initiative subscale, one child of EG (X.P.) reached 138% improvement, achieving the highest score in the Educational Evaluation Tool for children with autism in the field of Social Skills. In the Eye Contact and Parallel Activity subscales, X.P. improved by 100% in the post measurement. The lowest improvement of EG was noticed in the Adaptation to change subscale. On the other hand, the CG exhibited lower improvements in all subscales of social skills compared to EG. It seems that the GTD programme, despite its short duration (only eight weeks), brought positive changes to the social skills of the children who participated in it. Unfortunately, to our knowledge, there is no published study that has examined the effect of a (Greek) traditional dance programme on the social skills of children with ASD to compare our findings with. However, the results of studies in which therapeutic or creative dance programmes were implemented in children with ASD have revealed improvements in their eye and physical contact, social interaction, obedience towards the rules, and adaptation to changes (Boettinger, 1978; Ellis, 2016; Kalish-Weiss, 1982; Koch et al., 2015; Koehne et al., 2016; Nelson et al., 2017). Nevertheless, it should be noticed that only two of the above studies (Koch et al., 2015; Koehne et al., 2016) included both EG and CG in their study design. Apart from dance, movement programs have also been found to have a positive impact on the social skills of children with ASD (Astorino et al., 2012; Bass et al., 2009; Garcia-Gomez et al., 2014; Najafabadi et al., 2018; Zhao & Chen, 2018).

Regarding mirroring, our results confirm the findings of previous studies that revealed the improvement of the participants' eye contact (Boettinger, 1978; Ellis, 2016; Kalish-Weiss, 1982; Koch et al., 2015; Koehne et al., 2016). It seems that mirroring contributes to the enhancement of the eye contact in children with ASD.

The present study has some limitations that should be taken into account when interpreting its findings. To start with, the sample was consisted of only eight children with ASD, who were not at same ASD level (DSM-5, 2013) due to the absence of such data in their diagnosis. A larger sample with children of the same ASD level is needed if sound conclusions are to be drawn. Moreover, the duration of the GTD programme was relative short. A programme lasting one academic year may lead to a higher improvement of children's social skills. Nevertheless, this study is the first providing research evidence regarding the effectiveness of the GTD on the development of social skills in children with ASD.

Summarizing the aforesaid, a GTD programme applied for eight weeks in children with ASD seems to positively affect their social skills, a finding that is encouraging and supports the educational value of GTD. Movement should play a dominant role in the education of children with ASD; in this context, adding GTD in the curriculum of special education schools would be beneficial for children's social development.

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