Social competence between equals through body percussion according to method BAPNE in secondary students

Eugenio Fabra-Brell* & Francisco Javier Romero-Naranjo

Universidad de Alicante, Department of Innovation and Didactic Training, San Vicente del Raspeig s/n, 03080 Alicante, Spain

Abstract

The main objective of this study is to know if social competence between equals can be improved in students in secondary school education through psychomotor stimulation with musical practice and body percussion according to the BAPNE method. In order to do this, we carried out a sociometric for twelve weeks in two secondary schools in the city of Alicante, Spain (IES Playa San Juan and IES Cabo de la Huerta). A quantitative method was used due to its credibility in studies of developmental and educational psychology.

As an evaluation tool, we used a sociometric questionnaire of peer nominations produced by the Group GREI called SOCIOMET. The results show that, in most cases, the students in the treatment group improved their interaction, their behavior, the feeling of belonging to the group, as well as the network of friendly relations between them. This was reflected in the coefficient of rejection of each individual by the group. While in the control group the average number of negative nominations given in the test-questionnaire increased [(before M = 1.67) (after M = 1.80) a difference of + 0.13], in the experimental group the average number of negative nominations given by participants decreased [(M = 2.35 before) (after M = 2.00) a difference of - 0.35].

1. Introduction

The period of adolescence coincides with secondary school education. From the age of 14, boys and girls often have to face social demands from society for which they are still not prepared (Vallés, Olives, & Rosa, 2014).

* Corresponding author. E-mail address: eugeniofabra@gmail.com
According to Topping, Bremner and Holmes (2000), social competence means the possession and use of the ability to integrate thinking, feeling, and behaviour to achieve social tasks appreciated by the cultural context in which they are. Social competence is not a uniform quality; on the contrary, it is a quality which can be considered a combination of thoughts, feelings, abilities and behaviours, which may change according to the situation. (Gilar, Miñano, & Castejón, 2008).

With regard to this, authors such as García-Bacete & Álvarez (2010) point out the range of positive contributions resulting from friendly relations between equals, highlighting self knowledge and affirmation, emotional support and the influence on cognitive development and adjustment to school life. “It should be stressed that researchers into social development are unanimous in their agreement that relations between peers during childhood contribute enormously, and in a unique way, to social and emotional development” (García-Bacete, 2006, p. 438).

Furthermore, as regards the sociometric concept, García-Bacete & Álvarez (2010) point out that “Bronfenbrenner (1945) defined sociometry as a way of discovering, describing and evaluating group social structure, development and status by measuring acceptance and rejection amongst individuals” (p.47). Through sociometry, we can measure social competence between equals. We can study how social competence and its sociometric and structural characteristics are formed in a peer group (for example in a school class), that is to say, the position each individual and each group occupies in the classroom, and at the same time individuals in their group.

As a result, sociometric studies are very useful tools in the classroom. Sociometric analysis is considered by many to be a powerful “methodological and conceptual tool, which uses the power of attraction and rejection amongst group members to study the life of a group.” (Tinoco, Rodríguez & Lagares, 2008, p.665).

Of the possible formulas for sociometric classification, the sociometric method of direct nominations offers the possibility of measuring the main reasons why an individual in a group is chosen or rejected. These two-dimensional nominations are an essential part of the different types of sociometric studies.

In Spain, there seems to be little interest in a sociometric typology. Sociometric studies and programmes, like those by Almar and Gil (1993) and Civsoc de Barrasa and Gil (2004) demonstrate a lack of unified criteria for establishing both statistical significance and establishing a graphic representation of sociometry (a sociogram). In addition, it is evident that sociometric procedures used by researchers are not standard. They employ different procedures but with the same name, and they use the same terms for types of sociometry which they have identified using different techniques (García-Bacete, 2006).

Authors such as Bacete, Lagares, Tinoco, Casares, García, Coll & Ruíz (2013) stress that school rejection is perhaps the corner stone of sociometric studies, and proof of this is the extensive research into this area (see Asher & Coie, 1990; Bierman, 2004; García Bacete, Sureda & Monjas, 2010; Leary, 2001, amongst others).

As regards social rejection in schools, the nature of relationships between equals and the degree of social acceptance or rejection experienced by adolescents, are key to psychosocial adaptation and academic achievement at this stage in life (Estévez, Martínez & Jiménez 2009).

As regards body percussion, we could say that it is perhaps one of the most significant musical experiences of humans, and it takes on diverse functions and meanings in different cultures around the world. An appropriate definition may be that provided by Romero Naranjo (2013), who defined it as “the art of hitting the body in order to produce a variety of sounds, with possible educational, therapeutic and/or anthropological and social goals” (p.443).

Many musical didactic methods have focussed on the concept of the body and physical movement. Since the Twentieth Century, a variety of methodologies have been developed, directly or indirectly, to work on rhythm and body movement. Examples of these are the music methodologies developed by Émile Jacques-Dalcroze, Zoltan Kodaly, Carl Orff, Edgar Willems, Maurice Martenot and BAPNE the methodology (Trives, Romero, Pons, Romero, Crespo, Liendo, & Tripovic, 2014).

Of all these, the only methodology which focuses on body percussion and which produces all kinds of body sounds using every part of the body is BAPNE. This is an acronym of the words Biomechanics, Anatomy, Psychology, Neuroscience and Ethnomusicology. The BAPNE method involves all these disciplines, and the exercises focus on the development of Multiple Intelligences through the teaching of body percussion. Thus, it becomes a teaching method which provides cognitive, socio-emotional, psychomotor and neurorehabilitation stimulation.

Authors such as Romero, Liendo, Romero & Menargues (2014) have found a relationship between social competence and the practice of body percussion. They maintain that the BAPNE method can have a therapeutic effect,
“favouring personal perception of self competence through learning amongst equals, stimulating memory, empathy, improving self esteem and motivation, and especially improving attention” (p.1717).

The BAPNE method is based on cooperative work and learning, sharing the basic principal of all cooperative learning methods, which is that students are not only responsible for their own learning but also for that of their classmates. Students’ work consists in not only doing something as a team but in also learning from the team (Slavin, 1990).

Today, education is considered by many to be a social process by which knowledge, and models of thought and behaviour of a particular society are transmitted. Through this study, the social side of education is presented. In many ways, schools can be considered social centres in which students establish a whole series of relationships with teachers and the group. These relationships ultimately aid competence development in individuals.

2. Objectives

The two main objectives of this research were:
1. To measure the degree of social rejection of each individual of a school group, in order to improve attitudes and social skills between class peers.
2. Increase awareness of the importance of a good atmosphere and the development of social skills between equals in order to improve the working atmosphere in secondary school classrooms, on both an individual and group level.

3. Methodology

3.1. Context and participants

The study was carried out in a state secondary school in the city of Alicante, Spain, more specifically in San Juan Playa Secondary School, located in the coastal area of San Juan Beach (population of 18,788, according to the census of 2010). This is a residential area on the coast in which many people from Alicante city, inland areas of the Community, and the rest of Spain, especially Madrid, have a second home. A state secondary school with similar socioeconomic and educational characteristics in the same area was used as a control, in order to have a good reliable control reference. This control school was Cabo de la Huerta Secondary School, which is only 3.5 kms from San Juan Playa Secondary School and has pupils with the same profile.

Thus, we used a group from the second year of compulsory secondary education with 31 participants, of which 14 were girls and 17 boys between the ages of 13 and 14, with the exception of 5 participants who were between 15 and 16 years old and also students of Playa San Juan Secondary School. This was the experimental group. The control group was a second year group from Cabo de la Huerta Secondary School, with 30 participants, of which 19 were girls and 11 boys aged between 13 and 14.

All these students, both in the test and control group, have been studying music since primary school but not always focussing attention on rhythm through body percussion, and even less through the BAPNE method.

3.2. Instrument

The instrument of evaluation employed for the analysis was a sociometric questionnaire called SOCIOMET and published by TEA editions. The statistical programme SPSS 20 was used for the quantitative analysis. The sociometric questionnaire SOCIOMET, which we gave to the participants, was elaborated by the GREI Group (Interuniversity Group for Research and Peer Social Rejection in Schools). The sociometric procedure of identification used in the questionnaire employs the method of probability of García Bacete. SOCIOMET is aimed fundamentally at children and adolescents, and is recognised in Spain. The questionnaire is made up of four questions through which the participants nominate, with or without justification, classmates from the group according to the positive or negative criteria of the questions. The main criteria of the questionnaire is the criteria of friendship, with its positive dimensions (questions 1 and 3) and its negative dimensions (questions 2 and 4), as well as direct or affective inclusion (questions 1 and 3) and the opposite or cognitive (questions 2 and 4). Nominations are limited to three, with no restriction on the
gender of the nominee, and always chosen from members of the class group. Students are offered the possibility of justifying their nominations through the question “Why?”.

This study has focused on the numerical results provided by SOCIOMET, that is, the negative nominations received by each individual on a points scale from higher to lower social relevance in the group in question, the points corresponding to the rejected student. Rejected pupils are described by their peers as classmates who do not cooperate, do not pay attention, not considerate, and not socially extrovert.

The numerical value which was measured in the pre-test and post-test, through the statistics programme SPSS 20, corresponds to the number of pupils rejected by the group before and after the experiment. In other words, the NNR (number of negative nominations received by each pupil in the group) was measured, the degree of rejection of each participant in the group.

3.3. Data Collection and Treatment

The evidence was collected by carrying out a pre-test and a post-test given to both the test and control groups.

We were in contact with the Department for Educational Guidance of Playa San Juan Secondary School (the test group school), who also validated both the sociometric questionnaire used and the results obtained.

Permission was requested from the parents of all the participants in the two secondary schools. The participants were treated at all times in accordance with ethical standards and informed consent.

Once permission was given by all the participants, without exception, the study was begun by giving the pre-test to both groups. Subsequently, rhythmic work was carried out through body percussion and the BAPNE method with the test group only, San Juan Playa Secondary School. They received 50-minute sessions twice a week during 12 weeks (from March to June 2015). After this period of 12 weeks, a post-test was given to the two groups, the test group of San Juan Playa and the control group of Cabo de la Huerta Secondary School.

Both the pre-test and post-test were carried out in the corresponding classroom of each group, during tutorial time and with the collaboration of the corresponding class tutor. When filling in the questionnaires, the participants had a complete list of the names and list number of all their classmates.

In addition, the students were invigilated so they could not talk about the questionnaire. They were informed at all times of the importance of the research for improving group relations and atmosphere. They were also asked to be as sincere as possible in order to be able to do this, and reassured that the results would always be confidential, with the exception of the group tutor.

3.4. Design and analysis of the data

The methodology used was quantitative. The method was of a simple quasi-experimental design: two different groups with measurements made before (pre-test) and after (post-test) the treatment. There was a test group in which 31 participants were studied, 14 girls and 17 boys of between 13 and 14 years old, and also 5 participants of between 15 and 16 years old. The control group consisted of 30 participants, 19 girls and 11 boys of between the ages of 13 and 14. The test group was in Year 2 of San Juan Playa Secondary School (2C), and the control group in Year 2 of Cabo de la Huerta Secondary School (2B). In total, there were 61 participants.

A mixed factorial design between-subjects (treatments) and within-subjects (measures repeated before and after) was used for the statistical analysis, employing the factorial analysis of variance ANOVA for repeated measurements. All of this was carried out with the statistical programme SPSS 20. There were three study variables: the group type (experimental and control group), the pre-test NNR score (negative nominations received) of each participant and, finally, the post-test NNR score of each participant after the treatment.

4. Results

The analysis of the results as regards the negative nominations given by each group before and after the treatment (see Table 1) demonstrates that there are differences in the average number of negative nominations made by each group before and after the study. Whilst the average number of negative nominations increased in the test-questionnaire of the control group [(before M= 1.67) (after M= 1.80) a difference of + 0.13], the average number of negative
nominations made by the experimental group participants decreased [(before M= 2.35) (after M= 2.00) a difference of – 0.35]. Thus, improvement was observed in the experimental group as the participants gave fewer negative nominations of their classmates. However, the group which was not treated (the control group), far from improving or maintaining the same level, actually gave more negative nominations of their classmates.

Table 1. Descriptive statistics of each group before and after the experiment.

<table>
<thead>
<tr>
<th>Measurement</th>
<th>Group</th>
<th>n</th>
<th>M</th>
<th>DS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Before</td>
<td>control</td>
<td>30</td>
<td>1.67</td>
<td>2.670</td>
</tr>
<tr>
<td></td>
<td>experimental</td>
<td>31</td>
<td>2.35</td>
<td>2.858</td>
</tr>
<tr>
<td></td>
<td>total</td>
<td>61</td>
<td>2.02</td>
<td>2.766</td>
</tr>
<tr>
<td>After</td>
<td>control</td>
<td>30</td>
<td>1.80</td>
<td>2.747</td>
</tr>
<tr>
<td></td>
<td>experimental</td>
<td>31</td>
<td>2.00</td>
<td>2.781</td>
</tr>
<tr>
<td></td>
<td>total</td>
<td>61</td>
<td>1.90</td>
<td>2.743</td>
</tr>
</tbody>
</table>

Table 2, corresponding to the summary of between-within subjects ANOVA univariate, shows the results of the analysis of the variance of between-within subjects. Here a difference can be seen between before and after for both groups and also the significant difference (p ≤ 0.05) between the test group and the control group [p = 0.333]. Furthermore, the power indicator, with a value of 0.161, indicates that our hypothesis about the treatment was in part confirmed, and also the influence of the treatment by the effect size reflected in the values of eta squared (η²).

Table 2. Summary of between-within subjects ANOVA univariate

<table>
<thead>
<tr>
<th>Source</th>
<th>SSQ</th>
<th>gl</th>
<th>MS</th>
<th>F</th>
<th>p</th>
<th>η²</th>
<th>Power</th>
</tr>
</thead>
<tbody>
<tr>
<td>Within</td>
<td>.374</td>
<td>1</td>
<td>.374</td>
<td>.197</td>
<td>.659</td>
<td>.003</td>
<td>.072</td>
</tr>
<tr>
<td>Within*</td>
<td>1.817</td>
<td>1</td>
<td>1.817</td>
<td>.955</td>
<td>.333</td>
<td>.016</td>
<td>.161</td>
</tr>
<tr>
<td>Between</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Error within</td>
<td>112.282</td>
<td>59</td>
<td>1.903</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Between</td>
<td>6.013</td>
<td>1</td>
<td>6.13</td>
<td>.449</td>
<td>.505</td>
<td>.008</td>
<td>.101</td>
</tr>
<tr>
<td>Error between</td>
<td>790.282</td>
<td>59</td>
<td>13.395</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

SSQ: sum of squares, MS: mean square, p: significance level
Finally, continuing with the differences between the two groups, Figure 1 shows the estimated marginal means and it can be seen that there is a clear tendency towards interaction of the two groups. This demonstrates how the treatment had a positive effect on the test group, unlike the control group.

5. Discussion and Conclusions

For this study, we have analysed the improved social competence between peers in second year of secondary school, Spain, through psychomotor stimulation with the practise of body percussion according to the BAPNE method.

Referring back to the results, the general conclusion is that the experimental group was less stable than the control group as regards the number of negative nominations given. The control group maintained more or less the same percentages of negative nominations both in the pre-test and post-test, in fact even worse figures in the post-test, nominating negatively more than in the experimental group’s pre-test. Although the experimental group began by giving more negative nominations in the pre-test (M= 2.35), it went on to give fewer negative nominations in the post-test (after M= 2.00) with a difference of –0.35. However, the opposite occurred in the control group, which went from being the group that nominated negatively less in the pre-test (before M= 1.67), to being the group which gave more negative nominations in the post-test (after M= 1.80), with a difference of +0.13.

For certain exercises, the BAPNE method, in addition to rhythm and body movement, also incorporates singing. This is very important for the development of social competences and can sometimes help to improve and develop different skills in young adolescents, and have an influence on their mood. As regards this, many research works have confirmed not only the physical but also social benefits of singing (Jauset, Tripovic, & Romero, 2014). It is important to remember and stress the fact that exercises which form part of the BAPNE method are always done in groups and not individually, and also that the instructor creates a pleasant atmosphere which is fun and motivating, without ever forgetting the precision implicit in the activity. The groupings for the exercises can be in the form of a circle, concentric circles, semi-circles, quartets, sextets, pairs, or in two lines moving sideways, or two lines moving facing each other. Previous studies tell us that “working in a circle is a way of stimulating inclusive work and the development of communication skills. Working in two circles encourages social interaction in a context in which there are no hierarchies and everybody interacts with everybody. Singing and tapping a melody in unison generates the sensation of pleasant sounds, and this causes the secretion of oxytocin, a hormone linked to recognising and establishing social relationships, especially in the formation of relationships of trust and generosity” (Romero & Romero, 2013, p 1743).
Thus our work for this research was based on cooperative group work through a series of exercises presented differently from the traditional way. It was based on cooperative learning, put forward by authors like Slavin (1990) as an important form of learning which can help develop motivational and cognitive skills.

We can confirm that, given the significance level of the differences between the groups before and after, the treatment had an effect. If we look again at the results in Figure 1, we can see that they reflect the interaction that the significant differences of the groups before and after indicate. On comparing the results of the pre-test with those of the post-test, we can see that this type of rhythmic learning through body percussion, according to the BAPNE method, eliminates competitiveness between members of the group as it is a form of learning which is by nature inclusive and not hierarchical. All the members of the group accept the hierarchy of the group and not that of the individual, and boys and girls interact and socialise better, and some help classmates who have problems carrying out different exercises. Thus, in summary, the results demonstrate that there was a small change for the better in the experimental group after the post-test. It should also be mentioned that we have taken into account other possible variables which could have had an influence between the pre-test and post-test, such as the time lapse between the two tests and the natural evolution and growth in participants at this stage in their lives.

Finally, it is important to stress that, although we hope our research will be taken into consideration, we recognise that it could always be improved, especially given the limited time we had to carry out the research. A longitudinal study would help to confirm the results observed here.

In conclusion, we hope that our research serves as an indicator and stimulus for continuing the practice of these new rhythmic methodologies, and so be able to carry out more research in the future which could prove and consolidate the results obtained here and so be able to certify the validity and usefulness of our study.

Acknowledgements

This research was supported by Playa San Juan Secondary School and Cabo de la Huerta Secondary School of the city of Alicante.

References


