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GENDER, COMPETITION AND COOPERATION IN SCHOLAR PHYSICAL EDUCATION

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Abstract
Background. The present study analyzes the gender difference presented in the physical education class: the boys are competitive but they do not cooperate and the girls cooperate but they are not competitive.
Aims. The aim of the study is to dispute gender stereotypes and to encourage communication between pupils by using the play in a mixed pair and to improve cooperation skills for boys and competition spirit for girls.
Methods. Observation and Sociometry of Moreno. We applied the sociometry and the sociomatrix and calculated the sociometric index: the Index of Social Status (ISS) and the Index of Preferential Status (ISP) based on the total of preferences (Tpref) and rejections (Tresp).
Results. By calculating the Index of Social Status and Index of Preferential Status, we will know the formal and informal leader of the mixed group. If at the initial test, the leader is a boy, followed by a girl, at the final tests the boy loses the place and another boy becomes the leader but the girl keeps the same position in the group, proving consequence and appreciation.
Conclusions. We observe that the initial stereotypes are changed and this will determine choices based on new criteria which involve cooperation and competition.
Keywords: pair, game, cooperation, stereotype.

Introduction

When mentioning the concept of gender identity, one can understand the process of social construction of the differences between the two categories: "feminine" and "masculine" (C. Delphy, 1991), as well as those of "woman" and "man". Gender studies can also be approached from the perspective of physical education through the analysis of gender stereotypes regarding the sportive branches and disciplines which are not recommended for girls, as they are considered to be "masculine" and can be registered in the subfield of *feminist studies*. But the same rule applies to boys that want to practice sportive branches and disciplines considered to be "feminine" such as dance, ballet, even volley, which can be registered under *masculine* studies. Gender differences are defined as the products of the interaction between biological characteristics of women and men with the environment and they reflect the individual differences through biological, psychological and behavioural variables. (D.N. Ruble, C.L. Martin, 1998).

It has been observed that the separate development of motor skills facilitates the separate development of cognitive skills: boys will get involved especially in activities which will stimulate the development of their spatial skills, girls will engage in social, interactive activities which stimulate their verbal skills (M. Gurian, 2001). At a pedagogical level, in the physical education class it has been observed (M. Balica et al., 2004) that boys aged between 10 and 14 do not know how to cooperate, but only compete; the predominant characteristics are competitiveness and combativeness (A. Chiriac, 2004); the co-operant characteristic belongs to the girls. The educational system itself is structured around the notion of competitiveness, hierarchy and not cooperation and finding a role and status of each member of the group; this implies that the girls, which generally do not adapt to the competitive system, produce much weaker results in the physical education class than the boys (A. Davisse, 2000) and the ones that manage to adapt are regarded as "sportive".

Research shows that women have a more positive attitude towards cooperation than men, while men have a more positive attitude towards competition than women do (Hoyenga & Hoyenga, 1993). Often, boys get involved in games of a competitive nature. Even in the cases in which girls and boys are playing the same game, the boys start competing with everyone around them, while the girls form cooperation groups (Hoyenga & Hoyenga, 1993). and individualism and they will collaborate with the girls in order to achieve the motor tasks. Thus, working in pairs and mixed teams during physical education classes helps fight gender stereotypes by getting to know the partner or teammate of the opposite sex (S. Colwell, 1999). Communication and cooperation strategies approached together with the purpose of the motor task facilitate a path of getting to know the other,

Learning through cooperation is a modern method through which individuals work together with the purpose of accomplishing common objectives. They collaborate to learn better or to help other learn better; this is why the usage of the pair boy-girl will diminish the boys' will of competitiveness.

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appreciating his role and implicitly the development of relationships.

The analysis of school curriculum represents a current issue (M. Balica et al., 2004) and the specific of physical education in Romania has been up to 2010 that certain sportive branches were indicated and recommended separately for boys and girls in the school curriculum. In certain schools, if the space and material conditions allowed it, the physical education class was organised completely unmixed; the timetable was made so as two parallel classes of the same level would have the same physical education class, but unmixed in terms of gender; a male teacher would work with the boys and a female teacher with the girls. These practices are presently not recommended as they no longer correspond to current educational demands; it is believed that working in unmixed groups prevents boy-girl interaction, even if something maybe gained on a motor and organizational level.

Gender education is the teaching system related to the specific learning needs of boys and girls, with the purpose of ensuring them equal chances of development.

The aim of this research is to dispute gender stereotypes in the physical education and sports class through girl-work pair work that also involves achieving the didactic objectives.

The tasks and objectives of the research were to organise a set of motor games to be played in pairs during the physical education class (such as "The Statues"). The operational objectives will be made so as to fulfil the tasks as follows:

- During the motor game "The Statues", pupils hold hands; the pairs are formed by a boy and a girl that run in an allocated space, trying to catch another pair without taking their hands apart; the followed pair must run between the other pairs that are standing in place, going around them; if the pair is caught, then it must catch in its turn the pair that had been following it during the previous round.
- Methodical tips: the activity should be started with a large space, which, as the game progresses is made smaller, so that the space between the pairs is less extensive; thus, the pupils must communicate better between themselves in order to move around.

The object of study is the boy-girl relationship and communication in the pair required by the motor game. It has been proves that boys are not educated in the spirit of cooperation. In this regard, the chosen game will educate and improve the boys' cooperation skills with the purpose of disputing gender stereotypes. It is mentioned that each pupil had the liberty of choosing his/her own partner.

Hypothesis

It is presumed that mixed pair work will improve the cooperation and communication between boys and girls, which will lead to a better knowledge and appreciation between the two members of the pair, materialised in the high number of mutual choices.

Material and method

The experiment took place in the eighth grade School from Jamu Mare, Timiş County , during the first semester of the 2010-2011 scholastic year, at an eighth grade class with 18 pupils – 9 girls and 9 boys. The observation method (systematic observation) and the sociometric method (F. Georgescu, 1979) were used. The sociometric test was applied, the sociometric matrix was produced and the sociometric indexes were calculated: the Social Status Index (ISS) and the Preferential Status Index (ISP) were calculated on the total of preferences (TPref) and on the total of rejections (TResp). The sociometric test used to determine the choices and rejections contains 4 types of questions: *a) Whom would you choose as your pair in "The Statues" game? b) Whom would you not choose as your pair in "The Statues" game? c) Who do you think would make a pair with you in "The Statues" game? d) Who do you think would not make a pair with you in "The Statues" game?*

Three answer options are offered, each being awarded with 3 points, 2 points or 1 point on the order of preference. These choices will be represented in a sociometric matrix in which the choices and rejections between boys and girls will be presented.

In the tables presented below, the boys are registered with dark grey and the boys with light grey. An initial testing was made at the beginning of the first semester and a final one was made at the end of the same semester (Tables 1-4)

Results

Following the initial testing, this data has been recorded:

Table 1: Presentation of choices and rejections recorded upon initial testing

Pupils	GM	LO	TC	BS	MP	MB	CD	PN	PI	NF	FG	SŞ	MI	SI	GR	BP	PR	FA
GM	**0**	1			-1		-3			-2				2			3	
LO		**0**					-1			-2		-3		3			1	2
TC			**0**				-2		2	-3			-1	3				1
BS	-2			**0**								2	1	-3		3		-1
MP				-3	**0**				3	-1		-2	2			1		
MB		1			-2	**0**			-1	-3							2	3
CD				-3		1	**0**	3			2	-2				-1		
PN				-2			3	**0**	2	-3		-1		1				
PI				-2	3				**0**			-3	2	-1		1		
NF		2		-2						**0**	3	-1	-3		1			
FG				-3			2	1	-2		**0**						3	-1
SŞ			-1	3	-3				1			**0**	-2			2		
MI		-3	2				-1		3	-2			**0**			1		
SI	2		1	-1			-2			-3				**0**			3	
GR				-1				1		2	3	-2			**0**			-3
BP			2	-1	-2				1			-3	3			**0**		
PR	2			-1			-2	1		-3				3			**0**	
FA			1			3				-1		-2	-3	2				**0**
T.Pre	2/4	3/4	4/6	1/3	1/3	2/4	2/5	4/6	6/12	1/2	3/8	1/2	4/8	6/14	1/1	5/8	5/12	3/6
T.Res	½	1/3	1/1	10/19	4/8	0/0	6/11	0/0	2/3	10/23	0/0	9/19	4/9	2/4	0/0	1/1	0/0	3/5
ISS	0,11	0,17	0,23	0,05	0,05	0,11	0,11	0,23	0,35	0,05	0,17	0,05	0,23	0,35	0,05	0,29	0,29	0,17
ISP	0,05	0,11	0,17	-0,52	-0,17	0,11	-0,17	0,23	0,23	-0,52	0,17	-0,47	0,00	0,23	0,05	0,23	0,29	0,00

Upon initial testing, boys choose girls firstly in 2 cases (TC - SI, PR - SI), while girls choose boys in the same order also in 2 cases (FG – PR, SI - PR).

For the second position, boys choose girls in one single case (GM – SI), while the girls choose boys in 4 cases (MB – PR, PN – PI, SI – GM, GR – NF).

For the third position, boys choose girls in 3 cases (GM – LO, TC – FA, PR – PN), the same number of times girls choose boys (LO – PR, SI – TC, FA – TC).

When it comes to rejections, boys turn down girls chiefly in 5 cases (GM – CD, TC – NF, BS – SI, MI – LO, PR – NF), the same as girls reject boys (LO – SŞ, CD – BS, NF – MI, FG – BS, FA – MI).

For the second position, boys reject girls in 4 cases (GM – NF, TC – CD, MI – NF, PR – CD) and girls reject boys in 7 cases (MB – MP, CD – SŞ, PN – BS, NF – BS, FG – PI, GR – SŞ, FA – SŞ).

Boys reject girls for the third position in 4 cases (BS – FA, MP – NF, PI – SI, MI – CD) and the girls reject boys in 6 cases (MB - PI, CD - BP, PN - SŞ, NF - SŞ, NF - SŞ, SI - BS, GR - SŞ).

Table 2: Presentation of choices and rejections estimated upon initial testing

Pupils	GM	LO	TC	BS	MP	MB	CD	PN	PI	NF	FG	SŞ	MI	SI	GR	BP	PR	FA
GM	**0**			-1	-2			-3						1			2	3

LO	2	**0**					-2						-3			-1	3	1
TC			**0**		-3				2			-2	-1	3				1
BS	+2 -2			**0**		-1					3			-3	1			
MP			1	+2 -1	**0**				3				-3			-2		
MB	1	2			-2	**0**							-3	-1				3
CD	1	-2					**0**	3		2							-1	-3
PN		2	-1			-2	3	**0**							1			-3
PI					3	-2	1	2	**0**		-1							-3
NF	-2					-3				**0**	2			1	3		-1	
FG		-3				-1	1			2	**0**				3			-2
SŞ		-2		3		-3						**0**	1	-1		2		
MI		-2	3									1	**0**	-3		2		-1
SI	2		1	-3									-1	**0**	-2		3	
GR		-3					1			2	3				**0**		-2	-1
BP				1	-3				2			-2	3			**0**	-1	
PR	2	-3				1							-1	3			**0**	-2
FA		2				3				-1	-3			1	-2			**0**
T.Pre	6/10	3/6	3/5	4/7	1/3	2/4	4/6	2/5	3/7	3/6	3/8	1/1	2/4	5/11	4/8	2/4	3/8	4/8
T.Res	2/4	6/15	1/1	3/5	4/10	6/13	1/2	1/3	0/0	1/1	2/4	2/4	6/12	4/8	2/4	2/3	4/5	7/15
ISS	0,35	0,17	0,17	0,23	0,05	0,11	0,23	0,11	0,17	0,17	0,17	0,05	0,11	0,29	0,23	0,11	0,17	0,23
ISP	0,23	-0,17	0,23	0,05	-0,17	-0,23	0,17	0,05	0,17	0,23	0,05	-0,05	-0,23	-0,05	0,11	0,00	-0,05	-0,17

When it comes to presuming, the boys think they will be chosen firstly by the girls in 4 cases (GM – FA, TC – SI, BS – FG, PR – SI) and the girls by the boys in 2 cases (LO – PR, SI – PR).

For the second position, the boys presume they will be chosen by girls in 2 cases (BS – GM, PI – PN) and the girls will be chosen by the boys also in 2 cases (LO – GM, SI – GM).

For the third position, the boys think they will be chosen by the girls in 5 cases (GM – SI, TC – FA, BS – GR, PI – CD, PR – MB) and the girls by the boys in 4 cases (MB – GM, CD – GM, SI – TC, GR – BS).

In the case of the presumed rejections, the boys think they will not be chosen by girls for the first position in 6 cases (GM-PN, BS-SI, PI-FA, SŞ-MB, MI-SI, PR-LD) and the girls think they will not be chosen by the boys in 3 cases (LO-MI, MB-MI, SI-BS).

For the second position, the boys think they will not be chosen by the girls in 5 cases (BS-GM, PI-MB, SŞ-LD, MI-LD, PR-FA) and the girls will not be chosen by the boys in 3 cases (MB-MP, NF-GM, GR-PR).

For the last position the boys think they will not be chosen by the girls in 4 cases (BS-MB, PI-FG, SŞ-SI, MI-FA) while the girls will not be chosen by the boys in 5 cases (LO-BP, CD-PR, PN-TC, NF-PR, SI-MI).

Following the final testing, the results were recorded in the next two tables:

Table 3: Presentation of choices and rejections upon final testing

Pupils	GM	LO	TC	BS	MP	MB	CD	PN	PI	NF	FG	SŞ	MI	SI	GR	BP	PR	FA

GM	**0**			-1	-2			-3						1			2	3
LO	2	**0**					-2						-3			-1	3	1
TC			**0**		-3				2			-2	-1	3				1
BS	+2 -2			**0**		-1					3			-3	1			
MP			1	+2 -1	**0**				3				-3			-2		
MB	1	2			-2	**0**							-3	-1				3
CD	1	-2					**0**	3		2							-1	-3
PN		2	-1			-2	3	**0**							1			-3
PI					3	-2	1	2	**0**		-1							-3
NF	-2					-3				**0**	2			1	3		-1	
FG		-3				-1	1			2	**0**				3			-2
SŞ		-2		3		-3						**0**	1	-1		2		
MI		-2	3									1	**0**	-3		2		-1
SI	2		1	-3									-1	**0**	-2		3	
GR		-3					1			2	3				**0**		-2	-1
BP				1	-3				2			-2	3			**0**	-1	
PR	2	-3				1							-1	3			**0**	-2
FA		2				3				-1	-3			1	-2			**0**
T.Pre	6/10	3/6	3/5	4/7	1/3	2/4	4/6	2/5	3/7	3/6	3/8	1/1	2/4	5/11	4/8	2/4	3/8	4/8
T.Res	2/4	6/15	1/1	3/5	4/10	6/13	1/2	1/3	0/0	1/1	2/4	2/4	6/12	4/8	2/4	2/3	4/5	7/15
ISS	0,35	0,17	0,17	0,23	0,05	0,11	0,23	0,11	0,17	0,17	0,17	0,05	0,11	0,29	0,23	0,11	0,17	0,23
ISP	0,23	-0,17	0,23	0,05	-0,17	-0,23	0,17	0,05	0,17	0,23	0,05	-0,05	-0,23	-0,05	0,11	0,00	-0,05	-0,17

Upon final testing, one can observe that the boys choose girls for the first position in 4 cases (GM - FA, TC - SI, BS - FG, PR - SI), while the girls choose the boys for the first position for the same position in 2 cases (LO - PR and SI - PR).

For the second position, boys choose girls in one single case (PI-PN), while girls choose boys in 2 cases (LO-GM, SI-GM).

For the third position, boys choose girls in 5 cases (GM - SI, TC - FA, BS - GR, PI - CD, PR - MB) and the girls choose boys in 3 cases (MB - GM, CD - GM, SI - TC).

In the case of rejections, boys do not choose girls for the first position in 6 cases (GM - PN, BS - SI, PI - FA, SŞ - MB, MI - SI, PR-LO) and the girls reject boys in 3 cases (LO - MI, MB - MI, SI - BS).

For the second position, the boys reject the girls in 4 cases (PI - MB, SŞ - LO, MI - LO, PR - FA) and the girls reject the boys in 3 cases (MB - MP, NF - GM, GR - PR).

Boys reject girls for the third position in 4 cases (BS - MB, PI - FG, SŞ - SI, MI - FA) and the girls choose the boys in 5 cases (LO - BP, CD - PR, PN - TC, NF - PR, SI - MI).

Table 4: Presentation of estimated choices and rejections upon final testing

Pupils	GM	LO	TC	BS	MP	MB	CD	PN	PI	NF	FG	SŞ	MI	SI	GR	BP	PR	FA
GM	**0**	1			-1		-3			-2				2			3	
LO		**0**					-1			-2		-3		3			1	2
TC			**0**				-2		2	-3			-1	3				1
BS	-2			**0**								2	1	-3		3		-1

MP				-3	**0**				3	-1		-2	2			1		
MB		1			-2	**0**			-1	-3							2	3
CD				-3		1	**0**	3			2	-2				-1		
PN				-2			3	**0**	2	-3		-1		1				
PI				-2	3				**0**			-3	2	-1		1		
NF		2		-2						**0**	3	-1	-3		1			
FG				-3			2	1	-2		**0**						3	-1
SŞ			-1	3	-3				1			**0**	-2			2		
MI		-3	2				-1		3	-2			**0**			1		
SI	2		1	-1			-2			-3				**0**			3	
GR				-1				1		2	3	-2			**0**			-3
BP			2	-1	-2				1			-3	3			**0**		
PR	2			-1			-2	1		-3				3			**0**	
FA			1			3				-1		-2	-3	2				**0**
T.Pre	2/4	3/4	4/6	1/3	1/3	2/4	2/5	4/6	6/12	1/2	3/8	1/2	4/8	6/14	1/1	5/8	5/12	3/6
T.Res	1/2	1/3	1/1	10/19	4/8	0/0	6/11	0/0	2/3	10/23	0/0	9/19	4/9	2/4	0/0	1/1	0/0	3/5
ISS	0,11	0,17	0,23	0,05	0,05	0,11	0,11	0,23	0,35	0,05	0,17	0,05	0,23	0,35	0,05	0,29	0,29	0,17
ISP	0,05	0,11	0,17	-0,52	-0,17	0,11	-0,17	0,23	0,23	-0,52	0-17	-0,47	0,00	0,23	0,05	0,23	0,29	0,00

When it comes to presumptions, the boys think that they will be chosen for the first position by girls in 2 cases (TC-SI, PR-SI) and the girls presume they will be chosen by the boys in 2 cases (FG-PR, SI-PR).

For the second position, boys presume they will be chosen by the girls in one single case (GM-SI) and the girls think they will be chosen by the boys in 3 cases (MB-PR, PN-PI, SI-GM).

For the third position, the boys think they will be chosen by the girls in 3 cases (GM-LO, TC-FA, PR-PN) and the girls will be chosen by the boys in 3 cases (LO-PR, SI-TC, FA-TC).

In the case of presumed rejections, the boys assume they will be rejected by the girls for the first position in 5 cases (GM-CD, TC-NF, BS-SI, MI-LO, PR-NF) and the girls think they will not be chosen by the boys also in 5 cases (LO-SŞ, CD-BS, NF-MI, FG-BS, FA-MI).

For the second position, boys think they will not be chosen by girls in 4 cases (GM-NF, TC-CD, MI-NF, PR-CD) and the girls presume they will not be chosen by the girls in 7 cases (MB-MP, CD-SŞ, PN-BS, NF-BS, FG-PI, GR-SŞ, FA-SŞ).

For the last position, the boys think they will be rejected by the girls in 4 cases (BS-FA, MP-NF, PI-SI, MI-CD) and the girls think they will not be chosen by the boys in 6 cases (MB-PI, CD-BP, PN-SŞ, NF-SŞ, SI-BS, GR-BS).

Table 5: Presentation of the choices and rejections (initial and upon final testing)

	Ti: BOYS-GIRLS	Tf: BOYS-GIRLS	Ti: GIRLS-BOYS	Tf: GIRLS-BOYS
CHOICES (3)	2	4	2	2
CHOICES (2)	1	1	4	2
CHOICES (1)	3	5	3	3
REJECTIONS (-3)	5	6	5	3
REJECTIONS (-2)	4	4	7	3
REJECTIONS (-1)	4	4	6	5
PRESUMED CHOICES (3)	4	2	2	2
PRESUMED CHOICES (2)	2	1	2	3
PRESUMED CHOICES (1)	5	3	4	3
PRESUMED REJECTIONS (-3)	6	5	3	5
PRESUMED REJECTIONS (-2)	5	4	3	7
PRESUMED REJECTIONS (-1)	4	4	5	6

Discussions

a) *Whom would you choose as your pair in "The Statues" game?*

It can be observed from the table above that the boys are improving their perception of girls during the first semester: if upon initial testing they chose a girl for the first position in 2 cases, upon final testing the number of choices increased to 4; for the second position no change is noticed (1 case each) and for the third position the number of choices rises from 3 to 5. In the case of the girls their choices remain relatively unchanged (2 for the first position and 3 for the third position); only for the second position one can notice a decrease from 4 to 2 choices.

b) *Whom would you not choose as your pair in "The Statues" game?*

In the case of girls' rejection by boys, their decision remains unchanged in the case of the second and third positions (4 each) and they increase from 5 to 6 for the first position. The girls diminish their rejections towards the boys from 5 to 3 for the first position, from 7 to 3 for the second position and from 6 to 5 for the third position.

c) *Who do you think would make a pair with you in "The Statues" game?*

If upon initial testing, the boys presume that the girls would choose them in 4, 2 and 5 cases respectively (for the first, second and third position) and upon final testing these presumptions decrease to 2, 1 and 3, respectively. When it comes to the girls, they remain constant in their choice for the first position (2 presumed choices upon both tests), increase from 2 to 3 for the second position and decrease from 4 to 3 for the third position.

d) *Who do you think would not make a pair with you in "The Statues" game?*

If the boys decrease their number of presumed rejections by girls from 6 to 5 and from 5 to 4 for the first two positions and remain constant for the third position (4 upon both tests), the girls increase the number of presumed rejections by boys from 3 to 5 for the first position, from 3 to 7 for the second position and from 5 to 6 for the third position.

- ***Index of sociometric status***

Upon initial testing, one can notice that there is a tie for the position for class leader: a girl (SI, Iss=0,35) and a boy (PI, Iss=0,35) and upon final testing, PI loses his position; only one pupil remains the leader (GM, Iss=0,35), followed closely by SI (Iss=0,29).

- ***Index of preferential status***

Upon initial testing, a boy is on the first position (PR, Isp=0,29), followed closely (Isp= 0,23) by two girls (SI and PN) and by two boys (BP and PI). Upon final testing, preferences change completely – two boys (GM and TC) and a girl (NF) share the same index (Isp=0,23).

Conclusions

1. The analysis of preferences and rejections recorded between boys and girls before and after working in mixed pairs helps us understand better the perception and stereotypes that boys and girls form about each other, without knowing each other and without working together and to be aware of the difficulty with which these are changed. Working in mixed pairs during the physical education class represents one of the means to dispute gender differences and helps improve the cooperation between girls and boys.
2. It has been noticed that girls are more reserved regarding the boys' capacity of cooperating in a mixed team and this is reflected in the relatively unchanged number of choices from the initial to the final testing.
3. It has been noticed that initial stereotypes that determine attraction during adolescence are confused and determine choices based on new criteria that involve competitiveness (in the case of the girls' rejection by boys) or cooperation (in the case of the boys' choice or rejection by girls).

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