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ORIGINAL

TEACHING STYLE, AUTONOMY SUPPORT AND COMPETENCES IN ADOLESCENTS

ESTILO DE ENSEÑANZA, APOYO A LA AUTONOMÍA Y COMPETENCIAS EN ADOLESCENTES

Moreno-Murcia, J. A¹.; Llorca-Cano², M., y Huéscar³, E.

¹ Catedrático de Universidad, Universidad Miguel Hernández de Elche, Alicante (Spain)
j.moreno@umh.es
jamorenmurcia.edu.umh.es

² Graduado en Ciencias de la Actividad Física y el Deporte. Universidad Miguel Hernández de Elche, Alicante (Spain) millorka2@gmail.com

³ Profesora Contratada Doctora, Universidad Miguel Hernández de Elche, Alicante (Spain)
ehuescar@umh.es

Spanish-English translator: Lorraine Mealing, lmealing.elc@gmail.com

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ABSTRACT

The objective of the study was to verify the predictive power of teaching styles on autonomy support and key competences in adolescent students in physical education classes. The sample consisted of 475 students ($M = 15.43$, $SD = 1.13$) from eight centers of a large Spanish province, which were measured the perception of teaching styles, support for autonomy and key competences. After stepwise linear regression analyzes, active teaching styles (individualizing, participatory and socializing, cognitive and creative) predicted in a significant and positive way support for autonomy and key competences with an explained variance of 44% and 17%, respectively. The active teaching styles positively predict both the support for teacher autonomy and the acquisition of key competences by students in physical education. In conclusion, this study shows

a relationship between teaching styles, autonomy support and key competences development.

KEY WORDS: methodology, teaching, teachers, pedagogy, adolescence.

RESUMEN

El objetivo del estudio consistió en comprobar el poder predictivo de los estilos de enseñanza docente sobre el apoyo a la autonomía y las competencias clave en estudiantes adolescentes en clases de educación física. La muestra estuvo compuesta por 475 estudiantes ($M = 15.43$, $DT = 1.13$) de ocho centros de una gran provincia española a los que se les midió la percepción de los estilos docentes, el apoyo a la autonomía y las competencias clave. Tras los análisis de regresión lineal por Steps, los estilos de enseñanza activos (individualizadores, participativos y socializadores, cognitivos y creativos) predijeron de forma significativa y positiva el apoyo a la autonomía y las competencias clave con una varianza explicada de 44% y 17%, respectivamente. Como conclusión general, el estudio muestra la relación entre los estilos de enseñanza docentes, el apoyo a la autonomía y el desarrollo de las competencias clave.

PALABRAS CLAVE: metodología, docencia, profesorado, pedagogía, adolescencia.

INTRODUCCIÓN

There are currently numerous studies that draw attention to how students' experiences in physical education classes can generate both positive and negative consequences on a cognitive, behavioral, and affective level. Authors highlight the influence of these factors on instilling healthy sports habits or interest in doing physical activity outside the school and in later life (Jang, Kim, & Reeve, 2016). Besides this, over the last decade, the Organization for Economic Co-operation and Development (OECD), through the Deseco Project (DESECO, 2002) has identified a set of key competences to respond to students having to adjust personal characteristics to different contextual demands and to promote life-long learning. The definition of competence is the ability to respond to demands successfully, taking into account both cognitive and non-cognitive dimensions.

In addition, it has been stressed that developing such competences would require a favorable social climate in order to stimulate their optimization. Thus, the adaptation of teaching-learning methods to the acquisition of such competences has become fundamental (Gutiérrez et al., 2017; Hortigüela, Pérez, & Abella, 2016). In this sense, active and student-centered methodologies have become the cornerstone of current pedagogy, substantiated by extensive scientific research on a correlational and experimental level (Gustavsson, Jirwen, Aurell, Miller, & Rudman, 2016). Therefore, when designing globalizing models that optimize pedagogical

performance, it would be highly relevant to consider the relations between these aspects with empirical evidence.

Autonomy support

We used the *Autonomy Support Scale in Physical Education (Apoyo a la Autonomía en Educación Física)* (EAA-EF) by Moreno-Murcia, Huéscar, Andrés-Fabra and Sánchez-Latorre (2020). This scale has 11 items that measure a single factor, student perception of autonomy support from their teachers in physical education classes. The items (e.g. “Explains why it is important to do the tasks”) preceded by the sentence “In my physical education classes, my teacher ...”. Were measured on a Likert scale from 1 (*Totally agree*) to 5 (*Totally disagree*). Internal consistency obtained was 0.78.

Teaching styles in physical education

One of the aspects of most interest in the educational context is how to maximize teachers’ methodological effectiveness in order to optimize and improve the teaching-learning process (Delgado, 1991; Delgado & Sicilia, 2002; Lochbaum & Jean-Noel, 2016). This is directly related to the teaching style used by teachers in their classes, and is a determining factor in the advancement of autonomy and the active involvement of students. Delgado Noguera (1991) identifies six groups: traditional, individualizing, participatory, socializing, cognitive and creative. Among these styles, research shows that physical education teachers tend to have a preference for participatory, individualizing, creative and socializing styles (Alarcón y Reyno, 2009; González-Peiteado & Pino-Juste, 2013; Merino, Soler, & Valero, 2014), which, because of their characteristics of involvement and closeness to students, lead to a better relationship with them and a positive classroom atmosphere (Blandon, Molina, & Vergara, 2005; Morgan, Sproule, & Kingston, 2005). However, this view contrasts with other studies that indicate that the styles most frequently used by teachers and where they feel most confident are traditional styles (Jaakkola & Watt, 2011; Kulinna & Cothran, 2003).

Key competences in physical education

In Spain, prompted by an international trend for innovation in education, different educational reforms have been enacted: LOCE (2002), LOE (2006), and the current Organic Law 8/2013 of 9th December, LOMCE. The latter was developed for the improvement of quality in education, which through “Key Competences” is immersed in what is known as the “Competency-based Approach” (OCDE, 2002). In this framework, competence is understood to be a set of practical skills, knowledge, motivation, ethical values, attitudes and emotions aimed at achieving effective results (OCDE, 2005). With key knowledge, the LOE and the LOMCE established competences in the educational context, including them in the basic curriculum (Order ECD/65/2015; Royal Decree 126/2014; Royall Decree 1105/2014). These competences are situated at the epicenter of the teaching-learning process so that students can perform effectively; and teachers become facilitators and guides, designing situations which promote a sense of initiative and interest in

their students, aiming to take a step towards an educational approach based on the skills necessary to attain a full development in their lives outside school (Halász & Michel, 2011).

In the context of physical education, there is still a gap between official discourse and the verification of knowledge about this approach and putting it into practice (Figueras et al., 2016; Zapatero, González, & Campos, 2013). Therefore, a greater comprehension is required through studies that contemplate the role of key competences in the teaching-learning process, and analyze it through different models (Hortigüela et al., 2016). In any event, what matters most is that competences should entail a change in the educational perspective; moving from teaching centered education to learner centered education, where both the learner and teacher's role are contemplated. This shift has methodological implications that favor active methodologies that involve students and enable them to become part of the teaching-learning process, thereby disregarding the passivity implicit in the more traditional models.

The present study

Based on the above arguments, the question would be: what teaching styles are more conducive to developing key competences and students' perception of autonomy?; or how does an autonomy support style affect the development of this curricular element? In spite of being three elements of great interest in current education, it is evident that scientific literature does not place much stress on these aspects jointly, and there is a need for further scientific studies that research the relation between them. Moreno-Murcia, Ruiz, and Vera (2015) verified how the profile of teacher autonomy support has a direct relation with students' perception of the basic competences. In this respect, it would be positive to link these relations to the different teaching styles to establish which would be conducive to students' adaptive progress in terms of competences. Based on the previous studies, it is expected that the styles considered active (individualizing, socializing, participatory, cognitive and creative) will positively predict autonomy support and the development of key competencies.

Objectives

Therefore, the main aim of this study was to verify the predictive power of teachers' teaching styles on autonomy support and key competences in physical education. In addition, the secondary objectives were to verify the mean value of teachers' styles to find out which is the most valued by students and to verify the relationship between the variables (by comparing the different styles to one another) and interpersonal style.

MATERIAL AND METHODS

PARTICIPANTS

The sample consisted of 475 physical education students (236 boys and 239 girls) aged between 14 and 20 ($M = 15.43$, $SD = 1.13$). They were from 3rd and 4th grade of secondary education and first year of Baccalaureate at eight secondary education schools in a large Spanish province.

MEASURES

Perceived teaching style. The *Teaching Styles Scale in Physical Education (Escala de Estilo de Enseñanza en Educación Física) (EEEF)* was adapted to evaluate students. Based on the scale by Merino, Valero, and Moreno-Murcia (2017), it consisted of 20 items grouped into 5 factors: traditional styles (e.g. “Sets the pace of the class so that we all finish the exercise at the same time, without being concerned about why I couldn’t finish it”); individualizing styles (e.g. “Introduces situations that favor my responsibility and ability to reason what I’m thinking”); participatory and socializing (e.g. “Allows me to participate in classes and so I learn more”) (e.g. “Favors team work with classmates”); cognitive (e.g. “Guides us so that we can discover how to learn skills”); and creative (e.g. “Helps me develop my creativity in classes. The preceding sentence was “In my physical education classes my teacher...”. The responses were valued on a Likert scale from 1 (*Totally disagree*) to 5 (*Totally agree*). Internal consistency for the dimensions was as follows: 0.69 for traditional, 0.71 for individualizing, 0.73 for participatory and socializing, 0.70 for cognitive and 0.78 for creative.

Autonomy support. We used the *Autonomy Support Scale in Physical Education (Apoyo a la Autonomía en Educación Física) (EAA-EF)* by Moreno-Murcia, Huéscar, Fabra and Sánchez (in print). This scale has 11 items that measure a single factor, student perception of autonomy support from their teachers in physical education classes. The items (e.g. “Explains why it is important to do the tasks”) preceded by the sentence “In my physical education classes, my teacher ...”. were measured on a Likert scale from 1 (*Totally agree*) to 5 (*Totally disagree*). Internal consistency obtained was 0.78.

Key competences. We used the *“Perceived Key Competences Scale (Escala de percepción de las Competencias Clave)” (ECC)* by Moreno-Murcia et al. (2015). It comprises 9 items which measure student perception of the acquisition of different key competences. These items, (e.g. “Express my ideas and respect those of others”), are preceded by the sentence “What my teacher is teaching me in physical education enables me to ...”. The responses were given on a Likert scale from 1 (*Totally disagree*) to 7 (*Totally agree*). The internal consistency of this dimension was 0.82.

PROCEDURE

After asking for the necessary authorization from the authorities at each of the selected schools and from the participants' parents/tutors, the administration of the questionnaires was scheduled. They were administered during the different tutorial times of the groups, giving them the necessary instructions for completing the questionnaires and insisting on sincerity and honesty in their responses. The time required to fill out the questionnaires was approximately 15 minutes.

DATA ANALYSIS

First, the descriptive statistics for all the target variables were calculated (mean and standard deviation). Internal consistency for each factor was measured by Cronbach's Alpha coefficient and bivariate correlations. A confirmatory factor analysis was performed to validate the scale of students' perception of teaching styles. Stepwise linear regression was carried out for each teaching style to verify their predictive power on autonomy support and students' acquisition of key competences. Data analysis was performed using the statistical software SPSS 25.0.

RESULTS

Confirmatory factorial Analysis of The *Teaching Styles Scale in Physical Education (EEEEF)*

As the *EEEEF* had not been validated for the context of students' perception, a confirmatory factorial analysis (CFA) was carried out, based on the 20 measures observed and the five latent constructs from the original scale. This was done with an independent sample of 285 physical education students (132 boys and 153 girls) aged between 14 and 20 ($M = 15.67$, $SD = 1.45$), from 3rd and 4th grade of secondary education and first year of Baccalaureate. The validity of the model was considered through a series of *fit* coefficients, also called goodness of fit indices: χ^2 , $\chi^2/d.f.$, RMSEA and incremental indices (CFI, TLI and GFI). Maximum likelihood estimation in conjunction with *bootstrapping* was used, since the Mardia multivariate coefficient was 86.30, which indicated lack of multivariate normality of data. The indices obtained were adequate: χ^2 (60, $N = 285$) = 310.97, $p = .000$; $\chi^2/d.f. = 2.07$; CFI = .92; TLI = .90; GFI = .92; RSMR = .04; RMSEA = .04. The standardized weights of the regression ranged between .41 y .68, all of which were statistically significant.

Descriptive and correlational analyses

The styles that obtained the highest scores were participatory/socializing, followed by traditional, individualizing, cognitive, and creative. All the dimensions correlated with each other positively and significantly (Table 1).

Table1. Descriptive Statistics and Correlations for all the Variables

	<i>M</i>	<i>SD</i>	α	1	2	3	4	5	6	7
1. Autonomy support	3.76	0.54	0.78	-	0.22**	0.46**	0.59**	0.57**	0.52**	0.39**
2. Traditional styles	3.92	0.73	0.69	-	-	0.23*	0.35**	0.23**	0.23**	0.09*
3. Individualizing styles	3.72	0.82	0.71	-	-	-	0.53**	0.48**	0.43**	0.31**
4. Paparticipatory /socializing styles	4.08	0.62	0.73	-	-	-	-	0.62**	0.53**	0.34**
5. Cognitive styles	3.71	0.69	0.70	-	-	-	-	-	0.52**	0.31**
6. Creative styles	3.71	0.78	0.78	-	-	-	-	-	-	0.34**
7. Key competences	3.54	1.23	0.85	-	-	-	-	-	-	-

Note: * $p < 0.05$; ** $p < 0.01$

Linear regression model

The predictive value of the different teaching styles on autonomy support and key competences was verified through the stepwise linear regression analysis (Tables 2 and 3). In the first step, the results indicated a positive prediction by traditional styles, explaining 4% variance for autonomy. In the second step, individualizing styles were introduced, and together with traditional styles, they positively predicted autonomy support and key competences, with 22% and 9% respectively. In the third step, participatory and socializing styles were introduced, and together with individualizing styles, they positively predicted autonomy support with 37% and key competences with 13%. In the fourth step, autonomy support with 42% explained variance and key competences with 15% explained variance were predicted positively by individualizing styles, participatory and socializing styles and cognitive styles. In the fifth step, autonomy support and key competences, with 44% and 17% explained variance respectively, were predicted positively by all the styles except for traditional styles.

Table 2. Linear regression analysis for prediction of autonomy support by teaching styles.

	B	SEB	β	ΔR^2
Step 1	3.12	0.13		0.04**
Traditional styles	0.16	0.03	0.21**	
Step 2	2.34	0.14		0.22**
Traditional styles	0.08	0.03	0.11**	
Individualizing styles	0.28	0.02	0.43**	
Step 3	1.53	0.14		0.37**
Traditional styles	0.00	0.02	0.00	
Individualizing styles	0.13	0.02	.20**	
Participatory and socializing styles	0.42	0.04	0.47**	
Step 4	1.35	0.14		0.42**
Traditional styles	0.00	0.02	0.00	
Individualizing styles	0.09	0.02	0.14**	
Participatory and socializing styles	0.28	0.04	0.32**	
Cognitive	0.24	0.03	0.30**	
Step 5	1.28	0.14		0.44**
Traditional styles	-0.00	0.02	-0.00	
Individualizing styles	0.07	0.02	0.11**	
Participatory and socializing styles	0.24	0.04	0.27**	
Cognitive	0.19	0.03	0.24**	
Creative styled	0.13	0.03	0.19**	

Note: * $p < 0.05$; ** $p < 0.01$

Table 3. Linear regression analysis for the prediction of key competences

	B	SEB	β	ΔR^2
Step 1	2.93	0.31		0.00*
Traditional styles	0.15	0.07	0.21*	
Step 2	1.70	0.34		0.09**
Traditional styles	0.04	0.07	0.24	
Individualizing styles	0.45	0.06	0.30**	
Step 3	0.72	0.39		0.13**
Traditional styles	-0.06	0.07	-0.03	
Individualizing styles	0.26	0.07	0.17**	
Participatory and socializing styles	0.51	0.10	0.25**	
Step 4	0.44	0.39		0.15**
Traditional styles	-0.06	0.07	-0.03	
Individualizing styles	0.20	0.07	0.13**	
Participatory and socializing styles	0.30	0.11	0.15*	
Cognitive	0.36	0.09	0.20**	
Step 5	0.32	0.39		0.17**
Traditional styles	-0.07	0.07	-0.04	
Individualizing styles	0.17	0.07	0.11*	
Participatory and socializing styles	0.22	0.12	0.11*	
Cognitive	0.28	0.10	0.15**	
Creative styles	0.25	0.08	0.16**	

Note: * $p < 0.05$; ** $p < 0.01$ f

DISCUSSION

There has been a change in teachers' perception about the importance of introducing key competences in their teaching because of the expected benefits they bring. However, there are no studies that contribute to understanding the relations between these competences and students' perception of teachers' behavioral patterns, such as teaching styles and the motivational style that is developed during their interaction. In this respect, this study aimed to verify the predictive power of perceived teaching styles on autonomy support and key competences in physical education.

As hypothesized, active teaching styles predicted autonomy support as well as students' perception of key competences. For Reeve (2016), one aspect which should be addressed to generate autonomy support in students is to think about how the curriculum is developed to approach this autonomy support (design of learning activities, class atmosphere and facilitation of a teacher-learner relationship that satisfies the basic psychological needs). Another aspect involves the establishment of teacher-learner synchronization, which is a far cry from unidirectional processes (Lee & Reeve, 2013). In fact, in the same line, Jang et al. (2016) found that considering students' preferences in the design of instruction, increased commitment, improved conceptual learning and the perception of autonomy support. After an intervention with English students, Morgan et al. (2005) concluded that student centered styles led to a better motivational climate, among other benefits. This contrasts with teacher centered styles where students have less power of decision (Bartholomew et al., 2018). Likewise, Pitsi, Digelidis, and Papaioannou (2015) reached the same conclusion after an experimental intervention in learning traditional Greek dances. Other studies have shown that implementing this style results in improvement in students' involvement during physical education classes (Isaza & Henao, 2012).

With respect to key competences, the results are coherent with the scarce research to date that indicates that enabling students to participate more in decision making through active methodologies shows a positive relation with the acquisition of key competences (Fernández, 2006). Moreno-Murcia et al. (2015) have pointed out that there is a positive relationship between teacher autonomy support and the development of competences in students. In fact, teaching styles perceived as active provide learners with the necessary strategies to initiate, organize and persist in learning, participate in results, and experience inclusion and participation with others. All of these strategies can be expected to lead them towards being able to nurture the basic psychological needs that characterize the autonomy support style (Reeve, 2016), and at the same time enable them to nurture characteristics that define each of the key competences (communication, mathematical, digital, learning to learn, social and civic, sense of initiative and entrepreneurship and cultural awareness/ expression). This study has some limitations. The number of participants is limited, and they have difficulty in completing questionnaires because they are unfamiliar with this type of task. Also, there is the complexity of items, characteristic of correlational studies, and in this line, some studies acknowledge the difficulty

students have in differentiating the styles used by teachers (Cothran, Kulinna, & Ward, 2000).

Nevertheless, these results also provide an impetus to the research presented so far, which needs to have validated instruments which will permit further comprehension of the variables involved in positive motivational climates during physical education classes. In this sense, it would be opportune for new studies to continue verifying the validity of these variables with other groups, and to also look into the teacher-learner interaction through experimental designs, trying to find cause-effect relations between them. Also, it would be interesting to contemplate some of the competence teaching methods that have been gaining importance recently (project-based learning, service learning, cooperative learning, Blázquez, 2016).

CONCLUSIONS

The results of this study allow us to confirm the objective presented. That is to say, more active teaching styles predict variables like autonomy support and the development of key competences in students. For this reason, it is evident that in their interaction with students, there is a need for physical education teachers to use strategies that involve students actively, thereby increasing their participation in the decisions made in class. To be exact, it would be interesting for students to be able to intervene in aspects like the selection of content, types of tasks and how to solve them, assessment methods, etc. Furthermore, it would be beneficial to students if teachers provided them with the tools to be able to work independently, thereby favoring their autonomy and emancipatory processes, as well as the ability to self-manage situations that occur within the process.

In this sense, establishing tasks that promote cooperation and social relations within the classroom would have positive effects, enabling students to assume a specific role in the development of tasks. Accepting their role and adjusting to the rest of their classmates would therefore generate a positive predisposition towards collaboration and cooperation. Finally, in order to achieve greater integral development in students, it is important for teachers to assume the role of guide and present problems suited to students' needs, guiding and motivating them in a self-determined way towards solving them. To conclude, the concept of competence as students' mastery resulting from their learning should not be separate from the design of teaching strategies where priority is given to students' participation and criteria in conjunction with support for their autonomy.

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