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Publicaciones. Facultad de Educación y Humanidades del Campus de Melilla
Depósito legal: GR-94-2001 · eISSN: 2530-9269 · pISSN: 1577-4147
Editor: Facultad de Ciencias de la Educación y del Deporte de Melilla (Universidad de Granada)

Self-concept profiles: differences in body satisfaction, body mass index and physical activity in school children

Perfiles en el autoconcepto: diferencias en la insatisfacción corporal, Índice de Masa Corporal y actividad física en jóvenes escolares

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Dates · Fechas

Published: 2021/12/31
Received: 2021/08/07
Accepted: 2021/09/20

How to Cite this Paper · Cómo citar este trabajo

Vaquero-Solís, M., Moreno-Díaz, M. I., Tapia-Serrano M. A., & Sánchez-Miguel, P. A. (2021). Self-concept profiles: differences in body satisfaction, body mass index and physical activity in school children. *Publicaciones, 51*(2), 77–88. https://doi.org/10.30827/publicaciones.v51i2.22394

Abstract

The aim of the present study was to identify different groups of students, with homogeneous profiles, for the different dimensions that make up the physical self-concept, as well as set differences in relation to body dissatisfaction, body mass index, and physical activity. A total of 303 adolescents, male (150) and female (152), aged between 10-13 years (M = 11.74) belonging to different primary education schools participated in the study. The PSPP questionnaire was used for the evaluation of physical self-concept, Stunkard figures for body satisfaction, BMI, and the PAQ-A questionnaire were used for the evaluation of physical activity. Descriptive statistics, bivariate correlations, cluster analysis, and ANOVA of a factor were made to establish differences between the variables. The results showed the establishment of 4 different profiles in relation to the different dimensions of the physical self-concept. Likewise, significant differences were shown between BMI, physical activity, and body dissatisfaction between profiles derived from self-concept. As a conclusion, 4 different profiles are established regarding the dimensions of physical self-concept among which there are differences around BMI, levels of PA, and body satisfaction.

Keywords: Self-concept, body mass index, physical activity, body dissatisfaction, children.

Resumen

El objetivo del presente estudio ha sido identificar diferentes grupos de estudiantes, con perfiles homogéneos, para las distintas dimensiones que componen el autoconcepto físico, y establecer diferencias en relación a la insatisfacción corporal, índice de masa corporal, y actividad física. Un total de 303 adolescentes, masculinos (150) y femeninos (152), con edades comprendidas entre los 10-13 años (*M* = 11.74) pertenecientes a diferentes centros de Educación Primaria participaron en el estudio. Se empleó el cuestionario PSPP para la valoración del autoconcepto físico, las figuras de Stunkard para la satisfacción corporal, el IMC, y el cuestionario PAQ-A para la valoración de la actividad física. Se realizaron estadísticosdescriptivos, correlaciones de bivariadas, analisis de cluster, y ANOVA de un factor para establecer diferencias entre las variables. Los resultados mostraron el establecimiento de 4 perfiles distintos en relación a las distintas dimensiones del autoconcepto físico. Asimismo, se mostraron diferencias significativas entre el IMC, la actividad física, y la satisfacción corporal entre los perfiles derivados del autoconcepto. A modo de conclusión se establecen 4 perfiles distintos respecto las dimensiones del autoconcepto físico entre las cuales existen diferencias en torno al IMC, niveles de AF, y satisfacción corporal.

Palabras Clave: Autoconcepto, índice de masa corporal, actividad física, insatisfacción corporal, niños.

概要

本研究的目的是针对构成身体自我概念的不同维度，确定具有相同特征的不同学生群体，并确定与身体满意度、体重指数和身体活动方面有关的差异。共有 303 名青少年参与了研究，其中包括150名男性和152名女性，年龄在 10-13 岁 (M = 11.74)，在不同的小学上学。我们应用PSPP 问卷评估身体自我概念，Stunkard 数据用于评估身体满意度，BMI，PAQ-A 问卷用于评估身体活动。研究进行了描述性统计、双变量相关性、聚类分析和单向方差分析以确定变量之间的差异。研究结果根据与身体自我概念的不同维度将参与者分为4类。同样，BMI、身体活动和身体满意度在源自自我概念的概况之间也存在显着差异。作为结论，研究按照身体自我概念的维度将参与者分为4类，他们在BMI、PA水平和身体满意度方面存在差异。

关键词: 自我概念、体重指数、体力活动、身体不满、儿童。

Аннотация

Целью настоящего исследования было выявить различные группы студентов с однородными профилями по различным измерениям, составляющим физическую самооценку, и установить различия в отношении неудовлетворенности телом, индекса массы тела и физической активности. В исследовании приняли участие 303 подростка мужского (150) и женского (152) пола в возрасте 10-13 лет (M = 11,74) из разных начальных школ. Для оценки физической самооценки использовался опросник PSPP, для оценки удовлетворенности телом - показатели Стункарда, ИМТ, для оценки физической активности - опросник PAQ-A. Для установления различий между переменными были проведены описательная статистика, двумерные корреляции, кластерный анализ и однофакторный ANOVA. Результаты показали наличие 4 различных профилей в отношении различных измерений физической самооценки. Также были обнаружены значительные различия между ИМТ, физической активностью и удовлетворенностью телом среди профилей, полученных на основе самооценки. В заключение, было установлено 4 различных профиля в отношении измерений физической самооценки, среди которых существуют различия по ИМТ, уровню ПА и удовлетворенности телом.

Ключевые слова: Самооценка, индекс массы тела, физическая активность, неудовлетворенность своим телом, дети.

Introduction

Adolescence is a period characterized by important biological changes such as puberty an psychosocial growth, which have a strong impact on health related to healthy behaviors (Malina et al., 2004). This stage tends to be characterized by an increase in sedentary behaviors, causing an increase in the Body Mass Index (BMI) in young and adolescents, a decrease in physical activity levels, and increase in screen time (Cerin et al., 2019; Sousa-Sá et al., 2020; Verloigne et al., 2016). The age range from 10 to 15 years is considered one of the most critical periods in the maturation of childhood for the development of overweight and obesity in adolescents (Sousa-Sá et al., 2020). This fact of perceiving him/herself with overweight and obesity is associated with negative mental health that can have consequences in physical inactivity and weight gain (Flanagan & Perry, 2018). In this regard, the concept of body dissatisfaction refers to the subjective evaluation of one's own body, such as figure, weight, stomach, and hips. (Stice & Shaw, 2002). Another essential item of mental health and psychological well-being is the physical self-concept, which forms one of the main domains of the general self-concept and multidimensional conception (Shavelson et al., 1976), differentiating in the same four dimensions or subdomains: Physical ability, physical condition, physical attractiveness, and strength.

Previous studies have already shown the benefits and relationships that take place between physical activity, BMI, body satisfaction, and self-concept. In this sense, a significant literature provides evidence about the relationships established between the aforementioned variables, which range from cross-sectional studies based on relationships (Sánchez-Miguel et al., 2019), to structural equation models that explain the role of self-concept in the intention to be physically active (Fernández-Bustos et al., 2019)physical self-concept, and body mass index (BMI, passing through the role self-concept mediator (Jekauc et al., 2017).

In addition, there are constructs that allow us to talk about profiles, such as the different profiles of achievement goals in physical education (Nicholls, 1984)a context in which gains in mastery indicate competence, or as capacity relative to that of others, a context in which a gain in mastery alone does not indicate high ability. To demonstrate high capacity, one must achieve more with equal effort or use less effort than do others for an equal performance. The conditions under which these different conceptions of ability function as individuals' goals and the nature of subjective experience in each case are specified. Different predictions of task choice and performance are derived and tested for each case using data from previously published studies. The effects of task and ego involvement, task choice, and self-perceptions are discussed. (125 ref ("to the task" and "to the ego"), resilience (Martínez, 2016), emotional intelligence (Martínez-Monteagudo et al., 2019), and self-concept (Ramos-Díaz et al., 2017). Regarding the dimension of self-concept, some works have attempted to explain the construct of the self-concept as one that presents various levels in which the self-concept fluctuates, presenting different degrees of it. (Sánchez-Miguel et al., 2020; Tellu et al., 2018). In this sense, other studies identify different profiles in self-concept (Gargallo López et al., 2009; Guijarro-Romero et al., 2020), which are based on an analysis of the means according to the different factors in which self-concept can be categorized.

Therefore, the present research aims to identify different groups of students with homogeneous profile based on the different dimensions that compose the physical self-concept. In addition, its proposed to analyze differences around body dissatisfaction, BMI, and level of physical activity.

Methods

Participants

A total of 303 students from eight primary schools, boys (n = 150) and girls (n = 152), aged between 10 to 13 years participated in the study. The sample was selected for convenience considering the availability of the researchers to travel to the schools, and the predisposition of the schools to participate in the research.

Measures

Self-concept perception. For the assessment of physical self-concept, the Spanish version (Murcia et al., 2007)as well as the effect of gender, the practice of physical activity and sport and the extent of physical activity and sport practice outside of school hours in relation to the physical self-concept of older primary schoolchildren in Physical Education classes. The sample was comprised of 1086 participants, 570 boys and 516 girls ranging in age from 10 to 11 years. Each student completed Fox and Corbin's (1989 of the Physical Self-Perception Profile (Fox, 1989) was used. The complete instrument consists of 28 items that assesses five factors: Fitness (five items, e.g., "I feel very confident to practice continuously and to maintain my physical shape" α = .78); Perceived competence (four items, e.g., "I am very good at almost all sports" α = .78), Physical strength (six items, e.g. "When it comes to situations that require strength, I am the first to offer myself" α = .68), physical appearance (nine items, e.g., "I feel very satisfied with how I am physically" α = .72), and esteem (four items, e.g., "When it comes to physical appearance, I don't feel very confident in myself." α = .65).

The instrument showed an acceptable internal consistency (all factors scored over .70) (Nunnally, 1978).

Body Mass Index. It was calculated through the values obtained in weight and height. These measurements where repeated two to three times if there were differences of .5 cm or .5 kg respectively. Likewise, weight and height were obtained with a *Seca 884* model scale, and it was calculated through the following formula [peso (kg)/altura (m)2]. In the same way, the BMI was adjusted in relation to the age and sex of the participants according to the cut-off points of Cole et al. (2000).

Physical activity perceived. Physical activity was evaluated through the Physical Activity Questionnaire for adolescents (PAQ-A, (Kowalski et al., 2004). This questionnaire is made up of 9 items that assesses the level of physical activity that adolescents have performed in the last 7 days, using a 5-point Likert scale: during their free time, during physical education classes, as well as at different times during class days (lunch, afternoons, and nights) and during the weekend. The result is a score of 1 to 5 that allows to establish a rank in the level of physical activity (Martínez-Gómez et al., 2009). The final score is obtained from the arithmetic mean of 8 of the 9 items, since the last item measures whether the participant was ill during the last week (Martínez-Gómez et al., 2009). Finally, the Cronbach's alpha coefficient obtained for the present sample was a = .79.

Body dissatisfaction. The Stunkard figure scale was used to assess body image dissatisfaction. The Stunkard scale is composed of nine silhouette figures that increase in size from very thin (a value of 1) to very obese (a value of 9) (Stunkard et al., 1983). The size of the body image is the number of the figure selected in response to the question "select the figure that reflects how you think you look?". The ideal body satisfaction of the body is the number of the chosen figure in response to the question "select your ideal figure?". Subsequently, body image dissatisfaction was calculated through the difference between the perceived body size and the perceived ideal body size. Finally, a body size dissatisfaction value was created for each participant by subtracting the number from the indicated figure as the body image number from the desired figure.

Procedure

The development of this study has been carried out through several phases. In the first step, we contacted the collaborating schools to request the pertinent permissions. In addition, it was explained that participation in the study was voluntary and anonymous, so the identity of the participants was not compromised. Once the permits were obtained from the school, under the recommendations of the ethical principles and codes of conduct of the American Psychological Association (2002) for this type of research, an appointment was made to administer the questionnaires personally. The procedure conducted by the researcher was to briefly present what the questionnaire would be about, making it clear that it was not an evaluation test so that the students were as honest as possible. The approximate time allotted to complete the questionnaires was about 25 minutes while the researcher was there in case any questions arose.

Data analysis

Data analysis was performed using the SPSS 23.0 statistical package, with which descriptive statistics, correlations, cluster analysis of k means, and one-factor ANOVA were performed to find differences in BMI, body satisfaction and physical activity level.

Results

Descriptive statistics and correlation analyze are shown in Table 1. In this regard, significant positive relationships were shown between BMI and body image dissatisfaction (r = .53; p< .05), also shown significant negative relationships between BMI with the physical activity (r = - .11; p < .05), finally, it was negatively related to the global score of self-concept (r = - .22; p < .05). On another hand, showed significant positive relationships between physical activity and the global score of self-concept (r = .46; p < .05*).*

Table 1

Descriptive statistics and correlation between variables

Variables	1	2	3	4
1. BMI	-	.053**	-.11**	-.22**
2. Body dissatisfaction	-	-	-.058	-.216**
3. Physical activity	-	-	-	.463**
4. G S of self-concept	-	-	-	-
M	18.6	.52	3.20	3.70
SD	3.00	1.14	.67	.61

Note. P ** <.05; G. S of self-concept: Global Score of self-concept

Table 2 shows the statistics extracted through the Z scores, derived from the mean scores of the descriptive statistics. Next, after performing the hierarchical analysis of K means, 4 itineraries were selected, thus classifying 4 profiles of self-concept: profile 1: Low profile in self-esteem and appearance, medium-negative levels of strength and good perceived competence and physical condition; profile 2: high profile in self-esteem and appearance and those dimensions of physical self-concept that are closely related to physical-sporting skills (strength, endurance, agility); profile 3: profile of those adolescents who score high in all dimensions of physical self-concept; profile 4: profile of those individuals who score low in all dimensions of physical self-concept. The following graph (Figure 1) shows in a more visual way the different profiles according to the scores obtained in the different dimensions of physical self-concept.

Table 2

Cluster analysis for the creation of profiles in the self-concept

Self-concept profiles				
	Profiles			
	1	2	3	4
Strength (z-scores)	-.074	-.330	1.045	-.797
Self-Esteem (z-scores)	-1.580	.317	.673	-.631
Perceived Competence (z-scores)	.646	-.284	.972	-1.119
Appearance (z-scores)	-.836	.378	.665	-1.075
Physical Condition (z-scores)	.473	-.137	.859	-1.125
Number of cases by profiles	33	111	90	69

Figure 1

Profiles graph

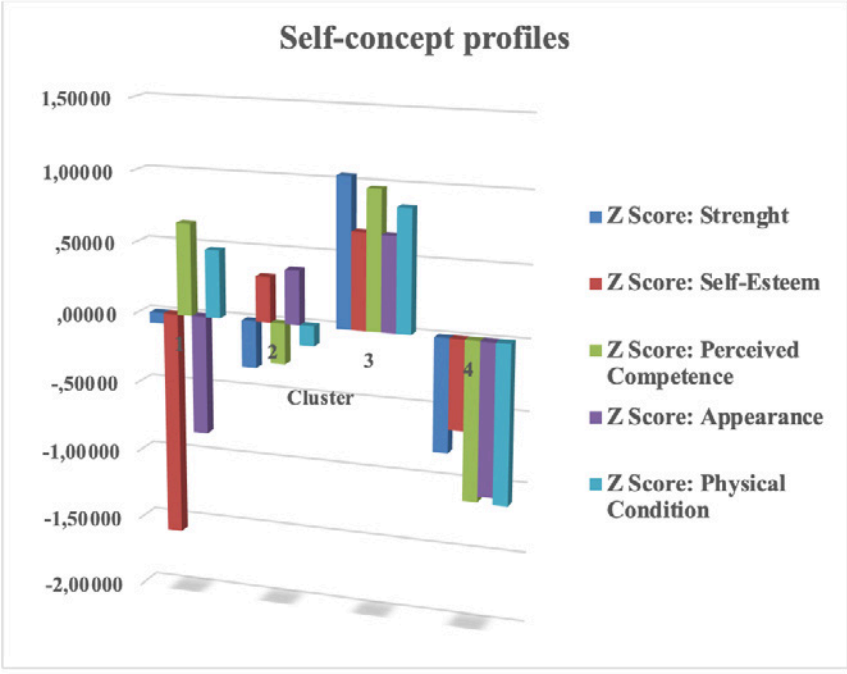

Table 3 shows the differences found in BMI, body dissatisfaction, physical activity, and self-concept, considering the profiles obtained through the cluster analysis. In this regard, the ANOVA showed significant differences for each of the study variables ($p < .05$), presenting most acceptable means for the values of BMI, body dissatisfaction, and physical activity in profile 3, and the low acceptable values in profile 4.

Table 3
ANOVA, differences in self-concept profiles

Variables	Profiles	*M*	*F*	*p*
BMI	Profile 1	18.28	8.77	.00**
	Profile 2	18.28		
	Profile 3	18.09		
	Profile 4	20.23		
Body dissatisfaction	Profile 1	.393	5.02	.00**
	Profile 2	.387		
	Profile 3	.388		
	Profile 4	.985		
Physical Activity	Profile 1	3.42	31.9	.00**
	Profile 2	3.06		
	Profile 3	3.63		
	Profile 4	2.77		

Note. *p ** = <.05; BMI = Body Mass Index*

Discussion

The main objective of this study was to identify different groups of students, with homogeneous profiles, for the different dimensions that compose the physical self-concept, and to analyze the differences around self-concept profiles in BMI, body dissatisfaction, and physical activity.

Firstly, in relation to the identification of physical self-concept profiles, the cluster analysis showed 4 different profiles (see description in results section). In this sense, there is no extensive literature that gives rise to discuss on the suitability of talking about profiles or levels of self-concept. In this regard, our findings are consistent with those found by Gargallo López et al. (2009), Guijarro-Romero et al. (2020) with respect to the treatment of the self-concept dimension, classifying individuals in profiles (3-4) and not in levels. In addition, our findings are in line with the results shown in the study by Guijarro-Romero et al. (2020), where four classifications were shown. On the contrary, the majority of previous studies refer to low, moderate, or high physical self-concept profiles (De Meester et al., 2016; Sánchez-Miguel et al., 2020; Tellu et al., 2018). In this sense, we consider that it would be more correct to speak of profiles of physical self-concept than different self-concept levels, since everyone has different psychosocial characteristics that make up their personality together. Therefore, we think that it is more appropriate to speak of profiles in certain psychosocial aspects, where each factor converges in a certain way, than in levels based on general scores.

Regarding the differences found in BMI according to the different profiles of self-concept, our results showed significant differences. Regarding this issue, previous studies (Fedewa et al., 2016), showed that the children who reported high levels of self-concept were those with the lowest BMI. Likewise, the term body dissatisfaction is associ-

ated with appearance (Babic et al., 2016), Thus, our work showed small values of body dissatisfaction in all participants except for those included in profile 4 of self-concept (low values in all dimensions of physical self-concept). These results are in line with those found in the work of *Üstündağ and* Özcan (2018), where, after an intervention based on games, the experimental group increased their perception of appearance with respect to physical self-concept. Thus, this fact of not being physically satisfied could cause poor self-concept formation in adolescents, which could lead to a depressed mood and low self-esteem (Steiger et al., 2014). On the other hand, in relation to the differences between the different self-concept profiles, our findings showed significant differences between the participants of profile 1,2, and 3 with profile 4 in relation to physical activity. These findings are consistent with those found in De Meester et al. (2016) where the different clusters reported differences in the levels of physical activity. In this sense, teaching styles have a great responsibility in promoting physical activity, and an adequate development of self-concept (Rubeli et al., 2020).

Conclusion

The present study concludes on the difficulty presented by self-concept as a construct where various levels fluctuate due to the scarce bibliography focused on this topic and provides a new classification of self-concept through four different profiles of students. A first profile that has low self-esteem and appearance, medium-negative strength levels and a good perception of competence and physical condition; a second profile with high scores in self-esteem and appearance, and low in those dimensions of physical self-concept that are closely related to sports physical aptitudes (strength, endurance, agility); a third profile of those individuals who score high in all dimensions of physical self-concept; and finally a fourth profile for those participants who score low in all dimensions of self-concept. Likewise, it has been shown that participants who present a good physical self-concept configuration will have better rates of physical activity and body satisfaction. however, this research has some limitations such as the cross-sectional nature of the present investigation, which does not allow establishing cause-effect relationships. Furthermore, the sample size is not very large, which makes it difficult for the configuration of these four self-concept profiles to be extrapolated to other populations. Future studies should be aimed at verifying the existence of these self-concept profiles in a much larger sample, and of different ethnicities or nationalities. In addition, we should encourage the development of interventions that, through the promotion of physical activity or teaching styles, promote the correct development of physical self-concept, avoiding falling into depressive moods or low self-esteem.

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