

Article

Cross-Sectional Study of Self-Concept and Gender in Relation to Physical Activity and Martial Arts in Spanish Adolescents during the COVID-19 Lockdown

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Abstract: The COVID-19 lockdown has negatively affected individuals' welfare. However, there has been no research published heretofore about the levels of self-concept (SC) in adolescents, nor how having practised martial arts (MA) or any physical activity (PA) before the lockdown may have influenced the SC in that time. Hence, this study aimed to analyze some demographic, physical, and psychosocial parameters in Spanish adolescents throughout the COVID-19 quarantine through a cross-sectional investigation, establishing correlations among these factors. **Methods:** The present study had a descriptive, comparative, and cross-sectional design. The sample comprised of 54 (39.7%) male and 82 (60.3%) female Spanish adolescents aged 12–18 ($M = 14.49$; $SD = 1.80$). An ad-hoc questionnaire collected sociodemographic data; the self-concept Form 5 (AF5) questionnaire obtained data on SC dimensions. **Results:** There were some differences among the SC dimensions, with family and academic dimensions having higher values than the physical and emotional ones. Females' academic SC was higher than that of males ($p = 0.019$). The practice of PA before the lockdown was positively associated with physical ($p < 0.001$) and social ($p = 0.012$) SC, yet there was no significant association between the previous practice of MA and SC ($p > 0.050$). **Conclusions:** the findings suggest that the COVID-19 lockdown negatively affected Spanish adolescents by decreasing their total SC and some dimensions of it, although PA may buffer psychological harmfulness in adolescents.

Keywords: self-concept; physical activity; martial arts; gender; adolescents; COVID-19 lockdown

1. Introduction

Self-concept (SC), which is a broadly investigated construct defined as one's knowledge and image of oneself, varies during one's lifetime according to the degree of the individual's identification as being an integral part of humanity and part of the universe as a whole [1]. People tend to observe external stimuli and replicate that behavior [2]. In this way, SC takes on people's transition to a new environment, given that the present SC is seen as changes based on the past SC, in order to achieve the ideal/future SC [3,4]. Furthermore, the SC is comprised of the interaction between the individual's perception and others' perception of oneself, their experience, and environmental reinforcements [5,6]. Hence, people select between possible selves [7] as they make identity claims by conveying images that signal how they view themselves or hope to be viewed by others, as may be seen in online relations [8]. Consequently, people with a low SC tend to adjust their online self-presentation to be socially praised [9,10] and, conversely, SC helps individuals control their anxiety and cope better with

stressful situations [11], which may be observed in a population suffering social exclusion, such as resettled refugees [12].

Despite the variation mentioned above, SC usually describes a concave curve within adolescence [13], so this period becomes crucial in SC's development, and peers and family play a critical role due to their interaction and relation with the individual. Moreover, the SC is a pivotal construct in education [6], and may predict achievement and levels of teacher engagement [14,15], contributing to self-efficacy [16] even in students with learning disabilities [17]. Additionally, female students often have a higher academic self-concept (AS) [18], and while boys with high academic achievement tend to be happier, girls with high academic achievement tend to be more satisfied [19]; thus, adolescents have AS as a vital element in paving the way to be well-rated by peers [20]. Notwithstanding the effects of AS, physical self-concept (PS) influences adolescents' psychological needs more than any other dimension [21,22] and enables individuals to be more likely to succeed in school adjustments [23].

In line with the previous paragraph, physical activity (PA) usually reduces SC's concavity during adolescence if practised with a task-oriented motivational climate and the individual's family supports them [24,25]. Furthermore, even though PA increases SC as such [26–28], team sports often foster a higher social dimension than individual sports [29,30]. Moreover, self-esteem is also influenced by the practice of martial arts (MA) [31–34], regardless of gender [35], which might lead martial artists to cope better with more stressful situations, such as a lockdown.

Unfortunately, although no research has been published yet about the level of SC during the COVID-19 lockdown, this pandemic is agreed to affect people's physical, social, and mental welfare, and it is agreed that there is going to be an increase in people in need of psychiatric help [36]. Along this line, Casale and Flett [37] affirm that "we underscore how the current health crisis impacts the self and identity of people", since psychological needs only become relevant once the physiological ones have been satisfied. Nonetheless, similar situations have already been investigated and may shed light upon prior insight into the current situation; for instance, refugees [38–42] and people hospitalized for a long time [43,44] are known to have low levels of SC. In any case, SC may buffer psychological impacts on adolescents post-trauma [45], since disorders such as depression or isolation are correlated to a negative SC [46–48], and the SC of people exposed to stressful situations such as war is negatively associated with optimism [49].

This research is based on the theory stated by Shavelson, Hubner, and Stanton [6], which affirms that SC has five factors: PS, AS, social self-concept (SS), family self-concept (FS), and emotional self-concept (EmS). Therefore, this study aimed to assess the SC of adolescents after a fortnight of lockdown through the self-concept Form 5 questionnaire (AF5) [50]. This instrument has already been validated by many authors [51–58]. Furthermore, this investigation also intended to establish demographic and psychosocial parameters in adolescents after two weeks of lockdown. Lastly, this study tried to investigate the existence of any association between SC and being physically active, which means to practise PA more than three hours a week, as the World Health Organization (WHO) recommends [59], or practising MA before the lockdown. Consequently, this study might shed light on the influence of the COVID-19 pandemic on SC, given the absence of research, and the importance of PA and MA on SC, leading people to cope better with stressful situations.

2. Materials and Methods

2.1. Design and Participants

The sample comprised of 54 (39.7%) male and 82 (60.3%) female Spanish adolescents aged 12–18 ($M = 14.49$; $SD = 1.805$ years). Voluntary response sampling to select participants was conducted by us previously advertising the study during online physical education lessons and ensuring that every doubt and question was solved. The inclusion criteria were for the participants to be in full control of their mental faculties and to possess informed consent from their parent/guardian.

The sample came from different settlements in southern Spain, requiring the participation of the ones who had sent in their informed consent prior to the experiment. Lastly, 17 participants were excluded due to their questionnaires being incorrectly completed.

2.2. Variables and Instruments

- **Demographic questionnaire**, in which the data collected involved gender (male or female); age; whether PA before the lockdown was performed for more the three hours a week out of school time (yes or no), as the WHO recommends [59]; and whether that PA was a MA (yes or no).
- **Self-concept Form 5 (AF5)** [50], which is based on Shavelson et al. [4] and comprises 30 items grouped in five dimensions: AS (items 1, 6, 11, 16, 21, and 26), SS (items 2, 7, 12, 17, 22, and 27), EmS (items 3, 8, 13, 18, 23, and 28), FS (items 4, 9, 14, 19, 24, and 29), and PS (items 5, 10, 15, 20, 25, and 30). It measures SC by using a five-level Likert scale (1 = never and 5 = always), and it has been adapted by some researchers [52,54]. The Cronbach's alpha value of the whole AF5 questionnaire in the current study was 0.872.

2.3. Procedure

Both the participants and guardians were contacted via social networks. Once contact was established, everyone was presented with information regarding the study and information relating to the consent. Then, the researchers specified that the written document had to be sent back and warranted the anonymity and data treatment with a scientific purpose. The researchers were virtually present during the data collection to ensure the correct process and to solve any doubts the participants might have. Even though this questionnaire has already been validated by many authors [51–58], 17 questionnaires were cast aside owing to wrong complementation before calculating its reliability. Lastly, it is required to clarify that this research fulfils the Research Ethics Committee of the University of Granada, coded 1230/CEIH/2020.

2.4. Statistical Analysis

The data were processed with IBM SPSS® version 25.0 for Windows. After performing the Kolmogorov–Smirnov test, a normal distribution was seen ($p < 0.001$), so parametric tests were used. Frequencies and means were used for the basic descriptive statistics, and every dimension of the SC was analyzed; T-Student test and contingency tables were used to compare the data, and Pearson's chi-squared test was used to analyze the correlations.

The magnitude of difference in effect size (ES) was obtained with Cohen's standardized d-index, interpreted as null, small (0.20–0.49), medium (0.50–0.79), and large (≥ 0.80). For each ES, the 95% confidence interval (95% CI) was calculated. Cohen's Q measure was used to calculate the ES of the differences between correlations, calculated through the transformation of the correlations with Fisher's Z [60], interpreted as no effect (< 0.1), small effect (0.1–0.3), intermediate effect (0.3–0.5), and large effect (> 0.5).

3. Results

In Table 1 the 136 participants were distributed in groups according to gender (39.7% male and 60.3% female), the practice of PA before the lockdown (33.8% did not practise PA more than 3 h a week, whereas 66.2% did), and the practitioners of MA within the whole group (14.6% practised any MA, whereas 85.4% did not). Regarding SC, both the tFS ($M = 3.98$) and AS ($M = 3.85$) dimensions had the highest values, in contrast to the PS ($M = 3.29$) and EmS ($M = 3.33$) dimensions, which stood for the lowest values.

A significant difference was found in terms of the practice of PA ($p = 0.0402$), but not with regards to MA ($p = 0.081$). Nonetheless, there was a significant difference only in terms of AS (Table 2), where females had higher values than males ($M = 3.97$ vs $M = 3.68$ $p = 0.019$).

Table 1. Descriptive analysis of the sample.

Gender	Male	39.7% (n = 54)	SC	PS	M = 3.29; SD = 0.762
	Female	60.3% (n = 82)		AS	M = 3.85; SD = 0.707
PA	Yes	66.2% (n = 90)		SS	M = 3.72; SD = 0.736
	No	33.8% (n = 46)		EmS	M = 3.33; SD = 0.658
MA	Yes	14.0% (n = 19)		FS	M = 3.98; SD = 0.746
	No	86.0% (n = 117)			

Table 2. Correlation between gender and self-concept (SC).

Gender	Levene’s Test				T-Test			ES (d)	IC 95%	
	M	SD	F	Sig	t	df	Sig. (Bilateral)			
PS	Male	3.27	0.819	0.013	0.908	-0.225	134	0.822	-0.289	[-0.530; -0.484]
	Female	3.30	0.728							
AS	Male	3.68	0.679	0.335	0.564	-2.375	134	0.019 **	-0.060	[-0.316; -0.195]
	Female	3.97	0.705							
SS	Male	3.69	0.702	1.365	0.245	-0.469	134	0.640	-0.021	[-0.250; -0.207]
	Female	3.75	0.761							
EmS	Male	3.32	0.632	0.472	0.493	-0.185	134	0.853	-0.004	[-0.254; -0.264]
	Female	3.34	0.679							
FS	Male	3.98	0.797	0.007	0.935	0.037	134	0.970	-0.004	[-0.261; -0.271]
	Female	3.97	0.715							

Note 1: ** (significant ≤ 0.05). **Note 2:** PS (Physical Self-concept), AS (Academic Self-concept), SS (Social Self-concept), EmS (Emotional Self-concept), FS (Family Self-concept).

No significant difference ($p > 0.050$) correlating the practice of PA and some dimensions of SC (Table 3), namely PS ($p < 0.001$ **) and SS ($p = 0.012$ **), due to higher values in the physically active adolescents ($M = 3.50$ vs $M = 2.87$ in PS and $M = 3.84$ vs $M = 3.50$ in SS). No correlations were found with the rest of the dimensions.

Table 3. Correlation between the practice of physical activity (PA) and SC.

Practice of PA	Levene’s Test				T-Test			ES (d)	IC 95%	
	M	SD	F	Sig	t	df	Sig. (bilateral)			
PS	No	2.87	0.755	0.629	0.429	-4.922	134	0.000 **	-0.628	[-0.881; -0.376]
	Yes	3.50	0.677							
AS	No	3.70	0.777	1.421	0.235	-1.828	134	0.070	-0.232	[-0.483; 0.019]
	Yes	3.93	0.658							
SS	No	3.50	0.773	0.001	0.979	-2.548	134	0.012 **	-0.333	[-0.592; -0.074]
	Yes	3.84	0.694							
EmS	No	3.32	0.665	0.042	0.837	-0.183	134	0.855	-0.021	[-0.258; 0.215]
	Yes	3.34	0.659							
FS	No	3.83	0.792	2.211	0.139	-1.626	134	0.106	-0.218	[-0.484; 0.047]
	Yes	4.05	0.714							

Note 1: ** (significant ≤ 0.05). **Note 2:** PS (Physical Self-concept), AS (Academic Self-concept), SS (Social Self-concept), EmS (Emotional Self-concept), FS (Family Self-concept).

No significant difference was found regarding the habitual practice of MA in individuals ($p > 0.050$) in any dimension of SC (Table 4).

Table 4. Correlation between the practice of martial arts (MA) and SC.

Practice of MA		Levene's Test				T-Test			ES (d)	IC 95%
		M	SD	F	Sig	t	df	Sig. (Bilateral)		
PS	No	3.30	0.777	0.574	0.450	0.290	134	0.772	0.054	[-0.319; -0.429]
	Yes	3.24	0.681							
AS	No	3.88	0.726	1.706	0.194	0.971	134	0.333	0.169	[-0.176; 0.515]
	Yes	3.71	0.571							
SS	No	3.73	0.736	0.105	0.747	0.111	134	0.912	0.020	[-0.341; -0.381]
	Yes	3.71	0.755							
EmS	No	3.34	0.665	0.349	0.556	0.338	134	0.736	0.055	[-0.268; 0.378]
	Yes	3.28	0.628							
FS	No	3.96	0.733	0.049	0.825	-0.667	134	0.506	-0.123	[-0.489; 0.242]
	Yes	4.08	0.830							

Note 1: PS (Physical Self-concept), AS (Academic Self-concept), SS (Social Self-concept), EmS (Emotional Self-concept), FS (Family Self-concept).

Regarding the correlations between the research variables (Table 5), the results indicated that there was a moderate positive correlation between PS and the rest of the dimensions (AS, $r = 0.369^{**}$; SS, $r = 0.380^{**}$; EmS, $r = 0.392^{**}$; FS, $r = 0.323^{**}$), so that as the rest of the dimensions increased their level, so did the others. Likewise, there was also a moderate positive correlation between AS and SS ($r = 0.361^{**}$) and FS ($r = 0.469^{**}$), as well as between SS and EmS ($r = 0.351^{**}$) and FS ($r = 0.302^{**}$). No correlations were found between the rest of the dimensions and age.

Table 5. Pearson's r correlations between the research variables.

	PS	AS	SS	ES	FS	Age
PS	1					
AS	0.369 **	1				
SS	0.380 **	0.361 **	1			
EmS	0.392 **	0.187 *	0.351 **	1		
FS	0.323 **	0.469 **	0.302 **	0.149	1	
Age	-0.025	0.066	-0.049	-0.060	-0.070	1

Note 1: * (significant bilateral correlation at 0.05), ** (significant bilateral correlation at 0.01). **Note 2:** PS (Physical Self-concept), AS (Academic Self-concept), SS (Social Self-concept), EmS (Emotional Self-concept), FS (Family Self-concept).

4. Discussion and Conclusions

With the COVID-19 pandemic evolving rapidly across the globe, scarce articles may be found, especially in terms of children or the effects of the COVID-19 pandemic on their SC. However, children and adolescents are more likely to experience harmful consequences on their psychological welfare [61,62]. Additionally, similar research has been found regarding this population and the psychological effects on it. For instance, Fiorillo and Gorwood [36] affirmed that lockdown may harm mental health, leading to several disorders such as schizophrenia or depression. In this line, people with special medical care needs, such as autism spectrum disorder (ASD) children [63], people with post-traumatic stress disorder [64], or transgender individuals [65], are affected by the COVID-19 lockdown. Consequently, this research is in line with these investigations, as it tried to shed light on how the COVID-19 pandemic may influence young people's SC.

According to their ratings in PA, two thirds of the adolescents were physically active under the WHO recommendations [59], which was a similar distribution to prior research [66,67]. Furthermore, the ones who practise MA account for 14.6% of the total, which is just a slightly higher value than

some research [68,69] which reported a value no higher than 10%. Hence, this sample was similar to many others investigated, despite being a small one.

With regards to SC, its general score was lower than in previous research [70,71] and, even though FS was still being higher than others, AS took more importance during the lockdown. This could be explained due to time expenditure with a sort of homeschooling. Moreover, although PS is often lower than the rest of the dimensions in other studies [70,71], its score was the lowest in comparison to previous research, which could be explained by the lower importance of this component in comparison to the rest. Lastly, the SS was scored lower than in previous research [70,71], possibly owing to the forced social distancing because of the lockdown. With regards to gender, females had a higher AS than males.

The results indicated that people who practise any sport tend to have a higher SS, which is in line with previous research [72,73], and it may be explained by the fact that sports practitioners tend to have more relations and establish strong bonds with their peers.

A further finding is that, while prior research reported a higher SC in martial artists [32,74], this study did not found any correlation between both. The harmful situation of lockdown may justify this, so even martial artists' SC is lowered regardless of martial art's usual effect on this construct.

The findings shed light on the importance of PS, especially at this age. As may be seen, as the PS increased, so did the rest of the dimensions. This finding may be explained because adolescents need to familiarize to a new body shape, guiding their concept towards physical aspects in order to create a well-accepted self by others [75,76]. This results in an increase in self-esteem to the extent of PS [21,77].

Nonetheless, while age is important in SC development, as it describes a concave curve throughout adolescence [13], our research did not found any correlation. This finding might be explained since psychological factors are lowered in harmful situations, and social distance decreases SC due to a weaker praise, taking into account that adolescents' SC relies on how society values them.

The present study had some limitations. It is important to emphasize some caveats to the findings of this research for its generalization to other populations; as the descriptive design does not allow causal correlations to be established, the results obtained ought to be interpreted cautiously. Consequently, it would be interesting to widen the sample by including more students across the globe. Additionally, it is essential to note that prior research focused upon SC out of a lockdown situation, so comparisons become difficult. Lastly, a fortnight might be a short period to notice the whole impact a lock down may have on adolescents' SC; consequently, a pre-post lockdown test would have been useful in order to discover whether the quarantine and the level of SC were associated. Despite the fact that these issues may limit comparisons to prior studies, the results suggested that these limitations have not adversely impacted our findings. Moreover, although this study aimed to analyze the impact of being physically active on SC even during a stressful situation like a lockdown, it may be interesting to delve into this by further investigating the PA by either asking about the type of PA practised or establishing groups according to the hours practised, and asking about whether this activity is competitive, the level of competitiveness, et cetera, as opposed to only differentiating the practice of MA.

In conclusion, the COVID-19 lockdown has negatively affected adolescents by decreasing some psychosocial factors such as SC, prioritizing family and academic matters within that period, since adolescents spent more time along their relatives and schoolwork took more importance. Nevertheless, PA may have a substantial effect in buffering psychological harmfulness in adolescents by scaling PS and, subsequently, all the dimensions.

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