Contributions of Music Education to the development of the Multidimensional Self-concept in adolescence according to gender

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Abstract. During adolescence, the multidimensional self-concept can vary depending on the age and gender of the individual. It is related to many academic aspects and to learning music, both of which are interwoven with performance in school. The objectives of the present study were: to measure the Multidimensional Self-Concept in a group of adolescents, to establish a comparison between young musicians and non-musicians, and to examine the impact of music practice on the Multidimensional Self-Concept based on gender. The sample consisted of 409 adolescent students of Compulsory Secondary Education in Valencia with ages ranging between 11 and 16 years (205 were girls and 204 boys). Some of the students were studying in a Professional Conservatory of Music, and others had never studied music. An *ad hoc* sociodemographic questionnaire and Fernández-Zabala's Dimensional Self-Concept Questionnaire (AUDIM) were used to collect the data. After the relevant analyses, and in line with previous studies, the results showed significant differences based on the gender and age variables. However, the most important findings of the research were, on the one hand, the significant differences in the Multidimensional Self-Concept between adolescent musicians and non-musicians and, on the other, the fact that this positive and significant effect on the musicians' Multidimensional Self-Concept occurred equally in all of them, regardless of their gender. Therefore, music had the same significantly positive influence on boys and girls.
Key words: Self-concept; adolescence; music; education; gender

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1. Introduction

The self-concept is the perception individuals have of themselves. This self-knowledge is formed through experiences and relationships with the environment, where both environmental reinforcements and significant others play an important role. The self-concept also acts as a moderating explanatory variable in achievement outcomes (Shavelson *et al.*, 1976), and it is nurtured by individuals' social relationships with their environment (Gimeno, 1976).

Specifically, the Multidimensional Self-Concept (MS) is a determining factor at early ages, given that childhood is the stage of the external self, when children construct their own image based almost entirely on what others perceive about them and communicate to them (Axpe *et al.*, 2015), and adolescence is the phase known as the inner self, when one's identity is established in a more differentiated and less global way. In the latter phase, adolescents define themselves in terms of their social self-worth. Their experiences

will determine their future successes and failures and reinforce or modify their self-concept (Cazalla-Luna & Molero, 2013). Furthermore, this psychological trait varies according to their age and gender (Guerrero-Barona *et al.*, 2019; Jurado *et al.*, 2018; Ramos-Díaz *et al.*, 2016; Veiga *et al.*, 2015; Zubeldia *et al.*, 2018).

The importance of this psychological variable in the educational setting lies in its potentially predictive capacity for school engagement (Fernández-Lasarte *et al.*, 2019; Ramos-Díaz *et al.*, 2016. Moreover, along with the global self-concept, it has a moderate-large predictive capacity for academic achievement (Fernández-Lasarte *et al.*, 2019) and the emotions (Zubeldia *et al.*, 2018).

As for the implications of music in these psychological and educational variables, there seems to be a relationship between the MS of children and adolescents and whether they have studied music, particularly through their academic self-concept (Degé *et al.*, 2014). Thus, music practice, age, and gender seem to intervene in the MS of young people, as the following sections reveal.

2. The Multidimensional Self-concept

The MS is a cognitive-behavioural factor that encompasses multiple dimensions of the individual and is organized hierarchically. Its assessment has relevance in different academic, personal, and psychosocial fields, and it is a decisive component of people's subjective well-being (Rodríguez-Fernández *et al.*, 2016).

Based on the multidimensional and hierarchical model by Shavelson *et al.* (1976), Fernández-Zabala *et al.* (2015) carried out a reorganization of the self-concept hierarchy, verifying the same level for the general, academic, and non-academic self-concepts. The academic self-concept was divided into two main areas: verbal self-concept and mathematical self-concept, which respectively contained the subjects associated with these two fields of knowledge. The non-academic self-concept included the social, personal, and physical factors of each individual, which in turn were composed of other subdimensions, as Figure 1 shows.

Figure 1. Multidimensional and Hierarchical Organization of the MS according to Fernández-Zabala et al (2015)
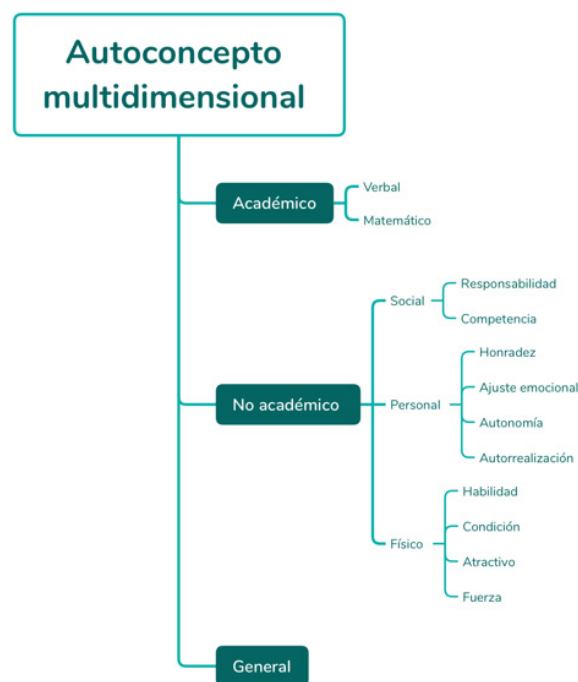
2.1. Multidimensional Self-concept and Education

The MS takes on special importance in the school setting, given that it is a decisive psychological attribute in individuals' subjective well-being (Rodríguez-Fernández *et al.*, 2016). It is also noteworthy in both assessment and educational research, whether used as an outcome or as a moderating variable that explains achievement outcomes (Shavelson *et al.*, 1976).

The most relevant dimension of MS in the educational setting is the Academic self-concept, defined as the person's academic self-perception based on their school performance, which evolves as the student progresses through each year of Compulsory Secondary Education (Rodríguez-Rodríguez & Guzmán, 2016). It is considered a predictor variable of school engagement in both sexes, and it plays a noteworthy role in behavioural and emotional involvement, but not cognitive (Rodríguez-Fernández *et al.*, 2018). There is a close link between the self-concept, academic adjustment, and school involvement that is especially revealed through the academic self-concept (Guerrero-Barona *et al.*, 2019; Ramos-Díaz *et al.*, 2016; Shavelson *et al.*, 1976; Veiga *et al.*, 2015). In fact, a negative self-concept is considered one of the main components blocking learning because it reduces or keeps students from recognizing their own abilities (Sevilla-Santo *et al.*, 2021).

The academic variables are also involved in subjective well-being, and an adjustment or maladjustment of these variables can affect personal and social dimensions (Guerrero-Barona *et al.*, 2019). Thus, adolescents' beliefs regarding their self-concept have an influence when implementing strategies to regulate their emotions (Antonio-Agirre *et al.*, 2020). These beliefs intercede in their behaviour (Ramos-Díaz *et al.*, 2016), determine their level of life satisfaction and positive affect (Ramos-Díaz *et al.*, 2017), and reinforce their subjective well-being (Rodríguez-Fernández *et al.*, 2016). Therefore, it is necessary to promote the development of the MS in children and young people, preferably from the academic setting.

2.2. Multidimensional Self-concept: age and gender

The MS can very throughout adolescence, a critical stage in relation to the general self-concept (Zubeldia *et al.*, 2018). Thus, low levels of self-concept and family support perceived by the adolescent predict greater negative affect (Rodríguez-Fernández *et al.*, 2016), which may be aggravated depending on what stage of adolescence the individual is in (Ramos-Díaz *et al.*, 2016; Zubeldia, *et al.*, 2018).

Ramos-Díaz *et al.* (2016) found that young people in the second cycle of Compulsory Secondary Education [10th grade] present lower scores in several dimensions of the MS, compared to those in the first cycle [7th, 8th, and 9th grades]. These dimensions include school involvement and the physical, general, and academic domains of self-concept. In mid-adolescence, a decline in school adjustment begins along with limitations on a high self-concept, distortions that could be due to the importance given to the opinion of the peer group and its norms at this age (Veiga *et al.*, 2015).

With regard to gender, Jurado *et al.* (2018) detected differences in favour of males in almost all the dimensions (physical, social, and general self-concepts) in Secondary School students. In the case of the personal self-concept, other studies also found significant differences between genders (Goñi *et al.*, 2012; Guerrero-Barona *et al.*, 2019; Zubeldia *et al.*, 2018).

In general, boys obtained higher scores on the global or general and physical self-concepts, and girls leaned more towards academic and family self-concepts. In contrast, the study by Guerrero-Barona *et al.* (2019) with adolescents from 12 to 19 years old found a higher trend in boys in terms of their emotional and social self-concepts, and higher scores on the academic self-concept in girls, although neither reached significance.

In sum, most of the studies analysed showed disparities in the MS of young people when the age and gender variables were considered.

2.3. Multidimensional Self-concept and Music

At the beginning of the 21st century there was a certain tendency to study the self-concept related to the activity of professional musicians such as conductors, performers, or composers (Palacios *et al.*, 2009), and these contributions are valuable to better understand the MS of professionals dedicated to music. However, the truth is that today this topic continues to be under-explored in the childhood and adolescence of musicians and non-musicians. Some interesting contributions have also come from other areas close to music practice.

On the one hand, this trend towards music research led to the consideration of a new dimension within the hierarchical and multidimensional model by Shavelson *et al.* (1976), called the Artistic Self-concept (AS). In some of the dimensions of the AS, discrepancies were found with the significant differences in self-concept between age and gender groups characteristic of MS, so that the AS seems to have a protective effect on the general self-concept of adolescent students and females (Zubeldia *et al.*, 2018).

On the other hand, research has been carried out on young people who had a relationship with music through the field of dance. According to Murgui *et al.* (2012), young dancers achieved higher scores on physical, professional, social, and family self-concept, compared to those who did not practice dance. Along the same lines, Vergara *et al.* (2021) highlighted dance as an instrument for the development of students' self-concept.

From the area of the conservatory of music, it has been established that students in the Professional Music Degree programme present significant age and gender differences on most of the MS variables (Zubeldia *et al.*, 2018). Moreover, in other cases, music learning has been positively associated with the MS in children between 12 and 14 years old who had studied it for different periods of time. Even when controlling for confounding variables, music lessons were associated with the academic self-concept and, thus, with school achievement (Degé *et al.*, 2014).

In sum, music seems to have an important influence on adolescents' self-concept. The AS highlights the protective effect of musical ability on the general self-concept, especially when age and gender are considered. Finally, it is worth mentioning that there is an association between learning music, the academic self-concept, and school achievement.

3. Objectives and hypotheses

The general objective of the present research was to measure the MS of adolescents based on the age, gender, and music study variables. Consequently, three specific objectives were outlined: to explore the levels of MS in a group of adolescents according to their age and gender, to establish a comparison of the MS scores obtained by young musicians and non-musicians, and to explore whether music practice affects the MS of young male and female musicians equally. Thus, the following hypotheses were established:

1. There are differences in the MS depending on the age and gender of the adolescents.
2. Young people who study at the Conservatory of Professional Music Education (CPE) have different MS scores from those who have never received formal music training.
3. The relationship between music practice and MS in adolescents is not affected by the gender variable.
    The ultimate goal of the present study was to find out whether young musicians have a better self-concept than non-musicians, and whether the gender variable affects the impact of the music variable on adolescents.

4. Method

4.1. Population and Sample

In order to guarantee the homogeneity of the sample, private schools classified as elitist were previously ruled out, as well as schools classified as Singular Educational Action Centres (CAES). The second selection criterion was that the schools had to be located in environments with a socioeconomic and cultural level as similar as possible to that of the music conservatories. Finally, the following schools were selected in the city of Valencia (Comunidad Valenciana, Spain):
– IES San Vicente Ferrer, located in *L'Eixample*.
– Colegio Salesiano San Antonio Abad, located in *Morvedre*, Zaidía district, in the *Sant Antoni* neighbourhood.
– Colegio Mantellate, located in the Llano de la Zaidía.
    Of the three collaborating schools, one is publicly owned, and the other two are subsidized semi-private schools.
    The collaborating music conservatories are located in the cities of Valencia and Torrente, respectively. Both offer professional music instruction, both are publicly owned, and both are managed by the Valencian Government. The selected conservatories were the following:
– Professional conservatory of music of Valencia *Velluters*, located in the centre of the city in the district called *Ciutat Vella*.
– Professional conservatory of music of *Torrent* (CPMT), located in the metropolitan area of Valencia.
    The final study sample consisted of a total of 409 Compulsory Secondary Education students residing in Valencia whose ages ranged from 11 to 16 years old (M = 13.86; SD = 1.222), given that 129 participants were removed from the analyses due to missing data or because they did not meet the inclusion criteria. Of the 409 students, 205 were girls between 12 and 16 years old (*M* = 13.96; *SD* = 1.206), and 204 were boys between 11 and 16 years old (*M* = 13.76; *SD* = 1.233).

4.2. Variables and instruments

Sociodemographic data: By means of a sociodemographic questionnaire prepared *ad hoc*, both quantitative and qualitative data were obtained to define the different categories and groups in the sample. This instrument contained 21 items that collected sociodemographic data, academic data, and music habits. It was structured in two blocks of questions: one designed to collect sociodemographic data such as age, gender, or place of birth and residence; and another for academic data such as the level of music studies completed, the time devoted to these studies, the age at which they began to study music and in what educational context, their level of regulated studies, or future academic prospects (the latter was not used in the present study because it fell outside its objectives).
    Musical training: Two categories of participants were identified in the collective: musicians (those who studied at music conservatories) and non-musicians (those who did not study at music conservatories). In turn, they were organized into four subgroups, focusing on the type of music training they had received and the time they had been playing a musical instrument. Respecting the category determined by Zhang *et al.* (2020), the group of musicians was composed of young people who had been in contact with music for at least six years, and so the following subgroups were established: musicians with more than six years of training, musicians with less than six years of training, non-musicians (they only studied music at school), and no music (they have never studied music).
    Self-concept: To measure this dependent variable, the Dimensional Self-Concept Scale (AUDIM) by Fernández-Zabala *et al.* (2015) was used. This instrument uses the responses to 33 items to measure 11 specific facets of self-concept as well as a general measure. It has a Likert scale response format ranging from 1 = false to 5 = true. This questionnaire has been validated in a Spanish adolescent population.
    Through its affirmative and inverse items (*), the different factors or dimensions of the MS are explored:
– Academic self-concept (6 items):
    – Verbal (3, 13, 27, 18*).
    – Mathematical (11*, 20, 23*, 30).
– Social self-concept (4 items):
    – Social responsibility (8, 25).
    – Social acceptance (4, 16).
– Physical self-concept (8 items):
    – Ability (1*, 33).
    – Condition (6, 24).
    – Attractiveness (14, 29).
    – Strength (19, 32).

- Personal self-concept (8 items):
    - Honesty (2, 26).
    - Emotions (7*, 22*).
    - Autonomy (9*, 17*).
    - Self-realization (15, 31).
- General self-concept (5 items): (5*, 10, 12*, 21*, 28).

4.3. Data collection procedure

The study used an exploratory cross-sectional quantitative methodological approach, collecting the data at a single time point. Throughout the process, the double-blind criterion was applied by using alphanumeric codes that determined the course, class, and ID of the participant. Therefore, the researchers did not have access to participants' sensitive data, and the schools did not have access to the results found.

The procedure was carried out following the indications of the authors of the questionnaire. At the request of one of the schools, the scale was provided in an online format, whereas the rest of the schools used a paper format. After the relevant analyses, the schools were accepted in the study because they did not present any differences that could affect the results.

The questionnaires in paper format were provided collectively during morning class hours in the students' classrooms. They were administered simultaneously to each class group in a time slot lasting between 35 and 40 minutes, thus allowing the data to be collected in a single session in each class group. The online format contained the same number of items with the same scales and response options, and it was provided through a Google Form that was completed individually by the students from home outside school hours.

4.4. Data analysis

Once the necessary verifications had been made, the data were processed. The calculations were carried out by means of probabilistic sampling, so that all the participants had the same probability of forming part of the analyses.

For the statistical analysis, IBM SPSS 26.0 was used for all the analyses, establishing $p < 0.05$ as the level of significance. The *outlier* analysis was performed using the Mahalanobis procedure, with the results yielding no *outliers* on the AUDIM test. However, a total of 15 participants were found to have missing data on the AUDIM test and removed from the analysis of the General Self-Concept and its dimensions. Therefore, a sample containing 394 students was used for the analyses.

The analysis of gender differences in Self-Concept (AUDIM) was performed using the twelve dimensions of *Student's t*-test for independent samples and its global score. In addition, Pearson's correlations were used to observe the relationship between the dimensions of the Self-Concept and age. A multivariate ANOVA with Group (categories of (i) Musician and (ii) Non-Musician) and Gender (categories of (i) Male and (ii) Female) as inter-subject variables was used to establish the differences in General Self-Concept and the 12 dimensions of Self-Concept between the Musician and Non-Musician groups, based on gender. The Bonferroni test was used in the *post hoc* analyses. For the analysis of the subgroups of Musician (Musician > 6 years and Musician < 6 years) and Non-Musician (Non-Musician – School, and No Music) and their relationship with the General Self-Concept score and the 12 dimensions of Self-Concept according to gender, a multivariate ANOVA was carried out with the Group variable (categories (i) Musician > 6 years, (ii) Musician < 6 years, (iii) Non-Musician – School, and (iv) No Music), and a multivariate ANOVA was performed with the Group (categories of (i) Musician > 6 years, (ii) Musician < 6 years, (iii) Non Musician – School, and (iv) No Music) and Gender (categories of (i) Male and (ii) Female) variables as inter-subject variables and General Self-Concept and the 12 dimensions of Self-concept as intra-subject variables. *Post-hoc* analyses were performed using the Bonferroni adjustment for *p*-values.

The results of the preliminary analyses were the following. Table 1 shows the distribution of the sample by group according to the music training received and the gender.

Table 1. Distribution of the sample

Gender N (%)	Musician		Non-musician		Total
	>6 years	< 6 years	School	No music	
Girls	43 (53.1)	33 (50.8)	90 (46.2)	39 (57.4)	205 (50.1)
Boys	38 (46.9)	32 (49.2)	105 (53.8)	29 (42.6)	204 (49.9)
Total (N)	81	65	195	68	409

Table created by the authors

The *t*-test for independent samples showed no significant differences in age between the Musician and Non-Musician groups ($t_{407} = 0.620$, $p = 0.536$). The girls in this sample began their music studies between the ages of 3 and 15 ($M = 8.71$, $SD = 2.551$), whereas the boys began them between the ages of 2 and 16 ($M = 8.17$, $DE = 2,477$). The *t* test for independent samples was applied, and no significant differences between boys and girls were found based on the age or the age of initiation in music (all $p > 0.005$).

As for the subgroups of Musicians (Musician < 6 years and Musician > 6 years) and Non-Musicians (Non-Musician - School and No Music), the ANOVA showed significant differences in age ($F_{3, 405}$ = 74.881, p < 0.001). Musicians with more than six years of formal training in music were older than musicians with less than six years of training and non-musicians who only received instruction in school (all p < 0.001). In contrast, those who received no music education at all were older than musicians with more than six years of music training (p = 0.001).

In addition, the ANOVA showed significant differences in the age of starting music education between the groups that practice music (Musician > 6 years, Musician < 6 years, and Non-Musician - School), either through formal music education (e.g. conservatory) or through training provided in school ($F_{3, 335}$ = 76.120, p < 0.001).

No significant differences were found in the distribution of boys and girls in the Musician and Non-Musician groups χ^2_3 = 2.946, p = 0.400, which indicates that there was a balanced gender distribution in all the groups.

In the analysis of self-concept between groups, significant gender differences were observed in the dimensions of Verbal Self-concept (t_{392} = 2.621, p = 0.009), Mathematical Self-concept (t_{392} = -4.491, p < 0.001), Physical Ability (t_{392} = -3.876, p < 0.001), Physical Fitness (t_{392} = -6.402, p < 0.001), Physical Strength (t_{392} = -5.647, p < 0.001), Emotional Adjustment (t_{392} = -2.820, p = 0.005), and Social Responsibility (t_{392} = 2.222, p = 0.027). In general, boys had higher scores on Mathematical Self-Concept, Physical Ability, Physical Fitness, Physical Strength, and Emotional Adjustment than girls. In contrast, girls had higher scores on Verbal Self-Concept and Social Responsibility.

Pearson's correlation analysis showed significant correlations between age, the General Self-concept, and all the Self-concept dimensions except Physical Ability and Autonomy (see Table 2). Negative correlations were observed between age and the Verbal Self-concept, Physical Attractiveness, Physical Strength, Autonomy, and Self-realization (see Table 2). That is, the older the age, the lower the scores on general self-concept and in the dimensions of verbal self-concept, physical attractiveness, physical strength, autonomy, and self-realization.

Table 2. Correlations between the Age variable and the Multidimensional Self-concept

	Age	General Self-concept	Verbal Self-concept	Math Self-concept	Physical Ability	Physical Condition	Physical Attractiveness	Physical Strength	Honesty	Emotional Adjustment	Autonomy	Self-realization	Social Responsibility
General Self-concept	r = -0,168**	-											
Verbal Self-concept	r = -0,118*	r = 0,258***	-										
Math Self-concept	r = -0,084	r = 0,209***	r = 0,015	-									
Physical Ability	r = -0,013	r = 0,065	r = -0,164**	r = 0,050	-								
Physical Condition	r = -0,033	r = 0,189***	r = -0,059	r = 0,149**	r = 0,2866**	-							
Physical Attractiveness	r = -0,126*	r = 0,608***	r = 0,067	r = 0,168**	r = 0,146**	r = 0,265***	-						
Physical Strength	r = -0,121*	r = 0,125*	r = -0,090	r = 0,067	r = 0,215***	r = 0,433***	r = 0,151**	-					
Honesty	r = 0,022	r = 0,188***	r = 0,129*	r = 0,004	r = 0,031	r = 0,063	r = 0,114*	r = 0,096	-				
Emotional Adjustment	r = -0,028	r = 0,194***	r = 0,097	r = 111*	r = -0,047	r = 0,070	r = 0,116*	r = 0,053	r = -0,091	-			
Autonomy	r = -0,108*	r = 0,098	r = 0,017	r = 0,113*	r = -0,063	r = 0,122*	r = 0,158**	r = 0,108*	r = 0,045	r = 0,140**	-		
Self-realization	r = -0,193***	r = 0,669***	r = 0,279***	r = 0,233***	r = 0,083	r = 0,194***	r = 0,531***	r = 0,119**	r = 0,247***	r = 0,164***	r = 0,121*	-	
Social Responsibility	r = -0,046	r = 0,137**	r = 0,166**	r = 0,100*	r = -0,011	r = 0,052	r = 0,067	r = 0,004	r = 0,161**	r = -0,014	r = 0,047	r = 0,217***	-
Social Acceptance	r = -0,046	r = 0,521***	r = 0,081	r = 0,131**	r = 0,138**	r = 0,236***	r = 0,443***	r = 0,189***	r = 0,158**	r = 0,084	r = 0,039	r = 0,418***	r = 0,006

* p < 0,05; ** p < 0,01; *** p < 0,001

Table created by the authors

Multivariate ANOVAs with Group (categories of (i) Musician and (ii) Non-Musician) and Gender (categories of (i) Male and (ii) Female) as inter-subject variables showed a significant effect of the Gender variable on the dimensions of Verbal Self-concept, Mathematical Self-concept, Physical Ability, Physical Fitness, Physical Strength, Emotional Adjustment, and Social Responsibility (see Table 3). Girls had higher scores than boys on Verbal Self-concept and Social Responsibility, whereas boys had higher scores than girls on Mathematical Self-Concept, Physical Ability, Physical Fitness, Physical Strength, and Emotional Adjustment (see Table 3).

Table 3. Effect of the Gender variable on the Multidimensional Self-concept

Dependent Variable	Student's gender	Mean	Standard Dev.	ANOVA	
					Sig.
Verbal Self-concept	Female	15,552	0,298	6,442	0,012
	Male	14,462	0,309		
Mathematical Self-concept	Female	12,575	0,218	19,144	<0,001
	Male	13,953	0,227		
Physical Ability	Female	5,689	0,101	11,883	0,001
	Male	6,192	0,105		
Physical Condition	Female	5,470	0,180	38,480	<0,001
	Male	7,077	0,187		
Physical Attractiveness	Female	7,539	0,155	0,882	0,348
	Male	7,749	0,161		
Physical Strength	Female	4,827	0,163	32,885	<0,001
	Male	6,179	0,170		
Honesty	Female	8,582	0,101	0,601	0,439
	Male	8,469	0,105		
Emotional Adjustment	Female	5,516	0,159	6,571	0,011
	Male	6,106	0,166		
Autonomy	Female	7,315	0,152	2,476	0,116
	Male	7,661	0,158		
Self-realization	Female	7,962	0,150	0,076	0,782
	Male	7,903	0,156		
Social Responsibility	Female	5,667	0,159	4,721	0,030
	Male	5,170	0,165		
Social Acceptance	Female	8,166	0,125	0,277	0,599
	Male	8,261	0,130		
General Self-concept	Female	20,291	0,293	2,170	0,142
	Male	20,914	0,304		

Table created by the authors

In addition, a significant effect of the Group variable (categories of (i) Musician and (ii) Non-Musician) was observed in the dimensions of Verbal Self-Concept, Mathematical Self-Concept, Self-Realization, and Social Responsibility, as well as General Self-Concept (see Table 4).

Table 4. Effect of the Group variable (Musician vs. Non-musician) on the Multidimensional Self-concept

Dependent Variable	Student Group	Mean	Standard Dev.	ANOVA	
				F	Sig.
Verbal Self-concept	Musician	16,299	0,342	36,151	<0,001
	Non-musician	13,716	0,260		
Mathematical Self-concept	Musician	13,975	0,250	20,381	<0,001
	Non-musician	12,553	0,191		
Physical Ability	Musician	5,898	0,116	0,334	0,563
	Non-musician	5,983	0,089		
Physical Condition	Musician	6,322	0,206	0,143	0,706
	Non-musician	6,225	0,157		

Physical Attractiveness	Musician	7,755	0,178	0,986	0,321
	Non-musician	7,533	0,136		
Physical Strength	Musician	5,280	0,187	3,574	0,059
	Non-musician	5,726	0,143		
Honesty	Musician	8,619	0,116	1,656	0,199
	Non-musician	8,432	0,088		
Emotional Adjustment	Musician	5,784	0,183	0,057	0,811
	Non-musician	5,839	0,139		
Autonomy	Musician	7,394	0,175	0,736	0,391
	Non-musician	7,582	0,133		
Self-realization	Musician	8,219	0,172	7,007	0,008
	Non-musician	7,646	0,131		
Social Responsibility	Musician	5,918	0,182	19,115	<0,001
	Non-musician	4,919	0,139		
Social Acceptance	Musician	8,364	0,144	2,778	0,096
	Non-musician	8,063	0,110		
General Self-concept	Musician	21,283	0,336	10,363	<0,001
	Non-musician	19,922	0,256		

Table created by the authors

Likewise, Figure 2 shows that musicians had higher scores than non-musicians on Verbal Self-concept, Mathematical Self-concept, Self-realization, Social Responsibility, and General Self-concept (all $p < 0.008$). The Group*Gender interaction was not significant for the General Self-concept or any of its dimensions (all $p > 0.267$).

Figure 2. Comparison of the MS of musicians and non-musicians
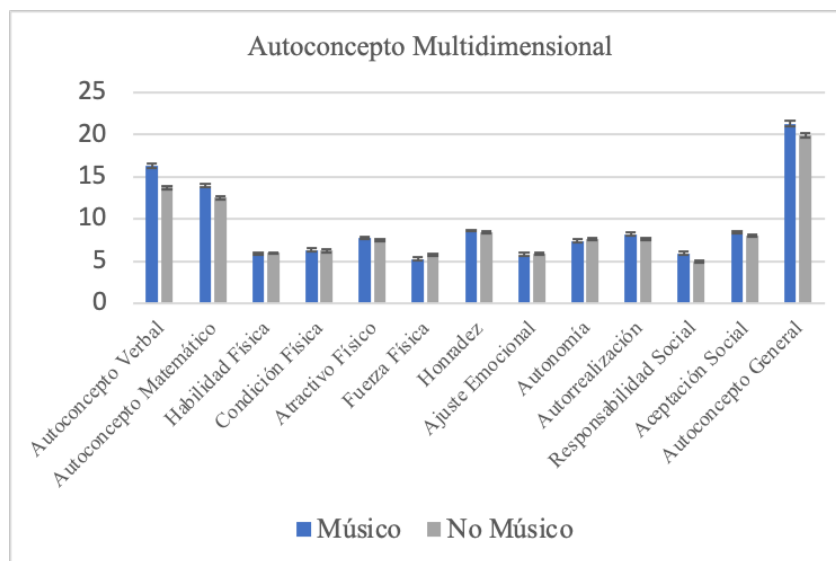
Analysing the results for the Musician and Non-Musician subgroups in detail, the multivariate ANOVA with the Group (categories (i) Musician > 6 years, (ii) Musician < 6 years, (iii) Non-Musician – School, and (iv) No Music) and Gender (categories (i) Male and (ii) Female) variables continues to show the significant effect of Gender on the dimensions of Verbal Self-Concept ($F_{1, 386} = 8.803$, $p = 0.003$), Mathematical Self-concept ($F_{1, 386} = 16.335$, $p < 0.001$), Physical Ability ($F_{1, 386} = 12.007$, $p = 0.001$), Physical Condition ($F_{1, 386} = 35.223$, $p < 0.001$), Physical Strength ($F_{1, 386} = 29.019$, $p < 0.001$), and Social Responsibility ($F_{1, 386} = 4.527$, $p = 0.034$). Girls showed higher scores on Verbal Self-Concept and Social Responsibility compared to boys (both $p < 0.003$), whereas boys showed higher scores than girls on Mathematical Self-Concept, Physical Ability, Physical Fitness, and Physical Strength (all $p < 0.034$).

In addition, a significant effect of the Group variable (categories (i) Musician > 6 years, (ii) Musician < 6 years, (iii) Non-Musician – School, and (iv) No Music) was observed in the dimensions of Verbal Self-concept, Mathematical Self-concept, Physical Strength, Self-realization, Social Responsibility, and General Self-Concept, and marginally on Social Acceptance (see Table 5).

In the case of the General Self-Concept, there were no differences between the groups of Musicians > 6 years, Musician < 6 years, and Non-Musician - school ($p > 0.230$). In the dimensions of Verbal Self-

concept, Mathematical Self-concept, Physical Strength, Self-realization, and Social Responsibility, the post hoc analyses showed that there were no differences between Musicians with > 6 years of training and those with < 6 years ($p > 0.567$).

No differences in Verbal Self-Concept and Mathematical Self-Concept were found between Non-musicians - school and No Music (all $p > 0.099$). Thus, Musicians presented a higher Verbal Self-concept and Mathematical Self-concept, regardless of the years of formal music training. Musicians > 6 years showed lower scores on Physical Strength than the Non-Musician - school group (all $p = 0.026$), but no differences were observed between the Musician < 6, Non-Musician – school, and No Music groups (all $p > 0.610$). In the Self-realization dimension, no differences were found between the two Musician groups and the Non-Musician - school group ($p > 0.511$). In contrast, the No Music group showed the lowest scores on Self-realization and differed from all the other groups (all $p < 0.005$). In the case of Social Responsibility, the Musician > 6 years group showed higher Social Responsibility scores than the Non-Musician - school and No Music groups (both $p < 0.002$). However, the Musician < 6 years group did not differ in Social Responsibility from the Non-Musician and Non-Musician - School groups (both $p < 277$); nor were differences observed between the No Music and Non-Musician - School groups ($p > 0.99$). With regard to Social Acceptance, although the overall factor is significant, no differences were observed between groups in the pairwise comparisons (all $p > 0.190$), except between the Musician < 6 and No Music groups ($p = 0.050$), with higher scores observed in the former. Finally, the Non-Musician - school group showed higher scores on the General Self-Concept than the No Music group ($p = 0.008$).

The Group*Gender interaction was not significant for the General Self-Concept or for any dimension (all $p > 0.140$), which shows that the relationship between music training and the self-concept is not modulated by gender. Therefore, practicing music affects the general self-concept of boys and girls equally in this dimension.

Table 5. Effect of the Group variable (Musician >6, Musician <6, Non-musician – school, and No Music) on the Multidimensional Self-concept

Dependent Variable	Student Group	Mean	Standard deviation	ANOVA	
				F	Sig.
Verbal Self-concept	Musician >6	16,638	0,457	13,177	<0,001
	Musician <6	15,880	0,513		
	Non-musician - school	13,846	0,302		
	No music	13,191	0,522		
Mathematical self-concept	Musician >6	13,760	0,336	7,172	<0,001
	Musician <6	14,250	0,378		
	Non-musician - school	12,632	0,222		
	No music	12,334	0,384		
Physical ability	Musician >6	5,974	0,156	0,389	0,761
	Musician <6	5,802	0,175		
	Non-musician - school	5,962	0,103		
	No music	6,066	0,178		
Physical Condition	Musician >6	6,201	0,276	0,224	0,879
	Musician <6	6,485	0,310		
	Non-musician - school	6,265	0,182		
	No music	6,156	0,316		
Physical Attractiveness	Musician >6	7,617	0,238	1,948	0,121
	Musician <6	7,935	0,267		
	Non-musician - school	7,699	0,157		
	No music	7,063	0,272		
Physical Strength	Musician >6	5,019	0,249	3,011	0,030
	Musician <6	5,622	0,280		
	Non-musician - school	5,875	0,165		
	No music	5,335	0,285		

Honesty	Musician >6	8,511	0,155	1,090	0,353
	Musician <6	8,753	0,174		
	Non-musician - school	8,402	0,102		
	No music	8,588	0,177		
Emotional Adjustment	Musician >6	5,938	0,244	0,318	0,812
	Musician <6	5,594	0,275		
	Non-musician - school	5,835	0,162		
	No music	5,754	0,279		
Autonomy	Musician >6	7,286	0,234	0,785	0,503
	Musician <6	7,533	0,263		
	Non-musician - school	7,670	0,155		
	No music	7,347	0,268		
Self-realization	Musician >6	8,064	0,228	6,449	<0,001
	Musician <6	8,417	0,256		
	Non-musician - school	7,905	0,150		
	No music	6,897	0,260		
Social Responsibility	Musician >6	6,192	0,243	7,339	<0,001
	Musician <6	5,579	0,273		
	Non-musician - school	4,944	0,161		
	No music	4,847	0,278		
Social Acceptance	Musician >6	8,286	0,191	2,616	0,051
	Musician <6	8,473	0,215		
	Non-musician - school	8,202	0,126		
	No music	7,661	0,218		
General Self-concept	Musician >6	21,038	0,445	7,238	<0,001
	Musician <6	21,605	0,500		
	Non-musician - school	20,399	0,294		
	No music	18,505	0,509		

Table created by the authors

Figure 3 shows the MS results obtained between the different subcategories of musicians and non-musicians in all the dimensions of the construct:

Figure 3. Differences in MS according to the categories of musicians and non-musicians
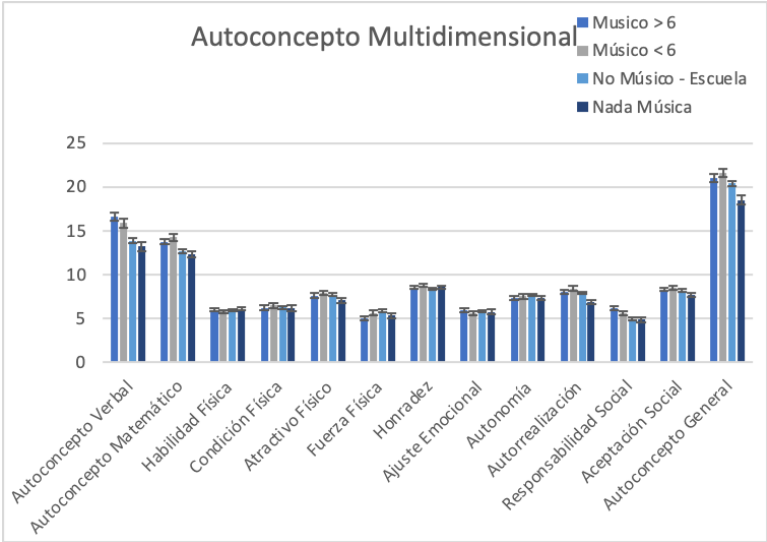
The results of the analyses showed significance in favour of musicians in eight of the 13 dimensions of the MS. In addition, it should be noted that the positive impact of music on the MS of the subjects affected both boys and girls equally.

5. Results and Discussion

5.1. Relationship between the Multidimensional Self-concept and the age and gender variables

The literature on the MS in adolescence found differences based on age (Goñi *et al.*, 2012; Guerrero-Barona *et al.*, 2019; Ramos-Díaz *et al.*, 2016; Zubeldia *et al.*, 2018) and gender (Fernández-Zabala *et al.*, 2015; Goñi *et al.*, 2012; Guerrero-Barona *et al.*, 2019; Jurado *et al.*, 2018; Ramos-Díaz *et al.*, 2016; Zubeldia *et al.*, 2018) in young people.

Along the same lines, the present study found negative correlations between age, the general self-concept, the verbal self-concept, physical attractiveness, physical strength, autonomy, and self-realization. Thus, the older the adolescents were, the worse their self-perception of these self-esteem dimensions. When considering the gender variable, boys presented a greater mathematical self-concept, physical ability, physical condition, physical strength, and emotional adjustment, and girls presented a greater verbal self-concept and social responsibility. Thus, adolescents perceived themselves differently in these dimensions depending on their gender.

Likewise, when the sample was analysed using the group (categories of musicians and non-musicians) as the inter-subject variable, the results continued to show the same significant differences based on age and gender. No significant differences were found in the rest of the factors. In sum, the existence of significant gender and age differences in the MS of all the young participants in this study was confirmed.

5.2. Relationship between the Multidimensional Self-concept and the music variable

Previous research carried out in the artistic field found a positive association between music practice and academic motivation and the self-concept (Oriola-Requena *et al.*, 2018), as well as school performance (Degé *et al.*, 2014).

In the present study, a comparison of the MS scores of musicians and non-musicians yielded the following results:

a) Adolescent musicians have a significantly higher academic self-concept (verbal and mathematical) than non-musicians, regardless of their gender. Given the high predictive capacity of this dimension for school involvement, it is possible that the practice of music in formal education attenuates the typical declines in the academic self-concept and school adjustment in adolescence.

b) With regard to the non-academic self-concept (physical, personal, and social), significant differences were found in self-fulfilment and social responsibility, in favour of musicians. In accordance with what has been reported by the research referenced above, music practice could have a positive influence on the personal and subjective well-being of young people, on the one hand, and on their interpersonal relationships, on the other.

c Regarding the general self-concept, musicians also presented a significantly higher perception than non-musicians, which suggests that instrumental-music practice could be involved in the processes of a positive self-perception in this dimension, with all the benefits this entails for the individual.

In sum, the adolescents who studied music at the conservatory showed significant differences in their favour on all the subscales of the Academic self-concept and the General self-concept, and on some subscales of the Non-academic self-concept. These findings are important at the psychological and musical level, but above all they are educationally relevant. According to the aforementioned research, musical praxis seems to increase the self-concept levels in young people, thus avoiding one of the main blocks to learning, a negative self-concept. It improves motivation and the academic self-concept and, thus, helps to improve performance in school.

5.3. Relationship between music and the Multidimensional Self-concept according to age and gender

No research has been found that compares the MS of adolescent musicians and non-musicians. However, Zubeldia *et al.* (2018) found a protective effect of the Artistic Self-concept on the General self-concept of musicians, especially in adolescents and females, which could indicate that music praxis directly influences the MS in these collectives.

The results of the present study are the following. The group*gender interaction in the group of musicians was not significant for the general self-concept or for any of its dimensions. Therefore, the positive and significant effect of music practice on the MS of the subjects occurs equally in all adolescents, regardless of their gender. This beneficial effect for the whole group of musicians is particularly relevant in the female gender, given that girls generally have significantly lower levels of the MS than boys.

The detailed study of the group and subgroup variables (musician > 6 years, musician < 6 years, non-musician-school, no-music) confirmed that there are no differences between the subgroups in each category, with the following results:

On academic self-concept (verbal and mathematical), both musicians > 6 and musicians < 6 years showed significantly higher scores than the two subgroups of non-musicians. Moreover, the musicians presented a higher academic self-concept, regardless of the years of formal music training received. This could mean that the effects of this education on young people's MS occurred before finishing 6 years of music studies, a standard established by Zhang *et al.* (2020) to determine the category of musicians. Nor were there differences between the subgroups of non-musicians.

Regarding the non-academic self-concept, non-musicians-school excelled on the physical strength subscale compared to musicians > 6 years, but they did not show differences from the rest of the subgroups. On self-realization, no differences were found between musicians > 6 and < 6 years and music-school, but they did present higher scores than the no-music group, whose scores were significantly lower. On social responsibility, no differences were found between the subgroups of each group, but there were differences between musicians > 6 and the subgroups of non-musicians. Musicians < 6 years did not present differences compared to non-musicians. Finally, there were no differences in the general self-concept between the groups of musicians > 6 and < 6 and the non-musician-school group, but there were differences in comparison with the no-music group. In terms of gender, significant differences continued to appear in favour of boys on mathematical self-concept, physical ability, physical condition, and physical strength, whereas girls achieved higher scores on verbal self-concept and social responsibility. In the group*gender interaction, the results were the same as those obtained in the general study, which again suggests that the benefits music brings to the adolescent's self-concept are not regulated by the gender.

Finally, on the general self-concept, the subgroups of musicians > 6, < 6 years, and non-musician-school did not show significant differences, but all the musicians showed significant differences in this factor compared to the no-music subgroup. The group*gender interaction continued to show that the relationship between musical training and the MS of the young musicians was not regulated by the gender, and so practicing music affected the general self-concept of boys and girls equally.

These findings are important because they suggest that learning music may reduce the devaluations of academic self-concept and school adjustment characteristic of adolescence, regardless of the individual's age or gender.

6. Conclusions

After an exhaustive analysis of the MS of young people according to their gender, age, and music status, the following conclusions have been reached in relation to the hypotheses initially proposed:

1. There are significant gender and age differences in the MS of the young people who make up the entire sample of this study.
2. There are significant differences in the Academic Self-Concept, some subscales of the Non-Academic Self-Concept, and the General Self-Concept between the groups of young musicians and non-musicians.
3. Adolescent musicians benefit to the same degree in all the dimensions that present significant differences from non-musicians, regardless of their gender. In other words, the MS benefits that musicians receive affect boys and girls equally.

These results were maintained when the subgroups were analysed in detail, with some nuances that differentiated the young people who studied music at school from those who did not. However, setting aside the differences found between conservatory musicians and non-musicians, it should be noted that those young people who studied music at school also showed differences from those who had never studied this subject in school.

Although it is beyond the scope of this paper, it would be interesting to analyse the causality of the results for these variables in the adolescent group. If instrumental praxis produces a significant improvement in this regard, the study of music in school should have its own space, so that the benefits of this activity would not be restricted to the artistic education group.

In terms of its implications, a final synthesis leads us to highlight the importance of musical praxis in students' MS, regardless of their age and gender. Thus, this activity transcends learning music in the classroom and could improve academic adjustment and school involvement, in addition to providing an intrinsic value in the well-being of individuals. Although as a discipline music occupies a marginal space in the education curriculum, we believe that its value as a tool for the integral development of children and adolescents has been sufficiently supported to award it curricular justice.

The limitations of this study include the great difficulty of obtaining the participation of schools and music conservatories, which has impeded greater participation in the research.

Another limitation is due to the methodology used because, as a cross-sectional comparative study, the results obtained reveal specific scores of numerous participants at a given time, which does not allow us to examine their evolution over time or establish causal relationships between the variables analysed.

Likewise, it would be interesting to discover whether the results obtained in the ages that comprise the professional conservatories of music would also be found in elementary and higher conservatory education.

We propose the following actions as future lines of research:

Given that musicians show significant differences in their academic self-concept compared to non-musicians, it would be advantageous to find out whether their school grades coincide with their perceptions and are really higher than those of non-musicians.

Given that music has an impact on psychological variables directly related to academic and personal achievement, it would be interesting to carry out a longitudinal intervention in schools with students at risk of

failing. The project would contemplate learning a musical instrument for the amount of time needed to carry out a pre- and post-test that would make it possible to determine the effect of music on these and other psychological variables.

In conclusion, this research shows that young people who study music in a regular and regulated way present significant differences in their self-concept compared to young people who have not studied music, thus challenging the MS decline typical of the age and gender in adolescence.

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