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# Self-Concept and Feeling of Belonging as a Predictor Variable of the Attitude towards the Study from the PISA 2018 Report

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**Abstract:** The importance of self-concept and the feeling of belonging to a school have been highlighted in numerous studies as predictors of school success. However, there are hardly any studies that link the relationship between self-concept and the feeling of belonging to the school. Thus, the aim of this study is to analyze the influence of personal and educational self-concept on the feeling of belonging to school, based on the data provided by the PISA 2018 report. To achieve this objective, a correlational methodology based on structural equation modelling has been used. The sample of participants is composed of 35,943 students of Compulsory Secondary Education from different Spanish high schools that participated in the PISA 2018 Report. The results obtained have shown that personal and educational self-concept correlate positively. In addition, both factors were positively related to the feeling of belonging to the educational centre. This study allows us to infer the idea of the existence of a direct and positive correlation between school and personal self-concept and the feeling of belonging, which would allow schools to develop educational intervention programmes with the aim of promoting the student's self-concept in order for them to feel better integrated into the school.

**Keywords:** PISA report; self-concept; sense of belonging



**Citation:** Gutiérrez, N.; Mercader, I.; Carrión, J.J.; Trigueros, R. Self-Concept and Feeling of Belonging as a Predictor Variable of the Attitude towards the Study from the PISA 2018 Report. *Educ. Sci.* **2022**, *12*, 91. <https://doi.org/10.3390/educsci12020091>

Academic Editor: Casey D. Cobb

Received: 12 December 2021

Accepted: 25 January 2022

Published: 28 January 2022

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## 1. Introduction

One of the major transformations that occur during adolescence is the development of cognitive skills [1]. This progressive development leads to changes in the adolescent's perception of themselves, as they face new academic and social roles, but fundamentally physical ones, as they produce a change in self-description and self-esteem due to how they see themselves reflected in relation to others. Adolescents are vulnerable and susceptible to distorting their image, which is why there is so much interest in studying self-concept at this stage of development [2,3].

The importance of self-concept and its binding relationship with the feeling of belonging has been highlighted in numerous investigations [4,5]. Specifically, some studies [6,7] have found a close relationship between a high self-concept and school success, since these students have a better integration in the classroom, resulting in higher school achievement, an increase in school grades and a more positive assessment by the teachers of the centre compared to students with a low self-concept.

Self-concept can be considered to be associated with the psychological well-being and social adjustment of adolescents [8]. Thus, it can be inferred that a scarcity of conflicts at school and high academic achievement have a positive effect on the self-concept of adolescents in general. Along the same lines, numerous authors confirm this thesis, pointing out its predictive power in the improvement of academic performance in the scarcity of school conflicts, better school adjustment and therefore less school failure [9–14].

Focusing on the educational sphere, some studies on the feeling of belonging indicate that the involvement of students and teachers with the school has a significant influence on the development of students' school trajectories and their academic results [15–17]. In addition, students with a strong sense of school belonging are more motivated, have a higher self-concept, better academic performance, feel greater school satisfaction, and their behaviour results in less socioemotional mismatches and better relationships with teachers [18].

Thus, the sense of belonging constitutes an important element of personal identity, interests and human development, characterized by cognitive, affective and social components, according [19,20], who point out that it is of real importance to know the factors that determine the sense of belonging in order to understand the importance of this feeling from the various contexts of identification and elaboration of identity with the group and the physical environment.

As with other psychological constructs, self-concept has had a multitude of definitions by numerous authors. Ref. [21] considers that self-concept is linked to the relationships of our self with others and to how we perceive of ourselves and the values we assign to these perceptions [22]. Others, such as [23] argue that self-concept mainly has to do with the image that the subject has of themselves, their strengths and limitations, and that this image influences the subject's behaviour. Authors such as [24] defined self-concept as the set of self-perceptions of a physical, intellectual, affective and social nature, among others. Therefore, it could be said that self-concept is multidimensional and hierarchically structured, from the most unstable dimensions, such as the personal ones, to the most stable ones, such as self-concept in general.

However, [25] adds to that perception the judgment the individual makes of himself and the type of relationship that the subject maintains with his environment. Therefore, self-concept could be assumed to be the perception and evaluation that a person makes of themselves in three dimensions: affective, cognitive and behavioural [26,27].

Parallel to self-esteem, we should comment on the importance of the feeling of belonging to the school. According, this concept corresponds to how you identify yourself in your school. Additionally, it is a fundamental concept and one of the great challenges of the educational system since it is a variable that can mitigate school dropout and failure rates. The English term "school sense of belonging" [28] makes it interesting to investigate the factors that may mediate this feeling of school belonging. This feeling is an emotional or identifying and internal feeling by which one feels that they is part of the school. Being proud to be part of a school is represented by the feeling of being accepted and respected [29].

One of the first researchers of this concept was [30], who proposed a bidirectional model made up of participation in the school and identification with it. In time, [31] built on the work of Wehlage and Finn and developed a questionnaire to measure the students' sense of belonging: the PSSM or "Psychological Sense of School Membership scale". The first model of the PSSM questionnaire [31] has a single dimension, psychological sense of belonging, and in the last decade the three-dimensional model [32,33] which is composed of three dimensions: caring relationships, acceptance and rejection, has gained strength.

The objectives of this work are to analyse the feelings of belonging and self-concept, and their influence on academic success of in students of Compulsory Secondary Education, based on the data provided by the PISA 2018 report.

Thus, this study provides knowledge on the analysis of the feeling of belonging, understood as the set of values, perceptions and actions that constitute a field of communication and relationships between individuals of the same community and the relationships between the self-concept of adolescents.

## 2. Materials and Methods

The method used was correlational, corresponding to an ex post facto design, and retrospective and comparative in nature, since different variables such as sex, age, or nationality

are compared with other types of variables, in this case dependent variables, which correspond to self-concept and the feeling of belonging to the centre.

### 2.1. Participants

The sample was composed of 35,943 students of Compulsory Secondary Education, from different Spanish high schools that participated in the 2018 PISA Report. The mean age of the sample is 15.83 years, with a standard deviation  $SD = 0.28$ . Regarding sex, 50% ( $n = 17,987$ ) are male, and 50% ( $n = 17,956$ ) are female. As for nationality, 90.7% ( $n = 31,901$ ) were of Spanish nationality and 9.3% ( $n = 3253$ ) were of a nationality other than Spanish. Finally, 82.9% ( $n = 29,129$ ) had not repeated a grade and 11.8% ( $n = 6814$ ) had repeated a grade.

### 2.2. Instrument

The instruments used are the placement tests, referring to the 2018 PISA Report, from which only those items referring to questions of a sociodemographic nature and those related to self-concept and the feeling of belonging to the centre were chosen. (See Appendix A). All of them corresponded to a Likert-type scale response format.

Therefore, it is a scale of categories, widely used in research in the field of psychology to measure preferences, attitudes or beliefs, through which the sample gives a response based on a set of specific categories distributed in order of frequency or quantity. In this case, in the Likert scale used, the value of zero corresponded to do not agree at all, and the value of five to totally agree.

### 2.3. Procedure

The results were collected and processed from the database corresponding to the answers of the PISA 2018 Report level tests. Said database is available on the website of the Ministry of Education and Vocational Training and the INEE (National Institute for Educational Evaluation).

### 2.4. Data Analysis

The data analyses used in this study were descriptive statistics (mean, standard deviation and bivariate correlations), reliability analysis and structural equation modelling (SEM) in order to test the relationships established in the hypothesised model.

The estimation method used in the SEM was maximum likelihood coupled with bootstrapping of 6000 iterations. To accept or reject the proposed model, a set of fit indices (Hu and Bentler, 1999) were taken into account:  $\chi^2/df$ , IFI (Incremental Fit Index), CFI (Comparative Fit Index), TLI (Tucker–Lewis Index), SRMR (Standardized Root-Mean-Square Residual) and RMSEA (Root-Mean-Square Error of Approximation) plus their confidence interval (CI) at 90%. Thus, the fit indices are:  $\chi^2/df$ , values between 2 and 3; IFI, CFI and TLI values above 0.95; SRMR values below 0.06; and RMSEA with values below 0.08.

These analyses were carried out using the statistical analysis software SPSS version 26 and AMOS version 22.

## 3. Results

Regarding educational self-concept, the questions from the PISA report related to the fact that the main objective of the students was to learn as much as possible were taken as variables. The main objective of the students was to fully master the material presented in the classes. Additionally, the main objective of the students was to understand the content of the classes as comprehensively as possible.

Regarding personal self-concept, the questions of the PISA report related to the ability to manage by themselves were taken as variables: being proud of your own achievements; the ability to handle multiple issues at once; believing in themselves; and being able to find solutions to difficult situations.

Regarding the feeling of belonging to the school, the questions from the PISA report related to feeling like a stranger at school or feeling uncomfortable at school were taken as variables: staying alone at school; having or making friends easily at school; feeling part of the group/class; and feeling accepted by peers.

### 3.1. Descriptive Statistics, Reliability and Bivariate Correlations

As can be seen in Table 1, the correlations between the study variables were positive, reflecting the reciprocity between the study variables. On the other hand, the reliability analysis through Cronbach's Alpha showed that each of the three factors possessed scores above 0.70.

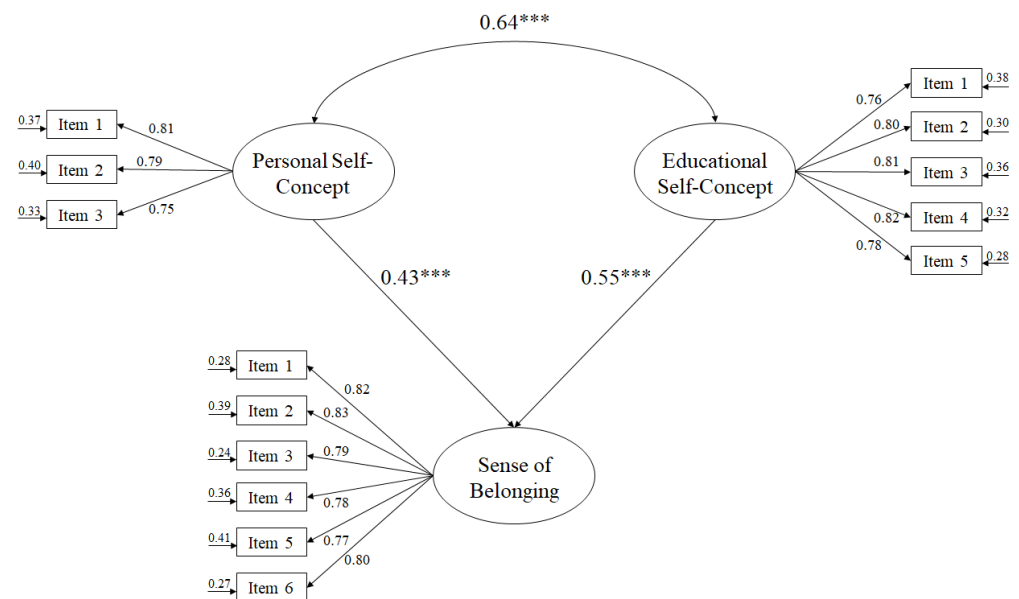
**Table 1.** Preliminary Analysis.

Factors	M	SD	$\alpha$	1	2	3
Personal self-concept	3.18	0.72	0.79	-	0.51 ***	0.34 ***
Educational self-concept	3.35	1.15	0.84		-	0.67 ***
Sense of belonging	2.78	0.79	0.73			-

Note: \*\*\*  $p < 0.001$ ; SD = Standard Deviation; M = Mean;  $\alpha$  = Cronbach's Alpha.

### 3.2. Structural Equation Model

The hypothesized model of predictive relationships (Figure 1), has shown that the fit indices were adequate:  $\chi^2 (74, n = 35,943) = 191.98, \chi^2/df = 2.59, p < 0.001, IFI = 0.96, TLI = 0.96, CFI = 0.96, RMSEA = 0.052 (90\% CI = 0.050-0.061), SRMR = 0.033$ .



**Figure 1.** Structural equation modelling. Note: \*\*\*  $p < 0.001$ .

The relationships established in the structural equation model are specified below:

- Personal Self-Concept and Educational Self-Concept correlated positively ( $\beta = 0.64, p < 0.001$ ).
- Personal Self-Concept is positively related to sense of belonging ( $\beta = 0.43, p < 0.001$ ).
- Educational Self-Concept is positively related to sense of belonging ( $\beta = 0.55, p < 0.001$ ).

## 4. Discussion

The aim of the present study was to analyse the feelings of belonging and self-concept in students of Compulsory Secondary Education, based on the data provided by the PISA 2018 report.

The results obtained in this study allow us to conclude on the idea of the existence of a direct and positive correlation between school self-concept and the feeling of belonging (Guay et al., 2003; Martínez-Antón et al., 2007), and personal self-concept and the feeling of belonging (Enrique and Muñoz, 2015).

As occurs with respect to personal self-concept, there is a direct and positive correlation with respect to school self-concept (Goñi, 2003, Sevilla et al., 2021), and with the feeling of belonging.

The relationship established between self-concept and the feeling of belonging results in full school integration, better academic results, a proactive and positive attitude of students (Barquín, 2009; Merenstein, 2001), an increase in intrinsic motivation, lower socioemotional imbalances, better relationships with teachers (Harborg, 1998) and better relationships with peers, and reduction in the occurrence of school conflicts (Garaigordobil, Durá, & Pérez, 2005; Taylor et al., 2007; Celorrio and Finistrosa, 2009).

Finally, regarding the feeling of belonging, there is a direct and positive correlation with personal self-concept and school self-concept (Barquín, 2009; Harborg, 1998; Merenstein, 2001; Pelaez and Vernetta, 2020).

These results also reveal, in relation to educational self-concept, the manifestation of being moderately in agreement with the fact that learning as much as possible is their goal, along with completely mastering the material presented in class. Additionally, they show strong agreement with understanding the material presented in class. For these variables, there are differences in terms of sex and country of origin, but not in terms of having repeated a grade. Additionally, the results show a direct and positive correlation between educational self-concept and age.

These results are in line with personal self-concept, in which the participants say they can manage by themselves and also agree with feeling proud of having achieved certain objectives and with being able to handle many things at the same time, believing in themselves, and finding a way to get out of complicated situations. There are differences according to sex, but not according to nationality or the fact of having repeated a grade. In addition, the results show a direct and positive correlation between educational self-concept and age.

Finally, in relation to the feeling of belonging, part of the relevant data of this study resides in the manifestation by the participants of feeling like a stranger at school and feeling alone at school, with differences in terms of sex and nationality, but not in terms of having repeated a grade. The same is true of feeling uncomfortable and out of place at school. However, in this case, there are differences in terms of sex, nationality and having repeated a grade.

**Author Contributions:** Investigation, N.G., I.M., J.J.C. and R.T. All authors have read and agreed to the published version of the manuscript.

**Funding:** This research received no external funding.

**Institutional Review Board Statement:** Bioethics Committee of the University of Almeria UALBIO 2022/004.

**Informed Consent Statement:** Not applicable.

**Data Availability Statement:** Not applicable.

**Conflicts of Interest:** The authors declare no conflict of interest.

## Appendix A

Educational self-concept:

My goal is to learn as much as possible. My goal is to fully master the material presented in my classes. My goal is to understand the content of my classes as thoroughly as possible.

Personal self-concept:

I usually manage one way or another. I am proud to have achieved. I feel like I can handle a lot of things at the same time. My belief in myself helps me get through difficult times. When I am in a difficult situation, I can usually find my way out of it.

Sense of belonging:

I feel like a stranger at school. I make friends easily at school. I feel like I belong to the school. I feel uncomfortable and out of place in my school. Other students seem to like me. I feel lonely at school.

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