

Psychometrical properties of a classroom social comparison scale among a sample of Algerian students

الخصائص السيكومترية لمقياس المقارنات الاجتماعية في القسم لدى عينة من التلاميذ الجزائريين

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Abstract:	Article info
This study was conducted , since within the limits of our research, no social comparison scale in the Arabic version is available in our department. The purpose of the study was to build a valid and reliable comparison scale. The Arabic version of the social comparison scale was applied using a sample of 600 students among Algerian schools during the period between 2020 and 2021. The data were analyzed using factorial analysis along with the Cronbach's and McDonald's coefficients of reliability by means of the JAMOVİ computation software. The findings showed that the social comparison scale in classroom has acceptable psychometric properties.	Received :28/06/2024 Accepted :31/10/2024
	Keyword: social comparison classroom validity and reliability
ملخص:	معلومات المقال
لا يوجد أي مقياس لقياس المقارنات الاجتماعية في القسم في حدود اطلاعنا. تهدف الدراسة إلى بناء مقياس المقارنات الاجتماعية في القسم، والتأكد من صدقه وثباته. قمنا ببناء مقياس المقارنات الاجتماعية في القسم وتطبيقه على عينة من 600 تلميذ في المدارس الجزائرية، في السنة الدراسية 2020\2021. استخدمنا التحليل العاملي، وقمنا بحساب معامل ألفا كلوندياخ وماكدوغال. تم القياس بالحساب من خلال البرنامج الاحصائي JAMOVİ. أظهرت النتائج أن المقياس يتمتع بقدر مقبول من الخصائص السيكومترية.	تاريخ الارسال: 2024/06/28 تاريخ القبول: 2024/10/31
	الكلمات المفتاحية: المقارنات الاجتماعية القسم الصدق والثبات

❖ **Introduction:** School is an important context in students' lives because they spend about 12 years of their lives inside classrooms, which combine academic and social content. As Wehrens (2008) mentions Students in the classroom feel uncertain and make many evaluations about themselves and others.

Buunk P Bram and Ven der Zee (2019) mention that the evaluation of self-comparison with others refers to two processes: cognitive and social, and we call it social comparison. It is a process of thinking about social information (ie: information about others), and this comparison defines their opinions and abilities as Huschens et al (2019) mention.

Festinger, in 1954, was the first scientist who developed classical social comparison and said that individuals are driven by a desire for self-evaluation, a motivation to establish that one's opinions are correct and to know precisely what one is capable of doing as Buunk and Gibbons (2007) mentions. The fundamental assumption of this theory is that humans have an inherent desire to compare themselves with others and relate their features (abilities and opinions) to those of relevant peers. Second, if subjects experience a discrepancy between themselves and their comparison targets. They tend to perform actions to minimize this difference Huschens et al (2019) mention. This process arises in all development stages. Children are more likely to distinguish themselves from others in comparative rather than in absolute terms. That is, elementary school-age children are no longer as likely to think about what I do or do not do but are more likely to think about what I can do in comparison with others (Karckay, 2009) They can make their comparisons with either higher achieving peers (upward) or with lower achieving counterparts (downward) (Von, 2021), and between pupils who got better grades, an upward comparison, or worse grades, a downward comparison. Research shows that these comparisons can be threatening or motivating as Boissicat et al (2021) mentions.

From this perspective, social comparison is important to understand students. To research this subject we need materials to measure in the classroom. In general, we find two scales in this field, the Academic Social Comparisons Scale of Briony et al (2018), and the social comparison scale of Schneider and Schupp (2011), but we don't find any instrument in Arabic word, in Arabic language, so we aim in this study to build a social comparison scale in the classroom in the Arabic language, with Algerian students' sample. There are two important components in psychometric properties validity and reliability, so we build a social comparison scale and confirm its validity and reliability.

❖ **Method:**

- **Participants:** Six hundred students (600 students) from Bouzidi Abdelkader High School (250 students), and Bounakhla Abdelkader Elementary School (350 students) in Tlemcen, Algeria, participated in this study, in the study year 2020/2021, we faced many difficulties caused by COVID-19. We select the sample by a simple random method, and all communities are included in the sample.
- **Materiel:** This scale was conducted based on the classic social comparison theory of Festinger note in Buunk and Gibbons (2007), and the Academic Social Comparisons Scale of Briony et al (2018), where we consider comparisons upwards and downwards. And the social comparison scale of Schneider & Schupp (2011). We took into account its dimensions: comparison of opinions, comparison of abilities,

and then we conducted this scale to measure social comparison in classrooms in the Arabic version (Appendix A)

The scale is scored according to a five-point Likert scale (never, rarely, sometimes, often, always). The score on this scale is from 8 to 40. Each dimension is determined by a degree from 04 to 20, and the direction of comparison (up, down) is specified according to the items.

- **Statistical analysis and procedure:** We calculate descriptive statistics and confirm the fit of distributions to do factor analysis. For validity, we calculate KIMO and Bartlett for Assumption Checks so that we can do an Exploratory Factor Analysis, and we calculate after concerning all statistical rules based on it (Revelle, W, 2019). We calculate Confirmatory Factor Analysis based on it (Rosseel, Y., et al, 2018), and take some additional fit index (CFI, TLI, SRMR, RMSEA, χ^2 , AIC, BIC), based on interpretation (Hu & Bentler, 1999). We calculate internal consistency between items based on a heatmap of person correlation. For reliability, we calculate Cronbach's α and McDonald's ω . For statistical analysis, we use in calculating JAMOV software.

Abbreviations: we mean by C the items: **c1 (item1) to c8 (item8)**

❖ Results:

➤ Descriptive for the social comparison scale:

Table 1. Descriptive statistics for items

	N	Mean	SD	Skewness		Kurtosis	
				Skewness	SE	Kurtosis	SE
c1	600	2.57	1.48	0.398	0.0998	-1.247	0.199
c2	600	3.74	1.39	-0.741	0.0998	-0.718	0.199
c3	600	2.47	1.39	0.483	0.0998	-1.009	0.199
c4	600	2.58	1.33	0.318	0.0998	-0.983	0.199
c5	600	3.09	1.52	-0.113	0.0998	-1.407	0.199
c6	600	3.25	1.51	-0.217	0.0998	-1.385	0.199
c7	600	1.89	1.20	1.252	0.0998	0.554	0.199
c8	600	1.75	1.14	1.472	0.0998	1.233	0.199

The mean average of the item is between 1.75 and 3.74, while SD is between 1.14 and 1.52. the skewness is between -0.21 and 1.47, while kerosis is between -1.40 and 1.23. All these values are normal in distribution.

➤ **The validity:**▪ **Exploratory Factor Analysis for social comparison scale**• **Assumption Checks****Table 2. Bartlett's Test of Sphericity**

χ^2	df	p
952	28	< .001

The Bartlett sphericity test is 952, and significant at 0.01. These results demonstrating the existence of correlations between items of scale show that the data set is appropriate for exploratory factor analysis.

Table 3. KMO Measure of Sampling Adequacy

	MSA
Overall	0.742
c1	0.832
c2	0.804
c3	0.764
c4	0.795
c5	0.759
c6	0.754
c7	0.612
c8	0.625

The KMO result of all items is 0.742, and the KMO of items individually ranged between 0.61 and 0.83. These results prove that the sample size is very good.

• **Exploratory Factor Analysis for social comparison scale****Table 4. Factor Loadings**

	Factor			Uniqueness
	1	2	3	
c1 (item1)	0.581			0.66025
c2 (item2)	0.508			0.72926
c3 (item 3)				0.00396
c4 (item4)			0.952	0.89111

Table 4. Factor Loadings

	Factor			Uniqueness
	1	2	3	
c5 (item5)	0.765			0.38756
c6 (item6)	0.807			0.35256
c7 (item7)		0.874		0.23738
c8 (item8)		0.547		0.66892

With the 'Minimum residual' extraction method used in combination with an 'oblimin' rotation, the results show that 3 factors are loading in the range between 0.54 and 0.99.

- **Factor Statistics**

Table 5. Summary of factors

Factor	SS Loadings	% of Variance	Cumulative %
1	1.90	23.7	23.7
2	1.10	13.7	37.5
3	1.07	13.4	50.9

The results show that there are 3 factors: SS loading more than 0.50, and each factor cumulated more than 20%.

These results mean that we have 3 factors in social comparison: up social comparison (factor 1), down social comparison in ability (factor 2), and down social comparison in opinion (factor 3)

➤ **Confirmatory Factor Analysis of Social Comparison Scale**

Table 6. Models Fit of Social Comparison Scale

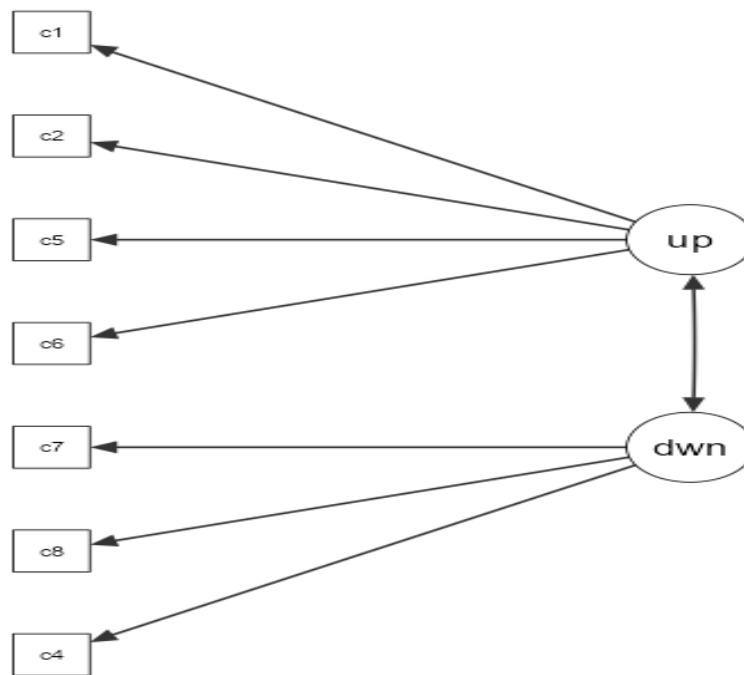
models	CFI	TLI	SRMR	RMSEA	χ^2	AIC	BIC
Model 1	0.99	0.98	0.01	0.02	20 P= 0.13	15713	15845
Model 2	0.97	0.96	0.03	0.04	39.1 P= 0.002	15726	15845
Model 3	0.95	0.93	0.05	0.06	48 P= 0.001	13710	13807

After doing a confirmatory factor analysis of the social comparison scale, we found 3 models have good additional fit, so we must choose one model. The three models have a fit value of the comparative fit index CFI, and the Tucker-Lewis Index, with desirable values above .90.

The threshold of a standardized root mean square residual (SRMR) is less than or equal to 0.05 in all models. The value of the root means the square error of approximation (RMSEA) in models 1 and 2 does not fit, but in model 3 it is fit (between 0.05-0.08). The χ^2 statistic fits in model 1 (p value is not significant). The best models for this sample are model 1 and model 3, but the best Akaike information criterion (AIC) and Bayesian information criterion (BIC) are in model 3 because their value is the smallest. Finally we choose model 3 for this sample.

Path Diagram

Figure 1. Confirmatory factor analysis path diagram by JAMOV



Up: upward comparison

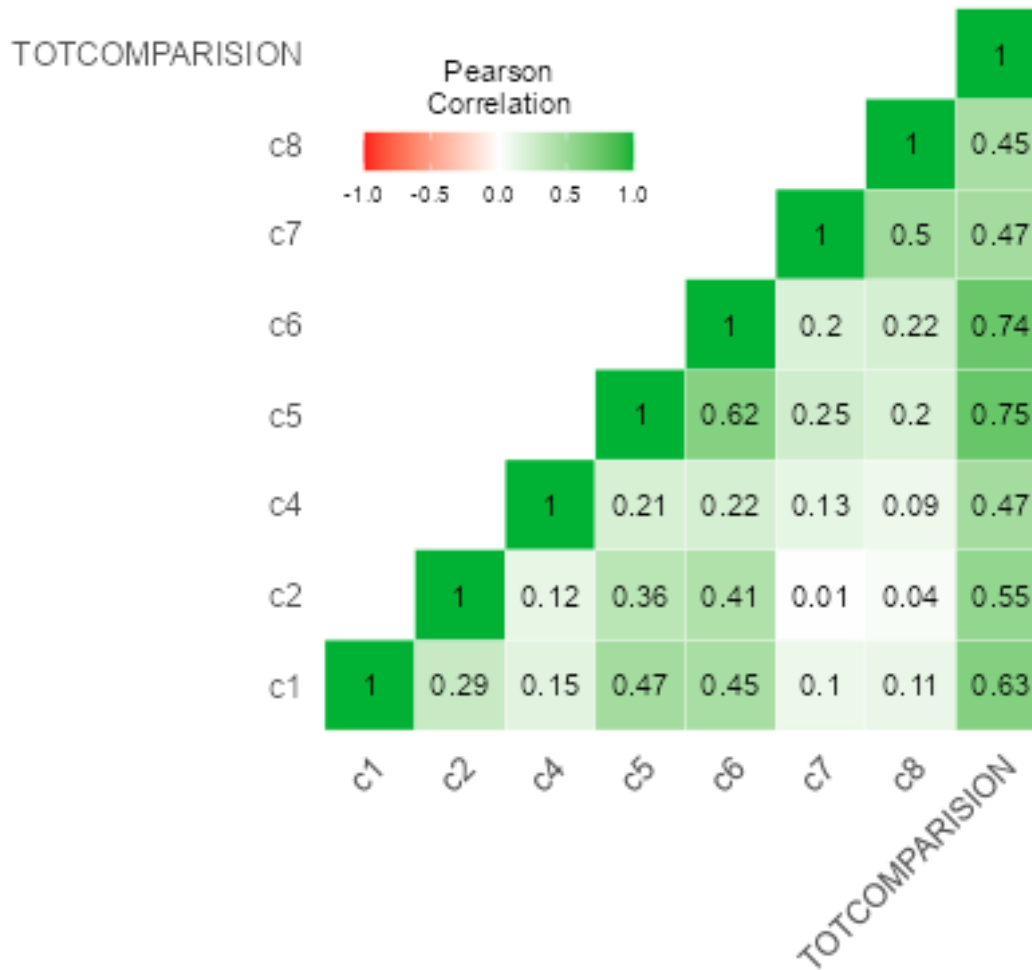
dwn: downward comparison

We observe from the path diagram that there are two factors: upward comparison, and downward comparison.

➤ **internal consistency between items and social comparison scale**

We calculate person correlation with heatmap for good data presentation:

Figure 2. Correlation heatmap by JAMOV



We observe from the figure that all items correlate with a social comparison scale in a range between 0.45 to 0.75, and this value is acceptable.

➤ the reliability:

3-3-1- Cronbach's and McDonald's Reliability Analysis for Social Comparison Scale

Table 7. Scale Reliability Statistics for social comparison scale

	Cronbach's α	McDonald's ω
scale	0.705	0.713

Cronbach's α is 0.70, and McDonald's ω and this value is fit for reliability, so the scale is reliable.

Table 8. Item Reliability Statistics for Social Comparison Scale

	If item dropped	
	Cronbach's α	McDonald's ω
c1	0.662	0.674
c2	0.687	0.698
c4	0.712	0.720
c5	0.608	0.619
c6	0.608	0.619
c7	0.698	0.709
c8	0.698	0.710

The range of Cronbach's α of items is between 0.60 to 0.71, and the range of McDonald's ω of items is between 0.61 to 0.71, and this value is fit for reliability, so the scale is reliable.

❖ Discussion:

After doing statistical analysis, we confirmed that the social comparison scale in the classroom has good validity and reliability.

We confirmed the validity by Exploratory Factor Analysis where analysis showed 3 factors, and Confirmatory Factor Analysis showed 3 models. We accepted the model of 2 factors because it showed the best fit with the sample of the study, and we calculated the internal consistency that all items correlate with the social comparison scale in a range between 0.45 to 0.75, and this value is acceptable.

We confirm reliability with Cronbach's which reached 0.70, and McDonald's which reached 0.71.

Many studies confirm that social comparison in the classroom is related to self-esteem issues such as self-improvement or self-enhancement (Han, 2022), The student compared himself with others and constructed an image of himself (ie: I had the best result in Math compared to my classmates, so I'm a genius).

On the other hand, students can develop emotional difficulties and mental health issues, such as uncontrolled anger and depression, especially if they cannot accept themselves unconditionally (Kan & Prihadi, 2021). Social comparison can raise anxiety about learning by comparing themselves with others. (Hong, Tai kai, Hwang, & Lin, 2022). When students feel that they are less than their classmates, they can get into anger and have low self-confidence.

❖ **Conclusion:** Social comparison in the classroom is a new area of study in the Arabic world and needs more research to understand how students in the classroom, especially the social cognition in the classroom affects pedagogical processes.

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