Validity and reliability of a social skills scale among Chilean health sciences students: A cross-sectional study

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Abstract

Currently, there is a growing need to assess social skills in young university students since the use and application of these scales can provide benefits in different situations, such as work, education, clinical and psychological. The objective of the study was to verify the validity and reliability of a social skills scale (SS) for students from three professional health sciences programs in Chile. This information will provide understanding and development of SS among health care team members and between them and patients. A cross-sectional study was designed with 185 Chilean university students (141 males and 44 females). Students were recruited voluntarily from a private university in Chile. Ages ranged from 18 to 30 years old. Goldstein's SS scale (consisting of six dimensions with a total of 50 questions) was used. It was administered virtually. Validity was verified by means of confirmatory factor analysis and reliability through internal consistency. The factor structure of the model confirmed the 50 questions and six dimensions of the scale. In general, the model reflected satisfactory values. Kaiser-Meyer-Olkin's (KMO) test for the adequacy (suitability) of the sample was 0.834, chi squared $X2= 4344.8$ (gl= 1425, p< 0.000). The comparative fit index (CFI) was 0.45, goodness of fit index (GFI) was 0.56, the root mean square error of approximation (RMSEA) was 0.091, and the % of variance 54%. The communalities reflected values from 0.31 to 0.76. In addition, Cronbach's Alpha values varied from 0.72 to 0.75. In its totality, the scale demonstrated a reliability of 0.75. The SS scale is valid and reliable. It can be used with students from nursing, kinesiology, and speech therapy programs. The results suggest the use and application of the scale with professionals working in higher education.

Key Words: Validity; reliability; social skills; university students; health.

Social skills (SS) are behaviors based on ideas, feelings, opinions, and affections to maintain or improve our relationships with others while helping us resolve and strengthen a social situation.[1] Their development is essential and serves for the future functioning of society to reduce the risk of emotional and behavioral problems.[2] This process begins in childhood and continues throughout adolescence during which communicative skills and relationships are developed with the goal of establishing strong positive social relationships of self-confidence and personal wellbeing.[3] In general, to date, research has suggested that SS developed in different stages of life provide the fundamental basis for social and academic success throughout the life cycle.[4-7] In this context, examining SS is a necessary requirement for developing and evaluating the effectiveness of cognitive and behavioral interventions.[8] In addition, SS help identify personal growth, self-esteem, and respect for human rights established socially in school to university.[7] Currently, a growing need exists to evaluate SS in young university students since the use and application of these scales may provide benefits in different situations, such as labor, educational, clinical, and psychological.[9] In addition, these can be measured with a wide range of methods, such as, for example, observation, self-reporting, questionnaires, scales, or interviews.

***Fig 1.** Socio-demographic characteristics of the sample.*
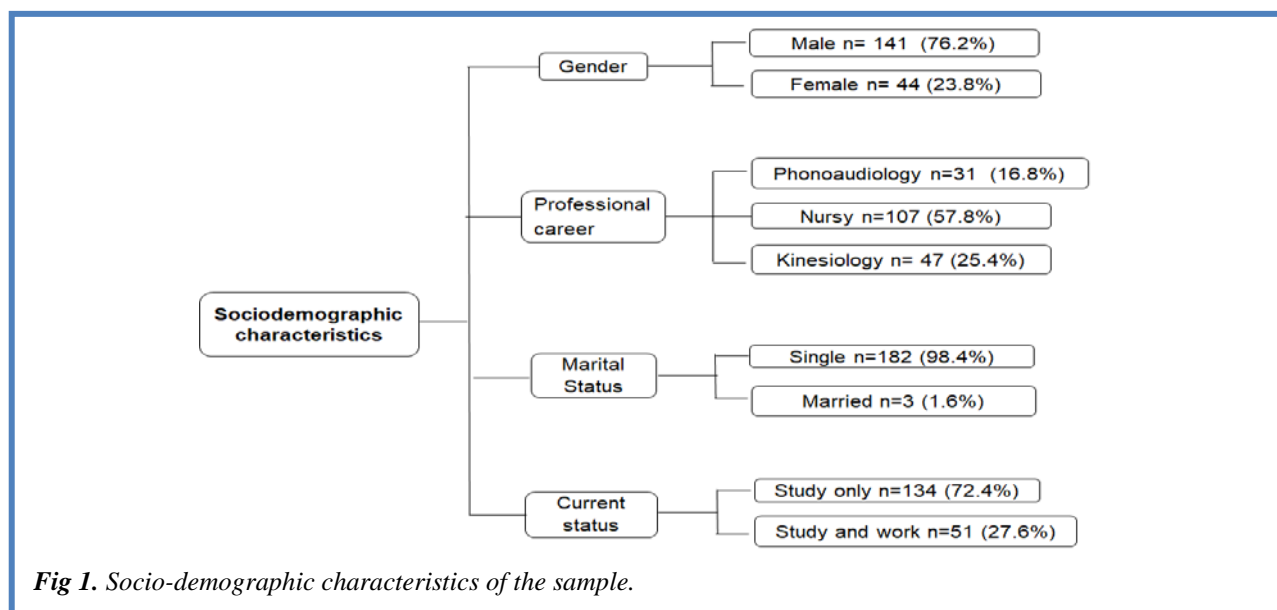
However, based on what is currently known, no definite consensus exists about how to measure SS.[7] The questionnaire is an economical tool that provides for fast evaluation of a large quantity of individuals in a short time period. Based on the fact that future professionals studying health sciences careers must perform competently on a social task (for example, active listening, interpersonal relationships, understanding the feelings of others, among others), it is possible that the scale proposed by Goldstein et al.[10] could be useful. This scale measures SS that could determine valid and reliable psychometric properties in the young studying in the health sciences professions.

Therefore, the objective of this research was to verify the validity and reliability of a SS scale in students from three professional health sciences programs in Chile. This information will help provide an understanding for developing SS among members of health care teams and between them and their patients.

Materials and Methods

Study design and participants

A cross-sectional study was designed with 185 Chilean university students (141 males and 44 females). Students from a private university in Chile volunteered to participate. Socio-demographic variables (sex, professional program, marital status, and employment) of the students studied are illustrated in Fig 1. The sample was selected non-probabilistically by convenience. Students were contacted by telephone to see if they wanted to participate in the study during the month of May 2021. Once they were consulted, all of the students agreeing to participate signed the informed consent form (sent by email). Students included in the research were from three professional health sciences programs (speech therapy, nursing, and kinesiology), studying only in one program. They were between 18 and 30 years old. Students excluded were those studying in two or more professional programs, younger than age 18, and those not completing the entire questionnaire sent to them. The entire process was carried out according to the Ethics Committee of the Catholic University Silva Henriquez and the Declaration of Helsinki for Human Subjects.

Procedures and instruments

The social skills scale was administered using the survey technique. The scale given to the students was proposed by Goldstein et al.[10] This scale consists of 6 dimensions (basic skills, advanced social skills, skills associated with emotions, skills related to aggression, stress related coping skills, and planning skills). Each dimension had four possible choices for answers: a) It happens to me very few times, b) It happens to me many times, c) It happens to me sometimes, and d) It never happens to me. A link was created for the questionnaire (Google Drive). It was sent to each of the students so that they could answer on-line. They were told that they had 24 hours to respond to the questions and return the scale. Once the deadline had expired, the questionnaire data was analyzed. Validity was carried out through construct (using confirmatory factor analysis (CFA)). For reliability, internal consistency was used.

Statistics

Normality of the data was verified by means of the Shapiro-Wilk test. Descriptive statistics of frequencies, percentages, range, average (X), standard deviation (SD), asymmetry, and kurtosis were analyzed. The model of fit for CFA provided the following calculations: Kaiser-Meyer-Olkin's (KMO) test of adequacy of the sample, chi squared (X^2), comparative fit index (CFI), goodness of fit index (GFI), root mean square error of approximation (RMSEA), and % of variance. Cronbach's Alpha was used for internal

consistency. For all cases, p< 0.05 was adopted. Initially, all results were processed and analyzed on

model reflected satisfactory values. Kaiser-Meyer-Olkin's (KMO) adequacy test for the sample was 0.834,

Questions	X	SD	Sk	Ku	Questions	X	SD	Sk	Ku
Basic skills					25. Negotiate.	3.92	0.88	-0.77	0.77
1. Listening.	4.32	0.80	-1.17	1.00	26. Begin self control.	3.52	1.07	-0.40	-0.40
2. Initiate a conversation.	3.16	1.06	-0.22	-0.49	27. Defend one's own rights.	4.10	0.93	-0.77	0.07
3. Maintain a conversation.	4.28	0.92	-1.44	2.14	28. Respond to jokes.	3.89	0.88	-0.55	0.16
4. Formulate a question.	3.92	0.91	-0.66	0.13	29. Avoid problems with others.	3.92	1.05	-0.74	-0.07
5. Give thanks.	4.66	0.61	-2.37	8.05	30. Do not get into fights.	4.02	0.99	-1.03	0.86
6. Introduce oneself.	3.56	1.16	-0.33	-0.78	**Stress coping skills**				
7. Introduce other people.	3.47	1.17	-0.36	-0.70	31. Formulate a complaint.	3.66	1.03	-0.56	-0.03
8. Give a compliment.	3.99	1.05	-0.85	0.09	32. Respond to a complaint.	4.11	0.87	-0.76	0.14
					33. Show sportsmanship after a game.	4.28	0.84	-1.05	0.76
Advanced Skills					34. Overcome embarrassment.	3.34	1.05	-0.37	-0.15
9. Ask for help.	3.89	1.01	-0.69	-0.05	35. Compose oneself when one is left out.	4.32	0.99	-1.36	0.94
10. Participate.	3.77	1.01	-0.66	0.05					
11. Give instructions.	4.12	0.92	-0.92	0.47	36. Defend a friend.	4.11	0.95	-0.76	-0.29
12. Follow instructions.	4.08	0.79	-0.42	-0.55	37. Respond to persuasion.	4.03	0.88	-0.79	0.56
13. Apologize.	4.55	0.74	-1.95	4.40	38. Deal with failure.	4.01	0.94	-0.80	0.37
14. Persuade others.	2.77	1.20	0.18	-0.76	39. Deal with contradictory messages.	3.67	1.00	-0.43	-0.30
Skills related to feelings					40. Respond to an accusation.	3.66	1.11	-0.48	-0.41
15. Recognize one's own emotions.	3.62	1.08	-0.47	-0.42	41. Prepare for a difficult conversation.	3.95	0.98	-0.85	0.40
16. Express emotions.	2.71	1.18	0.38	-0.59	42. Deal with group pressure.	3.62	1.00	-0.37	-0.28
17. Understand the emotions of others.	4.36	0.77	-1.09	0.72	**Planning Skills**				
18. Face the anger of another.	4.11	0.90	-0.86	0.47	43. Take initiative.	3.76	1.07	-0.52	-0.44
19. Express affection.	4.10	0.96	-0.83	-0.15	44. Find out the cause of a problem.	3.99	0.92	-0.78	0.48
20. Overcome fear.	3.53	1.05	-0.51	-0.01	45. Establish a goal.	4.11	0.87	-1.01	1.31
21. Self reward.	3.76	1.18	-0.65	-0.55	46. Discover one's own skills.	3.91	0.94	-0.68	0.19
Skills related to aggression					47. Collect information.	4.09	0.93	-0.88	0.33

Table 1. *Descriptive analysis of the social skills scale for university students*

Excel spreadsheets and afterwards with SPSS 18.0.

Results

The descriptive analysis of the SS scale given to university students is illustrated in Table 1. The average values of the 50 questions of the scale varied from 2.71±1.18 points to 4.66±0.61 points. Asymmetry showed values from -2.37 to 0.38 and kurtosis from -0.78 to 8.05. In both cases, all of the questions showed a deviation from a normal distribution.

The factor structure of the model confirmed the 50 questions and 6 dimensions (Table 2). In general, the

chi squared was X2= 4344.8 (gl= 1425, p< 0.000). The comparative fit index (CFI) was 0.45 and the goodness fit (GF) was 0.56. The root mean square error of approximation (RMSEA) was 0.091, and the % of variation as 54%. The communalities presented values from 0.31 to 0.76. In addition, the values of Cronbach's Alpha varied from 0.72 to 0.75. In its totality, the scale showed a reliability of 0.75

Discussion

The objective of this research was to verify the validity and reliability of a scale that measures the SS of young

Table 2*. Validity (communalities) and reliability (Cronbach's) values for the social skills scale*

Questions	C	CA	Questions	C	AC
Basic skills			25. Negotiate.	0.49	0.73
1. Listening.	0.45	0.74	26. Begin self control.	0.46	0.74
2. Initiate a conversation.	0.35	0.74	27. Defend one's own rights.	0.66	0.74
3. Maintain a conversation.	0.55	0.73	28. Respond to jokes.	0.54	0.73
4. Formulate a question.	0.47	0.74	29. Avoid problems with others.	0.41	0.72
5. Give thanks.	0.39	0.75	30. Do not get into fights .	0.63	0.74
6. Introduce oneself.	0.59	0.74	**Stress coping skills**		
7. Introduce other people.	0.61	0.73	31. Formulate a complaint.	0.62	0.74
8. Give a compliment.	0.56	0.74	32. Respond to a complaint.	0.61	0.74
Advanced Skills			33. Show sportsmanship after a game.	0.57	0.74
9. Ask for help.	0.55	0.72	34. Overcome embarrassment.	0.47	0.73
10. Participate.	0.63	0.74	35. Compose oneself when one is left out.	0.38	0.74
11. Give instructions.	0.37	0.74	36. Defend a friend.	0.46	0.73
12. Follow instructions.	0.51	0.73	37. Respond to persuasion.	0.39	0.74
13. Apologize.	0.50	0.74	38. Deal with failure.	0.66	0.74
14. Persuade others.	0.31	0.74	39. Deal with contradictory messages.	0.53	0.73
Skills related to feelings			40. Respond to an accusation.	0.48	0.74
15. Reccognize one's own emotions.	0.61	0.74	41. Prepare for a difficult conversation.	0.54	0.74
16. Express emotions.	0.62	0.73	42. Deal with group pressure.	0.54	0.73
17. Understand the emotions of others	0.68	0.73	**Planning skills**		
18. Face the anger of another..	0.76	0.74	43. Take initiative.	0.56	0.74
19. Express affection.	0.47	0.74	44. Find out the cause of a problem.	0.51	0.73
20. Overcome fear.	0.43	0.74	45. Establish a goal.	0.56	0.74
21. Self reward.	0.55	0.73	46. Discover one's own skills.	0.78	0.74
Skills related to aggression			47. Collect information.	0.83	0.74
22. Ask for permission.	0.71	0.74	48. Solve problems according to their importance.	0.64	0.74
23. Share something.	0.60	0.74	49. Make a decision.	0.65	0.74
24. Help others.	0.60	0.73	50. Concentrate on a task.	0.60	0.74

Legend: Average: X, Standard deviation: SD, Asymmetry: Sk, Kurtosis: Ku

university students studying in three professional health sciences programs in Chile. The results of the study demonstrated that the distribution of the data in their totality were normal. Asymmetry described absolute values less than 0.38, and the kurtosis were less than 8.0. These values were accepted as normal based on those proposed by Kline[11] where the asymmetry must show values less than 3.0 and the kurtosis less than 10.0.

With regard to the psychometric properties of the SS scale, the results demonstrated that after the application of the CFA, the SS scale is valid since the original 50 items and the six dimensions of the instrument were confirmed. In general, the communalities varied from 0.31 to 0.76. These were consistent with the literature

that suggested communalities around approximately ~0.50.[12,13] In addition, the model showed an adequate internal structure, including the KMO (0.834), the CFI (0.45), the GFI (0.56), and the RMSEA (0.09). These were reasonable and consistent with the literature,[14-16] as well with some studies that have verified the validity with CFA in young university students.[7,17,18]

The findings from the CFA suggest that the SS scale was valid in its dimensions (basic skills, advanced social skills, skills related to emotions, skills related to aggression, skills for coping with stress, and planning skills). It explained 54% of the total variance, suggesting its use and application for the students in the nursing, kinesiology, and speech therapy programs. Furthermore, when the reliability was determined by

means of internal consistency, Cronbach's Alpha reflected values similar to those from other studies for young university students.[7,17] The values for internal consistency were within the limits permitted described in the literature.[19] Furthermore, they were similar to those reported in other studies that have confirmed reliability in social skills scale.s[7,17] In general, reliability is an essential component of research. By definition, it indicates that the results are repeatable and consistent.[20] Often, internal consistency is used due to the ease of its calculation and its one time application in time.[21]

This scale is a promising instrument for using with the young studying in health programs. It can also be used to assess SS during academic training. During the university years, the scale can be used to help identify some problematic personal and social behaviors among students.[22] Therefore, the decreased SS could serve as an indicators for developing interventions among the young since these behaviors are not acquired inherently, but rather they must be learned, developed, and improved gradually until reaching social acceptable behaviors.[23]

In this sense, universities are currently providing indicators of generic competencies to determine their effectiveness in terms of student learning outcomes.[24] Professionals working in higher education need to know the dimensions of SS since these behaviors are necessary for life in general. These allow individuals to perform in a successful and healthy manner personally and interpersonally in different situations[10] in social and professional health care environments.[25,26]

This study has strengths and limitations. It is one of the first research studies carried out in Chile with young university students from three health sciences programs. Furthermore, the actual results obtained may serve as a baseline for future research comparisons and verify possible secular SS trends among students.

On the other hand, without biasing the aforementioned, the study also had some limitations. For example, it is necessary to expand the size of the sample and the number of prof.

In conclusion, the results of our research demonstrate that the scale is valid and reliable and can be used to evaluate the SS of students from nursing, kinesiology, and speech therapy programs. Our results suggest that the scale can be used and administered by professionals working in higher education.

List of acronyms

CFA - confirmatory factor analysis
CFI - comparative fit index
GFI - goodness of fit index
KMO - Kaiser-Meyer-Olkin's
Ku – Kurtosis
RMSEA - root mean square error of approximation
SD - Standard deviation
Sk - Asymmetry
SS - skills scale

X – Average

Contributions of Authors

MCB, RGC, ERM and RVE: Study concept and design; ERM and RVE: Collection of materials; MCB and RGC: Statistical processing; ERM, RVE, MCB and RGC: Analysis of the data obtained; MCB, RGC and CLA: Text writing; MCB, RGC and CLA: Editing. All contributors approved the manuscript and agreed with study publication.

Conflict of Interest

The authors declare no conflict of interests.

Ethical Publication Statement

We confirm that we have read the Journal's position on issues involved in ethical publication and affirm that this report is consistent with those guidelines.

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