

Validation of the Spanish-language version of the Rapid Assessment for Adolescent Preventive Services among Colombian adolescents

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ABSTRACT

Seventy percent of adolescent morbidity and mortality is related to six risky behaviors.

The Rapid Assessment for Adolescent Preventive Services is a screening questionnaire consisting of 21 questions but there is not a validated Spanish-language version.

The objective of this study was to validate the Spanish-language version of the Rapid Assessment for Adolescent Preventive Services in two Colombian cities: Bucaramanga and Medellín. The questionnaire was administered to 270 randomly selected adolescent students aged between 11 and 19 years old. Its internal consistency measured using Cronbach's alpha was 0.7207. The factor analysis showed that two factors accounted for 84.5% of variance, but factor loading indicates that only one of these is valid in Colombia: substance use (tobacco, alcohol, narcotics, and psychoactive substances).

Key words: adolescent, result validity, Rapid Assessment for Adolescent Preventive Services, dangerous behavior.

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INTRODUCTION

Adolescence is a critical stage in the life cycle¹ that ends in personality and identity formation.² In the United States, up to 70% of adolescent morbidity and mortality is related to risky behaviors, including injuries, alcohol or psychoactive substance use, risky sexual behavior, tobacco use, unhealthy eating habits, and physical inactivity.^{3,4} An early identification of these behaviors allows to provide adequate support and develop prevention strategies.⁵ However, lack of time during office visits becomes a great hurdle in their identification. For

this reason, several screening instruments have been developed that aim at being time-effective. The Rapid Assessment for Adolescent Preventive Services (RAAPS) is one of these instruments.

The RAAPS was developed by the University of Michigan's School of Nursing. It consists of 21 questions related to six risky behaviors.⁶ Each risky behavior accounts for a domain in the theoretical construct which serves as the basis for this scale. The validity index of the English-language version is 0.825-1.0, and its inter-rater kappa is 0.44-0.99, granting the construct a highly relevant validity.⁷

There is a Spanish-language version of the RAAPS which has not been validated. This assessment may turn into a useful tool in primary care settings catering for Spanish-speaking adolescents.

The objective of this study is to validate the Spanish-language version of the RAAPS to screen for risky behaviors among Colombian adolescents.

MATERIALS AND METHODS

A study was conducted to validate the construct of the RAAPS Spanish-language version. High school students aged between 11 and 19 years old living in Bucaramanga and Medellín, with no disorders of perception that would prevent them from reading and writing with pen and paper, were included.

Permission to use the test was requested to its authors, who supplied the Spanish-language version provided that it was administered unchanged (*Table 1*). Participants referred comprehension problems with certain parts of the text, which were recorded and reported to authors after its validation. This study was approved by the Research Ethics Committee of Universidad Industrial de Santander (Resolution no. 30, December 5th, 2014).

Based on 80% reliability, it was expected that at least 10 subjects by item would be detected, in addition to a 10% potential loss due to parental refusal to participate. This meant that at least 230 adolescents had to be included.

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Participants were selected using a cluster random sampling process, which allowed identifying all high schools and the number of courses in each school in 2014; 18 groups from both cities were selected. Every student in each group was invited to participate. They were given an informed consent form to be duly completed by their parents or tutors and an assent form for themselves.⁸ Students who agreed to participate, and had both forms signed, completed the RAAPS anonymously, with no time constraints, supervision or help to answer any of the items.

Questionnaires that did not indicate the participant's age were excluded from the analysis. Although the RAAPS was designed for 11 to 19-year-old adolescents, we decided to include students who were 10 years old at the time of the

survey because they were already in high school and would turn 11 during the school year. They were also considered to be exposed to the same risk factors.

The prevalence of affirmative answers to each of the 21 items was estimated together with a 95% confidence interval (95% CI), and data were adjusted given the sampling process used, which may differ from the crude estimation of affirmative answers/population.⁹ For item 16, the proportion was estimated based on the total number of students who indicated to have had sexual intercourse.

Construct validity was analyzed with the Stata 12.1 software (StataCorp., College Station, USA, 2014) using Cronbach's alpha (overall and by item) and factor analysis to verify how theoretical

TABLE 1. *Spanish-language version of the Rapid Assessment for Adolescent Preventive Services*

1. In the past 12 months, have you tried to lose weight by obsessively exercising, taking diet pills or laxatives, making yourself vomit (throw up) after eating, or starving yourself?
2. Do you eat some fruits and vegetables every day?
3. Are you active after school or on weekends (walking, running, dancing, swimming, biking, playing sports) for at least 1 hour, on at least 3 or more days each week?
4. Do you always wear a seat belt when you are driving or riding in a car, truck, or van?
5. Do you always wear a helmet when you are biking, rollerblading, skateboarding, motorcycling, snowmobiling, skiing or snowboarding?
6. During the past month, have you been threatened, teased, or hurt by someone (on the internet, by text, or in person) or has anyone made you feel sad, unsafe, or afraid?
7. Has anyone ever abused you physically (hit, slapped, kicked), emotionally (threatened or made you feel afraid) or forced you to have sex or be involved in sexual activities when you didn't want to?
8. Have you ever carried a weapon (gun, knife, club, other) to protect yourself?
9. In the past 3 months, have you smoked cigarettes or any other form of tobacco (cigars, black and mild, hookah, other) or chewed/used smokeless tobacco?
10. In the past 12 months, have you driven a car drunk, high, or while texting or ridden in a car with a driver who was?
11. In the past 3 months, have you drunk more than a few sips of alcohol (beer, wine coolers, liquor, other)?
12. In the past 3 months, have you smoked marijuana, used other street drugs, steroids, or used inhalants ("huffed" household products)?
13. In the past 3 months, have you used someone else's prescription (from a doctor or other health provider) or any non-prescription (from a store) drugs to sleep, stay awake, concentrate, calm down, or get high?
14. Have you ever had any type of sex (vaginal, anal or oral sex)?
15. Have you ever been attracted to the same sex (girl to girl/guy to guy) or do you feel that you are gay, lesbian, or bisexual?
16. If you have had sex, do you always use a method to prevent sexually transmitted infections and pregnancy (condoms, female barriers, other)?
17. During the past month, did you often feel sad or down as though you had nothing to look forward to?
18. Do you have any serious problems or worries at home or at school?
19. In the past 12 months, have you seriously thought about killing yourself, tried to kill yourself, or have you purposely cut, burned or otherwise hurt yourself?
20. Do you have at least one adult in your life that you can talk to about any problems or worries?
21. When you are angry, do you do things that get you in trouble?

domains behaved, at first directly and, if the model was inadequate, making rotations. Factors were considered likely if they had an eigenvalue >1.0 while items were considered part of a given factor if their factor loading was ≥ 0.5 .^{10,11}

RESULTS

Out of 275 questionnaires administered between March and July 2015, five were excluded because participants had not indicated their age. Among those completed, 65.9% corresponded

TABLE 2. Prevalence of affirmative answers among 270 participating students

Question	n (Crude prevalence)	Adjusted prevalence (95% CI)
Tries to lose weight inadequately (12 months)	21 (7.8%)	8.6% (5.2-12.0)
Eats fruits and vegetables every day	186 (68.9%)	74.8% (69.5-80.1)
Is physically active outside school	186 (68.9%)	74.3% (69.0-79.5)
Always wears a seat belt	159 (58.9%)	61.9% (56.1-67.8)
Always wears a helmet	121 (44.8%)	47.4% (41.4-53.4)
Has been a victim of bullying (past month)	44 (16.3%)	16.7% (12.2-21.1)
Has been abused physically, emotionally or sexually	24 (8.9%)	8.9% (5.5-12.3)
Has carried a weapon	23 (8.5%)	10.0% (6.4-13.7)
Has smoked tobacco (3 months)	12 (4.4%)	4.8% (2.2-8.2)
Has driven a car drunk high, or while texting (12 months)	13 (4.8%)	5.6% (2.8-8.3)
Has drunk more than a few sips of alcohol (3 months)	57 (21.1%)	23.7% (18.6-28.8)
Has abused psychoactive substances or steroids (3 months)	8 (2.9%)	2.4% (1.9-2.9)
Has abused medications (12 months)	11 (4.1%)	3.3% (1.1-5.5)
Has had any type of sex	34 (12.6%)	12.8% (8.8-16.9)
Is attracted to the same sex or feels that he/she is gay, lesbian, or bisexual	12 (4.4%)	4.5% (2.0-7.0)
Always uses methods to prevent STI/pregnancy*	24 (70.5%)	79.4% (62.1-91.3)
Has felt depressed (1 month)	64 (23.7%)	27.1% (21.7-32.4)
Has had serious problems at home/school	51 (18.9%)	20.0% (15.2-24.8)
Suicide/self-harm thoughts/attempts (12 months)	23 (8.5%)	10.2% (6.5-13.8)
Has one adult that he/she can talk to about any worries	201 (74.4%)	80.5% (75.7-85.3)
When angry, does things that get him/her in trouble	75 (27.7%)	31.5% (25.9-37.1)

* Proportion estimated among the 34 students who indicated to have had sex.

TABLE 3. Cronbach's alpha analysis of the Rapid Assessment for Adolescent Preventive Services

Item	Inter-item correlation	Item-test correlation	Item's alpha
Tries to lose weight inadequately (12 months)	0.3322	0.2345	0.7132
Eats fruits and vegetables every day	0.2606	0.2606	0.7137
Is physically active outside school	0.0828	0.0828	0.7322
Always wears a seat belt	0.2119	0.2119	0.7207
Always wears a helmet	0.2640	0.2640	0.7155
Has been a victim of bullying (past month)	0.3634	0.3634	0.7033
Has been abused physically, emotionally or sexually	0.2891	0.2891	0.7209
Has carried a weapon	0.3625	0.3625	0.7051
Has smoked tobacco (3 months)	0.3997	0.3997	0.7065
Has driven a car drunk, high, or while texting (12 months)	0.0410	0.0410	0.7255
Has drunk more than a few sips of alcohol (3 months)	0.3992	0.3992	0.6982
Has abused psychoactive substances or steroids (3 months)	0.3518	0.3518	0.7108
Has abused medications (12 months)	0.2839	0.2839	0.7130
Has had any type of sex	0.1990	0.1990	0.7171
Is attracted to the same sex or feels that he/she is gay, lesbian, or bisexual	0.3839	0.3839	0.7077
Has felt depressed (1 month)	0.4421	0.4421	0.6934
Has had serious problems at home/school	0.3565	0.3565	0.7036
Suicide/self-harm thoughts/attempts (12 months)	0.4433	0.4433	0.6992
Has one adult that he/she can talk to about any worries	0.3192	0.3192	0.7073
When angry, does things that get him/her in trouble	0.3089	0.3089	0.7089

to Bucaramanga, 91.1% to students attending public schools, 56.1% were boys, and 81.1% lived in a middle socioeconomic level area. Students' mean age was 13.6 years old (standard deviation: 1.8 years old).

Table 2 shows the crude and adjusted prevalence of affirmative answers to the RAAPS items.

Cronbach's alpha was 0.7207 and ranged between 0.6982 and 0.7322 by item (*Table 3*). Factor analysis did not include item 16 because it was answered only by students who had had sexual intercourse. Two factors were thus observed: a factor with a 2.969 eigenvalue, which accounted for 61.44% of variance, made up of three items related to alcohol, psychoactive substance, and tobacco use. The second factor (with an eigenvalue of 1.116) accounted for 23.09% of variance, but there were no prevalent items. After making rotations, factor resolution did not improve (*Table 4*).

DISCUSSION

This is the first validation of the Spanish-language version of the RAAPS. Construct validity was acceptable, with no remarkable

modifications after removing any of the items.¹⁰ However, only one factor made up of three items related to substance use was identified,¹¹ and this indicates that, in Colombia, the RAAPS may only result useful to assess these risk factors.

Using factor analysis to assess constructs is based on verifying agreement or lack of agreement between the items exploring a risky behavior or domain and the answers given by a population.¹¹ This means that, if the theoretical construct was true, questions specific to each risky behavior should be solved in the same direction and be part of the same factor. Thus, the North American theoretical risky behavior construct used to develop the RAAPS does not fit the Colombian setting.

Most of the participants attended public schools. In 2014, 82.9% of students in Bucaramanga and Medellín were enrolled in public schools, so the fact that the average number of students per course in public schools was twice the number in private schools does not allow to infer a bias in the cluster random sampling process.

The fact that the six expected risky behaviors did not appear in the factor analysis indicates

TABLE 4. Observed factor loading

Aspect	Factor 1	Factor 2	Factor 3
Eigenvalue	2.969	1.116	0.748
Explained variance	61.44%	23.09%	15.49%
Item			
Tries to lose weight inadequately (12 months)	0.279	-0.168	-0.092
Eats fruits and vegetables every day	-0.218	0.073	0.066
Is physically active outside school	-0.036	0.214	-0.043
Always wears a seat belt	-0.156	0.084	0.356
Always wears a helmet	-0.213	0.055	0.358
Has been a victim of bullying (past month)	0.463	-0.329	0.263
Has been abused physically, emotionally or sexually	0.320	-0.314	0.279
Has carried a weapon	0.412	-0.020	-0.170
Has smoked tobacco (3 months)	0.620	0.218	0.106
Has driven a car drunk, high, or while texting (12 months)	0.064	0.269	-0.188
Has drunk more than a few sips of alcohol (3 months)	0.498	0.063	-0.253
Has abused psychoactive substances or steroids (3 months)	0.652	0.469	0.158
Has abused medications (12 months)	0.315	-0.149	-0.156
Has had any type of sex	0.284	0.311	-0.290
Is attracted to the same sex or feels that he/she is gay, lesbian, or bisexual	0.480	-0.128	0.071
Has felt depressed (1 month)	0.455	-0.396	-0.047
Has had serious problems at home/school	0.433	-0.176	0.108
Suicide/self-harm thoughts/attempts (12 months)	0.461	-0.313	-0.170
Has one adult that he/she can talk to about any worries	-0.280	0.216	0.049
When angry, does things that get him/her in trouble	0.360	-0.092	-0.092

that construct validity is not a property of the test itself, but of the population where it is administered.¹² The RAAPS was designed for North American students but, in this study, it was assessed in Colombian students, among whom different behaviors may prevail, especially considering that half of the participants were younger than 15 years old. It is also possible that participants were not even aware of the information necessary to answer regarding some behaviors, such as using a seat belt or the type of food they eat. However, the similar prevalence of affirmative answers regarding items related to alcohol, tobacco and illegal substance use, sexual intercourse initiation,¹⁴ and depression prevalence¹⁵ renders this explanation less likely.

Finally, the small number of questions per domain also hinders the possibility of achieving factor loading for at least three of them to be considered relevant for factor analysis.

Also, the effect on the lack of detection of other risky behavior groups cannot be estimated because the test has not been transculturally adapted; so it is necessary to study the RAAPS validity in depth and explore potential differences in behavior by outcome measure, e.g., age or sex groups, especially among adolescents older than 16 years old, in addition to assessing intra-subject reproducibility and sensitivity to change.

CONCLUSION

The RAAPS construct validity in the Colombian setting is acceptable but limited. It is very useful to detect alcohol, psychoactive substance, and tobacco use. ■

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