

Performance of the Reported and Intended Behavior Scale Among Colombian Adolescents

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ABSTRACT

Background: Stigma discrimination against people who meet the criteria for mental disorders is frequent in Colombian adolescents; however, there is no valid and reliable instrument for measurement. The study aimed to establish the Reported and Intended Behavior Scale psychometric performance among Colombian adolescents.

Methods: A validation study was carried out with 350 students aged between 10 and 17, 53.7% of whom were girls. The authors estimated frequencies for reported behaviors and measured internal consistency and confirmatory factor analysis for intended behaviors. The Reported and Intended Behavior Scale has 2 sub-scales—reported and intended behaviors, with 4 items each.

Results: The reported behavior sub-scale ranged from 10.0% to 24.9%, whereas the intended behavior sub-scale presented a Cronbach's alpha of 0.88 (95% CI: 0.86-0.90) and a McDonald omega of 0.88. For the confirmatory factor analysis, Kaiser-Meyer-Olkin was 0.81, Bartlett chi-squared, was 771.1 ($df=6$, $P=.001$), and Eigen value was 2.95 that explained 73.9% of the total variance. For the goodness-of-fit tests, chi-squared was 21.9 ($df=2$, $P=.001$), root mean square error of approximation was 0.17 (90% CI: 0.11-0.24), Comparative Fit Index was 0.97, Tucker-Lewis Index was 0.92, and standardized root mean square residual was 0.03.

Conclusions: The Reported and Intended Behavior Scale can measure reported behaviors, and the intended behavior sub-scale shows high internal consistency. However, the dimensionality of the intended behavior sub-scale presents modest goodness-of-fit indexes. These findings need replications.

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INTRODUCTION

The stigma-discrimination complex was recently introduced to integrate 4 highly interrelated concepts: stigma, stereotype, prejudice, and discrimination.¹ Stigma occurs when an individual or collective attribute, characteristic, condition, trait, or situation is given an unfavorable assessment.^{1,2} Stereotypes are preconceived ideas of an attribute; this idea can be positive or negative and implies a simplification of the valuation of a person or group.¹

Prejudice occurs when the stereotype takes on a derogatory or pejorative connotation and is a quick judgment of or attitude toward the person as a whole.² This judgment tends to consider the indicated trait only, omitting other aspects and the distinctive singularity of each person or any other information that could distort this almost automatic idea.^{2,3} Stereotypes are also resistant to change, despite the availability of information that repeatedly denies this.⁴

Finally, discrimination is configured when society validates prejudice, grants the person or groups status as second-class citizens, and dismisses a set of rights about those carrying the stigmatized characteristic.⁵ Stigma and discrimination happen simultaneously, which is why it is known as “the stigma-discrimination complex.”^{1,6}

For several reasons, most people who meet the criteria for a mental disorder have suffered from a stigma-discrimination complex.^{1,7} For example, the genetic explanation for schizophrenia is associated with greater stigma discrimination among nurses, medical doctors, medical students, and patients.⁸ Furthermore, people living with major mental disorders are often described as unpredictable, uncontrollable, aggressive, or violent.^{1,6,8}

The mental disorder-related stigma-discrimination complex is ubiquitous among school children and young adolescents.⁹ Stigma-discrimination complex presents

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many adverse outcomes; it is linked to low self-esteem, few help-seeking behaviors, and even suicide among psychiatric patients.¹⁰ Thus, the importance of the mental disorder-related stigma-discrimination complex has encouraged the design of instruments for its measurements, such as the Reported and Intended Behavior Scale (RIBS).¹¹

The RIBS asks participants about reported and intended behavior in 4 different contexts: living with, working with, living near, and continuing a friendship with a person who meets the criteria for a mental disorder. The reported behavior sub-scale inquires about the frequency of experiences, and the intended behavior sub-scale measures attitudes as a construct.¹¹ Evans-Lacko et al.¹¹ in a sample of 403 adults aged between 25 and 45, reported behaviors ranging from 24.8% to 43.9%, whereas the intended behavior sub-scale showed high internal consistency with a Cronbach's alpha of 0.85.

On the other hand, the RIBS has presented an acceptable psychometric performance in English adolescents. In a study by Chisholm et al.¹² with 657 participants aged 11-13 years, the RIBS showed Cronbach's alpha of 0.86. In the study by Mansfield et al.¹³ their psychometric investigation with 1032 adolescents between 11 and 15 years old, the instrument revealed a clear 2-dimensional structure. The intended behaviors sub-scale showed high internal consistency, Cronbach's alpha, and McDonald's omega values of 0.94.

Because the psychometric performance is specific to a given population, internal consistency and other measurements can vary over time and samples.^{14,15} The performance of the Spanish version of RIBS is yet unknown. However, given the need to quantify this problem in a developing country such as Colombia,¹⁶ its authors have attempted to establish frequencies for reported behavior and tested internal consistency and dimensionality for the intended behavior sub-scale in adolescent students.

Proper mental health care includes an integrated approach to promoting mental health literacy and reducing stigma discrimination.¹⁷⁻²⁰ For years, attribution theory has been used to explain the stigma-discrimination complex. Attribution theory deals with how behaviors are interpreted and the effect of those explanations on people's perceptions.³ Besides, the theory holds that behavior is determined by a socially learned cognitive and emotional process.¹ Thus, measuring mental health-related stigma-discrimination complex with a reliable and valid instrument has implications for anti-stigma education programs involving adolescents. It could make it possible to follow programs to reduce stigma, as a complex issue involving politics, economy, policies, and socio-historical processes.

The purpose of the study was to explore the performance of the RIBS among Colombian adolescents. This paper is

the first study to evaluate the psychometric performance of the RIBS in a sample of participants in Colombia.

METHODS

Design and Ethical Issues

A validation study was carried out. The Institutional Ethical Board of the Universidad del Magdalena, Santa Marta, Colombia reviewed and approved the project in an ordinary session on July 18, 2017, parents signed informed consent, and adolescents agreed to participate. The authors of the RIBS permitted the use and translation of the instrument.

Participants

A non-probabilistic sample of 350 adolescent students was taken from 2 middle-income schools in Santa Marta, in northern Colombia. Santa Marta is a small Caribbean town of around 400 000 inhabitants. Students aged between 10 and 17 years (mean, 13.2 ± 1.8) from sixth to eleventh grade were included. A total of 188 students (53.7%) were female, and 162 (46.3%) were male. Seventy students were in grade 6 (20.0%), 56 in 7 (16.0%), 59 in 8 (16.9%), 51 in 9 (14.6%), 70 in 10 (20.0%), and 44 in 11 (12.6%). Participants were not excluded, given that all of them had the reading competence to fill out the instrument autonomously.

Instrument

The participants completed the RIBS in the classroom. The instrument has 2 sub-scales with 4 items each. The first 4 items assess the prevalence of reported behaviors, whereas the latter 4 inquire about intended behaviors. The reported sub-scale offers 2 answer options: yes or no.¹¹ The questions are listed in Table 1.

The intended sub-scale scores ranged from strongly agree (score 1) to strongly disagree (score 5). These questions are listed in Table 2. The scale followed a rigorous English to the Spanish translation process and a back translation: 2 translators independently performed the translation from English to Spanish. Second, these Spanish translations

Table 1. Distribution of Reported Behaviors

| Item | Yes n (%) | No n (%) |
|---|--------------|-------------|
| Are you currently living with or have you ever lived with someone with a mental health problem? | 35 (10.0) | 315 (90.0) |
| Are you currently studying with or have you ever studied with someone with a mental health problem? | 61 (17.4) | 289 (82.6) |
| Do you currently have or have you ever had a neighbor with a mental health problem? | 87 (24.9) | 263 (75.1) |
| Do you currently have or have you ever had a close friend with a mental health problem? | 59 (16.9) | 291 (83.1) |

Table 2. Distribution of Participants' Responses for Intended Behaviors

| Item | Strongly Agree n (%) | Agree n (%) | Neither Agree Nor Disagree n (%) | Disagree n (%) | Strongly Disagree n (%) |
|--|-------------------------|----------------|--|-------------------|-------------------------------|
| In the future, I would be willing to live with someone with a mental health problem | 31 (8.9) | 70 (20.0) | 146 (41.7) | 50 (14.3) | 53 (15.1) |
| In the future, I would be willing to work with someone with a mental health problem | 63 (18.0) | 125 (35.7) | 102 (29.1) | 32 (9.1) | 28 (8.0) |
| In the future, I would be willing to live nearby to someone with a mental health problem | 61 (17.4) | 129 (36.9) | 97 (27.7) | 31 (8.9) | 32 (9.1) |
| In the future, I would be willing to continue a relationship with a friend who developed a mental health problem | 69 (9.7) | 106 (30.3) | 102 (29.1) | 32 (9.1) | 41 (11.7) |

were highly concordant. Third, a professional translator translated the Spanish version back into English. The differences with the original version were minor. The process ensures semantic and cultural adaptation to Spanish spoken on the Colombian Caribbean coast.^{21,22}

Statistical Analysis

Response frequencies and percentages were computed for the reported behavior sub-scale and mean ± standard deviation for items of the intended sub-scale. Internal consistency reliability of the intended behavior sub-scale was quantified using Cronbach's alpha²³ and McDonald's omega.²⁴ McDonald's omega deals with the bias resulting from the violation of the tau-equivalence principle when all items have a substantial and similar effect on reliability. Nevertheless, this assumption is constantly violated; thus, Cronbach's alpha usually underestimates the internal consistency if tau-equivalence is not valid.^{23,24} Item-total score correlation and Cronbach's alpha were calculated if the item was omitted.

Finally, exploratory (EFA) and confirmatory factor analyses (CFA) were undertaken for the intended behavior sub-scale. For EFA, the Kaiser-Meyer-Olkin measure of sampling adequacy (KMO),²⁵ Bartlett's test of sphericity (chi-squared),²⁶ commonalities, loadings, and Eigenvalue (with explained variance) were computed.

Moreover, for CFA, the calculated goodness-of-fit tests were the chi-square test, with degrees of freedom (*df*), probability value (*P*) and rate of chi-square/*df*, root mean square error of approximation of the approximation error (RMSEA coefficient) with 90% CI, Comparative Fit Index (CFI), Tucker-Lewis Index (TLI), and standardized root mean square residual (SRMR). These coefficients are acceptable when the chi-square shows a probability value greater than 5% or the rate of chi-square/*df* ratio is below 3.0,²⁷ RMSEA of below 0.06, CFI and TLI higher than 0.89, and SRMR lower than 0.05.²⁸ A limitation of the chi-squared statistic and chi-square/*df* ratio is related to the sensitivity to the sample size, which translates into a slight tendency to reject theoretical models that are probably correct with large sample size.²⁹ Also, sometimes, RMSEA can be observed as high with other goodness-of-fit

indicators within accepted limits.³⁰ Alternative goodness-of-fit indices do not allow a clear relationship between the fit index and model specification errors. However, unfortunately, these goodness-of-fit indices do not allow a clear relationship between the fit index and model specification errors.³¹ Dimensionality was accepted if 3 of the 5 goodness-of-fit indicators showed values in the recommended range.³² Analyses were carried out using Stata 13.0.³³

RESULTS

The reported behaviors are presented in Table 1. The pattern of answers for intended behaviors is presented in Table 2. Intended behavior sub-scale scores fell between 4 and 20, mean = 10.8 ± 4.0.

Internal Consistency

The Cronbach's alpha was 0.88 (95% CI: 0.86-0.90), the McDonald's omega was 0.88, KMO was 0.81, Bartlett chi-squared was 771.1 (*df* = 6, *P* = .001), and Eigenvalue 2.95 explained 73.9% of the total variance.

Factor Analysis

For the CFA, the goodness-of-fit tests, chi-squared was 21.9 (*df* = 2, *P* = .001), chi-squared/*df* ratio was 10.9; RMSEA was 0.17 (90% CI: 0.11-0.24); CFI was 0.97; TLI was 0.92; and SRMR was 0.03. Other coefficients are presented in Table 3.

DISCUSSION

The current study presents the frequencies of the reported behaviors from 10.0% to 24.9%, and the intended behavior sub-scale of the RIBS presented a high internal consistency and an acceptable one-dimensionality.

The prevalence of reported behaviors in this adolescent sample ranged from 10.0% to 24.9%. There is no information on these frequencies among adolescents, but the percentages of reported behaviors are lower than in adults. Evans-Lacko et al¹¹ found frequencies between 24.8% and 43.9% in London, United Kingdom, Zalazar et al.³⁴ them

Table 3. Commonalities and Loadings for Intended Behavior Sub-scale

| Item | Correlation <i>i-t</i> | Cronbach's Alpha If the Item is Deleted | Commonality | Loading |
|--|------------------------|---|-------------|---------|
| In the future, I would be willing to live with someone with a mental health problem | 0.73 | 0.85 | 0.58 | 0.76 |
| In the future, I would be willing to work with someone with a mental health problem | 0.77 | 0.83 | 0.76 | 0.87 |
| In the future, I would be willing to live nearby to someone with a mental health problem | 0.78 | 0.83 | 0.76 | 0.87 |
| In the future, I would be willing to continue a relationship with a friend who developed a mental health problem | 0.68 | 0.87 | 0.51 | 0.71 |

i-t corrected item-total score correlation.

as between 20.4% and 37.4% in Buenos Aires, Argentina. Similarly, college students report higher frequencies of reported behaviors than adolescent students. Yamaguchi et al³⁵ described a prevalence from 14.7% to 39.7% in Japan.³⁵

Internal Consistency

This study documents a high internal consistency for the intended behavior sub-scale. Cronbach's alpha and McDonald's omega were both 0.88. Previously, Pingani et al³⁶ and Yamaguchi et al³⁵ reported a Cronbach's alpha of 0.83, Evans-Lacko et al¹¹ and Garcia et al³⁷ reported one of 0.85, Chisholm et al¹² of 0.86, Aznar-Lou et al³⁸ reported a Cronbach's alpha of 0.89, and Mansfield et al¹³ of 0.94. Similarly, a high McDonald's omega has previously been reported, and Mansfield et al¹³ found a coefficient of 0.94. Clearly, the RIBS has shown high internal consistency in different populations.

Dimensionality

The one-dimensional intended behavior sub-scale was tested with a high Eigenvalue, which explains over 50% of the total variance.^{39,40} However, the CFA showed unsatisfactory values, lower than those usually expected for chi-squared and RMSEA. Evans-Lacko et al¹¹ omitted this information in their report. Similar to the present study's findings, Garcia et al³⁷ reported poor indexes for chi-squared and RMSEA and acceptable values for CFI and TLI. Yamaguchi et al³⁵ found unsatisfactory values for chi-squared and RMSEA and high coefficients for CFI and TLI. However, Pingani et al³⁶ observed acceptable CFI and RMSEA, but they did not report chi-squared or TLI. These goodness-of-fit index findings are somewhat inconsistent. Readers must keep in mind that the chi-squared statistic and chi-square/*df* ratio can present poor performance with a sample larger than 200, and its calculation is discouraged if the degrees of freedom is low.²⁷ Besides, RMSEA can present an unfavorable value with other acceptable goodness-of-fit.³⁰ The poor RMSEA performance is due to having a small model with excess data because the scale is compound of a few items or items' redundancy.⁴¹ For this reason, it is crucial to repeatedly review the psychometric

performance of health measurement scales and verify the clarity of the construct and the content of the items.⁴²

Practical Issues

The results corroborate the need for repeated reviews of the psychometric performance of construct measuring scales, such as the intended behavior sub-scale. Remarkable differences between populations frequently indicate limitations to construct validity and, as such, to all conclusions regarding the findings from a scale with a deficient performance.^{14,15} The RIBS should be refined to guarantee its use in Spanish-speaking and adolescent populations.^{15,43}

Besides, in this sample of Colombian adolescent students, the frequency of "strongly agree" for intended behaviors was relatively lower than for other adults, for instance, in the United Kingdom and Japan.^{11,35} Thus, asking for professional help in cases of mental disorder is much lower than the frequency of mental health problems, as they are defined—in the National Survey of Mental Health—as symptoms that do not constitute a psychiatric problem.⁴⁴ The findings corroborate the estimated high prevalence of mental disorder-related stigma-discrimination complex among the general Colombian population.⁴⁵

The mental disorder-related stigma-discrimination complex is a social determinant of mental health and a source of stress with a high impact on patients' everyday lives; it reduces the use of services and discourages participation in leisure activities.¹⁰ Holistic mental healthcare should integrate an evaluation of intended and reported behaviors related to stigma discrimination among adolescent students. Then, mental health professionals must explore the presence of stigma-discrimination complex related to mental disorders in all age groups and settings and implement actions to mitigate the negative consequences of social exclusion of people living with a mental disorder.¹²

Study's Strengths and Limitations

This study has 2 main strengths. It was the first time that a Spanish version of the RIBS was applied among adolescents.

Furthermore, the second was that a broader analysis was carried out, including previously unreported CFA among adolescent students. Nevertheless, it is impossible to generalize these findings to other samples.¹⁴ Moreover, the chi-square, chi-square/df, and RMSEA values were lower than recommended.^{29,30} However, it may be enough to accept the dimensionality that other goodness-of-fit indicators are within the expected range.^{25,31}

CONCLUSION

To conclude, the RIBS can measure reported behaviors quickly, and the intended behavior sub-scale shows high internal consistency. However, the dimensionality of the intended behavior sub-scale presents modest goodness-of-fit indexes. These results need further replication in other Latin-American adolescent populations.

Data Availability Statement

The data that support the findings of this study are available from the corresponding author upon reasonable request.

Ethics Committee Approval: Ethics Committee approval was received from The Institutional Ethical Board of the Universidad del Magdalena, Santa Marta, Colombia, in an ordinary session on July 18, 2017.

Informed Consent: Written informed consent was obtained from all participants who participated in this study.

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