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Evidence of the reliability and validity of the MAYSI-2 in a Spanish sample of minors serving therapeutic judicial measures.

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Título: Evidencias de fiabilidad y validez del MAYSI-2 en una muestra española de menores con medidas judiciales terapéuticas.
Resumen: El sistema de justicia juvenil español prevé la asignación de medidas de internamiento terapéutico y tratamiento ambulatorio para los casos con necesidades de salud mental. El propósito de este estudio es aportar evidencias de consistencia interna y validez del Massachusetts Youth Screening Instrument: Second version (MAYSI-2), un instrumento de cribado de necesidades de salud mental diseñado para ser utilizado en justicia juvenil y traducido a diversos idiomas, incluido el español. La muestra estuvo compuesta por 126 adolescentes españoles, mayoritariamente de sexo masculino, de entre 15 y 21 años, que cumplían medidas judiciales terapéuticas. Además de la traducción al español del MAYSI-2 se aplicaron las adaptaciones españolas del MACI y del YLS/CMI. Los resultados obtenidos respaldan el uso de la traducción del MAYSI-2 en el sistema de justicia juvenil español, ya que la estructura original de siete factores se replica en la muestra objeto de estudio. También se constataron evidencias de validez convergente, respecto a las escalas conceptualmente relacionadas del MACI, y de validez divergente, relativas a los factores de riesgo del YLS/CMI. Finalmente, se obtuvieron evidencias de validez discriminante, referidas al tipo de medida judicial terapéutica, a la existencia de un diagnóstico psicopatológico y al riesgo de reincidencia.
Palabras clave: MAYSI-2. Cribados de salud mental. Sistema de justicia juvenil. Medidas judiciales terapéuticas. Modelo RNR. Factores de riesgo de reincidencia. Necesidades de salud mental. Principio de capacidad de respuesta. YLS/CMI.

Abstract: The Spanish juvenile justice system provides for the assignment of therapeutic internment and outpatient treatment measures for cases with mental health needs. The purpose of this study is to provide evidences of the internal consistency and validity of the Massachusetts Youth Screening Instrument, second version (MAYSI-2). This is a screening instrument for mental health needs designed for juvenile offenders and translated into several languages, including Spanish. The sample consisted of 126 Spanish adolescents, mostly male, between 15 and 21 years old, who were serving therapeutic judicial measures. In addition to the Spanish translation of the MAYSI-2, the Spanish adaptations of the MACI and the YLS/CMI were applied. The results obtained support the use of the MAYSI-2 translation in the Spanish juvenile justice system, since the original seven-factor structure is replicated in the sample under study. Evidence was also found of convergent validity, regarding the conceptually related scales of the MACI, and of divergent validity for the risk factors of the YLS/CMI. Finally, evidence of discriminant validity was obtained regarding the type of judicial therapeutic measure, the existence of a psychopathological diagnosis and the risk of recidivism.
Keywords: MAYSI-2. Mental health screening. Juvenile justice system. Therapeutic judicial measures. RNR model. Recidivism risk factors. Mental health needs. Responsivity principle. YLS/CMI.

Introduction

Particularly violent or cruel behavior by adolescents often gives rise to the idea that they use drugs or are "crazy". The media reflect this belief, and many professionals end up considering it as scientific evidence. However, the relationship between mental health and juvenile delinquency is complex and requires a specialized approach, both in research, and in prevention and treatment (Martín et al., 2025).

First, it should be noted that this is a spurious link not a causal one. Many adolescents who offend have no mental health needs, and many of those who have mental health needs never offend. Mental health needs are not the cause of the criminal behavior of most juvenile offenders, even those with significant mental illness. In fact, the delinquent behavior of adolescents with and without mental health needs often responds to the same causes and motivations (Grisso, 2008).

Second, the prevalence of mental health needs among adolescents in the juvenile justice system is higher than in the community (Nagel et al., 2016; Underwood & Washington, 2016), and this prevalence has been increasing in recent years (Brown & Rojas, 2024). This may have more to do with structural factors (political, economic, social, environmental, ...) than with the temporal evolution of their delinquent profiles (Grisso, 2004, 2008). Indeed, to some extent in recent decades, social policies have been aimed more at ensuring public safety and reducing social alarm than at the re-education of offenders. For this reason, as public administrations fear that those with mental health needs are a risk to society rather than to themselves, the likelihood that interventions involve referring them to the juvenile justice system rather than to the health system has increased (Brown & Rojas, 2024; Grisso, 2004, 2008; Nagel et al., 2016; Underwood & Washington, 2016).

Third, given the care crisis experienced by public health services in general, and mental health services in particular, many parents with limited resources voluntarily request that the public authorities assume guardianship of their children in the hope that their child's needs will be met. However, when community and/or protective services fail to do so, they end up turning to the juvenile justice system for help, even if this means reporting their own children. This situation occurs frequently in cases such as those involving ado-

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lescent-to-parent violence. Although these cases are not usually caused by mental health needs, they push parents to turn to the justice system to obtain, not only protective measures for themselves, but also the assistance that their children would not otherwise obtain (Grisso, 2008; Martín et al., 2022; Nagel et al., 2016). Whatever the origin of the high prevalence of mental health needs in the juvenile justice system, what has been shown is that, if not diagnosed and treated, these needs reduce the effectiveness of re-education programs (McCormick et al., 2017).

To diagnose and treat mental health needs in the juvenile justice system, it is necessary to keep in mind that adolescents are in a period of normal developmental transition. It is important to note that although almost all their problematic behavior and emotions could be considered symptoms of mental disorders at other life stages, at this point in their development, they are very frequent and are not considered pathological (Grisso, 2004). For this reason, the Diagnostic and Statistical Manual of Mental Disorders (DSM-V), functions poorly as a psychopathological diagnostic tool for young people than it does for adults (Leverso et al., 2023; Nagel et al., 2016). However, the alternative to the use of the DSM-V should not be that juvenile court judges make decisions about who should have a therapeutic judicial measure, or what type of measure it should be, based on first impressions and without a systematic assessment of the mental health needs of the defendants.

The therapeutic judicial measures established in Ley Orgánica 5/2000 (Organic Law 5/2000), which regulates the criminal responsibility of minors, are therapeutic internment (TI) and outpatient treatment (OT). TI is defined as "specialized educational care or specific treatment" provided for adolescents with "addiction to alcohol or other drugs" or with "significant dysfunctions in their psyche", with the aim of providing them with "a structured context in which to carry out a therapeutic program". OT is also indicated for the same problems as TI, but in the community, since it is assumed that those to whom it is applied "have the appropriate conditions in their lives". In OT, different types of "medical and psychological assistance" are provided, but "it can also be understood as a very specific socio-educational task for a well-defined problem" and implies "attending a designated center with the periodicity required by the physicians who (...) treat [the minors], as well as "following the guidelines specified for adequate treatment". The law leaves it to the judge to decide what judicial measure to impose, and to the technicians who enforce it the type of assessment and intervention to be carried out.

One of the most interesting proposals for intervention with adolescents with mental health needs in the juvenile justice system, developed from scientific evidence, is that of Thomas Grisso (2008; see also Underwood & Washington, 2016). In this approach, four stages can be distinguished in assessment and intervention during the implementation of a judicial measure. In the first stage, it is necessary to use screening instruments to identify whether the juvenile requires any immediate intervention and/or further in-depth assessment (see Grisso, 2008 and Underwood & Washington, 2016, for a detailed description of the other three stages). This immediate intervention is crucial when there is a high risk of suicide, or the adolescent is out of control due to alcohol and/or drug abuse.

The most widely used screening instrument with the greatest evidence of reliability and validity in juvenile justice is the Massachusetts Youth Screening Instrument: Second version (MAYSI-2) (Grisso et al., 2001). MAYSI-2 is a brief checklist that is administered on first contact with the adolescent to identify possible mental health needs that require the subsequent use of more comprehensive assessment tools. Therefore, its aim is not to diagnose psychopathologies, but to detect moods, symptoms and thoughts that may be associated with various mental disorders that adolescents without any pathologies may present (Colins et al., 2015).

MAYSI-2 was designed to meet the needs of North American juvenile courts specializing in mental health and drugs (Archer et al., 2010). Subsequently, given its speed of application and high predictive capacity, its psychometric properties and applicability in juvenile courts in general were evaluated (Grisso et al., 2012). The seven-factor structure was established in the original study by Grisso et al. (2001) and confirmed in other research, both domestically and abroad (Dölitzsch et al. 2017; Grisso et al., 2012; Leenarts et al., 2016; Russell et al., 2017; Williams et al., 2019). Convergent and divergent validity of MAYSI-2 was ascertained by comparing its scales with conceptually related and unrelated scales of the Millon Adolescent Clinical Inventory (MACI; Millon, 1993) and the Youth Self Report (YSR; Achenbach, 1991), in the studies of Grisso et al. (2001) and Grisso and Barnum (2006), respectively. Evidence for criterion validity was obtained considering internment in closed facilities and treatment before and during the measure (Aalsma et al., 2015; Grisso & Barnum, 2006; Grisso et al., 2005), while for those for predictive validity, recidivism (Colins & Grisso, 2019) and suicidal intent and self-harm (Shaffer et al., 2018) were considered. Several studies have also provided data on the internal and test-retest consistency of the instrument (Grisso and Barnum, 2006; Grisso et al., 2012; Williams et al. 2019).

Although the psychometric properties of MAYSI-2 are good, it has been recommended to test it with different subgroups based on gender (Grisso et al., 2001; Williams et al., 2019) and ethnicity (Zannella et al., 2018). Regarding gender, adolescent girls have been found to score higher on all scales than adolescent boys (Coker et al., 2014; Gouwy et al., 2024). In relation to ethnicity, North Americans of Anglo-Saxon origin scores higher than those of other origins on all scales except Angry-Irritable and Alcohol/Drug Use, on which those of Latin American origin score higher (Vincent et al., 2008). Louden et al. (2017) have argued that these differences are due to MAYSI-2 being less sensitive in detecting psychopathology in adolescents of Latin American origin. As MAYSI-2 has been translated into other languages and used

outside the United States, it has been posited that cut points might vary across countries (Collins et al., 2015; Dölitzsch et al. 2017; Leenarts et al., 2016). Dölitzsch et al. (2017), for example, found differences between Swiss and North Americans, in interaction with the language in which the instrument was administered and the gender of adolescents. In this case, the differences concerned the Angry-Irritable and Suicide Ideation scales, where the cut-off points were higher for the Swiss than for the Americans, especially if they answered in French and Italian and if they were girls.

In Spain, Moreno and Andrés-Pueyo (2014) translated the MAYSI-2 into Spanish and Catalan, among other languages, and applied it to a sample of adolescents who were in the Catalan system of protection or juvenile justice. They found that adolescents in detention centers had the highest scores on all scales compared to those in other situations, especially regarding Alcohol/Drug Use scale.

For the Spanish juvenile justice system, it is important for professionals to have at their disposal evidence-based instruments and good practice guides, such as MAYSI-2. However, if these instruments have been developed in another country, it is not enough to translate them; it is necessary to adapt them to the psychological-forensic context and to the users to whom they will be applied (Puente-López et al., 2024). This paper attempts to take a further step in the process of adapting MAYSI-2, initiated by Moreno and Andrés-Pueyo (2014), by providing evidence of validity and internal consistency of the Spanish translation of the instrument (InForSANA, 2012) in a Spanish sample of minors with therapeutic judicial measures. Following the original study by Grisso et al. (2001), evidence of construct validity and internal consistency of the instrument will be analyzed, as well as convergent and divergent validity with respect to the Spanish version of the MACI (Millon, 2004). The relationship of the MAYSI-2 scales with the risk factors of the Spanish translation of the Youth Level of Service/Case Management Inventory by Hoge et al. (2002) (Inventario de Gestión e Intervención para Jóvenes; Garrido et al., 2006) will also be explored.

Method

Participants

The sample consisted of 126 adolescents between 15 and 21 years old (M = 18.12; SD = 1.24), 84.9% were male. They were serving judicial measures with therapeutic content for crimes of domestic abuse (34.9%), crimes against property without violence (19%) or with violence (18.3%), among others. There were 54.8% who had an OT measure and the rest had TI. In half of the cases, their educational level was the first stage of Compulsory Secondary Education (ESO) (20.5%) or Basic Vocational Training (29.5%). The other half were in the second stage of ESO (13.9%), adult school (12.3%) and, to a lesser extent, high school (8.2%), non-formal education (7.4%) or programs to improve learning and performance (2.5%).

Instruments

Three data sources were used in this research:

MAYSI-2 (Grisso and Barnumm, 2006)

The Spanish adaptation of Moreno and Andrés-Pueyo (InForSANA, 2012) was administered. It consists of 52 items that refer to symptoms or behaviors related to emotional, behavioral and psychological alterations. These items have a dichotomous response format (Yes/No) and are grouped into seven scales, of which six apply to both genders: Alcohol/Drug Use (8 items), Angry-Irritable (9 items), Depressed-Anxious (9 items), Somatic Complaints (6 items), Suicide Ideation (5 items) and Traumatic Experiences (5 items). The Thought Disturbance scale (5 items) is recommended only for boys.

Scores on all these scales, except Traumatic Experiences, are rated in relation to two empirically developed cutoff points: *Caution* and *Warning*. A score above Caution means that further clinical assessment is necessary and, in the case of the Suicide Ideation scale, immediate activation of the corresponding prevention protocol. A score above Warning indicates that the person being assessed is in the top 10% of the normative sample, making it imperative to conduct a comprehensive mental health needs assessment and further clinical intervention. There are no cut-off points for the Traumatic Experiences scale as it is used only to alert about adverse early experiences, without specifying symptoms or the degree of distress experienced. The application of the instrument ranges from 10 to 15 minutes. Correction is free of charge, once the manual has been purchased and registration with the European distributor has been completed. The original version can be presented to participants in paper and pencil format or by means of specific software. Grisso et al. (2012) report that the internal consistency of the scales measured with Cronbach's alpha ranges between .70 and .90, except for the Thought Disturbance scale which is .54.

MACI (Millon, 1993)

The Spanish adaptation (Millon, 2004) was administered. It consists of 160 items with a dichotomous response format (True/False) referring to clinically maladaptive behaviors in adolescents, according to the description of the DSM-IV (American Psychiatric Association, 1995) and the theoretical schemas of Millon (1990). These items are grouped into 31 scales that refer to personality patterns, expressed concerns and clinical syndromes. Only four of the clinical syndromes scales are used in this study: Substance Abuse Proneness, Depressive Affect, Suicidal Tendency and Impulsive Propensity. The base rate scores (in Spanish, *tasa base*, TB), transformed and adjusted from the Spanish scale, were used.

The questionnaire was corrected using software purchased with the answer sheets. The internal consistency of the scales calculated in the Spanish version has values very similar to those of the original American sample, ranging between .65 and .91 (Millon, 2004).

Juvenile records

From the files of the minors archived by the Dirección General de Protección a la Infancia y la Familia (DGPIF) (General Directorate of Child and Family Protection) of the Gobierno de Canarias (Canary Island Government), the public entity in charge of managing the implementation of judicial measures, information was obtained on: (1) demographic characteristics, such as age, sex and academic level; (2) criminological characteristics, such as date of commission of the first offense, type of current offense, criminal records, types and duration of measures, as well as violent behavior whiles serving measures; (3) type of therapeutic measure (TI or OT) and its content (drug control, psychiatric treatment, psychological treatment and family intervention program); (4) psychopathological diagnosis before or during the measure, resource used to make the diagnosis, pharmacological treatment, and frequency and type of drugs consumed; and (5) scores on the Youth Level of Service/Case Management Inventory (YLS/CMI) of Hoge et al. (2002), in the translation by Garrido et al. (2006) as the Inventario de Gestión e Intervención para Jóvenes (IGI-J). The YLS/CMI is a choice (presence/absence) inventory used to measure recidivism risk with 42 items grouped by Andrews et al. (2006) into eight risk factors: Prior and Current Offense/Dispositions (5 items), Family Circumstances/Parenting (6 items), Education/Employment (7 items), Peer Relations (4 items), Substance Abuse (5 items), Leisure/Recreation (3 items), Personality/Behavior (7 items) and Attitudes/Orientation (5 items).

Procedure

This study was part of a broader research project on mental health and juvenile justice commissioned to the Universidad de La Laguna by the DGPIF. To carry it out, this entity authorized two researchers to access the files of adolescents with judicial measures, within the framework of the legislation in force at that time on data protection and child and adolescent protection. From these files, demographic and criminological information and the IGI-J scores described in the previous section were obtained.

The research team submitted a project to the DGPIF describing the nature of the study, the instruments to be used and the procedure to be followed. Subsequently, contact was made with those responsible for the adolescents who were serving their judicial measures to reach a consensus on the procedure to be followed for the administration of questionnaires. The technicians in charge of implementing the measures informed the adolescents' legal guardians about the nature of the research and requested that they sign an informed consent form authorizing their participation in the study. The minors were then informed of the nature of the study, of the commitment to confidentiality and anonymity of their responses and were asked to sign an informed consent form. It was explained to them that the questionnaires contained questions about their feelings and thoughts, that the interviewers were not part of the juvenile justice system, and that their answers could not influence their judicial measures.

The questionnaires were administered individually by trained research assistants in places provided by the collaborating entities in paper format. To check the participants' reading ability and comprehension and to establish whether they needed assistance, they were asked to read the first question of the MAYSI-2 aloud. For the MACI, the questions were read by the research assistant and the adolescent responded on the answer sheet. Each participant was assigned a code to match their responses to the questionnaires and the information extracted from their file while preserving their anonymity.

Data analysis

The data obtained were analyzed with the IBM SPSS Statistics 26 and Jamovi 2.3.28 statistical packages. First, descriptive statistics were calculated for the criminological and therapeutic characteristics of the sample. Next, a confirmatory factor analysis was carried out with the responses to the 52 MAYSI-2 items to verify that the original seven-factor structure (Grisso & Barnumm, 2006; Grisso et al., 2001) was replicated in the sample under study. Given that the item response format is dichotomous, the Robust Weighted Least Squares method was chosen. The model fit indices were the Standardized Root Mean Square Residual (SRMR), the Comparative Fit Index (CFI), the Tucker-Lewis Index (TLI), and the Nonnormal Fit Index (NNFI) (López-Pina & Veas, 2024). These indices were preferred to the χ^2 as they are less sensitive to sample size. The reference criterion for considering that the model fit was acceptable was $\geq .90$ for all indices except for the CFI which was $\leq .06$ (Gaskin et al., 2025; Hu & Bentler, 1999). The internal consistency of the scales, the sum of the positive responses to each of the items of each scale, the corresponding descriptive statistics, as well as the correlations between the scores on the MAYSI-2 scales and the TB scores of the conceptually related clinical syndromes scales of the MACI, were also calculated.

ROC (Receiver Operating Characteristic) curves were then estimated for the MAYSI-2 scales in relation to the TB scores of the conceptually related clinical syndromes scales of the MACI. The ROC curve plot was used to assess the probability of correctly classifying with the MAYSI-2 scales individuals with a level of risk that would suggest the implementation of a suicide prevention protocol and/or further clinical assessment. As the discriminant capacity of the ROC curve depends on the threshold value (cut-off point) select-

ed, we calculated, in addition to the area under the curve (AUC), the values of sensitivity, understood as the probability of correctly classifying at-risk participants, as well as specificity, understood as the probability of correctly classifying non-risk individuals.

Regarding the area under the curve, an AUC ≥ .70 was considered to maximize true positives and minimize false positives, in terms of TB scores on each conceptually related clinical syndromes scale of the MACI (Grisso et al., 2001). To obtain the cut-off points to establish at which MAYSI-2 score an individual is considered at risk of having mental health needs, sensitivity and specificity values were taken into account. Among the different criteria available to select these cut-off points, the one proposed by Unal (2017) was chosen, consisting of minimizing the difference between true and false positives. This criterion allows us to correctly classify the highest percentage of minors who require immediate intervention (e.g., suicide attempt) and/or further evaluation (e.g., need for psychological or psychiatric treatment), even at the risk of including some cases that do not require them.

This option was chosen, as opposed to other more conservative ones, taking into account: 1) the characteristics of the minors with judicial measures with whom the instrument is to be used; 2) that it is a screening instrument whose use should always be complemented by clinical and/or forensic evaluation; and 3) that two cut-off points, Caution and Warning, are required to decide whether a more exhaustive clinical evaluation is necessary to determine whether or not mental health needs exist and, if such mental health needs do exist, what the most appropriate clinical intervention should be, respectively. In the Suicide Ideation scale, the corresponding prevention protocol must be activated, even if the cut-off point is only Caution, given the implications of not doing so (Quevedo-Blasco et al., 2023).

Correlations between the MAYSI-2 scales and the YLS/CMI risk factors were also calculated. Finally, four discriminant analyses were carried out using the MAYSI-2 scales and as classificatory variables: Type of therapeutic measure, Psychopathological diagnosis, History and Total recidivism risk.

Results

The results obtained are presented in several sections. First, the criminological and therapeutic characteristics of the sample are described. Next, we provide evidence of construct validity and internal consistency of the MAYSI-2 scales, as well as convergent and divergent validity in relation to the clinical syndromes scales of the MACI and the YLS/CMI risk factors. Finally, the evidence of discriminant validity of the MAYSI-2 scales in relation to the Type of therapeutic measure (TI or OT), Psychopathological diagnosis (Yes/No), Criminal Records (Yes/No) and Total recidivism risk (low-moderate and high) is presented.

Criminological and therapeutic characteristics

The age at which the participants had committed their first offense ranged from 12 to 17 years old (M = 15.72; SD = 1.15), with the mode at 14 years old (31.5%) and decreasing in successive years. Some 55.6% had a prior record, ranging from 1 to 16 offenses (M = 3.53; SD = 3.63). In 34.9% of the cases, there was evidence of some type of violent behavior during the implementation of the judicial measure. 42.1% of the minors had been assigned two measures and 38.9% had been assigned three. The duration of the measures ranged from 4 to 40 months (M = 16.56; SD = 7.85).

The most common treatment associated with therapeutic measures was exclusively drug control (23%), followed by combinations of drug control with either psychological treatment on its own or psychological and psychiatric treatment (16% in each case). Drug control was excluded in only 2-5% of each possible combination. The family intervention program always appeared in combination with one or more of the other treatments.

There was 34.9% of the sample that had some previous psychopathological diagnosis, prior to the measure in 23% of the cases. These diagnoses were made by professionals from public health centers (52.2%), private individuals or the juvenile justice system, in the same proportion (21.7%). During the measure, 11.9% more cases were diagnosed, almost all by a psychologist or psychiatrist from the juvenile justice system (91.35%). The most frequent diagnoses were Antisocial Personality Disorder (40%), followed by Cannabis Use Disorder (13.3%) and Mixed Personality Disorder (13.3%).

A total of 28.6% of the sample had used between one and three drugs (M = 1.61; SD = 60), mostly antipsychotics (71.9%), antidepressants (12.5%), anxiolytics, hypnotics and sedatives (6.3%) and antiepileptics (6.3%). Twenty-three percent were regular users of tobacco and 92.1% of one to four different drugs (M = 1.97; SD = 1.11). Among drugs other than tobacco, cannabis derivatives (96.6%), cocaine (37.1%), benzodiazepines (23.3%), alcohol (22.4%) and MDMA (14.7%) stood out. In terms of frequency of use, 57% of the sample reported abstinence, 28.6% reported daily use, 6.3% reported weekly use and 7.9% reported never using.

Evidence of construct validity and internal consistency of the MAYSI-2 scales

To check whether the original structure of MAYSI-2 was replicated with the translation in the Spanish sample, a confirmatory factor analysis was carried out. Given that the item response format is dichotomous, the Robust Weighted Least Squares method was chosen. Although χ^2 was statistically significant ($\chi^2(839) = 978$, $p < .001$), the values of the remaining fit indicators of the seven-factor model were adequate (CFI = .92; TLI = .91; NNFI = .91; RMSEA = .036). All items were statistically significantly related to the corresponding latent variables, except item 50 (Have you been

raped or been in danger of sexual assault?) and item 51 (Do you have thoughts or dreams about something bad happening to you?) with the variable Traumatic Experiences.

The composition of the Traumatic Experiences scale was originally defined according to gender, but this time it was done by including both the items corresponding to boys and girls. Item 46 (Do you think that others talk about you a lot when you are not there?), which in the original version was included only for girls, was adequately adjusted to the scale with the total sample in this study. Item 50, on the contrary, was not significantly related to the factor. Item 51, which was common to both genders, was not adjusted either and, as it also scored in the Depressed-Anxious factor, it was chosen to keep it only in the latter, despite in the original study being included in both factors. The β values were higher than .35 in the rest of the cases.

Considering the dichotomous nature of the MAYSI-2 response scale, internal consistency was calculated using α and ω for ordinal scales. Table 1 shows the values obtained, as well as the descriptive statistics of the scores that resulted from summing the affirmative responses to the items of each scale.

Table 1
Descriptive statistics and internal consistency of the MAYSI-2 scales

MAYSI-2 scales	*M (DT)*	*Min.*	*Max.*	α	ω
Alcohol/Drug Use	4.38 (2.56)	0	8	.91	.93
Depressed-Anxious	2.57 (2.17)	0	8	.79	.80
Suicide Ideation	1.17 (1.67)	0	5	.95	.96
Angry-Irritable	4.66 (2.28)	0	9	.77	.78
Somatic Complaints	2.31 (1.66)	0	6	.77	.78
Thought Disturbance	1.10 (1.14)	0	5	.70	.76
Traumatic Experiences*	2.29 (1.14)	0	4	.54	.56

Note. α and ω for ordinal scales. *Eliminating items 50 and 51.

Indices were very good for the Alcohol/Drug Use and Suicide Ideation scales, and good for the Depressed-Anxious, Somatic Complaints, Angry-Irritable, and Thought Disturbance scales. The values for the Traumatic Experiences scale remained below .60, even when items 50 and 51 were removed.

Evidence of convergent validity of MAYSI-2 scales in relation to conceptually related MACI clinical scales and YLS/CMI risk factors

First, the correlations of the sum scores of the four MAYSI-2 scales with the TB scores on the four conceptually related MACI clinical syndromes scales were calculated. The results obtained are presented in Table 2.

Table 2
Correlations between MAYSI-2 scales and conceptually related clinical scales of the MACI

MAYSI-2 Scales	MACI Clinical Syndromes Scales			
	Substance Abuse Proneness	Depressive Affect	Suicidal Tendency	Impulsive Propensity
Alcohol/Drug Use	.43***	.01	.05	.34***
Depressed-Anxious	.23*	.56***	.45***	.31**
Suicide Ideation	.04	.53***	.47***	.12
Angry-Irritable	.30**	.50***	.39***	.41***

Note. ***$p < .001$ **$p < .01$ *$p < .05$

The MACI clinical syndromes scales Substance Abuse Proneness, Depressive Affect, Suicidal Tendency and Impulsive Propensity have, as expected, the highest correlations with the MAYSI-2 scales Alcohol/Drug Use, Depressed-Anxious, Suicide Ideation and Angry-Irritable, respectively. In addition, other conceptually logical correlations are observed such as Depressed-Anxious and Suicidal Tendency, Suicide Ideation and Depressive Affect, as well as Angry-Irritable with Depressive Affect and Suicidal Tendency.

Next, correlations of the sum scores of the same four MAYSI-2 scales with the YLS/CMI risk factors were calculated. These correlations, which are reflected in Table 3, were only substantially significant ($r > .30$) between the Alcohol/Drugs scale and the risk factors Substance Use, Criminal History, Total Recidivism Risk, and Peer Group.

Table 3
Correlations between total scores on MAYSI-2 scales and YLS/CMI risk factors

YLS/CMI Risk factors	MAYSI-2 Scales			
	Alcohol/ Drug Use	Depressed-Anxious	Suicide Ideation	Angry-Irritable
Prior and Current Offense/Dispositions	.35***	.08	-.05	.15
Family Circumstances/Parenting	-.02	.05	.20*	-.08
Education/Employment	.11	.03	-.01	-.03
Peer Relations	.32***	.06	-.01	.11
Substance Abuse	.48***	.15	.17	.28***
Leisure/Recreation	.24**	.13	.09	.08
Personality/Behavior	-.00	-.02	.09	-.03
Attitudes/Orientation	.21*	-.08	.08	-.03
Total recidivism risk	.33***	.07	.11	.08
Estimated recidivism risk	.23*	.06	.08	.10

Note. ***$p < .001$ **$p < .05$ *$p < .01$

Next, a ROC curve study was performed relating the MAYSI-2 scales to the conceptually related clinical syndromes scales of the MACI, as with the original instrument (Grisso et al., 2001). For this purpose, the sums of the posi-

tive responses to each of the items of each MAYSI-2 scale and the MACI BR scores were used. Table 4 shows the area under the curve (AUC) and the 95% confidence interval for each pairing. Figure 1 shows the ROC curves of total scores on MAYSI-2 scales in relation to TB scores on conceptually related MACI clinical syndromes scales.

These results indicate that the classification accuracy is statistically significant in all cases, with the curve of the Depressed-Anxious scale with the Depressive Affect scale presenting the highest value, correctly classifying 96% of the minors requiring follow-ups.

The curve of the Angry-Irritable scale with the Impulsive Propensity scale is the one with the lowest percentage, but still reaching 70%, indicating that even in this case, true positives are maximized and false positives are minimized (Grisso et al., 2001).

Table 4

Indices of the ROC curves for the MAYSI-2 scales and the conceptually related clinical syndromes scales of the MACI

Scales (**MAYSI-2** MACI)	*AUC*	*IC95%*	*Standard error*	*p*
Alcohol/Drug Use				
Substance Abuse proneness	.77	[.67, .86]	.05	.001
Depressed-Anxious				
Depressive Affect	.96	[.92, 1]	.03	.006
Suicide Ideation				
Suicidal Tendency	.83	[.68, .98]	.08	.001
Angry-Irritable				
Impulsive Propensity	.70	[.60, .81]	.06	.001

Figure 1

ROC curves of total scores on MAYSI-2 scales in relation to TB scores on conceptually related MACI clinical syndromes scales.

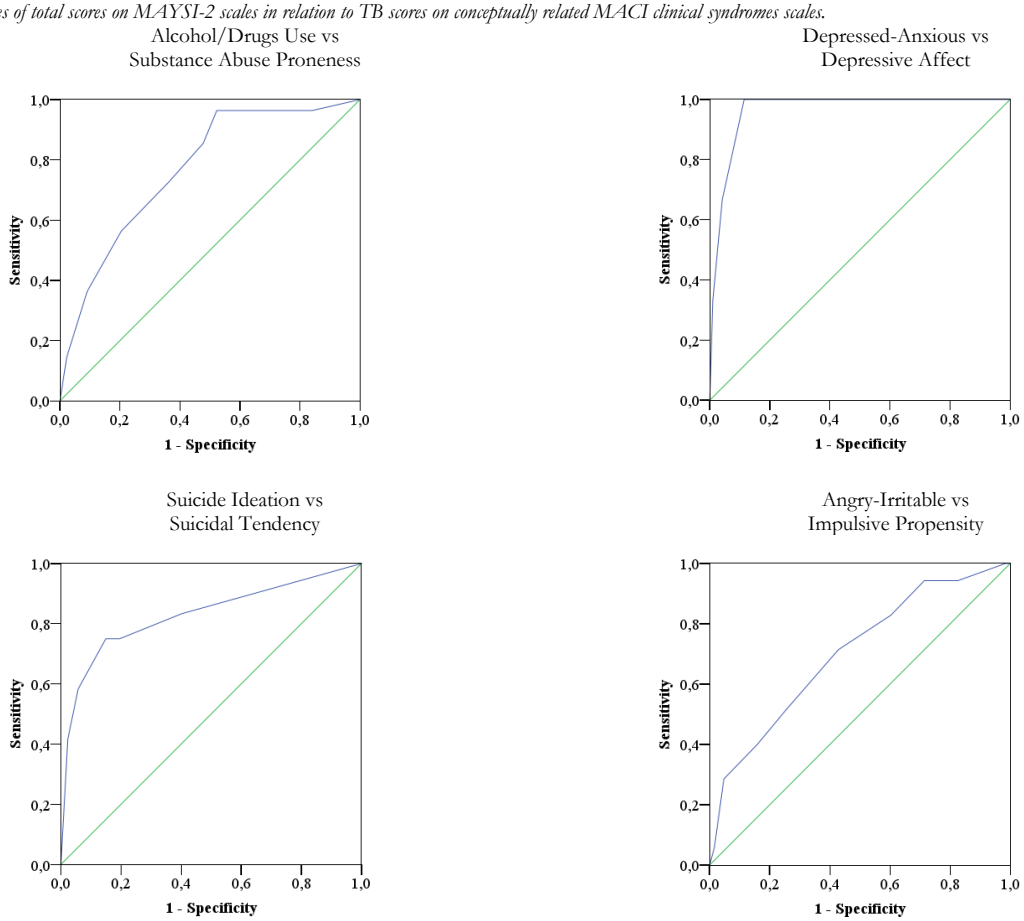


Table 5 shows the Caution and Warning threshold values of the MAYSI-2 scales in the original study and those proposed from the current sample. Among the different criteria available to select these cut-off points (Unal, 2017), we chose to correctly classify the highest percentage of minors requiring immediate intervention (suicide) or further in-depth evaluation, even at the risk of including some cases that did not need it.

Table 5
Cautionary and warning threshold values for the MAYSI-2 scales established from the MACI in the current study and in the original study, as well as their sensitivity and specificity values.

MAYSI-2 scales	Caution Threshold			Warning Threshold		
	Threshold value	Sensitivity	1-Specificity	Threshold value	Sensitivity	1-Specificity
Alcohol/Drugs Use vs. Substance abuse Proneness	4 (4)	.85	.48	6 (7)	.56 (.36)	.20 (.09)
Depressed-Anxious vs. Depressive Affect	3 (3)	1	.45	6 (6)	1	.12
Suicide Ideation vs. Suicidal Tendency	1 (2)	.83 (.75)	.40 (.20)	3 (3)	.75	.15
Angry-Irritable vs. Impulsive Propensity	5 (5)	.71	.43	7 (8)	.40 (.29)	.16 (.05)

Note.- In parentheses, the threshold values from the original manual (Grisso & Barnum, 2006) and the indices that would be obtained with them in this sample when they are different.

Thus, as shown in Table 5, the proposed cut-off points for Caution allow correct classification (sensitivity/true positives) above 80% (except for Angry-Irritable which is 71%), keeping false positives (1-specificity) below 48%. However, in the Warning thresholds, priority is given to keeping the false positive rate low (below 20%), even at the cost of losing some specificity (between 40 and 100%).

Evidence of the discriminant validity of the MAYSI-2 in relation to Type of therapeutic measure, Psychopathological diagnosis, Criminal records and Total recidivism risk.

Four discriminant analyses were carried out using as discriminant variables the Alcohol/Drug Use, Depressed-Anxious, Angry-Irritable, Suicide Ideation, Somatic Complaints and Thought Disturbance scales of the MAYSI-2, and as classificatory variables Type of therapeutic measure (TI or OT), Psychopathological diagnosis (No/Yes), Criminal records (No/Yes) and Total recidivism risk (Low or Moderate/High). The Traumatic Experiences scale was excluded from the analyses due to a low internal consistency value. In the four analyses, a single discriminant function was obtained which, in three of them, provided significant differentiation between the groups of adolescents established according to the classificatory variables. The results obtained are summarized in Table 6.

When the classificatory variable is the Type of therapeutic measure (TI/OT), statistically significant differences between groups are found for the Alcohol/Drug Use scale ($F(1, 123) = 15.575$, $p < .001$, $\eta^2 = .11$) (see Figure 2). The discriminant function allows us to correctly classify 67.2% of the cases of the total sample, 73.7% of TI and 61.8% of OT.

Table 6
Summary of results of the discriminant analysis of the MAYSI-2 scales in relation to the variables Type of therapeutic measure, Psychopathological diagnosis, Criminal Records, and Total recidivism risk

Classification variable	Significance of discriminant function	Centroid	
Type of therapeutic measure	($\lambda = .82$; $\chi^2(6) = 23.113$; $p < .001$)	TI	.49
		OT	-.42
Psychopathological diagnosis	($\lambda = .89$; $\chi^2(6) = 14.11$; $p = .028$)	No	-.26
		Yes	.47
Criminal records	($\lambda = .93$; $\chi^2(6) = 9.057$; $p = .170$)	No	-.31
		Yes	.25
Total recidivism risk	($\lambda = .86$; $\chi^2(6) = 18.27$; $p = .006$)	Low	-.42
		Moderate/High	.39

Statistically significant differences for the classificatory variable Psychopathological diagnosis (No/Yes) are obtained on the Angry-Irritable scale ($F(1, 123) = 8.304$, $p < .01$, $\eta^2 = .06$) (see Figure 3). The discriminant function allows us to correctly classify 60.8% of the cases of the total sample, 61.4% of the minors who had been diagnosed and 60.5% of those who had not been diagnosed.

In the discriminant analysis with the classificatory variable Criminal records (No/Yes), no statistically significant function was obtained.

Finally, with Total recidivism risk (Low or Moderate/High) as the classificatory variable, statistically significant differences occur in relation to the variable Alcohol/Drug Use ($F(1, 123) = 11.914$, $p < .001$, $\eta^2 = .08$) (see Figure 4). This function allowed us to correctly classify 64% of the cases of the total sample, 69.2% of the minors with high total recidivism risk and 58.3% from low to moderate risk.

Figure 2
Differences in means on the MAYSI-2 scales between the two groups of therapeutic judicial measures

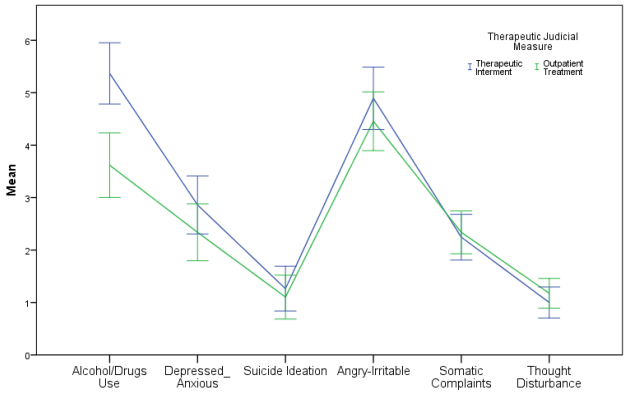


Figure 3
Mean differences in MAYSI-2 scales between children with and without psychopathological diagnosis

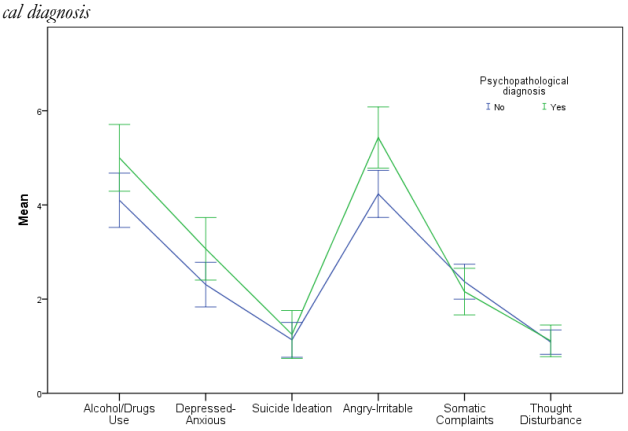
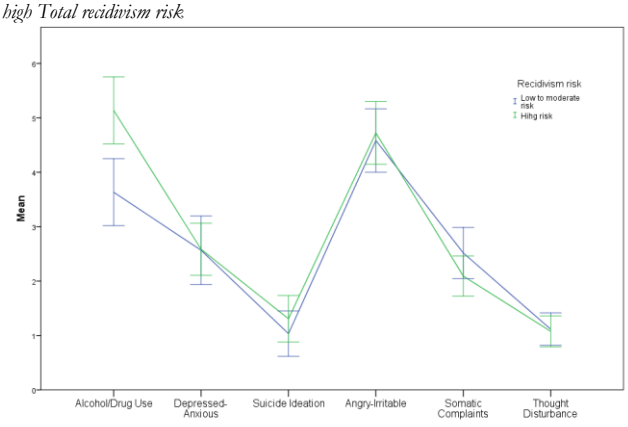


Figure 4
Differences in means on the MAYSI-2 scales between minors with low/moderate and high Total recidivism risk



Discussion

The main objective of this research was to search for evidence of validity and internal consistency of the Spanish adaptation of MAYSI-2, as a screening instrument for mental health and drug use problems, in a Spanish sample of adolescents serving therapeutic judicial measures. The results obtained indicate, first, that the original seven-factor structure is replicated with the translated instrument and the sample under study. This finding is consistent with Grisso et al. (2001) and with subsequent research conducted both within and outside the USA (Dölitzsch et al. 2017; Grisso et al., 2012; Leenarts et al., 2016; Russell et al., 2017; Williams et al., 2019). This time, however, we went beyond replication, using for the first time statistical analyses in line with the dichotomous nature of the item response scale.

The fit indices of the factor model were good, and all items were adequately related to their respective scales, except for items 50 and 51 with respect to the Traumatic Experiences factor. Although in the original work by Grisso et al. (2001) the composition of this factor was different for adolescent girls and boys, the current sample did not allow for a measurement invariance analysis by gender, since adolescent girls constituted only 15% of the total. Therefore, it was decided to jointly analyze the items that were originally studied separately, and it was found that item 46 performed well, but not items 50 and 51. This result seems reasonable given that item 50 also has weight in the Depressed-Anxious factor and item 51 is usually a more frequent traumatic experience among adolescent girls (Have you been raped or have you been in danger of sexual assault?). The Thought Disturbances scale was well adjusted with the entire sample, probably because 85% were adolescent boys.

The limitation of the small number of female participants in the sample is because the proportion of women in any criminal justice system is much lower than that of men, whether they are adults or juveniles. To overcome this difficulty, future research with a judicialized population in Spain should integrate, in the same sample, participants of both genders from different autonomous regions. To achieve this, the collaboration not only of the Central Government and the Generalitat de Catalunya will be required if participants are adults, but also of the different autonomous governments if they are adolescents. Without this collaboration, it will not be possible to carry out an invariance analysis of the MAYSI-2 measurement according to gender or other classification variables in the Spanish criminal justice system.

Despite this difficulty, the internal consistency values of all the scales were good, except in the case of the Traumatic Experiences scale which, even after eliminating the problematic items, did not reach the required minimum. The practical implications of this deficit are not important, since this scale is used only to alert to the existence of early adverse experiences, without specifying the symptoms or the degree of distress experienced. Future research should, however, use larger samples to obtain more evidence of consistency, not only internal, but test-retest and inter-judge.

A second result to highlight refers to the evidence of convergent and divergent validity of the MAYSI-2, in relation to the conceptually related scales of the MACI and the YLS/CMI risk factors. The correlations obtained between

the MAYSI-2 and MACI scales replicated the results reported by Grisso et al. (2012). Evidence of convergent validity was also obtained when analyzing the ROC curves, since in all cases the area under the curve was equal to or greater than .70. The establishment of the cut-off points was carried out by giving priority to the correct classification of the highest percentage of adolescents who would actually require follow-up or further intervention, even at the risk of slightly increasing the percentage of those who did not require it. This precaution is especially important in the case of the Suicide Ideation scale, since suicide is a serious risk that usually occurs in 20% of admissions to the juvenile justice system and, as it manifests with internalizing symptomatology, is often underdiagnosed (Ford et al., 2008; Lorenzo-Latorre et al., 2025). Moreover, a misdiagnosis of suicidal intent, involving death or serious injury to the user, may result in civil liability for the technical staff (Quevedo-Blasco et al., 2023). Therefore, it seems reasonable to accept a higher risk of false positives than false negatives.

As expected, the relationships of the MAYSI-2 with the YLS/CMI were not statistically significant, except for drug abuse. As this is the first study in which both instruments are used simultaneously, comparisons are not possible. The results, however, are consistent with evidence that mental health needs are not a risk factor for recidivism, except in the case of drug abuse. In this sense, the most widely used and evaluated offender re-education model to date, the Risk-Need-Responsivity model (Andrew et al., 2006), conceptualizes drug abuse as a risk factor, while considers mental health needs to be part of treatment responsivity (McCormick et al., 2017).

The evidence of discriminant validity obtained refers to the type of therapeutic measure, the existence of a psychopathological diagnosis and the risk of recidivism. Alcohol/Drug Use is the scale that makes it possible to differentiate between adolescents who were given an inpatient or outpatient therapeutic measure, and between those at low-moderate and high recidivism risk. These results are consistent with those obtained by Grisso et al. (2001) and by Moreno and Andrés-Pueyo (2014), who found higher scores on this scale for adolescents in internment in the USA and in Catalonia, respectively.

Regarding the previous psychopathological diagnosis, the fact that the Angry-Irritable scale was the one that allowed discrimination between the two groups can be understood considering that most diagnoses in the sample are of externalizing disorders, which are usually manifested by expressions of anger, rage and irritability. Referral to psychopathological intervention is usually made prioritizing externalizing symptoms (hostility, alcohol/drug abuse) over internalizing ones (anxiety, sadness), perhaps because the latter are more difficult to detect with the naked eye (Magalhães & Camilo, 2023, Sainero et al., 2015). But if we want to be effective in providing responses to the mental health needs of adolescents in the juvenile justice system, it is essential to detect and assess both symptomatologies (Hay et al., 2018).

In this context, MAYSI-2 can be useful as a screening tool for public services that do not currently have the resources to conduct comprehensive assessments of all adolescents entering the juvenile justice system. Likewise, the fact that MAYSI-2 is free of charge is an advantage in addition to the speed with which it is applied and scored, compared to other instruments currently used in the assignment and implementation of judicial measures. It is true that no screening can replace the individualized psychopathological assessment that allows the establishment of treatment goals (Swank & Gagnon, 2017), but it does help to identify quickly, and with an acceptable level of error, adolescents who truly need it. In this way, scarce treatment resources available could be devoted to these adolescents, regardless of whether their symptomatology is externalizing or internalizing (Colins et al., 2015; Grisso, 2005). This would result in decisions regarding the imposition and implementation of judicial measures in general, and of therapeutic content in particular, always being made on the basis of evidence-based assessments and never on the basis of first impressions.

Complementary information

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Conflict of Interest.- The authors of this article declare that there is no conflict of interest.

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