Short communication

Clinical and research utility of Spanish Teen-Addiction Severity Index (T-ASI)

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Abstract

This paper aims to test the clinical and research utility of a Spanish version of the Teen-Addiction Severity Index (T-ASI) in adolescents with psychiatric disorders attending a treatment programme. Eighty adolescents, 12 to 17 years old (Mean = 14.5; SD = 1.48) were evaluated with a research battery including the T-ASI to obtain data on socio-demographics, psychopathology, drug use, family environment and school achievement. The Substance Use scale of the T-ASI correlated significantly (Rho = 0.90, p ≤ 0.01) with an ordinal measure of “pattern of any drug use”, and with “subjective problems with drugs” (rank 0–32) (Rho = 0.69, p ≤ 0.01). All T-ASI scales, except Psychiatric Status, showed significant correlations with externalized scores of the Children’s Behavior Checklist (CBC) and also discriminated between patients with and without Substance Use Disorders. To conclude, Spanish version of the T-ASI shows adequate psychometric properties to be used as a clinical and research instrument in Spanish-speaking adolescents with psychiatric disorders.

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1. Introduction

Recent epidemiological studies in different countries have raised concerns regarding an increased risk of psychoactive drug use among adolescents (Vega et al., 2002). This trend towards “normalization” in the use of drugs such as cannabis and cocaine among young people could be especially dangerous for those adolescents with co-morbid psychiatric disorders (Armstrong & Costello, 2002).

In Spain, increases of drug-related problems and drug treatment demands have been reported (Rodríguez, Agulló, & Agulló, 2003; Observatorio Español sobre Drogas, 1994–2004; 1995–2003). There is thus an urgent need to adapt and validate instruments to assess these problems among Spanish adolescents.

Among the available English-language instruments for assessing drug-related problems in adolescents (SAMHSA / CSAT, 2006) we chose the Teen-Addiction Severity Index (T-ASI) since it is a relatively brief and easy to administer face-to-face interview that has been shown to have good reliability and validity (Kaminer, Bukstein, & Tarter, 1991; Kaminer, Wagner, & Plummer, 1993).

The present study aimed to test psychometric properties of a Spanish version of the T-ASI in adolescents with psychiatric disorders, specifically concurrent and discriminant validity.

2. Materials and methods

2.1. Subjects

Eligible patients for the present study were 103 adolescents aged 12–17 years and consecutively seen for psychiatric or psychological treatment between March and September 2004 at the Child and Adolescent Psychiatry and Psychology Department in the Hospital Clinic of Barcelona, Spain, which includes a specific Unit for Eating Disorders. Patients in an acute psychotic state \( (n=7) \) or those mentally retarded \( (n=3) \) were excluded from the study. Two patients were referred on for more intensive treatment due to severe drug dependency before completing the assessment protocol. Eleven adolescents or their parents refused to complete the study. Eighty adolescents (36.6% male; mean age=14.5 years, SD=1.48) were finally evaluated.

2.2. Procedure

After written informed consent was obtained from the adolescent patients and their parents or guardians, they were assessed with a test battery in accordance with a protocol approved by the Ethics Committee of the institution.

2.3. Socio-demographic, psychiatric and school data

Children were evaluated with semi-structured interviews based on those used in the COGA Project (Collaborative Studies on Genetics of Alcoholism) (Hesselbrock, Easton, Bucholz, Schuckit, & Hesselbrock, 1999), adapted to Spanish DSM-IV criteria. These interviews, along with clinical records, provided measures of socio-demographic variables: age, gender, socio-economic status on five levels (according to Hollingshead, 1990), psychiatric symptoms and school achievement (mean of marks in seven main academic subjects in the end-of-year
examination), among other variables. Primary psychiatric lifetime diagnoses were classified into nine categories (Table 1).

2.4. Severity of addiction

A Spanish version of the T-ASI\(^1\) (translated by LS and RD, back translated by a professional translator and reviewed by YK), which includes 142 items, was used to assess the severity of addiction in seven domains: substance use, school status, employment status, family function, peer–social relationships, legal status and psychiatric status. Severity of problems in each domain was scored on a five-point scale (0–4) according to both patient subjective criteria and interviewer criteria. The T-ASI was administered by a trained psychologist and scored by a different one, who was blind to the rest of the patient data. Both were trained in the author’s instructions manual and were in contact with Dr Kaminer for doubts in the scoring. Only one patient was part-time employed and therefore data regarding employment were eliminated from the analysis.

2.5. Drug-use pattern

The highest lifetime pattern of use of the different drugs was coded into five categories as follows: 1 (No use); 2 (Occasional use: from time to time, at parties, during holidays or social events); 3 (Regular use: almost daily use for tobacco, almost weekly use for alcohol and cannabis, almost monthly use for stimulants or other drugs, with no clear evidence of drug-related risks); 4 (Risky consumption: quantity-frequency and/or situational pattern of use with a high probability of developing health or psycho-social problems, now or in the future); and 5 (Diagnosis of abuse or dependence according to DSM-IV criteria).

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1 The Teen-ASI Spanish version used in this study is available upon request from the first author.
A measure of “pattern of any drug use” was also coded according to the same five categories, taking into account the higher level scored for any of the drugs, excluding tobacco.

2.6. Subjective problems with drugs

A self-report measure of problems with drugs was obtained with an instrument based on Jessor, Van der Bos, Vanderryn, Costa, and Turbin (1995) which considered eight different categories: casualties, legal, financial, sickness, fights, familial, friends and other. Each type of problem was scored according to its frequency of occurrence: 1 (never), 2 (1–2 times), 3 (3–5 times) or 4 (more than 5 times). The total summed score was computed (rank: 0–32).

2.7. Family Conflict

The corresponding subscale of the Spanish Family Environmental Scale (FES) (rank: 1–9) (Moss, Moss, & Tricket, 1984), was used as an external criterion to examine the concurrent validity of the Family Function Scale of the T-ASI.

2.8. Recent behavioral problems

Each patient completed the Youth Self-Report scale (YSR) (Achenbach, 1991a) and their parents the Child Behavior Checklist (CBC) (Achenbach, 1991b). Items were grouped into nine scales: 1) Withdrawn, 2) Somatic complaints, 3) Anxious/depressed, 4) Social problems, 5) Thought problems, 6) Attention problems, 7) Delinquent behavior, 8) Aggressive behavior, and 9) Others. Two summarizing scales were also obtained: the Internalizing Scale that includes sub-scales 1, 2 and 3, and the Externalizing Scale that summarizes sub-scales 7 and 8.

2.9. Data analysis

The concurrent validity of the Teen-ASI Substance Use scale was examined by means of Rho Spearman correlations (ordinal variables) with two different external measures: “pattern of any drug use” and “subjective problems with drugs”. Spearman correlations between the Teen-ASI Psychiatric Status scale and YSR/CBC internalizing and externalizing scores were also calculated to assess the

<table>
<thead>
<tr>
<th>Drug use</th>
<th>Alcohol (%)</th>
<th>Tobacco (%)</th>
<th>Cannabis (%)</th>
<th>Other drugs (%)</th>
<th>Any drug (except tobacco) (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-use</td>
<td>51.1</td>
<td>55.4</td>
<td>63</td>
<td>90</td>
<td>47.5</td>
</tr>
<tr>
<td>Occasional</td>
<td>17.4</td>
<td>7.6</td>
<td>13</td>
<td>1.1</td>
<td>15</td>
</tr>
<tr>
<td>Regular</td>
<td>18.5</td>
<td>7.6</td>
<td>5.4</td>
<td>1.1</td>
<td>11.3</td>
</tr>
<tr>
<td>Risky</td>
<td>9.8</td>
<td>3.3</td>
<td>5.4</td>
<td>6.5</td>
<td>11</td>
</tr>
<tr>
<td>Abuse or dependence</td>
<td>3.3</td>
<td>26.1</td>
<td>13</td>
<td>1.1</td>
<td>16.3</td>
</tr>
</tbody>
</table>

Table 2
Pattern of use of different drugs in the sample
clinical utility of this Teen-ASI scale. The same procedure was used to assess the utility of the Teen-ASI School Status scale in measuring academic performance (external criteria: mean of marks in seven academic subjects) and the Family Function scale for assessing the quality of family relationships (external criteria: Family Conflict score from the FES). In order to evaluate the utility of the Teen-ASI in discriminating between adolescent psychiatric patients with Substance Use Disorders (SUD) and those without this type of problem (non-SUD), Mann–Whitney U tests (due to ordinal scales) were computed comparing Teen-ASI scores in both patient groups. Data were analyzed with SPSS (Statistical Package for the Social Sciences) version 11.5.

3. Results

3.1. Characteristics of the sample

Table 1 summarizes age, gender and prevalence of different diagnoses. The more prevalent diagnoses in this sample were Eating Disorders, followed by Attention Deficit Disorder with or without Hyperactivity.

Table 2 shows the distribution of subjects according to their involvement with different drugs. More than 25% of the sample had a diagnosis of abuse or dependence for tobacco and 13% for cannabis, whereas alcohol followed more frequently occasional or regular patterns of consumption.

3.2. Concurrent validity of the Substance Use scale of the T-ASI

As shown in Table 3, significant positive correlations were obtained between the Substance Use scale of the T-ASI and both external measures of drug use: the more objective measure of “pattern of any drug

Table 3
Spearman correlations (Rho) between Teen-ASI scales and external validators: any drug use, subjective problems with drugs, school achievement and Family Conflict

<table>
<thead>
<tr>
<th>Teen-ASI Scales</th>
<th>Any drug use (2.33, 1–5)</th>
<th>Subjective problems with drugs (10, 8–22)</th>
<th>School achievement (5.54, 3.85–9)</th>
<th>Family Conflict (FES) (3.66, 0–9)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Substance use (1.29, 0–4)</td>
<td>0.90 **</td>
<td>0.69**</td>
<td>−0.33**</td>
<td>0.03</td>
</tr>
<tr>
<td>School status (1.46, 0–4)</td>
<td>0.40**</td>
<td>0.26 *</td>
<td>−0.75**</td>
<td>0.07</td>
</tr>
<tr>
<td>Family function (1.59, 0–4)</td>
<td>0.53**</td>
<td>0.59**</td>
<td>−0.37**</td>
<td>0.27*</td>
</tr>
<tr>
<td>Peer–social relationships (0.70, 0–4)</td>
<td>0.23*</td>
<td>0.21</td>
<td>−0.34**</td>
<td>0.23</td>
</tr>
<tr>
<td>Legal status (0.26, 0–4)</td>
<td>0.33**</td>
<td>0.37**</td>
<td>−0.20</td>
<td>0.18</td>
</tr>
<tr>
<td>Psychiatric status (2.81, 1–4)</td>
<td>0.25*</td>
<td>0.15</td>
<td>−0.21</td>
<td>0.04</td>
</tr>
</tbody>
</table>

In brackets, mean and range of each variable.

** p ≤ 0.01.

* p ≤ 0.05.
use” (except tobacco) according to the clinical interview (Rho=0.90, p ≤0.01) and “subjective problems with drugs” according to patients’ self report (Rho=0.69, p ≤0.01).

3.3. Concurrent validity of the School and Family scales of the T-ASI

Table 3 shows that the School Status scale of the T-ASI was negatively correlated with school achievement (Rho= −0.745, p ≤0.01), and that the Family Function scale of the T-ASI correlated with the FES Family Conflict scale, although with a lower level of significance (Rho=0.266, p ≤0.05).

Table 4
Spearman correlations (Rho) between Teen-ASI scales and external validators: Youth Self Report and Child Behaviour Checklist, internalizing and externalizing raw scores

<table>
<thead>
<tr>
<th>Teen-ASI Scales</th>
<th>CBC externalized (22.03, 2–50)</th>
<th>CBC internalized (16.76, 0–48)</th>
<th>YSR externalized (21.34, 3–49)</th>
<th>YSR internalized (16, 2–48)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Substance use (1.29, 0–4)</td>
<td>0.38**</td>
<td>0.18</td>
<td>0.58**</td>
<td>0.10</td>
</tr>
<tr>
<td>School status (1.46, 0–4)</td>
<td>0.31*</td>
<td>0.03</td>
<td>0.22</td>
<td>−0.24</td>
</tr>
<tr>
<td>Family function (1.59, 0–4)</td>
<td>0.49**</td>
<td>0.02</td>
<td>0.51**</td>
<td>−0.01</td>
</tr>
<tr>
<td>Peer–social relationships (0.70, 0–4)</td>
<td>0.37**</td>
<td>0.21</td>
<td>0.30*</td>
<td>0.10</td>
</tr>
<tr>
<td>Legal status (0.26, 0–4)</td>
<td>0.36**</td>
<td>−0.14</td>
<td>0.10</td>
<td>−0.29*</td>
</tr>
<tr>
<td>Psychiatric status (2.81, 1–4)</td>
<td>0.08</td>
<td>0.24</td>
<td>0.16</td>
<td>0.17</td>
</tr>
</tbody>
</table>

In brackets, mean and range of each variable.

* p ≤0.05.
** p ≤0.01.

Table 5
Mean comparisons for non-parametric data (Mann Whitney U) to assess the discriminant validity of different T-ASI scales between Substance Use Disorder (SUD) and non-Substance Use Disorder (non-SUD) patients according to DSM-IV diagnostic criteria

<table>
<thead>
<tr>
<th>Teen-ASI Scales</th>
<th>Non-SUD n=67 (83.8%)</th>
<th>SUD n=13 (16.3%)</th>
<th>U Mann Whitney p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Substance use</td>
<td>0.96±1.22</td>
<td>3.00±0.71</td>
<td>**(0.000)</td>
</tr>
<tr>
<td>School status</td>
<td>1.33±1.41</td>
<td>2.15±1.28</td>
<td>*(0.037)</td>
</tr>
<tr>
<td>Family function</td>
<td>1.34±1.26</td>
<td>2.85±0.90</td>
<td>** (0.000)</td>
</tr>
<tr>
<td>Peer–social relationships</td>
<td>0.60±1.10</td>
<td>1.23±1.17</td>
<td>*(0.014)</td>
</tr>
<tr>
<td>Legal status</td>
<td>0.15±0.58</td>
<td>0.85±1.35</td>
<td>** (0.002)</td>
</tr>
<tr>
<td>Psychiatric status</td>
<td>2.82±0.83</td>
<td>2.77±0.60</td>
<td>NS (0.741)</td>
</tr>
</tbody>
</table>

* p ≤0.05 (exact value).
** p ≤0.01.
3.4. Correlations between T-ASI scales and Achenbach’s checklists (CBC and YSR)

Table 4 shows that all the scales of the T-ASI, except for Psychiatric Status, correlated with the CBC Externalizing score, although only Substance Use, Family Function and Peer–Social Relationship correlated significantly with the YSR Externalizing score.

3.5. Discriminant validity of T-ASI scales

Table 5 presents the comparison between patients with and without SUD according to the means on different scales of the T-ASI. All scales, except for Psychiatric Status, discriminated significantly between SUD and non-SUD patients. Family Function and Legal Status were the most affected domains in subjects with SUD.

4. Discussion

The results of this study support the clinical and research utility of a Spanish version of the T-ASI, extending previous research on the English version (Kaminer et al., 1991, 1993).

In the sample studied, the T-ASI Substance Use scale correlated significantly with two external criteria, a more objective measure — pattern of use of any drug, and a more subjective measure — perceived problems with drugs. Additionally, the Substance Use scale correlated significantly with externalizing disorders according to the CBC and the YSR, thus supporting the already suggested relationship between these disorders and drug use (Lillehoj, Trudeau, Spoth, & Madon, 2005).

The School Status and the Family Function scales also correlated with their respective external criteria (mean of marks in seven scholar subjects, and level of Family Conflict in the FES), although this was not the case for the Psychiatric Status scale, which was not related to CBC or YSR behavioral problems. This latter finding may mean that the T-ASI Psychiatric Scale measures the severity of any psychiatric problem, including both Eating Disorders and Attention Deficit Disorders (the two most prevalent diagnoses in the sample) and not only those symptoms covered by the internalized and externalized summarizing scores of Achenbach’s problem behavior checklists (these summed scores do not take into account sub-scale 6 Attention Deficit and the checklist does not consider specifically Eating Disorders).

As regards the discriminant validity of the T-ASI, almost all the scales discriminated between SUD and non-SUD patients, except for Psychiatric Status, due to the reasons exposed above. This partial disagreement with the original T-ASI validation studies (Kaminer et al., 1991, 1993) is probably related to the differential characteristics of the sample.

The main limitation of this study is that adolescent self-reports about drug use in this clinical context must be interpreted with caution due to probable minimization (Brener, Billy, & Grady, 2003).

In conclusion, the Spanish version of the T-ASI seems to be a valid instrument for measuring the severity of problems related to drug use among adolescent psychiatric patients. However, further research with this Spanish version of the T-ASI is needed to examine its reliability, to generalize its use to other samples (especially those with severe drug-related problems), to validate its use in other Spanish-speaking populations (e.g. US, Mexico) and to develop computerized Spanish versions, as has been done recently with the original English test (Brodey et al., 2005).
Acknowledgements

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References