

The Reliability and Validity Study of Psychological Screening Test for Adolescents

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ABSTRACT

The reliability and validity study of Psychological Screening Test for Adolescents (PSTA)

Objective: We have aimed to conduct reliability and validity study of Psychological Screening Test for Adolescents (PSTA). The scale was developed in order to investigate the psychological conditions and urgent psychological needs of juvenile delinquents by screening for most crucial factors.

Method: For this study, interviews were carried out with a sample of 90 male delinquent adolescents in three different juvenile penal institutions in Turkey. For each subject, PSTA and Youth Self Report (YSR) scale were filled out. The interviews were performed by psychologists and social workers in psychological service departments of these institutions.

Results: The statistical investigations have shown that PSTA has an interrater reliability of $r=0.89$ and a high internal reliability ($\alpha=0.79$). There is a high level of positive correlation between YSR total score and PSTA total score ($r=0.60$). Also, based on the scores received from attention deficit and hyperactivity, psychosis and depression-anxiety sub-sections of PSTA, the sample was divided into high and low score groups for each sub-section. Those groups were compared based on the scores of corresponding sub-sections of YSR. The high score groups of each sub-section of PSTA had significantly higher scores on YSR, showing that the scale has high criterion validity. The factor analysis shows that sub-sections of PSTA were grouped under two factors, which explained 50.35% of the variance.

Discussion: Based on the analyses, it has been found that PSTA is a reliable and valid screening tool, which can be used for investigating psychological conditions and the need for further assessment of juvenile delinquents upon admission to penal institutions.

Conclusion: In penal institutions, where effective and reliable screening devices are needed to be applied in a short amount of time; the short application time and length of PSTA would be an advantage, beside the fact that it is a reliable and valid psychological screening device for adolescents. It is suggested that the scale needs to be applied to a sample including both genders and the general population of adolescents in further studies.

Key words: Adolescents, crime, validity, reliability, screening

ÖZET

Ergenler için Ruhsal Sorunlar Tarama Ölçeği'nin (ERST) geçerlilik ve güvenilirlik çalışması

Amaç: Bu çalışmada, yasayla ihtilafa düşen çocuk ve ergenlerin psikolojik durumlarının ve acil psikolojik ihtiyaçlarının taranması amacıyla geliştirilen Ergenler için Ruhsal Sorunlar Tarama Ölçeği'nin (ERST) geçerlilik ve güvenilirliğinin araştırılması hedeflenmiştir.

Yöntem: Türkiye'de, mevcut üç çocuk cezaevinde kalmakta olan 90 erkek tutuklu/hükümlü ergenle görüşülmüştür. Gençlerin her birine ERST ve Gençler için Kendini Değerlendirme Ölçeği (Youth Self Report-YSR) uygulanmıştır. Görüşmeler, ceza infaz kurumlarında çalışan psikososyal servis çalışanları tarafından yapılmıştır.

Bulgular: Yapılan istatistiksel incelemelerde, ERST'nin görüşmeciler arası güvenilirliğinin $r=0.89$, iç tutarlılığının $\alpha=0.79$ olduğu görülmüştür. YSR toplam puanı ile ERST toplam puanı arasında ($r=0.60$) yüksek korelasyon olduğu tespit edilmiştir. Ayrıca, ERST'nin dikkat eksikliği ve hiperaktivite, psikoz ve depresyon-anksiyete alt bölümlerinden alınan puanlar üzerinden düşük ve yüksek puan grupları oluşturulduğunda, yüksek puan alan grubun YSR'nin ilgili alt bölümlerinden aldığı puanların da, diğer grubunkinden anlamlı derecede daha yüksek olduğu görülmüştür. Yapı geçerliliği analizinde, ERST'yi oluşturan alt bölümlerin varyansın %50.35'ini oluşturan iki faktör altında toplandığı bulunmuştur.

Tartışma: Yapılan incelemeler sonucunda ERST'nin, ceza infaz kurumlarında kuruma kabul aşamasında psikolojik etkenlerin taranması ve daha fazla değerlendirmeye ihtiyaç olup olmadığının belirlenmesi için kullanılabilir, geçerli ve güvenilir bir ölçek olduğu tespit edilmiştir.

Sonuç: Ceza infaz kurumları gibi kısa sürede etkili ve geçerli bir taramanın yapılması gereken kurumlarda ERST'nin, geçerli ve güvenilir oluşu kadar, fazla uzun olmaması ve uygulama süresinin kısa olması da avantaj sağlayacaktır. Ölçeğin, gelecekteki çalışmalarda, her iki cinsiyeti ve cezaevi dışındaki popülasyonu da kapsayan örneklerde değerlendirilmesi öngörülmüştür.

Anahtar kelimeler: Ergen, suç, geçerlilik, güvenilirlik, tarama

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INTRODUCTION

Studies done with children and adolescents having problems with law showed that the most effective method to reduce risk of re-committing crime is interventions developed after risk and need evaluations (1). One of the most important factors encountered in risk evaluation is problems related with mental health. Children and adolescents related with penal and judicial system were found to have more mental health problems compared to general population (1). Studies showed that most of the children and adolescents at penal execution institutions meet at least one criterion of a mental disease and one out of five young people has a serious mental disorder generally accompanied by alcohol/substance abuse (2). Study of Teplin et al. (3) showed that comorbidity between psychiatric disorders is also quite high at penal execution institutions and 75% of young people who had any psychiatric diagnosis meet criteria of another disorder as well. The most prevalent psychiatric disorders are behavioral disorders, mood disorders, anxiety, substance abuse, attention deficit and developmental disorders (4).

In a study done in Turkey with criminal children and adolescents, it was shown that mental health of 69.2% of these children are “disturbed” and 30.8% are “very disturbed” (5). Moreover, it was found that risk of self-destructive behavior in criminal adolescents under 21 years old is three times higher than non-criminal adolescents (6). In 2009, 25.4% of adolescents under arrest or sentenced interviewed for “Active Sentenced Management” Project stated that they had gone to a psychologist or psychiatrist before, 19.7% stated that they received psychological treatment and 69.2% showed self-destructive behavior (7). In different studies done about alcohol and substance abuse, it was seen that 18% to 62% of children who committed crime used alcohol and 7% to 52% used substances such as thinner, pills, hashish, amphetamine and LSD (8,9). All these findings showed importance of mental problems in adolescents having dispute with laws and alcohol and substance abuse.

Most important differences of assessment and evaluation tools are their different purposes and duration

of administration. Assessment tools are scales aimed to determine young people under risk who need intervention or more detailed interview and can be administered in a short time. Evaluation tools aim to ask substance use and problems found at initial interview in detail and determine recommendations for intervention (4).

There is strong need for assessment tools which are user-friendly, valid, having short duration and can be used to find out people who need more detailed evaluation for recognition and treatment of mental health problems of young people at penal execution institutions. All children and adolescents related with penal judicial system should undergo from mental health and substance abuse evaluation along with general risk and need assessment at the shortest time possible. These assessments should also be repeated at regular intervals (2).

Massachusetts Youth Screening Instrument (MAYSI-2) is widely used at penal execution institutions for psychological screening. However, there is not Turkish translation of this scale and no research has been done on this scale yet (10,11). Child Behavior Checklist (CBCL) developed by Achenbach (12) and Youth Self Report (YSR) are scales widely used in adolescents between 6 and 18 years old and administered to screen mental problems (13). Brief Symptom Inventory (BSI) consists of 53 items and can be administered to populations with or without psychiatric diseases (14,15). Strengths and Difficulties Questionnaire (SDQ) is a self-evaluation scale used to screen emotional and behavioral problems in children and adolescents (16).

Multiple numbers of questions or long duration of administration and being based on self-rating create some difficulties. Administration in adolescents with lower educational and cultural level may particularly be difficult. Administration at clinical and prison environment can also be difficult. In Turkey, there is a need of a scale to detect mental problems in adolescents for Individualized Improvement System (BISIS) being conducted in children and adolescent penal execution institutions. In this study, developing a short and semi-structured scale to assess mental problems in adolescents was aimed.

METHODS

Development and Structure of Scale

Questions from “Research and Evaluation Form for Children and Adolescents Having Conflict with Law (ARDEF)” which was developed to evaluate risks and needs of adolescents under arrest or sentenced and planning appropriate interventions within Active Sentenced Management Project conducted by collaboration Ministry of Justice and UNICEF were utilized to develop the scale (7). Questions from this scale were shortened and questions of “Mental Problems Screening Scale (MPSS)” were formed.

Scale consists of 27 items. Responses to questions consist of two choices as “yes” or “no”. Five questions screening attention deficit and hyperactivity consist of 3 choices, having “partly” choice added as well. Highest possible score is 32. This scale was planned as a semi-structured scale which can be utilized for face-to-face interviews.

Scale consists of sub-scales about previous mental treatments, anxiety, depression, trauma experiences, self-harm, suicide, attention deficit and hyperactivity, alcohol and substance abuse. Getting “positive” response to any question in sub-scales means that presence of that diagnosis should be investigated.

Sample

Study was conducted at three children/adolescent prison in Istanbul, Ankara and Antalya. Sample consisted of 90 adolescents under arrest or sentenced at these institutions selected by random sampling method between March and April of 2009. Ages of adolescents were between 13 and 18 and all were boys.

Tools

YSR consists of 118 items and investigate behavioral and mental problems of children/adolescents. First 20 questions of the scale which make up the first section consist of items about competency. Second section consists of behavioral and emotional problems seen in

the last 6 months. Among these, there are sub-scales of introversion, somatic complaints, anxiety/depression, social problems, thought problems (psychosis), attention problems, destructive behaviors, aggressive behaviors and other problems. Total duration of administration is approximately 15 minutes. Test-retest reliability of YSR was found 0.82 and inner consistency was found 0.84 (17).

Administration

Administration was done by social service workers and psychologists working at these prisons. A short training was given to implementers. Interviews according to the sample were done after this training. Second interviews were done with the same adolescent and these were completed within the 3 days following the first interview. YSR was additionally administered to the sample to evaluate criteria-related validity as well.

Statistical Analysis

In order to evaluate criteria-related validity, participants who gave “positive” response to two of the questions in attention deficit and hyperactivity sub-scale, one question of psychosis sub-scale and one question which is present at both anxiety and depression sub-scales were accepted as being in the related diagnostic group.

Statistical analysis was done by SPSS 16.0 software. Pearson correlation analysis was used to compare inter-rater evaluations and evaluating scale-related validity, t-test was used to evaluate discriminating validity, Cronbach alpha test for inner consistency analysis and factor analysis to detect structural validity.

RESULTS

Mean age of sample was 17.6 ± 8.8 with a range between 13 and 18. Arrested/sentenced adolescents of the sample were mainly at 16-17 age group ($n=50$, 55.6%) and 44.4% ($n=40$) were found to be primary school graduates. 53.3% reported going to police center

Table 1: Socio-demographic characteristics, history of crime and institution during interview of the sample population

	n	%
Age		
15 years and younger	16	17.7
16-17 years	50	55.6
18 years	24	26.7
Education		
Not primary school graduate	18	20.0
Primary school graduate	40	44.4
Going to school	32	35.6
Crime History		
Previously once or more than once "went to police center"	48	53.3
Previously once or more than once sued	33	36.7
Previously once or more than once arrested	17	18.9
Previously once or more than once sentenced	5	5.6
Under 17 years old or younger when first sued	35	38.9
Under 17 years old or younger when first arrested	26	28.9
Institutions		
Maltepe Closed Prison for Children and Youth	25	27.8
Ankara Closed Prison for Children	34	37.8
Antalya L Type Prison	31	34.4

once or more than once (n=48), 18.9% were arrested (n=17), 36.7% were sued (n=33) and 5.6% (n=5) were sentenced. Distribution of adolescents according to institutions was given in Table 1. Mean PSTA score of the study sample was found 12.18±5.86.

Reliability

Inter-rater reliability and Cronbach alpha inner consistency coefficient were examined to evaluate reliability of the scale.

Inter-rater reliability: All 90 people of the sample were re-interviewed by a different administrator from the same institution and PSTA scale was completed. Mean total score of assessments of initial administrators was 12.18±5.86; however, mean total score of assessments of second administrators was found 9.77±6.58. When total score from scale was compared to Pearson correlation analysis, inter-rater reliability was found as $r = 0.89$ ($p < 0.01$).

Inner consistency: Inner consistency analysis done from responses to PSTA consisting of 27 items by 90 arrested/sentenced adolescents and Cronbach alpha reliability coefficient of whole scale was found 0.79. Correlation of items of the scale with the whole scale

and Cronbach alpha values after excluding these items were given in Table 2. Inner consistency value varies between 0.77 and 0.81 when any item is excluded from the scale.

Validity

Criteria-related validity: In order to evaluate criteria-related validity, total PSTA scores and total YSR scores were compared. When evaluated by Pearson correlation analysis, a statistically significant correlation was found between total scores from both scales ($r = 0.60$, $p < 0.01$).

Scores of diagnostic groups of PSTA scale and scores of YSR sub-scales were also compared. Mean scores of attention deficit and hyperactivity sub-scale from PSTA scale and attention problems sub-scale of YSR, psychosis sub-scale of PSTA and thought problems sub-scale of YSR, depression and anxiety sub-scale of PSTA and anxiety-depression sub-scale of YSR were compared. Mean scores of YSR sub-scales were found statistically significantly higher in groups which point out diagnosis in PSTA scale, compared to groups which do not (Table 3).

Structural validity: In order to assess structural validity of the scale, factor structure of the scale was

Table 2: Inner consistency values of PSTA scale and Cronbach alpha coefficient

	Mean	Standard deviation	Correlation of the item with the whole test	Cronbach alpha value when item is excluded
Presence of a mental problem up-to-date	0.30	0.46	0.44	0.78*
Having interview with a psychiatrist or a psychologist before going into prison	0.42	0.50	0.52	0.78*
Receiving psychological treatment and/or utilized medication before going into prison	0.30	0.46	0.47	0.78*
Feeling himself unhappy, sad and sorry	0.61	0.49	0.49	0.78*
Anhedonia, unwillingness	0.53	0.50	0.59	0.77*
Tiredness, fatigue	0.56	0.50	0.36	0.78*
Feeling stressful, anxious and restless	0.55	0.50	0.42	0.78*
Getting worried before something happens	0.43	0.50	0.26	0.79*
Sudden fear and excitement	0.32	0.47	0.32	0.79*
Self-harm	0.45	0.50	0.35	0.78*
Previous suicidal attempt	0.26	0.44	0.45	0.78*
Ongoing suicidal intent	0.08	0.27	0.08	0.79*
Suicidal plans	0.05	0.21	0.17	0.79*
Auditory and visual hallucinations	0.23	0.42	0.38	0.78*
Delusions	0.34	0.48	0.30	0.79*
Thought of being controlled	0.14	0.35	0.37	0.78*
Traumatic experiences	0.45	0.50	0.46	0.78*
Excessive alcohol consumption	0.21	0.41	0.50	0.78*
Criticizing others' alcohol use	0.25	0.44	0.42	0.78*
Feeling guilty due to excessive alcohol consumption	0.18	0.38	0.29	0.79*
Taking alcohol just after waking up	0.09	0.29	0.23	0.79*
Substance abuse	0.54	0.52	0.48	0.78*
Being restless	0.83	0.87	0.40	0.78*
Attention deficit	0.81	0.92	0.24	0.80*
Thinking before getting into action	0.36	0.70	0.06	0.80*
Completing tasks started, attention	0.39	0.70	-0.08	0.81*
Sitting without moving for a long time	0.93	0.94	0.27	0.79*

*p<0.05

Table 3: Comparison of YSR scores according to diagnostic groups pointed out by PSTA scale

	PSTA diagnostic group Mean (SD)		t	df	p
	+	-			
YSR Attention Problems	5.64 (3.03)	3.31 (3.30)	2.56	78	0.02
YSR Thought Problems	3.95 (2.89)	2.56 (2.59)	2.29	81	0.03
YSR Anxiety-Depression	11.95 (5.36)	8.12 (6.61)	2.20	77	0.04

YSR: Young Self Report, PSTA: Psychological Screening Test for Adolescents, t: Student T test

examined through sub-scales and a basic components analysis consisting of mean scores of each sub-section of the form by varimax axis rotation method. After that analysis, sub-sections making up the form were collected under two factors which explained 50.35% of total variance and having an eigen value over one. First factor consisting of five items explained 28.07% and second factor consisting of four items explained 22.28% of the variance. First factor consists of psychological disturbances such as depression, traumatic experiences,

psychosis, anxiety and attention deficit and hyperactivity. Second factor consists of items of alcohol and substance abuse, self-harm behavior and history of previous psychological treatment. Factor structure and factor burdens of sub-scales were also given (Table 4).

DISCUSSION

There is need for scales which can be used not only for clinical studies and research but evaluating mental

Table 4: Factor analysis, factor structure and factor burden of mean values obtained from sub-sections of Psychosocial Screening Test

Psychosocial Screening Test Sub-Sections	Factor 1	Factor 2
Depression	0.78	
Psychosis	0.76	
Anxiety	0.69	
Traumatic Experiences	0.63	
Attention Deficit and Hyperactivity	0.49	
Substance Use		0.81
Alcohol Consumption		0.65
Being Previously Treated		0.64
Self-harm and Suicidal Attempt		0.58

health at institutions, can be administered in a short duration and with proven validity and reliability as well (15). It was suggested that all children and adolescents somehow related with penal-judicial system should undergo a screening tool to evaluate their alcohol/substance abuse risk (4).

PSTA scale which validity and reliability were investigated in this study is valid and reliable to screen mental problems of adolescents. This study was conducted in a prison population. For this reason, it can easily be proposed that this scale can be administered in prison population. Validity and reliability study of MAYSI-2 self-rating scale which was developed to be used in adolescent prison population was done with adolescents at penal execution institutions (11). However, different from this scale, PSTA was developed to be administered by a psychologist or a social worker trained on semi-structured interview. In this context, it is aimed to be used as a psychological screening scale not only for clinical assessment and at prisons but in general adolescent population as well. However, further research is needed to be used at different adolescent populations.

Its correlation with YSR which has validity and reliability studies and has long been used in Turkey indicates that PSTA can be used to screen mental problems in adolescents. Correlation between scale total score and YSR total score was not found so powerful but a significant correlation was found. Power of correlation declines by the decreasing number of questions. This can be a factor decreasing validity of short scales (16). Despite this, high levels of

criteria-related validity and discriminative validity was found in comparison of PSTA with 27 items and YSR.

In factor analysis of the scale, it was observed that all psychological disorders were gathered under the same factor. Gathering alcohol and substance abuse and self-harm behavior with presence of previous treatment indicates that adolescents are admitted to these institutions more with these conditions. Alcohol, substance abuse and self-harm behavior were the problems shown to increase seeking treatment more than other mental problems, especially by parents of adolescents (18-20).

All of the study sample consisted of male adolescents under arrest or sentenced living at penal execution institutions. It will be beneficial to evaluate female adolescents under arrest or sentenced and living at institutions such as training homes and being under controlled freedom system. Moreover, studies which will be done in general population and with a wider sample size is needed to determine scale norms.

It should be kept in mind that PSTA is not a diagnostic scale but developed as a screening scale. As in all screening scales, it is a warning tool that determines risks and needs to be intervened. It should be taken as a steering tool for diagnosis by more sophisticated interview methods.

It was reported that a mental health screening tool should have a short duration and successfully determine young people who need more detailed evaluation or intervention. Although the most critical time for a psychosocial screening tool is the moment the young person first contacted with the judicial system, periodical evaluation was also recommended (4). It can be said that this version of PSTA scale meets these requirements about young people within judicial system. However, further studies are needed to be utilized in other populations.

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PSYCHOLOGICAL SCREENING TEST FOR ADOLESCENTS (PSTA)

1	Have you ever had a mental problem? Have you ever needed to speak to someone for this problem?	No (0)	Yes (1)	N-N-R o
2	Have you ever spoken to a psychiatrist or a psychologist?	No (0)	Yes (1)	N-N-R o
3	Have you ever received a psychiatric or psychological treatment or taken a medication?	No (0)	Yes (1)	N-N-R o
4	Do you feel yourself unhappy, sad, sorry or annoyed in the last month? Does everything seem to be empty and meaningless?	No (0)	Yes (1)	N-N-R o
5	Have you got no pleasure from anything and reduced interest on things which you usually like and unwillingness in the last month? <i>e.g.: friends, school, external appearance, sports, hobbies</i>	No (0)	Yes (1)	N-N-R o
6	Do you feel yourself tired, feeble, with lack of energy and weak in the last month?	No (0)	Yes (1)	N-N-R o
7	Did you feel yourself stressful, anxious, tense or restless for a long time during the last year?	No (0)	Yes (1)	N-N-R o
8	Do you feel anxious about things before they realized? Are you constrained to get calmed down after getting anxious?	No (0)	Yes (1)	N-N-R o
9	Did you experience a sudden fear and excitement condition coming out of blue and without any reason in the last year?	No (0)	Yes (1)	N-N-R o
10	Some people harm themselves by cutting, scratching or burning themselves, hitting their heads to walls or hitting walls by their fists. Have you ever experienced these?	No (0)	Yes (1)	N-N-R o
11	Have you ever tried or planned to commit suicide in the past? Have you ever thought of killing yourself?	No (0)	Yes (1)	N-N-R o
12	Do you currently thinking of committing suicide or killing yourself?	No (0)	Yes (1)	N-N-R o
13	Do you have plans about this?	No (0)	Yes (1)	N-N-R o
14	Do you hear voices which others don't or see things which others don't?	No (0)	Yes (1)	N-N-R o
15	Have you ever thought of other people watching you or talking about you?	No (0)	Yes (1)	N-N-R o

16 Have you ever thought of other people can control your thoughts or actions?	No (0)	Yes (1)	N-N-R o
17 Have you ever had or witnessed troubling and frightening experiences such as accident, assault, violence, earthquake, flood or death?	No (0)	Yes (1)	N-N-R o
18 Were there days that you thought that you drank excessive alcohol during the last year?	No (0)	Yes (1)	N-N-R o
19 Were there days that you thought that you drank excessive alcohol during the last year before you went into prison?	No (0)	Yes (1)	N-N-R o
20 Did you feel guilty or regretful due to excessive alcohol intake during the last year before you went into prison?	No (0)	Yes (1)	N-N-R o
21 Have you ever started taking alcohol just after waking up during the last year before you went into prison?	No (0)	Yes (1)	N-N-R o
22 Have you ever used any illicit drugs such as hashish, thinner, bally, ecstasy, cocaine or rosh?	No (0)	Yes (1)	N-N-R o
23 Are you always restless or move your hands and feet continuously?	No (0)	Partly Yes (1)	Yes (2) o
24 Are you easily distracted or feel difficulty in concentrating?	No (0)	Partly Yes (1)	Yes (2) o
25 Do you think before you do something?	No (0)	Partly Yes (1)	Yes (2) o
26 Do you complete the things you work on? Are you attentive?	No (0)	Partly Yes (1)	Yes (2) o
27 Can you sit for a long time without moving and feel restless?	No (0)	Partly Yes (1)	Yes (2) o

Acknowledgment

“N-N-R” means “Not known-Non-applicable-Response not valid “.

Calculation of sub-scales

If $4 + 5 + 6 \geq 1$	Risk of depression
If $7 + 8 + 9 \geq 1$	Risk of anxiety disorder
If $10 + 11 + 12 + 13 \geq 1$	Risk of self-harm
If $14 + 15 + 16 \geq 1$	Risk of psychosis
If $17 = 1$	Risk of post-traumatic stress disorder
If $18 + 19 + 20 + 21 \geq 1$	Risk of alcohol dependence
If $22 = 1$	Risk of illicit drug dependence
If $23 + 24 + 25 + 26 + 27 \geq 2$	Risk of attention deficit/hyperactivity