



Measuring emotional problems in Turkish adolescents: Development and initial validation of the Youth Internalizing Behavior Screener

Gökmen Arslan

To cite this article: Gökmen Arslan (2020): Measuring emotional problems in Turkish adolescents: Development and initial validation of the Youth Internalizing Behavior Screener, International Journal of School & Educational Psychology, DOI: [10.1080/21683603.2019.1700860](https://doi.org/10.1080/21683603.2019.1700860)

To link to this article: <https://doi.org/10.1080/21683603.2019.1700860>



Published online: 13 Feb 2020.



Submit your article to this journal [↗](#)



Article views: 103



View related articles [↗](#)



View Crossmark data [↗](#)



Measuring emotional problems in Turkish adolescents: Development and initial validation of the Youth Internalizing Behavior Screener

Gökmen Arslan 

Mehmet Akif Ersoy University, Burdur, Turkey

ABSTRACT

The present study reports on the preliminary development and validation of the Youth Internalizing Behavior Screener (YIBS) aimed at assessing internalizing behavior problems in Turkish adolescents. Participants of the study included two independent samples, comprising of 420 adolescents from two public high schools in an urban city of Turkey. Exploratory factor analysis results ($N = 217$) indicated that the YIBS provided a two-factor latent construct, which comprised of 10 items, with equal items targeting core symptoms of both depression and anxiety disorders. Subsequently, confirmatory factor analysis ($N = 203$) confirmed the two-factor measurement model and provided good data-model fit statistics. All scales had adequate-to-strong latent construct (H range = .84–.92) and internal reliability estimates (α range = .75–.90). Validity analyses also provided further evidence, demonstrating the small-to-large relationships between the YIBS and criterion variables (e.g., subjective wellbeing, conduct problems, peer problems). Latent variables path model indicated that measurement models had moderate-to-large predictive effects on youth school functioning and wellbeing indicators. Overall, these results suggest that the YIBS may be useful to identify Turkish adolescents with elevated levels of internalizing behavior problems and concurrently poor educational and wellbeing outcomes, providing a warrant for prevention and intervention in school settings.

KEYWORDS

Internalizing behavior;
depression; anxiety;
adolescence; mental health
problems

Internalizing behavior problems are one of the most common dimension of the child and adolescent psychopathology (Zahn-Waxler, Klimes-Dougan, & Slattery, 2000), and assessment of these problems within school context has recently received considerable attention in both research and practice (Cook et al., 2011; Howells-Wrobel & Lachar, 1998; Renshaw & Cook, 2016). Internalizing behavior problems have been broadly described as inner-directed symptoms that cause unease, tension, and suffering in the individual (Forms, Abad, & Kirchner, 2011) and comprises behaviors (e.g., anxiety, depression, and withdrawal) that are mainly directed toward the self (Chen et al., 2003). In the Diagnostic and Statistical Manual of Mental Disorders, internalizing behavior problems refer to disorders that involve anxiety, depressed mood, and related physiological and cognitive symptoms (DSM-5; American Psychiatric Association, 2013). Literature indicates that anxiety and depression are the two primary subtypes of internalizing behavior problems (Forms et al., 2011; Zahn-Waxler et al., 2000). The prevalence rates are higher for both subtypes among children and adolescents when compared to other group symptoms around the world (e.g., Görker, Korkmazlar, Durukan, & Aydoğdu, 2004; World Health Organization, 2017). There are many biological and

psychosocial theories aimed at exploring the differences between depressive and anxiety disorders (see Zahn-Waxler et al., 2000). These behavior problems share many common features comprising excessive and aversive feelings and thoughts directed toward the self (Chen et al., 2003; Forms et al., 2011); however, they also have significant differentiating features, with elevated levels of somatic tension and arousal being unique to anxiety and diminished levels of positive affectivity being unique to depression (Clark & Watson, 1991).

Although there are no national outcomes demonstrating the prevalence of the mental health problems among Turkish adolescents, several studies have reported that internalizing behavior problems influence a staggering proportion of adolescents (e.g., Aras, Ünlü, & Taş, 2007; Küçük & Bayat, 2012; Üner, Bağcı, & Velipaşaoğlu, 2007). Internalizing behavior problems have been associated with a variety of adjustment problems in adolescents at school, including low academic achievement, interpersonal problems, high rates of absenteeism, poor future educational outcomes, low school belongingness, and poor perceived health (Bradley, Doolittle, & Bartolotta, 2008; Laukkanen, Shemeikka, Notkola, Koivumaa-Honkanen, & Nissinen, 2002; McLeod & Kaiser, 2004). Adolescents with

internalizing behavior problems are also more likely to have low wellbeing and various difficulties in other life domains (Aras et al., 2007; Arslan, 2017a; Eskin, Ertekin, Harlak, & Dereboy, 2008; Özfirat, Pehlivan, & Özdemir, 2009; Suldo & Huebner, 2004a, 2004b; Yeh & Yang, 2006). In addition, internalizing behavior problems not only lead to impairment in youth current educational functioning and healthy development, but may also be an important risk factor for later social, emotional and behavioral adjustment problems, including substance disorders, suicide attempt, and academic underachievement (Copeland, Shanahan, Costello, & Angold, 2009; Fergusson & Woodward, 2002). Considering the outcomes associated with internalizing behaviors, there is a critical need to identify these problems and develop prevention or intervention strategies for youths in school settings (Moore, Dowdy, & Furlong, 2017).

Screening for internalizing behavior problems

Universal screening approach is a useful way to identify internalizing behavior problems and develop prevention and intervention strategies for children and adolescents at-risk (Cook et al., 2011; Glover & Albers, 2007). School-based universal screening is specifically considered the first step in identifying, preventing and treating youths with internalizing behavior problems (Moore et al., 2017). Self-report measures are the most common way to identify the emotional and behavioral problems of adolescents (Cook et al., 2011; Moore et al., 2017; Renshaw & Cook, 2016). Renshaw and Cook (2016) have delineated the benefits of self-report assessment tools for screening adolescent internalizing behavior problems in school settings, suggesting that self-report instruments are more useful for data collection, data analysis, and decision-making purposes. Given the behavioral problems observed by educators, self-report measures are functionally more valid for assessing this primarily subjective class of mental health problems within the school context (Renshaw & Cook, 2016). Overall, the literature suggests that self-report measures play a critical role in identifying internalizing behavior problems and providing mental health services in adolescents

There are several self-report instruments already available that have been adapted to measure internalizing and externalizing behavior problems of Turkish adolescents. The Strengths and Difficulties Questionnaire (SDQ; Goodman, 2001) is the most common self-report survey used for measuring internalizing and externalizing behavior problems of Turkish adolescents. The SDQ is comprised of 25 items assessing five dimensions: Conduct Problems Scale, Hyperactivity Scale, Prosocial Behavior Scale, Emotional Problems Scale, and Peer Problems

Scale. Internalizing behavior problems are assessed using the Emotional Problems Scale (EPS). The EPS is a 5-item measure targeting internalizing behavior symptoms. Findings from previous research indicated that the scale had at least adequate reliability coefficients along with high negative predictive power and specificity; however, it also had low positive predictive power and sensitivity (Goodman, 2001). A study by Guvenir et al. (2008) investigated the psychometric properties of the SDQ with Turkish adolescents, and their outcomes indicated that the scale had adequate convergent validity, discriminant validity, and internal reliability. The Child Behavior Checklist (CBCL; Achenbach & Rescorla, 2000) is another measure that is widely used to assess youth internalizing behavior problems. The CBCL is comprised of 118 items measuring two broadband scales called externalizing and internalizing problems. Research indicated that the CBCL scales had adequate internal reliability coefficients in Turkish children and adolescents (Dumenci, Erol, Achenbach, & Simsek, 2004; Erol & Simsek, 1997). However, the length of the scales might preclude the brief measurement of emotional and behavioral problems. Mental health service providers are more likely to face difficulties in the data collection process for the scale due to the item numbers in the instrument (Arslan, 2018). To date, there are no other screeners available to measure internalizing behavior problems of Turkish children and adolescents in school settings. The present study is thus performed to provide validity evidence for the YIBS that might function more effectively as a screener for measuring internalizing behavior problems of Turkish youths in schools. The development of a brief measure for internalizing problems can provide a low-cost and efficient assessment for research and practice.

In addition, a growing number of studies have focused on the influence of culture on individuals' mental health, and the outcomes have indicated that cultural experiences influence the development, manifestation, identification, and expression of mental health problems (e.g., Draguns & Tanaka-Matsumi, 2003; Saleem & Mehmood, 2011; Weisz, Weiss, Suwanlert, & Chaiyasit, 2003). Therefore, developing the assessment tools in relation to the particular culture is crucial for identifying and preventing emotional and behavioral problems (Gul, Tiryaki, Kultur, Topbas, & Ak, 2010; Saleem & Mehmood, 2011). Turkish society has relatively a collectivist structure compared with the Western culture (Kağıtçıbaşı, 1997). Family and societal values are important in developing an individual's emotions and behaviors (Kagıtcıbaşı, 2005; Kagıtcıbaşı & Ataca, 2005). These values also influence the individual's mental health and wellbeing (Arslan, 2017b; Saleem & Mehmood, 2011). Although the development

and validation of the measurement tools within a cultural context plays a crucial role in identifying mental health problems, there are very few measures to assess emotional and behavioral problems among children and adolescents in Turkey. For this reason, there is a need to develop a reliable and valid screener for measuring the youth internalizing behavior problems in the school context.

Purpose of the study

Considering the negative consequences associated with internalizing behavior problems, it is critical to develop and validate a new effective screener for measuring of these disorders in adolescents within the school context. Moreover, these results suggest that there is a need for early and timely identification of emotional problems in order to provide prevention and intervention services. Although several measures are available to assess internalizing and externalizing behavior problems (e.g., Achenbach & Rescorla, 2000; Goodman, 2001), few have been used for assessing internalizing behavior problems in school settings. Compared to the available measures, the development of a brief and reliable measure for internalizing behavior problems can provide a low-cost or free and efficient measurement for mental health service providers in Turkish schools. Unlike these instruments described above, a culturally valid and reliable screener can be deemed a critical prerequisite for identifying the internalizing behavior problems. This critical prerequisite may contribute to providing effective prevention and intervention services in Turkish school settings. Therefore, the purpose of the present study is to examine the preliminary development and validation of the Youth Internalizing Behavior Screener (YIBS) to assess the internalizing behavior problems of Turkish adolescents in schools.

Method

Participants

Participants of the study included two independent samples, comprising of 420 adolescents in Grades 9–12 attending two public high schools in an urban city, Turkey. Sample 1, which was used for the exploratory factor analysis, comprised of 217 adolescents. They were 56.2% female and 43.8% male and ranged in age from 14 to 18 years ($M = 16.07$, $SD = .92$). Sample 2, which was used for the confirmatory factor analysis, was consisted of 203 adolescents. They were 46.1% female and 53.9% male and ranged in age from 14

to 18 years ($M = 15.63$, $SD = 1.15$). Participants reported no ethnic differences.

Measures

Youth internalizing behavior screener (YIBS)

The YIBS item pool was generated by recommendations from texts on scale development (e.g., Clark & Watson, 1995; Tay & Jebb, 2017; Worthington & Whittaker, 2006). After outlining a rationale for developing a new measure for assessing youth internalizing behavior problems (presented in the Introduction), a multiphase measure construction process was conducted to create the scale pilot items (DeVellis, 2012; Worthington & Whittaker, 2006). In the first phase, the criteria for depression and anxiety disorders were examined in the Diagnostic and Statistical Manual of Mental Disorders (DSM-5; American Psychiatric Association, 2013). Subsequently, empirical and theoretical literature and self-report screeners, which have commonly been used to assess internalizing behavior problems in adolescents were reviewed to generate pilot items for the scale. After reviewing, nine pilot items for depression and ten pilot items for anxiety were created to identify the core symptoms of these themes (Clark & Watson, 1995; Worthington & Whittaker, 2006). Next, a group of six experts in youth mental health, who were tenured professors in the fields of counseling and school psychology in Turkey and familiar with Turkish culture, reviewed the YIBS item pool. They independently examined the structure of the items for clarity, conciseness, and developmental appropriateness. Following their feedbacks, several minor revisions were conducted on 4 items to increase clarity and developmental appropriateness. After these revisions, the item pool was composed of 19 items. All pilot items of the scale were rated using a 4-point Likert-type scale, ranging from *almost never* (1) to *almost always* (4). Scale scores are created by summing item responses, and higher scores are interpreted as greater levels of internalizing behavior problems.

School belongingness scale (SBS)

The SBS is 10-item self-report scale developed specifically to measure the sense of belongingness among Turkish adolescents (Arslan & Duru, 2016). It is comprised of two subscales including school acceptance or inclusion (e.g. “*I feel that I am accepted by other people at school*”, “*I think that people care about me in this school*”) and school exclusion (e.g. “*I think that I am not involved in most of the activities at school*”, “*I feel myself excluded in this school*”). All items are scored using a 4-point Likert-type scale ($1 = \textit{almost never}$ to $4 = \textit{almost always}$),

and after reversing exclusion's items, overall score refers to sense of the belonging at school. Research has shown that SBS is a valid and reliable scale for measuring school belonging in Turkish adolescents (Arslan & Duru, 2016). Moreover, observed scale characteristics and internal reliability coefficients with the present sample are presented in Table 2.

Strengths and difficulties questionnaire (SDQ)

The SDQ is a 25-item self-report instrument developed to measure youth emotional and behavioral problems, as well as wellbeing indicators (Goodman, 2001). The scale consists of five subscales measuring emotional problems (e.g. "I am often unhappy"), conduct problems (e.g. "I usually do as I am told"), peer problems (e.g. "I am rather solitary"), hyperactivity (e.g. "I am constantly fidgeting"), and prosocial behavior (e.g. "I am considerate of others"). All items are scored using a 3-point Likert-type scale (0 = not true, 1 = somewhat true, and 2 = certainly true). Guvenir et al. (2008) have examined the validity and reliability properties of the SDQ with Turkish youths, demonstrating that the scales provide adequate internal consistency coefficients, ranging between .65 and .84—except for peer problems factor that has lower internal consistency (α .37) than the other scales. Observed scales characteristics and internal reliability coefficients in this study are presented in Table 2.

Student subjective wellbeing scale (SSWS)

The SSWS was measured using a single item adapted from the Health Behavior in School-Aged Children (HBSC; Iannotti, 2012) and the item was arranged along a 10-point response scale ("Here is a picture of a ladder. The top of the ladder '10' is the best possible life for you and the bottom '0' is the worst possible life for you. In general, where on the ladder do you feel you stand at the moment?"). Higher scores indicate higher subjective wellbeing. Observed scale characteristics of the scale with the present sample are presented in Table 2.

Self-report academic achievement (SRAA)

Student academic achievement was measured using a single item scale ("During the past year, how would you describe the grades you received in school?"). The item was scored using a 5-point grade-range response scale (5 = very good [within top 20%], 4 = good [top 21–40%], 3 = average [41–60%], 2 = poor [low 21–40%], 1 = very poor [low 1–20%]), and higher scores represented higher academic achievement. Observed scale characteristics in the present study are presented in Table 2.

Procedure

A paper-and-pencil survey was first created using the demographic variable items, the YIBS and concurrent validity scales (i.e., the SBS, SDQ, SSWS, and SRAA). Before administering the survey, school counselors were informed about the study and guided not to influence the students' responses. Subsequently, school counselors presented consent forms that informed all students about the purpose of the study and ensured them that their responses would only be used anonymously for study purposes to students who volunteered to participate in the study. Despite inviting all students in both high schools to participate in the study, informed parental consent and student assent were obtained from approximately 65% of the total sampling pool. The students completed the demographic items and survey in approximately 35 minutes during school hours.

Data analyses

After checking the missing values (missing data $\leq 10\%$), data analyses were performed. First, exploratory factor analysis (EFA) was conducted to examine the factor structure of the measure with Sample 1. Before conducting the EFA, observed scale characteristics (e.g., mean, standard deviation) were investigated, and these preliminary analyses showed that several pilot items had no normal distribution (kurtosis and skewness $> |2.5|$). Principal-axis factoring extraction method with Promax (oblique) rotation was considered the most appropriate approach for exploratory factor analysis (for more information see Costello & Osborne, 2005). The EFA results were interpreted using cross-loading $\geq .32$, factor loading $\geq .40$, and theoretical interpretability (Stevens, 2009). After examining the scale's factor structure, a second-order confirmatory factor analysis (CFA) was performed to test the latent structure of the scale with Sample 2. Common data model fit statistics and their cut-off scores were used to interpret the CFA results: RMSEA and SRMR scores between .05 and .08 were considered to indicate adequate data-model fit, while values $< .05$ were considered good data-model fit; TLI and CFI scores $> .90$ were considered adequate and those exceeding .95 were considered good data-model fit (Kline, 2011). The latent construct reliability (H) coefficient was also calculated for latent structures, and the coefficient $\geq .70$ was considered adequate (Mueller & Hancock, 2008). Finally, concurrent validity analyses were performed. Correlation analysis was first conducted to examine the relationship between the YIBS scales and criterion variables, including school belonging, strengths and difficulties, subjective wellbeing, and

academic achievement, and the outcomes were interpreted using traditional standards: .00–.09 = negligible, .10–.29 = small, .30–.49 = moderate, $\geq .50$ = large. Next, a latent variable path analysis (LVPA) was conducted to examine the predictive effect of the first and second-order measurement models on subjective wellbeing, school belongingness, and academic achievement (Reynolds & Keith, 2013). The standardized path (β) scores and squared-multiple correlations (R^2) were used to interpret the results of the LVPA based on the traditional effect size: 00–.009 = negligible, .01–.059 = small, .06–.139 = medium, $\geq .14$ = large. Finally, the receiver–operating characteristic (ROC) curve analysis was used to evaluate the classification performance of the YIBS (Zweig & Campbell, 1993). All the data analyses were performed using SPSS and AMOS version 24.

Results

Factor structure

Factor structure of the scale was investigated using exploratory and confirmatory factor analysis. Exploratory factor analysis outcomes indicated three factors with eigenvalues > 1 that accounted for approximately 46% of the variance, with characterizing by an adequate sample size (Kaiser-Meyer-Olkin [KMO] = .91), lack of singularity (Bartlett's $\chi^2 = 1307.84$, $df = 153$, $p < .001$) and multicollinearity (Determinant = .001), and communality estimates (h^2) ranged from moderate to large (h^2 range = .26–.64). However, the pattern matrix loadings showed five cross-loading items ($\lambda > .32$ across more than one factor) and three non-loading items ($\lambda \leq .40$). Additionally, visual inspection of the scree plot and outcomes from a parallel analysis suggested a two-factor solution would provide a better fit to the data. Therefore, the two-factor structure was ultimately tested as the preferred model. When the non-loading and cross-loading items were excluded, the analysis was rerun constraining a two-factor solution. Further outcomes demonstrated the two-factor solution with eigenvalues > 1 , which consisted of 10 items accounted for 43% of the variance, with eigenvalues of 1.15 and 4.23. Communality scores (h^2) ranged from moderate to large (h^2 range = .35–.62), and all factor loadings on two factors had values exceeding .40, with no cross-loadings. Cross-loadings for all items were negligible (λ range = $-.24$ –.19). Factor loadings of the scales were robust, with values ranging from .40 to .92 (see Table 1).

Subsequently, confirmatory factor analysis was performed to confirm the latent structure of the scale using Sample 2. Findings from this factor analysis yielded the good data-model fit to the two-factor measurement model with 10 items was such that the items were

indicators of two latent constructs (i.e., depression and anxiety)– $\chi^2 = 59.38$, $df = 34$, $p < .05$, CFI = .97, TLI = .95, RMSEA [95% CI] = .061 [.034, .086] – that was characterized by strong latent construct reliability coefficients (H range = .84–.92). The scales had strong factor loadings, ranging from .67 to .81 (see Table 1).

Reliability analyses

Results from observed scale characteristics for the final 10-item scale showed that both scale and its dimensions had a relatively normal distribution (skewness and kurtosis $< |2|$), and corrected item-total correlation coefficient (r) ranged between moderate and large (r range = .50 to .63). The measures also demonstrated adequate-to-strong internal consistency reliability coefficients with both samples (α range = .75–to-.90; see Table 2).

Validity analyses

Bivariate correlation analysis was conducted to examine the relationship between the YIBS and criterion variables (i.e., school belonging, strengths and difficulties, subjective wellbeing, and academic achievement) selected for concurrent validity. The results indicated relatively a moderate-to-large negative association between internalizing behavior problems and wellbeing indicators including school belongingness ($r = -.47$, $p < .001$), subjective well-being ($r = -.45$, $p < .001$), and student academic achievement

Table 1. Scale items, internalizing domains, and factor loadings.

Items	EFA		CFA				
	AS	DS	λ_1	ℓ^2_1	λ_2	ℓ^2_2	H
Anxiety Scale	–	–	–	–	.94	.88	.84
I have difficulty in relaxing and calming down myself.	.62	–.06	.62	.39	–	–	–
I feel myself as disturbed and strain.	.58	.01	.78	.61	–	–	–
I generally feel tense and anxious	.55	.19	.73	.54	–	–	–
I have difficulty in focusing	.71	–.05	.67	.45	–	–	–
I have difficulty in making a decision.	.60	.01	.71	.51	–	–	–
Depression Scale	–	–	–	–	.92	.85	.86
I think I am a useless person	–.24	.92	.71	.51	–	–	–
I feel alone even when there are people around me.	.08	.60	.67	.45	–	–	–
I feel depressed and pessimistic	.24	.51	.81	.65	–	–	–
I don't want to deal with anything	.14	.40	.71	.50	–	–	–
I feel hopeless or have no expectations about the future.	.19	.48	.72	.51	–	–	–
Overall Internalizing Behavior Scale	–	–	–	–	–	–	.92

EFA = exploratory factor analyses; CFA = confirmatory factor analysis. λ_1 = item loadings for first-order factors; ℓ^2_1 = indicator reliability for first-order factor items; λ_2 = first-order factor loading for second-order factor; ℓ^2_2 = indicator reliability for second-order factor indicators; H = latent construct reliability for first-order and second-order factors. AS = Anxiety Scale, DS = Depression Scale.

Table 2. Observed scale characteristics for the YIBS and concurrent validity variables.

Scales	N. of Items	Range	<i>M</i>	<i>SD</i>	Skewness	Kurtosis	α
<i>Sample 1 (N = 217)</i>							
YIBS	10	10–38	17.52	5.31	1.15	1.87	.85
AS-YIBS	5	5–20	9.69	3.00	.79	.68	.75
DS-YIBS	5	5–20	7.89	2.98	1.50	1.44	.79
SBS	10	17–40	30.11	4.98	–.19	–.64	.72
SWS	1	0–10	6.98	2.45	–.63	–.04	–
SRAA	1	1–5	3.65	.78	–.27	.04	–
<i>Sample 2 (N = 203)</i>							
YIBS	10	10–40	19.15	7.04	.85	.16	.90
AS-YIBS	5	5–10	10.24	3.73	.65	–.16	.84
DS-YIBS	5	5–10	8.85	3.77	.99	.17	.84
HS-SDQ	5	0–10	5.42	1.72	.06	.44	.52
CPS-SDQ	5	0–10	2.44	1.51	1.16	2.05	.50
PPS-SDQ	5	0–10	3.06	2.54	.66	–.37	.40
PBS-SDQ	5	0–10	4.72	1.69	–.07	1.03	.73
EPS-SDQ	5	0–10	7.44	2.24	–.98	.65	.74

YIBS = Overall Internalizing Behavior Scale; AS-YIBS = Anxiety Scale; DS-YIBS = Depression Scale; SBS = School Belongingness Scale; SWS = Subjective Wellbeing Scale; SRAA = Self-reported academic achievement; ESS = Emotional Symptoms Scale; HS-SDQ = Hyperactivity Scale; CPS-SDQ = Conduct Problems Scale; PPS-SDQ = Peer Problems Scale; PBS-SDQ = Prosocial Behavior Scale.

($r = -.82, p < .001$). Next, correlations between YIBS scores and the scores derived from the SDQ subscales showed small-to-moderate positive correlations with hyperactivity ($r = .22, p < .001$), conduct problems ($r = .24, p < .001$), peer problems ($r = .25, p < .001$), and emotional problems ($r = .74, p < .001$), as well as small negative correlation with prosocial behavior ($r = -.16, p < .05$, see Table 3). Specifically, a strong positive correlation was observed between YIBS scores and emotional problem scores. Further, latent variables path model, which preferred to investigate the predictive power of the first and second-order YIBS measurement model on youth wellbeing indicators, demonstrated that the scale had significant and negative predictive effect on school belongingness ($\beta = -.57, p < .001$), subjective wellbeing ($\beta = -.47, p < .001$), and student academic achievement ($\beta = -.30, p < .001$), accounting for approximately moderate-to-large of variance in the variables (R^2 range = .09–.33; see Table 4).

Finally, the receiver operating-characteristic (ROC) analysis was performed to identify cut-off scores for adolescents who are at-risk and not-at-risk for internalizing behavior problems. Risk status groups were identified using the cut-off score of the SDQ Emotional Problems Scale (EBS). For the SDQ emotional problems subscale, scores 7 and above are clinically significant and refer to adolescents at-risk (Goodman, Meltzer, & Bailey, 1998). Findings from the ROC curve analysis demonstrated that the scale provided excellent discrimination ability for correctly classifying adolescents with emotional problems (AUC = .92 [95% CI .87, .95], $SE = .03, p < .001$). The findings also indicated that a score of 23 was

Table 3. Bivariate correlations between YIBS and concurrent validity scales.

Concurrent validity scale	Internalizing Problems		
	AS	DS	YIBS
School belongingness	–.40**	–.46**	–.47**
Subjective well-being	–.38**	–.34**	–.45**
Self-reported academic achievement	–.23**	–.24**	–.28**
Hyperactivity	.24**	.19**	.22**
Conduct problems	.23**	.23**	.24**
Peer problems	.21**	.26**	.25**
Prosocial behavior	–.14*	–.16*	–.16*
Emotional problems	.66**	.72**	.74**
Overall difficulties	.58**	.62**	.65**

* $p < .05$; ** $p < .001$. YIBS = Overall Internalizing Behavior Scale, AS = Anxiety Scale, and DS = Depression Scale.

Table 4. Path coefficients and multiple correlations from the latent variable path analysis.

Criterion	Internalizing Problems					
	AS β	R^2	DS β	R^2	YIBS β	R^2
School belongingness	–.48**	.23	–.53**	.29	–.57**	.33
Subjective well-being	–.47**	.22	–.38**	.14	–.47**	.22
Self-reported academic achievement	–.28**	.08	–.26**	.07	–.30**	.09

** $p < .001$. YIBS = Overall Internalizing Behavior Scale, AS = Anxiety Scale, and DS = Depression Scale.

associated with the optimal cutoff score, establishing the best balance between specificity (.83) and sensitivity (.84) values across criterion measure, with low positive predictive values (.35) and high negative predictive scores (.98). Moreover, 13.6% of the participants (25) who had 23 and higher scores were identified as at risk for internalizing behavior problems.

Discussion

Internalizing behavior problems are the most prevalent class of mental health disorders in adolescents around the world (Merikangas, Nakamura, & Kessler, 2009; World Health Organization, 2017) and associated with a variety of the educational and quality-of-life outcomes of adolescents (World Health Organization, 2014). Similar to trends in the internationally, previous studies have indicated that internalizing behavior is one of the most common mental health problems for Turkish adolescents—and that these problems are related to various school and quality-of-life outcomes within this cultural context (e.g., Aras et al., 2007; Arslan, 2017a; Erol & Simsek, 2000; Özfırat et al., 2009). There is, therefore, a need for research aiming to develop a reliable and valid instrument for assessing these problems among adolescents worldwide. Specifically, developing the assessment tools concerning the particular culture is crucial for identifying and preventing mental health disorders (Gul et al., 2010; Saleem & Mehmood, 2011). The purpose of the current study is to report the preliminary

development and validation of a brief self-report screener aimed at assessing internalizing behavior problems—the Youth Internalizing Behavior Screener (YIBS)—, which may be useful for measuring depression and anxiety in Turkish adolescents. Findings from exploratory factor analyses demonstrated the YIBS yielded a two-factor solution and consisted of 10 items that accounted for 43% of the variance, with equal items targeting core symptoms of both depression and anxiety disorders. Following examining the factor structure of the scale, confirmatory factor analysis was performed to confirm the latent structure of the scale and these outcomes indicated that the two-factor measurement model provided good data-model fit statistics, as well as the strong internal reliability and latent construct coefficients. Further, validity analyses revealed further evidence, demonstrating the small-to-large relationships between the YIBS and criterion variables. Latent model outcomes indicated that the scale had moderate-to-large predictive effect on school belonging, subjective wellbeing, and student's academic achievement. In conclusion, the study results suggest that the YIBS is a psychometrically reliable and valid screener for measuring internalizing behavior problems and identifying depression and anxiety disorders among Turkish adolescents in school settings.

Considering the literature, there are only a limited number of scales designed to measure adolescent internalizing behavior problems within the school context. The YIBS was developed and validated as a brief measure to screen Turkish youths who are at-risk for internalizing behavior problems, as well as depression and anxiety disorders. Findings of the study suggest the use of the YIBS as a brief and effective measure for assessing and identifying internalizing behavior problems in Turkish adolescents. In addition, given the criteria for evaluating universal measures (see, Glover & Albers, 2007), the outcomes of this study indicate that the YIBS is a psychometrically adequate, contextually and developmentally appropriate and usable instrument for measuring and identifying adolescent internalizing behavior problems. Compared to the other available assessment tools (e.g., Child Behavior Checklist (CBCL; Achenbach & Rescorla, 2000), the prime benefit of the YIBS is to provide mental health providers with a brief and reliable resource at no cost. Consistent with the previous outcomes (e.g., Aras et al., 2007; Arslan, 2017a; Bradley et al., 2008; Eskin et al., 2008; Laukkanen et al., 2002; McLeod & Kaiser, 2004; Özfirat et al., 2009), the study results have also revealed that internalizing problems are associated with school-based and quality-of-life outcomes in Turkish adolescents. Therefore, the YIBS may be a useful measure for identifying adolescents with elevated internalizing behavior problems at schools.

Internalizing behavior problems not only lead to impairment in current youth functioning but may also be an important risk factor for later adjustment outcomes (Copeland et al., 2009; Fergusson & Woodward, 2002). A critical step is, therefore, to identify these problems and to provide preventions and interventions for adolescents in schools. Although a considerable number of Turkish youths report internalizing behavior problems, very few have been referred to mental health services (Erol & Simsek, 2000). To this end, the YIBS could be used as a measure for acquiring information about adolescents requiring help, who are also at risk of developing these problems in Turkish school settings. Adolescents who have internalizing behaviors, for example, can be helped through the design of intervention programs targeting the improvement of well-being and treatment of psychopathology. Moreover, mental health providers could use the YIBS within the counseling process as a screener for monitoring youth psychological progress in response to intervention. This identification may be useful in selecting appropriate interventions and preventions for such students. Application of targeted interventions may improve student school outcomes in the long run – based on the extant evidence on associations between educational outcomes and internalizing behaviors (Arslan, 2017a; Eskin et al., 2008; Fergusson & Woodward, 2002). Taken all together, the present study provides initial evidence that counselors and other professions could use the YIBS as a brief, structurally valid and reliable instrument for both measuring Turkish adolescent overall internalizing behavior problems and identifying the core dimensions of these problems (i.e., depression and anxiety) in school settings.

Despite these promising contributions noted above, the findings of the present study should be considered in light of several methodological limitations. Primarily, the data was collected from adolescents using self-report instruments by convenience sampling, and the sample of Turkish adolescents in this study was not nationally representative. Given this limitation and that the sample was comprised of adolescents from two public high schools located in an urban city of Turkey, the results should be replicated and generalized with diverse samples (e.g., elementary school students). Next, self-reported academic achievement and subjective wellbeing are also considered as another limitation of this study because the scales are only comprised of a single item. Future validation of the scale can be investigated using different wellbeing indicators (e.g. psychological wellbeing, school-specific wellbeing) and educational outcomes (e.g. school absenteeism, school-based report academic achievement). Finally, considering the characteristics of the samples used in the present study,

advanced statistical analyses (e.g., configural invariance) could not be conducted. Therefore, research investigating further psychometric properties of the scale is warranted. Moreover, the YIBS was designed to directly collect data from adolescents. Given the primary sources of mental health problems, the parent and teacher report form of the YIBS should be developed and investigated the psychometric properties of these forms.

Disclosure statement

No potential conflict of interest was reported by the author.

Notes on contributor

Gökmen Arslan, PhD, is a Lecturer at Mehmet Akif Ersoy University in Burdur, Turkey. His research interests are centered on measuring and improving youths' wellbeing and mental health in school settings.

ORCID

Gökmen Arslan  <http://orcid.org/0000-0001-9427-1554>

References

- Achenbach, T. M., & Rescorla, L. A. (2000). *Manual for the ASEBA preschool forms and profiles*. Burlington, VT: University of Vermont Research Center for Children, Youth, and Families.
- American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders* (5th ed.). Arlington, VA: American Psychiatric Publishing.
- Aras, Ş., Ünlü, G., & Taş, F. V. (2007). Çocuk ve ergen psikiyatrisi polikliniğine başvuran hastalarda belirtiler, tanılar ve tanıya yönelik incelemeler. *Klinik Psikiyatri Dergisi*, 10(1), 28–37.
- Arslan, G. (2017a). School-based social exclusion, affective wellbeing, and mental health problems in adolescents: A study of mediator and moderator role of academic self-regulation. *Child Indicators Research*. Advance online publication. doi:10.1007/s12187-017-9486-3
- Arslan, G. (2017b). Psychological maltreatment, social acceptance, social connectedness, and subjective wellbeing in adolescents. *Journal of Happiness Studies*. Advance online publication. doi:10.1007/s10902-017-9856-z
- Arslan, G. (2018). Development and validation of the Youth Externalizing Behavior Screener: A brief and an effective measure of behavioral problems. *International Journal of School & Educational Psychology*. Advance online publication. doi:10.1080/21683603.2018.1466747
- Arslan, G., & Duru, E. (2016). Initial development and validation of the School Belongingness Scale. *Child Indicators Research*. Advance online publication. doi:10.1007/s12187-016-9414-y
- Bradley, R., Doolittle, J., & Bartolotta, R. (2008). Building on the data and adding to the discussion: The experiences and outcomes of students with emotional disturbance. *Journal of Behavioral Education*, 17(1), 4–23. doi:10.1007/s10864-007-9058-6
- Chen, X., Liu, M., Rubin, K. H., Li, D., Li, Z., Cen, G., & Li, B. (2003). Parental reports of externalizing and internalizing behaviors in Chinese children: Relevancy to social, emotional and school adjustment. *Journal of Psychology in Chinese Societies*, 3(2), 233–259.
- Clark, L. A., & Watson, D. (1991). Tripartite model of anxiety and depression: Psychometric evidence and taxonomic implications. *Journal of Abnormal Psychology*, 100, 316–336. doi:10.1037/0021-843X.100.3.316
- Clark, L. A., & Watson, D. (1995). Constructing validity: Basic issues in objective scale development. *Psychological Assessment*, 7(3), 309–319. doi:10.1037/1040-3590.7.3.309
- Cook, C. R., Rasetshwane, K. B., Truelson, E., Grant, S., Dart, E. H., Collins, T. A., & Sprague, J. (2011). Development and validation of the Student Internalizing Behavior Screener: Examination of reliability, validity, and classification accuracy. *Assessment for Effective Intervention*, 36(2), 71–79. doi:10.1177/1534508410390486
- Copeland, W. E., Shanahan, L., Costello, E. J., & Angold, A. (2009). Childhood and adolescent psychiatric disorders as predictors of young adult disorders. *Archives of General Psychiatry*, 66(7), 764–772. doi:10.1001/archgenpsychiatry.2009.85
- Costello, A. B., & Osborne, J. (2005). Best practices in exploratory factor analysis: Four recommendations for getting the most from your analysis. *Practical Assessment Research & Evaluation*, 10(7), 1–7.
- DeVellis, R. F. (2012). *Scale development. Theory and applications* (3rd ed.). Thousand Oaks, CA: Sage.
- Draguns, J. G., & Tanaka-Matsumi, J. (2003). Assessment of psychopathology across and within cultures: Issues and findings. *Behaviour Research and Therapy*, 41(7), 755–776. doi:10.1016/S0005-7967(02)00190-0
- Dumenci, L., Erol, N., Achenbach, T. M., & Simsek, Z. (2004). Measurement structure of the Turkish translation of the Child Behavior Checklist using confirmatory factor analytic approaches to validation of syndromal constructs. *Journal of Abnormal Child Psychology*, 32(3), 335–340. doi:10.1023/B:JACP.0000026146.67290.07
- Erol, N., & Simsek, Z. (1997). Mental health profiles of Turkey: Behavioral/emotional problems and competencies in Turkish children (In Turkish). In N. Erol, C. Kilic, M. Ulusoy, M. Kececi, & Z. Simsek (Eds.), *Mental health profiles of Turkey: A preliminary report* (pp. 12–33). Ankara, Turkey: Aydogdu.
- Erol, N., & Simsek, Z. (2000). Mental health of Turkish children: Behavioral and emotional problems reported by parents, teachers, and adolescents. In N. N. Singh, J. P. Leung, & A. N. Singh (Eds.), *International perspectives on child and adolescent mental health: Vol. 1. Proceedings of the First International Conference* (pp. 223–246). Oxford: Elsevier.
- Eskin, M., Ertekin, K., Harlak, H., & Dereboy, C. (2008). Prevalence of and factors related to depression in high school students. *Turkish Journal of Psychiatry*, 19(4), 382–389.
- Fergusson, D. M., & Woodward, L. J. (2002). Mental health, educational, and social role outcomes of adolescents with depression. *Archives of General Psychiatry*, 59(3), 225–231. doi:10.1001/archpsyc.59.3.225

- Forms, M., Abad, J., & Kirchner, T. (2011). Internalizing and externalizing problems. In R. J. R. Levesque (Ed.), *Encyclopedia of adolescence* (pp. 1464–1489). New York, NY: Springer.
- Glover, T. A., & Albers, C. A. (2007). Considerations for evaluating universal screening instruments. *Journal of School Psychology, 45*, 117–135. doi:10.1016/j.jsp.2006.05.005
- Goodman, R. (2001). Psychometric properties of the strengths and difficulties questionnaire. *Journal of the American Academy of Child & Adolescent Psychiatry, 40*, 1337–1345. doi:10.1097/00004583-200111000-00015
- Goodman, R., Meltzer, H., & Bailey, V. (1998). The strengths and difficulties questionnaire: A pilot study on the validity of the self-report version. *European Child & Adolescent Psychiatry, 7*(3), 125–130. doi:10.1007/s007870050057
- Görker, I., Korkmazlar, Ü., Durukan, M., & Aydoğdu, A. (2004). Çocuk ve ergen psikiyatri kliniğine başvuran ergenlerde belirti ve tanı dağılımı. *Klinik Psikiyatri Dergisi, 7*(2), 103–110.
- Gul, N., Tiryaki, A., Kultur, S. E. C., Topbas, M., & Ak, I. (2010). Prevalence of attention deficit hyperactivity disorder and comorbid disruptive behavior disorders among school age children in Trabzon. *Klinik Psikofarmakoloji Bülteni-Bulletin of Clinical Psychopharmacology, 20*(1), 50–56. doi:10.1080/10177833.2010.11790634
- Güvenir, T., Ozbek, A., Baykara, B., Arkar, H., Senturk, B., & Incekas, S. (2008). Psychometric properties of the Turkish version of the Strengths and Difficulties Questionnaire (SDQ). *Cocuk ve Genclik Ruh Sagligi Dergisi, 15*(2), 65–74.
- Howells-Wrobel, N., & Lachar, D. (1998). Validity of self-and parent-report scales in screening students for behavioral and emotional problems in elementary school. *Psychology in the Schools, 35*(1), 17–27. doi:10.1002/(SICI)1520-6807-(199801)35:1<17::AID-PITS2>3.0.CO;2-R
- Iannotti, R. J. (2012). *Health Behavior in School-Aged Children (HBSC), 2009–2010* (ICPSR34792-v1). Ann Arbor, MI: Inter-University Consortium for Political and Social Research. doi:10.3886/ICPSR34792.v1
- Kağıtçıbaşı, C. (1997). Individualism and collectivism. In J. W. Berry, M. H. Segall, & C. Kagitcibasi (Eds.), *Handbook of cross-cultural psychology: Vol. 3. Social behavior and applications* (pp. 1–49). Boston, MA: Allyn & Bacon.
- Kagitcibasi, C. (2005). Autonomy and relatedness in cultural context: Implications for self and family. *Journal of Cross-Cultural Psychology, 36*(4), 403–422. doi:10.1177/0022022105275959
- Kagitcibasi, C., & Ataca, B. (2005). Value of children and family change: A three-decade portrait from Turkey. *Applied Psychology, 54*(3), 317–337. doi:10.1111/apps.2005.54.issue-3
- Kline, R. B. (2011). *Principles and practice of structural equation modeling*. New York, NY: Guilford.
- Küçük, S., & Bayat, M. (2012). Ortaöğretim öğrencilerinde ruhsal durumların değerlendirilmesi. *Sağlık Bilimleri Dergisi, 21*(2), 103–111.
- Laukkanen, E., Shemeikka, S., Notkola, I. L., Koivumaa-Honkanen, H., & Nissinen, A. (2002). Externalizing and internalizing problems at school as signs of health-damaging behaviour and incipient marginalization. *Health Promotion International, 17*(2), 139–146. doi:10.1093/heapro/17.2.139
- McLeod, J. D., & Kaiser, K. (2004). Childhood emotional and behavioral problems and educational attainment. *American Sociological Review, 69*(5), 636–658. doi:10.1177/000312240406900502
- Merikangas, K. R., Nakamura, E. F., & Kessler, R. C. (2009). Epidemiology of mental disorders in children and adolescents. *Dialogues in Clinical Neuroscience, 11*(1), 7–20.
- Moore, S. A., Dowdy, E., & Furlong, M. J. (2017). Using the depression, anxiety, stress scales–21 with US adolescents: An alternate models analysis. *Journal of Psychoeducational Assessment, 35*(6), 581–598. doi:10.1177/0734282916651537
- Mueller, R. O., & Hancock, G. R. (2008). Best practices in structural equation modeling. In J. W. Osborne (Ed.), *Best practices in quantitative methods* (pp. 488–508). Thousand Oaks, CA: Sage.
- Özfirat, Ö., Pehlivan, E., & Özdemir, F. Ç. (2009). Malatya il merkezindeki lise son sınıf öğrencilerinde depresyon prevalansı ve ilişkili faktörler. *Turgut Özal Tıp Merkezi Dergisi, 16*(4), 247–255.
- Renshaw, T. L., & Cook, C. R. (2016). Initial development and validation of the Youth Internalizing Problems Screener. *Journal of Psychoeducational Assessment*. Advance online publication. doi:10.1177/0734282916679757
- Reynolds, M. R., & Keith, T. Z. (2013). Measurement and statistical issues in child assessment research. In D. H. Saklofske, V. L. Schwean, & C. R. Reynolds (Eds.), *The Oxford handbook of child psychological assessment* (pp. 48–83). New York, NY: Oxford University Press.
- Saleem, S., & Mehmood, Z. (2011). Development of a scale for assessing emotional and behavioral problems of school children. *Pakistan Journal of Social & Clinical Psychology, 9* (1), 73–78.
- Stevens, J. P. (2009). *Applied multivariate statistics for the social sciences* (5th ed.). New York, NY: Routledge.
- Suldo, S. M., & Huebner, E. S. (2004a). Does life satisfaction moderate the effects of stressful life events on psychopathological behavior during adolescence? *School Psychology Quarterly, 19*(2), 93–105. doi:10.1521/scpq.19.2.93.33313
- Suldo, S. M., & Huebner, E. S. (2004b). The role of life satisfaction in the relationship between authoritative parenting dimensions and adolescent problem behavior. *Social Indicators Research, 66*(1/2), 165–195. doi:10.1023/B:SOCI.0000007498.62080.1e
- Üner, S., Bağcı, B. T., & Velipaşaoğlu, M. (2007). Ankara’da bulunan iki lisenin öğrencilerinin ruhsal durumlarının GSA-12 ile değerlendirilmesi. *Toplum Hekimliği Bülteni, 26*(1), 25–31.
- Tay, L., & Jebb, A. (2017). Scale development. In S. Rogelberg (Ed.), *The SAGE encyclopedia of industrial and organizational psychology* (2nd ed.). Thousand Oaks, CA: Sage.
- Weisz, J. R., Weiss, B., Suwanlert, S., & Chaiyasit, W. (2003). Syndromal structure of psychopathology in children of Thailand and the United States. *Journal of Consulting and Clinical Psychology, 71*(2), 375. doi:10.1037/0022-006X.71.2.375
- World Health Organization. (2014). *Health for the world’s adolescents*. Geneva, Switzerland: WHO Press.

- World Health Organization. (2017). *Depression and other common mental disorders: Global health estimates*. Geneva, Switzerland: WHO Press.
- Worthington, R. L., & Whittaker, T. A. (2006). Scale development research: A content analysis and recommendations for best practices. *The Counseling Psychologist, 34*(6), 806–838.
- Yeh, K. H., & Yang, Y. J. (2006). Construct validation of individualizing and relating autonomy orientations in culturally Chinese adolescents. *Asian Journal of Social Psychology, 9*(2), 148–160. doi:10.1111/j.1467-839X.2006.00192.x
- Zahn-Waxler, C., Klimes-Dougan, B., & Slattery, M. J. (2000). Internalizing problems of childhood and adolescence: Prospects, pitfalls, and progress in understanding the development of anxiety and depression. *Development and Psychopathology, 12*(3), 443–466. doi:10.1017/S0954579400003102
- Zweig, M. H., & Campbell, G. (1993). Receiver-operating characteristic (ROC) plots: A fundamental evaluation tool in clinical medicine. *Clinical Chemistry, 39*(4), 561–577.