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Evidence for the Reliability and Validity of the Arabic Version of the Student Risk Screening Scale for Internalizing and Externalizing Behaviors (SRSS-IE)

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Abstract

School-based universal screening for behavioral/emotional risk is a necessary first step to providing services in an educational setting for students with emotional and behavioral disorders (EBDs). Psychometric properties are critical to making decisions about choosing a screening instrument. The purpose of the present study was to examine the psychometric properties of the student risk screening scale for internalizing and externalizing behaviors (SRSS-IE). Participants included 3145 students and their teachers. Item-level analyses of the current sample supported the retention of all items. The internal consistency of the SRSS items ranged from 0.83 to 0.85. Convergent validity between the SRSS-IE and a well-established screening tool, the strength and difficulties questionnaire (SDQ), was found for the total score (r = 0.70). Additionally, the results of this study demonstrate strong social validity, suggesting the SRSS-IE to be a useful and functional screening tool. We conclude that the SRSS-IE is a valid and reliable instrument for assessing the level of emotional and behavioral difficulties among elementary students.

Keywords

The Student Risk Screening Scale for Internalizing and Externalizing Behaviors (SRSS-IE), Strength and Difficulties Questionnaire (SDQ), Emotional and Behavioral Difficulties, Screening Tools, Systematic Screening

1. Introduction

The United Nations' (UNs) Sustainable Development Goals (SDGs) promote inclusive education for all students [1]. The fourth goal of their SDGs is to en-

sure inclusive and equitable quality education and promote lifelong learning opportunities for all [2]. Students with emotional and behavioral disorders are less fortunate in terms of their access to inclusive education [3]. The educational initiatives in the Kingdom of Saudi Arabia (KSA) are consistent with global trends and emphasize inclusive education [4]. In 2013, the Saudi government issued the Mental Health Act (MHA), which focuses on several areas, including improving access to mental health services in general and ensuring a less restrictive level of care [5]. Globally, many students have emotional and behavioral disorders (EBDs), such as anxiety and depression. These problem behaviors are a school-wide concern that cannot be ignored because they pose significant challenges to the educational system as well as to society [6] [7]. As a result, more research, screening, and interventions should be considered in school settings, especially in general education classes where children and youth are likely to spend the majority of their time [8] [9]. Students should learn and reach their potential in an inclusive environment that offers support and opportunities for active participation [10].

There are many undiagnosed students in general education classrooms that could benefit from school-based universal screening for emotional and behavioral risk [11] [12]. Therefore, having reliable and valid screening tools may identify the students who need support and reduce the negative impacts of emotional and behavioral problems that go unacknowledged. There are several screening tools available to detect students with or at risk of emotional and behavioral difficulties [13]-[21]. However, in KSA, there is a lack of reliable and valid screening tools used to screen for emotional and behavioral difficulties. Therefore, the current research focuses on adopting a screening tool to identify students needing mental health services or at risk of EBDs. The student risk screening scale for internalizing and externalizing behaviors (SRSS-IE) is a free-access screening tool developed to detect emotional and behavioral disorders in elementary-aged students [22] [23]. The SRSS-IE is a brief, one-stage behavioral screening tool that has been found to be reliable and valid [24]-[33].

The purpose of the present study was to develop an Arabic version of the SRSS-IE and to examine the psychometric properties (validity and reliability) of the Arabic version of the SRSS-IE in the Saudi elementary school context.

2. Materials and Methods

2.1. Participants

Participants were students attending elementary public schools (N = 3145) and their teachers (N = 100). The participating students were Saudi from different regions. The KSA is divided into 13 regions, which were all represented in this study (Table 1).

Participating teachers were general education teachers (see Table 2). All teachers knew their students for more than six months before the data collection process began.

Table 1. Students' characteristics (N = 3145).

Regions	Number of Schools	Number of Students	Sex		Grade Level					
			Male	Female	First	Second	Third	Fourth	Fifth	Sixth
	N (%)	N (%)	N (%)	N (%)	N (%)	N (%)	N (%)	N (%)	N (%)	N (%)
Riyadh	5 (8)	278 (8.8)	141 (8.9)	137 (8.8)	39 (7.6)	47 (10)	55 (9.7)	45 (8.8)	29 (5.8)	63 (10.8)
Makkah	5 (8)	276 (8.8)	153 (9.6)	123 (7.9)	63 (12.3)	30 (6.4)	30 (5.3)	33 (6.4)	60 (12)	60 (10.3)
Eastern	7 (12)	590 (18.8)	275 (17.3)	315 (20.3)	86 (16.7)	64 (13.6)	110 (19.4)	143 (27.9)	57 (11.4)	130 (22.3)
Madinah	4 (7)	270 (8.6)	146 (9.2)	124 (8.0)	30 (5.8)	30 (6.4)	64 (11.3)	56 (10.9)	30 (6.0)	60 (10.3)
Al Baha	4 (7)	141 (4.5)	54 (3.4)	87 (5.6)	29 (5.6)	25 (5.3)	38 (6.7)	0 (0)	24 (4.8)	25 (4.3)
Al Jawf	4 (7)	186 (5.9)	129 (8.1)	57 (3.7)	55 (10.7)	0 (0)	67 (11.8)	0 (0)	34 (6.8)	30 (5.2)
Northern Borders	5 (8)	209 (6.6)	93 (5.8)	116 (5.7)	29 (5.6)	41 (8.7)	32 (5.6)	32 (6.3)	37 (7.4)	38 (6.5)
Qassim	5 (8)	336 (10.7)	161 (10.1)	175 (11.3)	62 (12.1)	63 (13.4)	37 (6.5)	65 (12.7)	55 (11.05)	54 (9.3)
Ha'il	4 (7)	171 (5.4)	91 (5.7)	80 (5.2)	31 (6.0)	30 (6.4)	30 (5.3)	21 (4.1)	29 (5.8)	30 (5.2)
Tabuk	4 (7)	216 (6.9)	127 (8.0)	89 (5.7)	33 (6.4)	30 (6.4)	29 (5.1)	60 (11.7)	30 (6.0)	34 (5.8)
Aseer	4 (7)	176 (5.6)	87 (5.5)	89 (5.7)	0 (0)	56 (11.9)	29 (5.1)	32 (6.3)	59 (11.8)	0 (0)
Jazan	5 (8)	155 (4.9)	76 (4.8)	79 (5.1)	27 (5.3)	25 (5.3)	27 (4.8)	25 (4.9)	25 (5.0)	26 (4.5)
Najran	4 (7)	141 (4.5)	59 (3.7)	82 (5.3)	30 (5.8)	30 (6.4)	20 (3.5)	0 (0)	29 (5.8)	32 (5.5)
Total	60 (100)	3145 (100)	1592 (50.6)	1553 (49.4)	514 (16.3)	471 (15.0)	568 (18.1)	512 (16.3)	498 (15.8)	582 18.5)

2.2. Procedures of Data Collection

After approval was obtained by the Ethics Committee of King Saud University (KSU-HR-22-151, 8-3-2022) and informed consent was obtained from all participants, data were collected from each of the school sites during the 2022-2023 school year. The first researcher created the school's assessment team from each region by collaborating with the Saudi Association for Special Education (SASE). Each school's assessment team assisted the first researcher in providing information to the participating teachers on how to complete the SRSS-IE and the

Table 2. Teachers' characteristics (N = 100).

Descriptor	N (%)
Sex	
Male	49 (49%)
Female	51 (51%)
Highest degree earned	
Diploma	4 (4%)
Bachelor's degree	90 (90%)
Master's degree	6 (6%)
Years of teaching experience	
1 to 2 years	7 (7%)
3 to 5 years	4 (4%)
6 to 10 years	21 (21%)
More than 10 years	68 (68%)

strengths and difficulties questionnaire (SDQ) independently.

All participating teachers completed a brief self-report demographic form, the SRSS-IE, and the SDQ. They also completed the social validity form for both the SRSS-IE and the SDQ.

2.3. The Student Risk Screening Scale for Internalizing and Externalizing Behaviors (SRSS-IE)

The SRSS-IE is a free-access measure. The original instrument was developed in 1994 by Drummond to identify students who demonstrated early signs of anti-social behavior patterns at an elementary age [22]. The SRSS-IE is a one-step mass screening instrument consisting of twelve items used to identify students who are potentially at risk for emotional and behavioral disorders in elementary schools. Seven of these items measure externalizing behavior, and five of them measure internalizing behavior [13].

The SRSS-IE consists of 12 items that teachers use to rate their classroom of students based on the teacher's current knowledge and observation of each individual student's behavior. Teachers rate individual students based on the frequency of each observed behavior. The response options are in four ordered categories: (0 = never; 1 = occasionally; 2 = sometimes; 3 = frequently). Scores are calculated for one of three risk categories: low, moderate, or high risk. The SRSS-IE is considered appropriate for students in elementary schools. The SRSS-IE has been found to be socially valid and psychometrically sound in different school levels and settings [24]-[33].

Permission for translation was obtained from the copyright holder (the Ci3T Strategic Leadership Team). The SRSS-IE was translated into Arabic and culturally adapted to Saudi culture. The present study followed the translation and

cultural adaptation procedure suggested by Wild and colleagues in 2005 [34]; Sousa and Rojjanasrirat in 2011 [35]; and Mondrzak and colleagues in 2016 [36].

2.4. The Strengths and Difficulties Questionnaire (SDQ)

The strengths and difficulties questionnaire (SDQ) was developed in 1997 by Goodman [37]. The SDQ is a brief, free, one-stage behavioral screening tool. The SDQ consists of 25 statements distributed across five subscales: emotional symptoms, conduct problems, hyperactivity, peer problems, and prosocial behavior. Each scale comprises five items. Each item is scored on a 3-point Likert-type scale (0 = not true; 1 = somewhat true; 2 = definitely true). The SDQ has been found to be reliable and valid [38] [39] [40] [41]. The SDQ is available in different languages. The Arabic version of the SDQ was used in this study.

2.5. Screening Tool Rating Scale (STR)

The screening tool rating scale (STR) was developed in 2010 by Lane and Oakes [42] to evaluate the level of social validity of screening tools. The STR is made up of eight items. Each item of the STR is rated on a 5-point Likert-type measuring scale (ranging from 1 = strongly agree to 5 = strongly disagree). The total scores of the STR are calculated by summing the scores of the eight items. Consequently, the total scores of the STR range from 8 to 40. Higher numbers indicate higher social validity [42] [43].

3. Results

The completed data from the 3195 participants were examined using Statistical Analysis Software (SAS). Participants who had one or more items missing were excluded from the data set. Thus, the data of 50 participants were excluded from the data analysis, leading to the following analyses of the data of 3145 participants.

3.1. Item-Level Analyses

Descriptive statistics (*i.e.*, mean, SD, skewness, and kurtosis) were used to evaluate items by examining distributions to detect items that might have ceiling or floor problems. According to classical test theory (CTT), items that occur infrequently limit variance and, in extreme cases, cannot be measured reliably [44]. To ensure consistency with prior research on the SRSS-IE's English version [27] [28] [29] [30] [44], item-level analyses employed established thresholds of 0.20 for mean, 4 for skewness, and 15 for kurtosis, chosen based on their effectiveness in identifying potential item issues. The psychometric properties of the SRSS-IE items are provided in Table 3.

The SRSS-IE item mean scores range from 0.08 (steal) to 0.72 (low academic achievement), with several items having very low means. The first item (steal) was the only item that scored < 0.20. This item also had a skewness of (5.289) and a kurtosis of (30.806). None of the SRSS-IE items, other than the steal item,

were below the 0.20 criteria. In addition, there was no evidence of skewness or kurtosis concerns, as none of the values examined were greater than 4 or greater than 15, respectively. Accordingly, item-level analyses of the current sample supported the retention of all items.

3.2. Internal Consistency

Cronbach's alpha coefficients were computed for the SRSS-IE subscales and items. The alpha coefficients for the SRSS-IE subscales, presented in Table 4, were acceptable, as a reliability of 0.70 to 0.80 is recommended for research purposes [45].

As depicted in Table 5, the internal consistency of the SRSS items was high, ranging from 0.83 to 0.85. There were no item-total correlations less than 0.35, which indicated high reliability.

3.3. Convergent Validity

Convergent validity between the SRSS-IE and the SDQ scores was assessed with Pearson correlation coefficients. The correlation coefficients between the SRSS-IE

Table 3. Psychometric properties of the SRSS-IE items (N = 3145).

Item	Psychometrics			
	M > 0.20	SD	Skewness > 4	Kurtosis > 15
1. Steal	0.08	0.39	5.28	30.80
2. Lie, cheat, sneak	0.35	0.75	2.20	3.97
3. Behavior problem	0.23	0.65	2.95	8.09
4. Peer rejection	0.21	0.60	3.06	8.94
5. Low academic achievement	0.72	1.06	1.13	0.23
6. Negative attitude	0.21	0.58	2.98	8.68
7. Aggressive behavior	0.20	0.62	3.33	10.46
8. Emotionally flat	0.25	0.62	2.72	7.2
9. Shy; withdrawn	0.36	0.74	2.13	3.73
10. Sad; depressed	0.21	0.59	2.96	8.49
11. Anxious	0.27	0.63	2.49	5.75
12. Lonely	0.25	0.64	2.81	7.50

Table 4. Psychometric properties of the SRSS-IE items (N = 3145).

The SRSS Subscales	Cronbach's Alpha
SRSS-E (7 items)	0.78
SRSS-I (5 items)	0.85
SRSS-IE (12 items)	0.84

Table 5. Internal consistency of the SRSS items.

The SRSS Items	r With Total (<0.35)	Alpha
1. Steal	0.45	0.84
2. Lie, cheat, sneak	0.55	0.83
3. Behavior problem	0.51	0.83
4. Peer rejection	0.58	0.83
5. Low academic achievement	0.46	0.85
6. Negative attitude	0.56	0.83
7. Aggressive behavior	0.44	0.84
8. Emotionally flat	0.60	0.83
9. Shy; withdrawn	0.50	0.83
10. Sad; depressed	0.61	0.83
11. Anxious	0.55	0.83
12. Lonely	0.56	0.83

Table 6. Pearson correlation coefficients between the SRSS and the SDQ.

The SDQ Subscales	The SRSS Subscales		
	SRSS-E (7 Items)	SRSS-I (5 Items)	SRSS-IE (12 Items)
Emotional Symptoms	0.80	0.60	0.75
Conduct Problems	0.70	0.57	0.63
Hyperactivity	0.25	0.27	0.16
Peer Problems	0.67	0.60	0.55
Prosocial	0.15	0.14	0.12
Total Difficulties	0.80	0.66	0.70

and the SDQ total scores, presented in Table 6, exceeds the recommended threshold of 0.50, by Cronbach and Shavelson [45], demonstrating strong internal consistency. Looking at the individual subscales, we see a consistent pattern of moderate to strong positive correlations between the SRSS-IE and the SDQ. This indicates that the SRSS-IE and the SDQ are measuring similar constructs, which strengthens the validity of the SRSS-IE as a screening tool to effectively capture various aspects of student behavior problems, including both internalizing and externalizing behaviors. Interestingly, the correlation coefficients for the Hyperactivity and Prosocial subscales are relatively low. This suggests that the SRSS-IE may not be as effective in identifying students with hyperactivity or prosocial behaviors. However, it is important to note that these subscales only comprise a small portion of the overall SDQ score.

3.4. Social Validity

Teachers' perceptions of the feasibility and utility of both the SRSS-IE and the

SDQ were examined. Social validity was analyzed using descriptive statistics. Specifically, the average scores for each social validity item as well as the total score of the STR were computed. Teachers' responses are shown in Table 7. Despite both screening tools being valued by teachers, the SRSS-IE ultimately emerged as the favored option. This preference was rooted in both qualitative and quantitative evidence. Teachers found the SRSS-IE more effective, reflected in the statistically significant difference in scores, with SDQ scores averaging 1.95 points lower (t = 14.28, p = 0.0001). This robust statistical backing solidified the teachers' positive perception, confirming the SRSS-IE's superior efficacy as a screening tool.

4. Discussion and Conclusion

The availability of a reliable and easy-to-use screening instrument for the early identification of students with EBDs is a very important issue. A lack of school-based universal screening can lead to difficulty in identifying these students or providing adequate service to them. The purpose of this study was to assess the psychometric properties of the SRSS-IE in the Saudi Arabian elementary school context. The results of the item-level analysis showed that the SRSS-IE items were low but higher than the mean criteria of >0.20, except for the first item (steal), which also yielded skewness (5.28) and kurtosis (30.80). This result is consistent with previous research [46] [47] [48] [49] [50]. Even though the first item (steal) could be considered for removal due to being below the mean criteria, it was retained due to the item-total correlation and is considered a hallmark characteristic of externalizing behavior patterns. Internal consistency, using Cronbach's coefficient alpha, was found to be high for the SRSS-IE subscales and items. The correlations for items of the SRSS-IE ranged

Table 7. Teacher social validity ratings of the SRSS-IE and the SDQ.

Item	SRSS-IE		SDQ	
	M	SD	M	SD
1. The screener was easy to complete (user-friendly)	4.31	0.67	3.54	1.33
2. The screener was easy to score	3.95	0.89	3.88	0.94
3. the screener takes a reasonable amount of time to complete	4.27	0.85	3.48	1.23
4. this screener would offer me important information to support students	3.62	0.97	3.83	0.99
5. This screener would offer my school, as a whole, important information	3.65	0.96	3.58	0.99
6. This information from this screener is easy to interpret	3.76	1.02	3.76	1.02
7. I can use information from this screener to support students	3.90	0.89	3.90	0.89
8. This tool is easy to prepare	4.40	0.65	3.94	1.04
Total	31.86	3.99	29.91	3.66

from 0.83 to 0.85, which indicated high reliability. These results are highly consistent with the findings of psychometric studies [51] [52].

Convergent validity, determined using correlation coefficients, between the SRSS-IE and the SDQ was found to be highly positive and statistically significant for the total score (r = 0.70). The highest correlation coefficients were found for the emotional symptoms and total difficulties (r = 0.80), and the lowest were found for the prosocial with SRSS-IE (r = 0.12). These results are very similar to previous studies [51]-[56]. These findings suggest the SRSS-IE has convergent validity with the SDQ.

The results of this study demonstrate strong social validity, suggesting that the SRSS-IE is useful and acceptable as a screening tool. Consequently, teachers are more likely to use the SRSS-IE as a screening tool to detect at-risk students as early as possible. The results of this study extend the previous research to establish a level of social validity for the SRSS-IE [55] [56] [57].

Overall, these findings provide promising evidence that the SRSS-IE is reliable and valid for use as a screening tool for EBDs at the elementary school level in the KSA. However, the interpretation of these results should take into consideration the following limitations: First, this study's data were not collected at multiple time points over the course of the school year as in other psychometric studies [46] [55] [57]. Second, a screening process is not a regular school practice in these 13 provinces. Accordingly, teachers were not familiar with using a screening tool. Despite these limitations, this study extends the knowledge base by providing evidence of the psychological properties of the SRSS-IE in the Saudi elementary school context.

Future research should continue to examine the validity of the SRSS-IE over a longer period to affirm if the psychometric properties of the SRSS-IE do not shift within or across years. Although it is beyond the scope of this study, we recommend that future investigations consider using the SRSS-IE to determine the prevalence of EBDs in Saudi schools. In conclusion, the SRSS-IE is a reliable, valid, and no-cost tool for detecting students with EBDs.

Institutional Review Board Statement

The study was conducted in accordance with the Declaration of Helsinki, and approved by the Ethics Committee of King Saud University (KSU-HR-KSU-HR-22-151, 8-3-2022).

Informed Consent Statement

Informed consent was obtained from all subjects involved in the study.

Data Availability Statement

The data presented in this study are available on request from the author.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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