

# Psychometric analysis of the self-reporting questionnaire (SRQ-29) among university students

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## Abstract

The SRQ-29 is a measurement tool developed by WHO for the early detection of mental health problems. However, no research has focused on the psychometric testing of the SRQ-29 instrument. This study aimed to investigate the psychometric properties of the Indonesian version of the Self-Reporting Questionnaire (SRQ-29) as a screening tool for the early detection of mental health problems in individuals who are university students. The original version of the scale was adapted and translated into Indonesian and tested for validity, reliability, and factor analysis among university students. The adaptation process followed the guidelines of the International Test Commission and included translation, expert review, cognitive interview, and psychometric evaluation. The participants who actively participated in this study were 323 students from various faculties of Universitas Muhammadiyah Surakarta (UMS), selected using a convenience sampling technique. Data analysis to test content validity using Aiken's V analysis, construct validity using item factor analysis (IFA), and test reliability using Cronbach alpha. In general, the results showed that the measurement instrument has good validity and reliability, so it can be used in the population of university students in Indonesia to screen their mental health status.

## Keywords

Measurement tool, mental health, psychometrics, SRQ-29, university students

## Introduction

Mental health is one of the most highlighted issues in various parts of the world, and Indonesia is no exception. According to a survey conducted by Ipsos Global in July-August 2023 entitled Health Service Monitor 2023, 44 percent of 31 countries (23,274 respondents) in the world believe that mental health is the most concerning problem, followed by cancer (40 percent) and stress (30 percent) (Muhamad, 2023). Mental health is defined by WHO as a state of well-being characterized by psychological conditions that enable a person to cope with the stresses of life, realize their potential, learn and work productively, and contribute to their community (World Health Organization: WHO, 2019). Like physical health, mental health needs to be the focus and attention of many different parties. This is due to the important role of mental health as it can affect the well-being of individuals, communities, organizations, countries, and even the global scope.

In Indonesia, the phenomenon of mental health crisis is experienced by many people, especially the younger generations. According to the Bureau of Communication and Public Services, Indonesian Ministry of Health, data showed that up to 6.1% of the Indonesian population aged 15 years and above experience mental disorders (Biro Komunikasi dan Pelayanan Masyarakat, Kementerian Kesehatan Republik Indonesia, 2021). This finding is consistent with a survey conducted by the Indonesia National Adolescent Mental Health Survey (I-NAMHS) in 2022, which showed that one in three Indonesian adolescents had a mental health problem, while one in twenty Indonesian adolescents had

a mental disorder in the previous 12 months (Pusat Kesehatan Reproduksi, University of Queensland, & Johns Hopkins Bloomberg School of Public Health, 2022).

Research conducted by Kompas R&D (Rachmawati, 2020), based on WHO and Ministry of Health data, shows the prevalence of mental disorders by age. The prevalence of mental disorders among adolescents and young adults aged 15-24 years is 10%. Based on data from the Ministry of Home Affairs (Kemendagri), the total population of Indonesia, as of December 31, 2022, reached 277.75 million people and was dominated by adolescents (Kusnandar, 2023). Therefore, this age group has a crucial role in Indonesia's development, especially in actualizing the vision of Golden Indonesia 2024 and optimizing the demographic bonus in 2045 (Badan Pusat Statistik, 2023).

The most common mental disorders among adolescents are anxiety (26.7%), attention-deficit/hyperactivity disorder (10.6%), depression (5.3%), behavioral problems (2.4%), and post-traumatic stress (1.8%). Reported cases of suicidal tendencies are also high. While 0.4 percent of adolescents reported having attempted suicide, more than 80 percent of

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adolescents reported suicidal thoughts, plans, and/or attempts (Arif, 2023).

Based on data from the National Criminal Information Centre (Pusiknas) of the Indonesian National Police (POLRI), there were 971 suicides in Indonesia between January and October 18, 2023 (Muhammad, 2023). The data increased the number of cases in 2022 by 900 cases. The provinces with the highest suicide rates are Central Java (356), East Java (184), Bali (94) and West Java (60). In line with these data, suicide among university students is also a concern for the Indonesian nation and society. There are no exact figures on the number of university students with mental disorders in Indonesia (Wahyuni & Winarso, 2022). However, in October 2023 alone, Indonesia was shocked by consecutive university student suicides that occurred in the cities of Yogyakarta, Semarang, Depok, and Kupang (Arrahmah, 2022).

University students belong to an age group that is vulnerable to crises and mental health problems. Based on developmental theory (Santrock, 2009), university students are generally in the age range of 17-25 years, which is part of late adolescence and early adulthood. University students experience a critical transition period from adolescence to adulthood. They must adapt to new environments, maintain their academic performance, plan for their future, manage the challenges of independent living, and cope with being away from home (Prasetyo et al., 2019). Adjustment between school and university environments is also a risk factor for mental health problems in university students (Kerig & Schulz, 2012). In fact, mental health is important for university students to be able to complete their academic tasks well (Sari & Susmiatin, 2023). Mental health disorders are also at risk of causing physical problems if someone does not realize it (Kementerian Kesehatan Republik Indonesia, 2018).

The mental health of university students can be influenced by several factors such as genetics, family, friendship relationships, lifestyle, social factors, and other factors (Maulidah et al., 2023). Self-regulation is important to help university students control their emotions and behavior independently (Yunanto, 2019). However, not all university students have good self-regulation skills. Also, the health facilities and professionals available in Indonesia are not yet able to serve people with mental health problems. In addition to the limitations of professionals such as psychologists and psychiatrists (Wijaya, 2019), the resolution of mental health problems in Indonesia is also constrained by stigma and discrimination (Alfianto et al., 2019). As a result, university students experiencing mental health problems are reluctant to seek professional help at various mental health service facilities.

The Ministry of Education, Culture, Research, and Technology (Kemendikbudristek) provides direction and asks all universities in Indonesia to provide a healthy, safe, and comfortable campus environment, both physically and mentally (Amanda, 2023). One of the efforts that can be made to prevent cases of serious mental disorders among university students is to conduct early detection of mental health. The importance of conducting early detection of mental health in university students is useful in finding university students who have the potential and/or are experiencing mental disorders so that the management process can be carried out more easily and have a better prognosis (Sari & Susmiatin, 2023)

The Self-Reporting Questionnaire (SRQ) is a measure developed by the WHO as an instrument to detect mental health disorders (Beusenberg & Orley, 1994). This instrument is used as a screening instrument to detect mental disorders and is widely used for professional and research purposes (Sarfika et al., 2023). SRQ consists of 4 types that have different functions and a number of items, namely SRQ-10, SRQ-20, SRQ-24, and SRQ-29 (Hasanah et al., 2023). In this study, the researchers will focus on the SRQ-29. The SRQ-29 is an extended version of the SRQ-24 with the addition of the Post Traumatic Distress Syndrome (PTSD) classification (Hasanah et al., 2023). In the SRQ-29, anxiety and depressive disorders, psychoactive substance/drug abuse, psychotic disorders, and Post Traumatic Distress Syndrome (PTSD) are among the aspects assessed (Arini & Syarli, 2020).

It is considered to be a simple screening instrument for mental disorders, as the number of items is relatively short, and there are two alternative answers, 'yes' and 'no.' The SRQ has been used routinely in Indonesia to screen for symptoms of mental disorders. However, research on the reliability and construct validity of the SRQ-29 is limited. Therefore, based on the background of the problem, the research question is whether the Indonesian version of the SRQ-29 has good overall validity and reliability.

The problem of early detection of mental health in university students can be minimized by introducing a simple screening program for the early detection of mental disorders. This can be measured by a simple and short instrument, one of which is the SRQ-29. This study aims to assess the validity and reliability of the Indonesian version of the Self-Reporting Questionnaire (SRQ-29) for use among university students.

## Method

### Participants

The population of this study was university students at Universitas Muhammadiyah Surakarta. A total of 323 participants were actively involved in this study, which was obtained using a convenience sampling technique, which allowed the researcher to collect information from participants who were easily accessible. The researcher limited the research subjects with the inclusion criteria of the respondents, namely (1) active students of UMS as evidenced by the Student Identity Card (KTM); (2) male and female; (3) regular undergraduate students; (4) proficient in Indonesian. Data collection was conducted between 13-18 May 2024. The data collection process was carried out by disseminating information about the research survey through posters and broadcast messages. Information dissemination was carried out through various social media platforms, especially WhatsApp and Instagram, which are the main communication tools widely used by UMS students. In addition, data collection was carried out through personal networks of acquaintances and colleagues who met the criteria of respondents. Detailed information on the demographics of the research subjects is presented in Table 1.

**Table 1.** Demographic Data of Research Participants

Aspects	Frequency	%
Gender		
Male	84	26
Female	239	74
Age		
17-18	17	5
19-20	153	47
21-22	132	41
23-24	21	7
Faculty		
Psychology	100	31
Islamic religion	27	8
Economics and Business	53	16
Pharmacy	11	3
Geography	4	1
Law	4	1
Health Sciences	8	2
Dentistry	5	2
Communication and Informatics	13	4
Teacher Training and Science Education	30	9
Engineering	68	21

### Research Instruments

Data collection was done online using Google Form. Prior to data collection, the researchers conducted an ethical review to obtain approval from the ethics committee number 226/KEPK-FIK/III/2024. The questionnaire was distributed to eligible students. The questionnaire included a general research explanation sheet, an informed consent sheet, demographic data, and the WHO SRQ-29 instrument. The SRQ-29 is a self-report instrument with two alternative answers, 'yes' and 'no.' If the respondent answered "yes," a score of 1 was given; if the respondent answered "no", a score of 0. This questionnaire allows for modification and validation according to the needs and characteristics of the research participants.

The researcher translated the instrument from English to Bahasa Indonesia and Bahasa Indonesia to English (back-to-back translation). Two certified translators were involved in the translation process. The second stage was the expert review, which involved three psychologists in the clinical field to evaluate the wording of the items, their relevance, representativeness, and comprehensiveness within the mental health domain. Following the expert review, the researcher conducted cognitive interviews with five participants about their impressions of completing the instrument. In addition, the researcher applied for a research permit related to ethical review at the Ethics Committee of the Faculty of Medicine, UMS. After passing the ethical review and obtaining ethical approval, the data collection process was carried out by disseminating information about the research survey through posters and broadcast messages. Information dissemination was carried out through various social media platforms that could reach participants, with WhatsApp and Instagram being the main communication tools widely used by UMS students. In addition, data collection was also conducted through personal networks of acquaintances and colleagues who met the criteria of respondents. Data collection continued until a sufficient number of samples was obtained. The data collected was then processed. The data to be analyzed were complete data so that any incomplete data were eliminated. This data

was then analyzed using psychometric testing techniques, namely validity and reliability testing. Reliability testing techniques to measure internal consistency were assessed using Cronbach's alpha with a minimum limit of 0.70. Content validity was measured using Aiken's formula with the help of three experts in the field of psychology, namely three clinical psychologists with more than 3 years of practical experience. Construct validity was assessed using item factor analysis (IFA).

### Data Analysis Techniques

The analysis technique used in the research was item factor analysis (IFA). IFA analysis is a procedure for identifying items based on their degree of similarity. IFA aims to reduce data and identify latent dimensions underlying a set of variables. Then, items that are highly correlated form a factor set. This technique was chosen because the data generated in the SRQ-29 instrument is a Guttman scale, i.e., two alternative responses: Yes is worth 1, and No is worth 0.

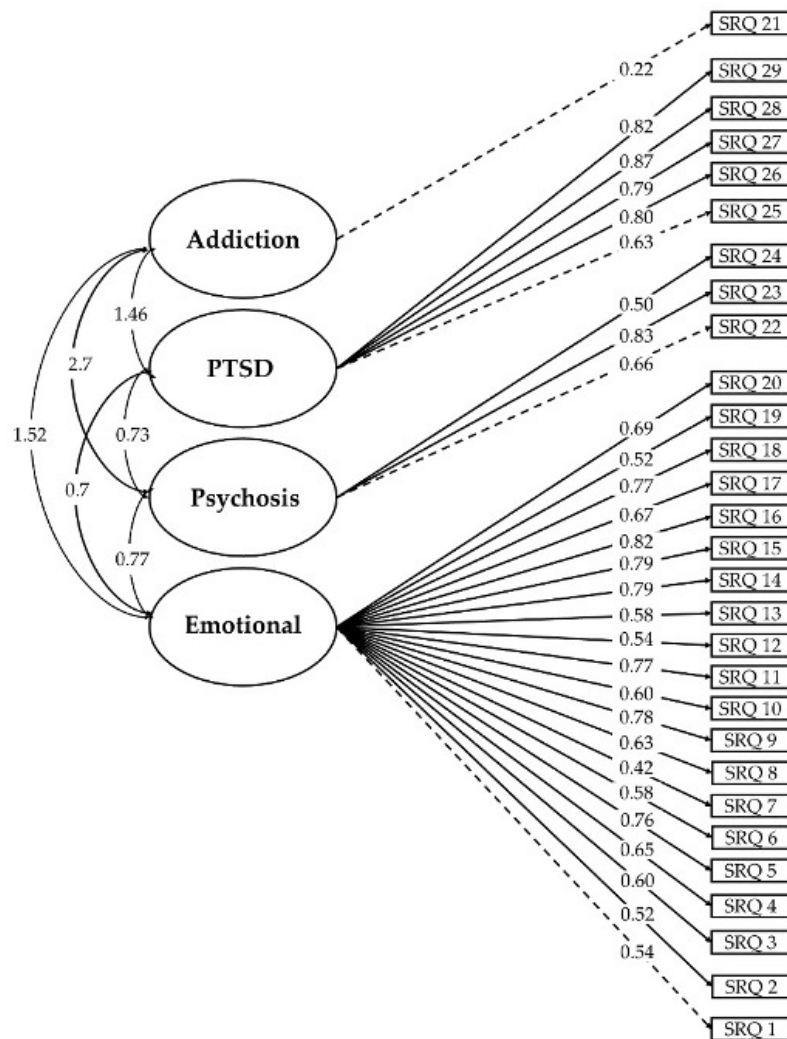
### Result

The survey consisted of 29 statements with two response options, 'yes' and 'no.' The validity used in this study was content and construct validity. Based on the results of the content validity analysis carried out with the help of 3 raters who were experts in the field of clinical psychology and were psychologists who had been practicing for more than 3 years. In determining the V-value, any V-value greater than 0.50 indicates a high level of content validity (Azwar, 2017). In the analysis conducted, the content validity test showed scores ranging from 0.83 to 1. In this case, all the items are declared valid. The results of the content validity test are presented in more detail in Table 2.

The research team carried out further analysis by conducting a test of construct validity. Item Factor Analysis (IFA) was used because this instrument consists of a Guttman scale with two response options: yes worth 1 and no worth 0. This instrument consists of 29 items and four latent factors, namely emotional disorders, addiction, psychotic, and PTSD. Based on the results of the analysis, it is known that of the 29 items contained in the SRQ measuring instrument, it showed a fit with the dimensions measured, including the dimensions of emotional, addiction, psychotic, and PTSD. In Table 3. the table of fit indices was explained.

Based on the calculation of goodness of fit, it was known that  $\chi^2(378) = 5253$ ,  $p < 0.001$ ,  $\text{GFI} = 0.060$ ,  $\text{SRMR} = 0.097$ ,  $\text{CFI} = 0.918$  and  $\text{TLI} = 0.911$ . The factor loadings obtained ranged from 0.22 to 0.87 (see Table 4). Each item was then plotted using the measurement model described in Figure 1. Although the factor loading values generally showed values that meet the standards, the test results showed that the only latent addiction item was invalid ( $< 0.03$ ).

The researcher then eliminated one item, item 21, and continued with the calculation of the reliability analysis on the SRQ-28 instrument. Based on the results of the reliability test on the SRQ measuring instrument with a total of 28 items, it was known that the Cronbach alpha value was 0.895. This result showed that the measuring instrument used has a good reliability value and can be used.



**Figure 1.** Output Model SRQ-29. Structural model output from the confirmatory analysis of SRQ-29, illustrating the relationships between four latent constructs—Addiction, Post-Traumatic Stress Disorder (PTSD), Psychotic Symptoms (Psychosis), and Emotional Symptoms (Emotional)—and their respective indicators. The model also showed that there is a correlation between these latent constructs, and each construct has factor loadings on relevant SRQ items except item's addiction. This model is consistent with the results in Table 4, which show that item number 21 on the Addiction latent factor has a weak factor loading value, so that item number 21 does not represent the addiction factor adequately.

## Discussion

The results of this study indicated that the SRQ-29 is valid and reliable in identifying emotional, psychotic, and PTSD disorders but is deficient in identifying addictive disorders. The SRQ-29 has undergone a validation process that includes content and construct validity. Evaluation by experts, namely psychologists, showed that the Aiken V value ranges from 0.83 to 1. These values indicated that the items were relevant and appropriate to the construct being measured. In addition, the IFA showed that all items except item number 21, relating to addictive disorders, were related to the three latent factors, namely emotional disturbance, psychotic disorder, and PTSD. With item 21 removed, the SRQ-28 showed excellent reliability values, with a Cronbach's alpha of 0.895. Finally,

the model fit indices, including CFI and TLI, supported the SRQ-28 consisting of three factors, namely emotional disturbance, psychotic disorder, and PTSD.

The expert judgment of an experienced psychologist indicated that all 29 items were relevant and appropriate for assessing the psychological constructs. The psychological constructs are (1) emotional disturbance, (2) psychosis, (3) addiction, and (4) PTSD. The SRQ-29 is an extended form of several existing SRQs, such as the SRQ-20 and the SRQ-24. In this case, the SRQ-20 deals with emotional disturbance (Beusenberg & Orley, 1994; Idaiani et al., 2022). The SRQ-24 has additional items, namely 3 items on psychotic disorders and an item on drug use (Sanyal, 2023). Finally, the SRQ-29 has an additional 5 items to detect PTSD (Rustam & Nurlala,

**Table 2.** Content Validity Test

Dimensions	Items	Aiken V Value	Description
Emotional	SRQ1	1	Valid
	SRQ2	1	Valid
	SRQ3	1	Valid
	SRQ4	1	Valid
	SRQ5	1	Valid
	SRQ6	1	Valid
	SRQ7	1	Valid
	SRQ8	1	Valid
	SRQ9	1	Valid
	SRQ10	1	Valid
	SRQ11	1	Valid
	SRQ12	0.92	Valid
	SRQ13	0.92	Valid
	SRQ14	0.92	Valid
	SRQ15	1	Valid
	SRQ16	1	Valid
	SRQ17	1	Valid
	SRQ18	0.92	Valid
	SRQ19	0.83	Valid
	SRQ20	1	Valid
Addiction	SRQ21	1	Valid
Psychotics	SRQ22	1	Valid
	SRQ23	1	Valid
	SRQ24	1	Valid
PTSD	SRQ25	1	Valid
	SRQ26	1	Valid
	SRQ27	0.92	Valid
	SRQ28	1	Valid
	SRQ29	1	Valid

**Table 3.** Fit Indices

SRMR	RMSEA	CFI	TLI
0.097	0.060	0.918	0.911

2021). In terms of construct validity, the involvement of an experienced psychologist in the validation process can ensure that the instruments used are appropriate in revealing aspects of each disorder. Thus, the assessment can provide confidence in the applicability of the instrument in the context of research and clinical purposes. As shown by the results of the expert review, each item was found to be relevant and reveal the construct being measured.

Construct validity results were assessed using IFA. The goodness of fit indices (SRMR = 0.097, RMSEA = 0.060, CFI = 0.918, TLI = 0.911) indicated a tolerable model fit. It means that the data obtained supports that the SRQ-29 contains four factors, namely emotional disturbance, psychotic, addiction, and PTSD. On the other hand, the chi-squared value ( $\chi^2=5253, <.001$ ) was significant. Nevertheless, this value is understandable, given the sensitivity of the chi-square test to large sample sizes (Bergh, 2015). For a better interpretation of the model, other goodness of fit indices such as RMSEA, SRMR, CFI, and TLI were considered. These indices suggested that the four-factor SRQ-29 is an appropriate model despite the significant chi-square values.

The factor loadings obtained for each item indicated the issues that need to be considered. All items except item 21, which relates to addictions, have factor loadings above 0.3. The low factor loading of item 21 may be due to the fact that

**Table 4.** Loading Factor Value (Dimension-Item)

Dimensions	Factor Loading Value	Description
SRQ1	0.54	Valid
SRQ2	0.52	Valid
SRQ3	0.60	Valid
SRQ4	0.65	Valid
SRQ5	0.78	Valid
SRQ6	0.58	Valid
SRQ7	0.42	Valid
SRQ8	0.63	Valid
SRQ9	0.78	Valid
SRQ10	0.60	Valid
SRQ11	0.77	Valid
SRQ12	0.54	Valid
SRQ13	0.58	Valid
SRQ14	0.79	Valid
SRQ15	0.79	Valid
SRQ16	0.82	Valid
SRQ17	0.67	Valid
SRQ18	0.77	Valid
SRQ19	0.52	Valid
SRQ20	0.69	Valid
SRQ21	0.22	Invalid
SRQ22	0.66	Valid
SRQ23	0.83	Valid
SRQ24	0.50	Valid
SRQ25	0.63	Valid
SRQ26	0.80	Valid
SRQ27	0.79	Valid
SRQ28	0.87	Valid
SRQ29	0.82	Valid

**Table 5.** Reliability Value

	Cronbach's Alpha Value	Description
SRQ-28	0.895	Reliable

it was the only item on the addiction factor. In fact, complex psychological constructs cannot be adequately captured by a single item (Allen et al, 2022). Costello & Osborne (2005) also found that factors with fewer than three items tend to be weak and unstable, and item 21, relating to addictive disorders, was an item that is grouped under psychotic disorders when referring to the SRQ-24 (Beusenberg & Orley, 1994). Thus, the results of this study indicated that item 21 does not adequately represent the addiction factor. Therefore, item number 21 was deleted from this questionnaire to ensure construct validity. The remaining items on the other factors showed factor loadings ranging from 0.42 to 0.87.

Reliability analysis using Cronbach alpha on the SRQ-28 showed a high internal consistency with an alpha value of 0.895. This value exceeds the threshold of 0.70, so it can be said that the SRQ-29 is reliable in revealing the desired variables. In this case, deleting item number 21 may improve reliability by increasing internal consistency and addressing issues of construct validity. This highlights the importance of refining the instrument to ensure accurate and reliable measurement.

The SRQ-29, revised as the SRQ-28, is a valid and reliable instrument for the identification of emotional, psychotic, and PTSD disorders. The SRQ-28 has important implications for university students. University students are a unique demographic group who may experience heightened

psychological distress due to academic pressures, social challenges, and life transitions. The SRQ-28's ability to detect emotional disturbance, psychotic disorders, and PTSD with high reliability and validity is valuable for early detection among college students. Schools, universities, and mental health professionals can use the SRQ-28 as a screening tool to identify students in need of psychological support. This allows for timely and targeted intervention. This, in turn, can improve university students' well-being and academic performance.

## Conclusion

Based on the results of the analysis, it can be concluded that the Indonesian version of the WHO-adapted SRQ-29 has content and construct validity as well as good reliability for the student subject group, except for item number 21. The results of this study indicated the validity and reliability of the Indonesian version of the SRQ-29 measuring instrument for students. However, in order to ensure the accuracy of the instrument, it needs to be further tested on other subject criteria. The results of one item that did not meet the factor loading standard also need to be further investigated.

## Declaration

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### Author contributions

RZQ designed the study and drafted the manuscript, BS analyzed the data and drafted the manuscript, and MY collected the data. All authors read and approved the final version of the manuscript.

### Conflict of interest

This research has no conflicts of interest.

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