

Peer Interaction Scale: Validity and Reliability Testing among Students at MAN Kota Kediri (A Preliminary Study)

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Abstract: Peer interaction is a crucial factor influencing the social development and character formation of adolescents within the school environment. Therefore, a valid and reliable instrument is required to measure the quality of such interactions. This study aimed to conduct an initial psychometric evaluation (pilot study) of a peer interaction scale developed based on theoretical aspects of adolescent social interaction. A descriptive-analytical quantitative approach was employed, involving 47 Grade XI students from MAN 1 Kediri City as the pilot sample. The instrument tested was a four-point Likert scale comprising 40 items. Item discrimination was analyzed using the corrected item-total correlation technique ($r\text{-table} = 0.288$; $df = 45$; $\alpha = 0.05$), while reliability was evaluated using Cronbach's Alpha per dimension. Following data verification and the correction of entry errors, items meeting the critical correlation threshold were retained. The dimensional Cronbach's Alpha values indicated a good level of internal consistency. These preliminary results suggest that the scale possesses promising psychometric potential for further testing with a larger sample and could support school guidance and counseling services. Based on the validity and reliability tests, the Peer Interaction Psychological Scale is suitable for assessing the peer interactions of MAN Kediri City students in the next stage of research.

Keywords: Peer Interaction; Psychological Scale; Validity; Reliability

INTRODUCTION

In the era of digital transformation, peer interactions not only occur face-to-face but also extend through social media. Positive peer interactions help students develop mutual respect, tolerance, and a sense of responsibility, which form the foundation of social skills. These values align with the goals of character education in schools. In this context, measuring peer interactions is important to provide an empirical picture of the quality of students' direct social relationships in the school environment. The process of individual development during adolescence focuses not only on biological physical maturity but also on the development of social adaptability, interpersonal communication skills, and emotional abilities (Santrock in Ramadhan et al., 2025). Peer groups are among the most dominant elements of the social environment influencing this transition process. Within the State Islamic Senior High School (MAN) setting, however, social dynamics have not yet fully functioned optimally. This is evident in the tendency of students to limit their social interactions to specific groups or "circles" perceived as being on the same wavelength, thereby creating social barriers and overlooking other classmates. This unhealthy pattern of interaction has a direct impact on the classroom learning process; when teachers form study groups randomly, many students show reluctance to participate—or even actively avoid involvement—if they are not placed with their close friends.

The phenomenon described above indicates that students have a low level of interaction with their peers. Peer interaction is a crucial aspect of adolescent life, playing a role in social and emotional development as well as the shaping of individual behavior. (Pusponegoro & Hasanah, 2025). According to (Parulian et al., 2019) Peer interaction refers to social relationships involving communication, cooperation, and mutual influence among adolescents of the same age. Another perspective describes peer interaction as a unique social process through which adolescents can learn to test their abilities and develop their social identities independently. (Dwistia et al., 2024). During adolescence, peers constitute a social environment that offers individuals the opportunity to learn how to communicate, cooperate, and support one another, as well as to develop the ability to adapt within a group. (Fitriawilan et al., 2023).

Limited peer interaction has profound psychological, emotional, and social consequences. From the perspective of personality and social development, a lack of peer dynamics can hinder the formation of a mature self-concept and identity. (Pracilia et al., 2024). According to (Soesilo et al., 2019) Peer interaction serves as a social mirror, helping individuals recognize their strengths and weaknesses while maturing their social adjustment skills. The aforementioned social dynamics underscore that peer interaction within *Madrasah Aliyah* (Islamic senior high schools) possesses specific cultural characteristics. To date, most peer interaction scales found in the literature remain universal and generalized in nature. This contrasts with the situation of *Madrasah Aliyah* students, who must adapt to an environment comprising graduates from both *Madrasah Tsanawiyah* (Islamic junior high schools) and standard junior high schools. Consequently, peer interaction requires a specialized analysis to ensure relevance to the specific context of *Madrasah Aliyah* students, whose communication is shaped by distinct social and religious norms. Therefore, the quality of peer interaction must be measured using an instrument capable of accurately reflecting these actual conditions.

Measuring peer interaction requires an instrument that meets basic psychometric requirements. The development of the peer interaction scale in this study is based on aspects of peer interaction proposed by (Purtowisastro in Sabaria, 2017) which encompasses three key dimensions: (1) individual openness toward the group, (2) individual cooperation within the group, and (3) the frequency of individual interactions within the group. To ensure the measurement tool yields consistent data, conducting a pilot study is crucial before it is used extensively.

Validity indicates the extent to which an instrument is capable of measuring what it is intended to measure, in accordance with the established research objectives. According to the view of (Arbeni & Azhar, 2025) A valid instrument yields accurate data that reflects the actual state of the interaction variables under study. In addition to validity, reliability is also a crucial aspect of a research instrument. (Forester et al., 2024) It explains that reliability relates to the degree of consistency with which an instrument yields relatively similar measurement results when used repeatedly under similar conditions. A reliable instrument demonstrates that its constituent items possess good internal consistency and can be trusted as a measurement tool (Zainudin, 2024). Meanwhile, reliability testing is generally conducted using the Cronbach's Alpha method to determine the level of internal consistency of the items in the questionnaire (Muhammad, 2012). Conducting this quality assessment is crucial to ensure that the data obtained from the questionnaire is truly suitable for use in further research analysis. Accordingly, this study aims to examine the validity and reliability of the Peer Interaction Scale questionnaire. The findings are expected to serve as a basis for evaluation and provide valuable insights for practitioners in the fields of education and developmental psychology regarding the measurement of adolescent social dynamics.

METHODS

The research method used in this study is analytical descriptive quantitative research which functions as an initial instrument test (pilot testing). According to Imanina, (2025) This descriptive-analytical study goes beyond merely describing a phenomenon; it also involves analyzing the collected data to draw conclusions. The subjects for this limited trial consisted of 47 Grade XI students from MAN 1 Kota Kediri. This sample (N = 47) served as a preliminary study group to assess item discrimination and internal consistency prior to conducting exploratory or confirmatory factor analysis (EFA/CFA) on a larger sample. A non-experimental instrument testing design was employed to evaluate the quality of the measurement tool through validity and reliability testing. Cluster random sampling (area/group sampling) was the sampling technique used. Data collection involved a 40-item psychological scale based on dimensions outlined by Purtowisastro (cited in Sabaria, 2017), utilizing a 4-point Likert scale (ranging from 1 = Strongly Inconsistent to 4 = Strongly Consistent). Item discrimination was analyzed using the Corrected Item-Total Correlation method in SPSS by comparing the correlation value against the critical r-table value for N = 47 (df = 45) at a significance level of alpha = 0.05 (r-table = 0.288). Reliability was evaluated using Cronbach's Alpha, calculated for both the overall scale and each individual dimension. The research process began with defining the study population, which comprised all 466 students at MAN 1 Kediri City.

The selection of groups or classes was carried out by listing all existing classes at MAN 1 Kediri City. Subsequently, cluster randomization was performed using Microsoft Excel software to systematically determine which classes would serve as the sample representation. Once the sample clusters were identified, a questionnaire comprising 40 statements was distributed to the respondents within those selected clusters. The questionnaire was administered in paper format, utilizing a 4-point Likert scale for responses, ranging from 1 (strongly disagree) to 4 (strongly agree). The collected data were then tabulated, processed, and analyzed in accordance with psychometric principles.

RESULTS AND DISCUSSION

The peer interaction scale was constructed based on theoretical studies regarding peer interaction. The development process began by identifying aspects relevant to the construct being measured. Each aspect was then broken down into several behavioral indicators, which were subsequently developed into favorable and unfavorable statement items. This process resulted in 40 statement items ready for pilot testing with respondents. The blueprint for the peer interaction scale is presented in Table 1 below.

Variable	Aspect	Indicator	Item. No
Peer Interaction	1. Individual openness	a. An individual's belief regarding openness toward their group.	1,15,29,8,22,35
		b. Acceptance of an individual's presence within their group kelompoknya	2,16,30,9,23,36
	2. Acceptance of an individual's presence within their group	a. Individual involvement in group activities	3,17,31,10,24,37
		b. Individuals are capable of contributing ideas for the group's progress.	4,18,32,11,25,38
		c. Individuals speak to one another within close relationships.	5,19,33,40,12,26
	3. Frequency of an individual's interactions within their group	a. The frequency of an individual's interactions with their group members.	6,20,13,27
		b. Communicating within a close relationship	7,21,34,14,28,39

All items were evaluated against the benchmark value of $r\text{-table} = 0.288$ ($df = 45$; $\alpha = 0.05$). Items with a calculated r -value of ≥ 0.288 were deemed adequate for this pilot scale, whereas items falling below 0.288 (such as item S22 with $r = 0.248$ and item S35 with $r = 0.257$) were recommended for revision or exclusion.

statement	r-value	r-Table 5%	information
S1	0,33	0,288	Valid
S2	0,385	0,288	Valid
S3	0,412	0,288	Valid
S4	0,611	0,288	Valid
S5	0,655	0,288	Valid
S6	0,627	0,288	Valid
S7	0,676	0,288	Valid
S8	0,394	0,288	Valid
S9	0,567	0,288	Valid
S10	0,63	0,288	Valid
S11	0,635	0,288	Valid

S12	0,483	0,288	Valid
S13	0,679	0,288	Valid
S14	0,619	0,288	Valid
S15	0,416	0,288	Valid
S16	0,502	0,288	Valid
S17	0,369	0,288	Valid
S18	0,67	0,288	Valid
S19	0,73	0,288	Valid
S20	0,475	0,288	Valid
S21	0,803	0,288	Valid
S22	0,248	0,288	invalid
S23	0,377	0,288	Valid
S24	0,737	0,288	Valid
S25	0,593	0,288	Valid
S26	0,535	0,288	Valid
S27	0,7	0,288	Valid
S28	0,635	0,288	Valid
S29	0,493	0,288	Valid
S30	0,643	0,288	Valid
S31	0,405	0,288	Valid
S32	0,367	0,288	Valid
S33	0,741	0,288	Valid
S34	0,794	0,288	Valid
S35	0,257	0,288	invalid
S36	0,53	0,288	Valid
S37	0,642	0,288	Valid
S38	0,59	0,288	Valid
S39	0,552	0,288	Valid
S40	0,712	0,288	Valid

Reliability Statistics	
Cronbach's Alpha	N of Items
,941	47

To avoid bias in reliability values caused by the large number of items, Cronbach's Alpha was calculated separately for each dimension:

- Dimension 1 (Openness): alpha = 0.812
- Dimension 2 (Collaboration): alpha = 0.845
- Dimension 3 (Frequency): alpha = 0.861
- Overall Scale: alpha = 0.941

These results indicate that each dimension within this instrument demonstrates proven internal consistency.

CONCLUSION

Results from the pilot study indicate that the Peer Interaction Scale possesses adequate item discrimination and internal consistency. Setting the r^* -table threshold at 0.288 effectively distinguished valid items from those with lower sensitivity. As this study represents an initial pilot phase with a sample size of $N = 47$, the findings cannot yet be fully generalized. Future research should expand the sample size ($N > 200$) to conduct Confirmatory Factor Analysis (CFA) for a more comprehensive assessment of construct validity. Furthermore, this instrument could be utilized to support the preliminary mapping of student social interactions within school-based guidance and counseling services and character education programs.

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