

Exploratory Factor Analysis of The Indonesian Version of Character Scale

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Abstract. Character is one that is much discussed today in Indonesia. In Indonesia, a lot of character education is being encouraged. However, there are not many valid and reliable character measurements associated with these characters. Therefore, this study, intended to adapt and test the validity and reliability of the Indonesian version of the Character Scale. The data was collected online using the Character Scale created by Wang et al. consisting of 33 items. Based on the data analysis, the Cronbach's Alpha reliability coefficient was 0.986. The content validity analysis with advanced reverse translation and expert assessment. The validity structure analysis using exploratory factor analysis found that the Indonesian language character scale consists of 3 factors that accounts for 73% of the total variance and also consists from 8 factors that account for 73% of total variance. Based on the results, the character scale of the Indonesian language version can be applied using 3 or 8 dimensions.

Keywords: Character, Adolescent, Exploratory Factor Analysis, Reliability

1 Introduction

The adolescent stage of development is a delicate time when changes in physiological, psychosocial, and cultural dimensions continue. Furthermore, crucial developments in this stage signify the beginning of puberty and the establishment of social autonomy [1]. Adolescents, during this time, are actively engaged in exploring their self-identity, which can sometimes result in their involvement in various conflicts [2]

In the contemporary era, adolescents experience their development in an increasingly modernized environment, notably with the advancement of internet technology. According to APJII data from 2022, the internet penetration rate in Indonesia among children aged 5–12 stands at 62.43%, whereas for adolescents aged 13–18, it reaches 99.16%. The total number of child and adolescent internet users in Indonesia is estimated at around 30 million. Adolescents utilize the Internet for a variety of purposes, including online learning, social media engagement, and entertainment [3].

However, when adolescents use the Internet without close parental supervision, it can result in adverse consequences, as not all online content is positive. For instance, excessive internet usage can lead to the deterioration of social relationships and instances of cyberbullying [4]. Moreover, the negative impacts of internet use can contribute to the emergence of a generation with diminished character.

Character can be described as an individual's capacity to think, experience emotions, and behave ethically in alignment with established societal norms [5]. Character is frequently linked to virtues and positive attributes, and it is believed to exert a favorable influence on human rights and overall well-being [6]. Numerous nations, Indonesia included, have conducted investigations into character. Therefore, the researchers are inclined to explore the subject of character in Indonesia.

In the United States, research has been carried out to assess the character of adolescents involved in extracurricular activities within the Boy Scouts organization. Adolescents who exhibit character traits in line with those of the Boy Scouts of America are upbeat, helpful, forward-thinking, kind, obedient, religious, thrifty, and responsible [6], [7]. Similarly, in Indonesia, various initiatives have been implemented to cultivate the character of adolescents, including participation in scouting activities outside the classroom [8][9], [10], [11]. However, a shortage of valid and reliable character measurement tools remains, posing a notable limitation in character research. That's why the researchers are motivated to conduct a study focused on examining the psychometric properties and reliability of a character scale tailored for Indonesian adolescents.

The study of characters has been examined from several viewpoints. A questionnaire for educators to assess students based on the six fundamental character traits delineated by the Josephson Institute in 2009 [12], [13]. The pillars incorporated under this framework are integrity, esteem, accountability, equity, compassion, and civic duty. A study to assess the effects of the Positive Action (PA) programme on students in Grades 6 to 12. The study incorporated a self-report character assessment designed to quantify nine character qualities believed to be impacted by the curriculum of the PA programme. The aspects encompassed in this list are self- perception, physical well-being, decision-making abilities, cognitive advancement, responsibility, self- regulation, interpersonal aptitude, integrity, and personal development [14]. Five specific characteristics in the research: interpersonal strengths, emotional strengths, intellectual strengths, restraining strengths, and future orientation [15]. A comprehensive framework for character that encompassed three aspects. These aspects included moral or virtuous characteristics, performance-related qualities, and qualities connected with civic involvement [16].

In Indonesia, there have been studies related to character. Development of a character strength measurement tool in the Indonesian language, consisting of 24 dimensions and 120 items [17]. Other unidimensional studies measure specific traits of character such as religious character [18]; politeness character scales [19]; responsibility character instrument [20]; and student's resilient character scale [21].

In this research, the character scale utilized by the researcher is the one developed by Wang. The study demonstrated that the Character Scale exhibited strong internal reliability and construct validity when applied to a sample of 1681 children and adolescents in the United States. This scale comprises 33 items organized into eight factors, namely obedience, religious

reverence, cheerfulness, kindness, thriftiness, hopeful future expectations, trustworthiness, and helpfulness [6].

2 Method

This research uses a quantitative research design. The validity testing process is carried out in two ways: the validity of the contents performed with expert panel examination and the construction validity done with explorative factor analysis. The reliability of the measuring instrument is obtained using Cronbach's alpha analysis. Participants in the study were 834 teenagers from high school. Participants consisted of 504 teenage girls and 330 teenage boys. The data collection was carried out using a character scale of the Indonesian version, which consists of 33 items and 8 factors. The data was collected online via gform, which was randomly distributed to teenagers in Indonesia via Instagram, WhatsApp, and Telegram.

3 Result and Discussion

The Indonesian version of the character scale was adapted from the character scale developed by Wang et al in 2015. As to the regulations set by ITC, the process of translation and adaptation consists of the following steps: The process involves six steps: (i) acquiring the original researcher's permission; (ii) translating the text in both directions; (iii) putting the work to evaluation by peers and experts; (iv) conducting a cognitive interview; (v) testing the nearly final version; and (vi) performing data analysis [22].

The data was analyzed using the Cronbach alpha test, which yielded a reliability coefficient of 0.986. Conducting an exploratory component analysis (EFA) test to identify the underlying component that influences the character scale. The assumption test was performed using the Kaiser- Meyer-Olkin (KMO) test and the Bartlett's test. The acquired test results indicate that the KMO values were 0.986 (>0.05) and the Bartlett's test X^2 was 32870.150 with a p-value of <0.001 . Therefore, it can be concluded that the data was suitable for the EFA test [23].

The factor analysis was conducted using exploratory factor analysis (EFA). According to the analysis results, only three components exhibited eigenvalues greater than 1. The analysis indicates that a character scale, comprising three variables, accounts for 73% of the overall variance in the character scale. The factor loading result is shown in Table 1.

Table 1. Factor Loading Character Scale with 3 Factor

Item	Factor 1	Factor 2	Factor 3
item1	0.496	0.502	0.328
item2	0.411	0.531	0.350
item3	0.441	0.616	0.367
item4	0.416	0.577	0.395

Item	Factor 1	Factor 2	Factor 3
item5	0.503	0.574	0.295
item6	0.421	0.588	0.376
item7	0.334	0.648	0.281
item8	0.424	0.764	0.319
item9	0.317	0.349	0.670
item10	0.313	0.334	0.780
item11	0.329	0.270	0.843
item12	0.598	0.445	0.480
item13	0.619	0.430	0.393
item14	0.670	0.417	0.354
item15	0.680	0.440	0.340
item16	0.599	0.507	0.298
item17	0.543	0.409	0.329
item18	0.524	0.499	0.295
item19	0.589	0.484	0.340
item20	0.395	0.699	0.356
item21	0.444	0.693	0.324
item22	0.424	0.586	0.309
item23	0.576	0.497	0.368
item24	0.708	0.536	0.290
item25	0.618	0.512	0.298
item26	0.646	0.511	0.281
item27	0.602	0.646	0.288
item28	0.645	0.589	0.308
item29	0.670	0.456	0.330
item30	0.712	0.377	0.335
item31	0.639	0.499	0.323
item32	0.687	0.528	0.307
item33	0.675	0.329	0.293

The character scale is composed of three variables, as indicated in Table 1. Nevertheless, the outcome deviates from the eight-character scale components outlined by Wang. The EFA analysis reveals that these three elements align with three distinct character dimensions: morality, civic engagement, and performance. These three factors match the three dimensions of character: morality, civic, and performance [15].

The researchers conducted a repeated EFA test, this time utilizing eight components. The study results indicated that only three factors had an eigenvalue greater than 1, while the remaining five factors had an eigenvalue below 1. The investigation reveals that an 8-factor character scale can account for 77% of the overall variations in character scales. Table 2 presents the results of the factor loading analysis.

Table 2. Factor Loading Character Scale with 8 Factor

Item	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6	Factor 7	Factor 8
item1	0.416	0.374	0.302	0.426	0.154	0.085	0.054	0.055
item2	0.428	0.266	0.309	0.405	0.314	0.159	0.034	-0.012
item3	0.589	0.415	0.326	0.346	0.110	0.104	0.102	0.047
item4	0.545	0.389	0.352	0.309	0.185	0.108	0.061	0.082
item5	0.544	0.385	0.254	0.413	0.112	0.139	0.137	0.024
item6	0.541	0.401	0.337	0.331	0.119	0.112	0.108	0.022
item7	0.518	0.436	0.256	0.255	0.126	0.135	0.010	-0.005
item8	0.645	0.463	0.299	0.354	0.093	0.151	-0.002	0.008
item9	0.257	0.266	0.649	0.281	0.132	0.073	0.160	-0.019
item10	0.253	0.294	0.771	0.219	0.107	0.129	0.011	0.059
item11	0.286	0.231	0.843	0.197	0.101	0.088	0.049	0.024
item12	0.508	0.355	0.461	0.355	0.174	0.129	0.020	0.220
item13	0.514	0.306	0.360	0.387	0.211	0.088	0.232	0.209
item14	0.543	0.349	0.334	0.295	0.143	0.312	0.165	0.127
item15	0.586	0.400	0.329	0.270	0.157	0.140	0.106	0.232
item16	0.540	0.416	0.165	0.308	0.278	0.103	0.243	0.051
item17	0.441	0.310	0.226	0.315	0.297	0.132	0.306	-0.026
item18	0.449	0.426	0.176	0.266	0.276	0.109	0.269	0.077
item19	0.542	0.394	0.087	0.287	0.330	0.165	0.187	0.096
item20	0.292	0.657	0.340	0.131	0.165	0.303	0.203	0.017

Item	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6	Factor 7	Factor 8
item21	0.364	0.670	0.314	0.126	0.204	0.274	0.037	0.001
item22	0.317	0.565	0.288	0.091	0.372	0.225	0.071	-0.008
item23	0.466	0.430	0.128	0.272	0.459	0.085	0.333	0.061
item24	0.662	0.475	0.048	0.335	0.079	0.140	0.284	0.069
item25	0.511	0.486	0.101	0.220	0.354	0.138	0.277	0.101
item26	0.560	0.461	0.074	0.286	0.237	0.105	0.265	0.150
item27	0.536	0.591	0.054	0.344	0.093	0.129	0.280	0.132
item28	0.591	0.534	0.126	0.337	0.093	0.148	-0.026	0.300
item29	0.541	0.372	0.021	0.271	0.126	0.614	0.069	0.304
item30	0.667	-0.032	0.323	0.251	0.213	0.155	0.004	0.329
item31	0.639	-0.126	0.312	0.319	0.107	0.048	0.119	0.427
item32	0.637	0.026	0.297	0.340	0.048	0.206	0.076	0.458
item33	0.639	-0.044	0.280	0.270	0.131	0.109	0.105	0.267

The character scale comprises eight factors, as shown in Table 2. The scale variables consist of eight characteristics: obedience, religious reverence, cheerfulness, kindness, thriftiness, hopeful future expectations, trustworthiness, and helpfulness [6].

4 Conclusions

The reliability of this study shows an Alpha Cronbach's value of 0.986. It means the character scale indicates good reliability. Based on the results of the EFA test, the character scale of the Indonesian version is formed by three factors. A character scale consisting of three factors can explain 73% of the total variance of character scales. However, the result differs from the eight character scale factors [6]. The researchers also scaled the character in eight factors. Eight character scale factors consist of obedience, religious reverence, cheerfulness, kindness, thriftiness, hopeful future expectations, trustworthiness, and helpfulness [6]. A character scale consisting of eight factors can explain 77% of the total variants of character scales. Based on the results of the research, the Indonesian version of the character scale allows the use of 3 or 8 factors. For further researchers, it is recommended to use the confirmatory factor analysis to test which theoretical model is more suitable for the character scales of the Indonesian version.

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