

Adapting Self-Report Altruism Scale to Measure Altruistic Behavior of Pre-service Teachers in Indonesia

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ABSTRACT--Altruistic behavior is one among other personality traits that teachers should possess but it is difficult to resist a temptation not to ask if altruism can be measured. Such has been running for decades in long lasting debates and there a polar opposite conclusion still exists. This research was conducted to support those who claim there is a place that altruism can be measured. In particular this was directed to standardize a Self-Report Altruism (SRA) scale adapted from the original altruism measure of Rushton, Chrisjohn, and Fekken. The adaptation was essential to comply with the Indonesian context in the sphere of teaching profession and its validation was conducted in a five-step process, i.e. translating the scale followed by conceptual validation by a panel of judges, piloting it out which involved limited respondents ($N = 30$). Following it, a standardization was made in which the instrument underwent several activities i.e. administered to bigger amount of respondents ($N = 105$), correlated with another measure of altruism (e.g. Carlo and Randall's Prosocial Tendency Measure) to verify its concurrent validity ($N = 51$), then finally tested and retested for reliability assessment ($N = 30$). Data were collected from students of pre-service teacher program in English education. To standardize the adapted measure Exploratory Factor Analysis (EFA) was applied to ensure whether it yielded high internal consistency and if all items were extracted from the underlying attributive constructs. The research reveals the following results (1) all items are significantly inter-correlated which shows high internal consistency ($r = .920$), (2) one item was dropped out due to validity reason, (3) based on EFA 6 factors were extracted, (3) the concurrent validity is medium ($r = 0.534$), (4) the reliability coefficient after a 30-day-time interval showed high consistency ($r = 0.806$). This means the adapted SRA scale is acceptable to measure altruistic behavior of Indonesian pre-service teachers.

Keywords-- altruism, pre-service teachers, Indonesia

I. INTRODUCTION

Success is a choice, not an accident of birth neither a lucky break. Such has been told many times by many life motivators. In a more general term, this is to say that there is always a place in life for anyone to choose a destiny – success or failure. This likely applies as well in many situations in a social life where such a similar polar opposite, altruism or selfishness, inevitably meet and one is bound to make a choice. When scrutinized more deeply, the mechanism to choose is not a simple case. A lot of things involved which raise a lot of questions to answer. Is it a relationship context – kinship or strangers? Is it a context of cultural relation, religiosity, ethnicity, gender? There certainly are many more to list out.

Ample researches of altruism in the sphere of a social life as well as in educational contexts have been conducted in many countries in the globe. To elaborate, for example, in a research of human's capacity for

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prosociality, Maner and Gailliot claimed that altruistic behavior was more pronounced within kinship relationship than among strangers (Manner & Gailliot, 2006). However, Allison (1992) theorized that culture relation could induce altruistic behaviors that run contrary to genetic predispositions. In addition, De Cremer and Van Lange concluded the prosocial would experience stronger feelings of social responsibility and would engage more in behavioral assimilation than proself did (De Cremer and Van Lange, 2001). Similarly, as reported by Hur, Rushton concluded that altruism could be increased by exposure to models exemplifying the behavior, and once engaged in, such behavior could be durable and generalizable across situations. Such is applicable as about 50% of the variance in prosocial behaviors is naturally heritable, which means the other portion is nurturally acquired (Hur, 2012). Specifically in in the realm of teacher education, a research concludes that the altruistic level of teacher candidates is predictively influenced by the social environment where they were born and raised, peer relations at school or out of school, happiness in the family and intercultural interactions during their education (Mustafa, 2017). Similarly, like self-control, altruism may be learned and maintained over individual's life time (Rachlin, 2002).

Despite it, unfortunately, there is arguably very little to know if researches on altruistic behaviour have been conducted in Indonesia, both in the contexts of a social life and more importantly in education. This is critical as, admittedly, in the sphere of educational setting teachers' altruism is pivotal. It is one among other commonly accepted criteria of what it means to be 'professional' in teaching (MacBeath, 2012). This article is not intended to specifically discuss altruism and its variables, but instead to report the validation process of the adapted Self-Report Altruism (SRA) Scale to apply in the context of teacher education. Once it is done, further researches on altruism may be conducted. In this line, it is deliberately decided to adapt SRA Scale originally developed by Rushton, Chrisjohn, and Fekken (1981).

There is certainly a profound thought of preference to verify the SRA scale of Rushton, Chrisjohn, and Fekken. First is about the SRA scale in itself. To elaborate, as claimed by Rushton, Chrisjohn, and Fekken, SRA scale they developed is easy to administer. It's in a form of self-report format consisting of 20 items in which respondents are instructed to rate the frequency of their engagement in the altruistic behaviors using five categories, such as 'Never', 'Once', 'More than Once', 'Often', and 'Very Often'. It is in this reason, I believe, the SRA scale has been used and adapted by researchers in many places in the globe and its validation was made before implemented, such as in Turkey (Yavuzer, et.al, 2006), Colombia (Pardo, & Cortina., 2016), India (Khanna, Singh, & Rushton, 1993), and China (Chou, 1996). Unfortunately, as noted, none has been conducted in Indonesia. The second reason as Borsa, Damasio, and Babdeira point out there is an urgency that any scale needs validation due to cultural, temporal and territorial differences (Borsa, J. C., Damásio, B. F., & Bandeira, D. R, 2012). In addition, there is a more basic consideration why this research was conducted. It concerned with the aspect of methodolgy and data analysis. Unlike the previous validation, the data in this research was analysed using Exploratory Factor Analysis (EFA). In addition, a qualitative procedure was also applied prior to such an analysis. Thus, in a summary, this validation has undergone five-stage testing of which one was theoretical and the rest empirical.

II. METHOD

2.1.1 Sample

The total number of respondents in the research was 216 consisting of 140 female and 76 male whose ages ranged between 19 to 35 years and they were deployed in all four empirical research activities. Specifically, 30 respondents joined the try out, 105 joined a survey for factor analysis, 51 respondents involved in concurrent validity test and another 30 for test-retest reliability assessment. It's worth to mention that the respondents were clustered in two different sample groups i.e., bachelor students of pre-service teacher program (called students of S1 Program) and students of master's degree program (called students of S2 program).

2.1.2 Procedure

As noted, this research was conducted in four stages i.e. trying out the measure to limited number of respondents from which validity and reliability were measured, administering the valid and reliable measure to the targetted respondents from which the data were analysed using Exploratory Factor Analysis (EFA), measuring the concurrent validity, and measuring the test and retest reliability. However prior to it, translating the SRA scale into Indonesian language followed by verification to a panel of judges was conducted. Thus, in this research the SRA scale has undergone five time testing of which one was qualitative and conceptual by a panel of judges and the rest were quantitatively empirical.

First, in the qualitative study three experts involved in the panel to verify the translated version of the measure. They were respectively one lecturer of English language Education, one lecturer of English literature and one psychologist. All of them hold doctoral degrees in their fields of disciplines. The translation process from English into Indonesian was done in four ways, such as (1) translating all words of the original measure in forms of paraphrases (e.g. statement 4); (2) translating with minor changes in the statements of the original measure (e.g. statement 1.); (3) adding a phrase in the translated statement to keep it culturally meaningful (e.g. statement 2); (4) totally changing the statements of the original measure with new sentences, keeping the messages similar as far as altruism is concerned (e.g. statement 3). In these steps, after the Indonesian translation was completed, English translation was made to easily compare to the original measure. This was done under intensive discussion with the three members of the panel judges. In addition, to write the statements of the adapted measure, the pronoun 'I' or the doer of the action was deliberately omitted as it's been clarified in the instruction that all actions were carried out by the respondents individually. Such an omission was intended to put a stress on the carried out actions. To clarify it, the instruction of the adapted measure reads, *Berilah tanda silang (X) di dalam kotak jawaban yang ada di bawah ini untuk menanggapi setiap pernyataan sesuai dengan frekwensi perbuatan yang Anda lakukan secara jujur.* (Give a cross (X) in the answer box below to honestly respond to each statement in accordance with the frequency of your actions). The five categories of frequency was kept similar with that of the original measure but additional description was made to clarify to what extent each frequency was done. It was posted above the statements to which the respondents gave the responses. Table 1 is showing such an additional description.

Table 1: Description of frequency levels of the carried out actions

No	Category of frequency	Description
1	Never	It's clear and no description is needed
2	Once	It happened only one time

3	More than once	It happened two to three times in one semester
4	Often	It happened four to five times in one semester
5	Very often	It happened more than five times in one semester

Second, as noted, the piloting was conducted to involve 30 respondents. They were students of bachelor students of pre-service teacher program in the department of English language education. They were randomized from classes of semester 5 of average to total 9 semesters. The measure validated in this stage was the translated version consisting of 20 items, similar to the original one. To analyze the data in the piloting stage, procedure of Person's Product moment was applied to assess the item validity and Alpha Cronbach formula was applied to measure the reliability.

Third, following up the piloting stage, the validated measure was administered to 105 respondents and the derived data were analyzed using Exploratory Factor Analysis (EFA). In the execution of EFA five-step exploration, raised in sequential questions, must be applied, such as (1) is the data suitable for factor analysis? (2) how are the factors extracted? (3) what criteria assist in determining factor extraction, (4) how is selection of rotational method made? (5) how could interpretation and labelling be made? (Williams, Onsman, Brown, 2010). In other words, the steps concern respectively about sample size, ways to do factor extraction, criteria applied to extract factors, rotation technique, and interpretation as well as naming the extracted factors. In response to the question number one, sample size in EFA is no less than 100 participants which means bigger size is recommended (Hair et al., 2014; Comrey & Lee, 1992). With regard to factor extraction, there are many ways to do, as far as factor analysis is concerned, such as Principal Component Analysis (PCA), Principal Axis Factoring (PAF), Image Factoring, Maximum Likelihood, Alpha Factoring, and Canonical. Among other ways of factors extraction, PCA and PAF are most commonly used in the published literature (Henson, & Roberts, 2007); (Fidell, 2007). In this line, prior to the extraction of the factors, several testing should be applied to assess the suitability of the data. This includes, such as, Kaiser-Meyer-Olkin (KMO) measure of Sampling Adequacy (MSA), Bartlett's Test of Sphericity. With regard to the criteria of factor extraction, it's suggested that multiple criteria are applied, including Keiser's criteria - with eigenvalue bigger than 1; the scree test; the cumulative percent of variance extracted; and parallel analysis (Kaiser, 1980; Cattell, 1966; Horn, 1965) as cited by William, Onsman, & Brown, (2010). With regards to rotation, there are two common rotation techniques, i.e., orthogonal varimax rotation and oblique promax rotations. Regardless of which rotation techniques is applied, the main objectives are to provide easier interpretation of the research results (Hair, Anderson, Tatham, and Black, 1995; Kieffer, 1999) cited by William, Onsman, & Brown, (2010). Finally, interpretation and labelling urge researchers to examine which variables are attributable to a particular factor and, at the same time, give that factor a name or a theme. Labelling a factor is subjective, theoretical, and inductive process. In other words, the meaningfulness of latent factors is ultimately dependent on the researcher's definition (Henson & Roberts, 2006) as cited by William, Onsman, & Brown, (2010).

All the procedural steps of EFA, as noted, has been applied in this research. It's to say that the number of respondents for EFA (N = 105) was slightly above the minimum sample size and PCA was preferred to apply in which KMO – MSA and Bartlett's test of sphericity have been tested ahead of time. This research has also applied multiple criteria to extract factors to include three out of four prevailing criteria, such as Keiser's criteria, scree test,

cumulative percent of variance extracted. In the near end of the steps, varimax rotation was made and finally interpretation and factor labelling was completed.

Fourth to assess the concurrent validity of the measure a correlational study was conducted. In this line, the adapted measure was correlated to another measure developed by Carlo and Rendal (1982) termed as PTM or Prosocial Tendency Measure. This measure consists of 23 items by which respondents are requested to describe themselves based on each of the stated item in the measure. There are five scales in the measure, such as (1) does not describe me at all, (2) describe me a little, (3) somewhat describe me, (4) describe me well, (5) describe me greatly.

Fifth the SRA Scale underwent a test-retest reliability assessment in the end of the validation process. It was intended to measure the level of consistency of the last Indonesian version of SRA scale. For this purpose the measure was administered to 30 respondents with 30 days time interval.

III. FINDING

3.1.1 Validity & Reliability

In the try out stage, one statement was dropped due to validity reason. It's the statement number 8 ($r_{cal} = 0.248 < 0.361$). Calculation was made by applying correlational procedure of Person's Product moment. Data is presented in table 2.

Table 2: Data of item validity test

Item Number	r_{cal}	r_{tab}	Status
1	0,5700	0,361	Valid
2	0,7854	0,361	Valid
3	0,7806	0,361	Valid
4	0,4189	0,361	Valid
5	0,6853	0,361	Valid
6	0,6798	0,361	Valid
7	0,8334	0,361	Valid
8	0,2458	0,361	Drop
9	0,4166	0,361	Valid
10	0,5304	0,361	Valid
11	0,6871	0,361	Valid
12	0,5526	0,361	Valid
13	0,6026	0,361	Valid
14	0,7427	0,361	Valid
15	0,6056	0,361	Valid
16	0,5607	0,361	Valid
17	0,7871	0,361	Valid
18	0,8342	0,361	Valid
19	0,6818	0,361	Valid

20 0,5240 0,361 Valid

Data derived from the try out was also used to calculate the reliability of the adapted measure and this gave the Alpha-Cronbach reliability index significantly high (Table 3).

Table 3: Reliability of the 19-item adapted measure

Number of Items	19
Combined Variance	25.202
Total Variance	196.372
Reliability	0.920

3.1.2 Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy & Bartlett's Test of Sphericity

KMO-MSA and Bartlett testing were conducted and yielded adequate value of MSA loading factors. Table 4 shows the results of these tests.

Table 4: KMO-MSA & Bartlett

KMO Measure of Sampling Adequacy	0.849
Bartlett's Test	Approx. Chi-Square 780.819
of Sphericity	df 171
Sig.	0.000

The KMO correlation as shown above is more than adequate to apply EFA in the data analysis. Such is claimed by (Netemeyer, Bearden et al. 2003) stating that a KMO correlation between 0.60 - 0.70 is considered adequate to analyze the EFA output.

3.1.3 Cumulative Percentage of Variance and Eigenvalue

There is no single agreement about cumulative percentage of variance across areas of disciplines. However, Hair et al. (2014), as cited by William, Onsmann, & Brown, (2010) stated that, for natural sciences, factors should be stopped when at least 95% of the variance is explained and in the sphere of humanities it ranges between 50% to 60%.

This research demonstrates a cumulative percentage of variance of 67.255% and 6 components or factors having an eigenvalue bigger than 1 (Table 5).

Table 5: Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	6,859	36,099	36,099	6,859	36,099	36,099	3,327	17,508	17,508
2	1,445	7,607	43,706	1,445	7,607	43,706	2,562	13,483	30,991
3	1,296	6,819	50,525	1,296	6,819	50,525	2,126	11,190	42,181
4	1,126	5,926	56,451	1,126	5,926	56,451	1,745	9,182	51,363
5	1,032	5,430	61,881	1,032	5,430	61,881	1,718	9,041	60,404
6	1,021	5,374	67,255	1,021	5,374	67,255	1,302	6,851	67,255
7	,810	4,263	71,518						
8	,754	3,971	75,488						
9	,726	3,819	79,307						
10	,625	3,287	82,594						
11	,594	3,125	85,720						
12	,491	2,586	88,306						
13	,423	2,228	90,533						
14	,397	2,087	92,620						
15	,365	1,919	94,539						
16	,333	1,752	96,291						
17	,271	1,429	97,720						
18	,242	1,275	98,995						
19	,191	1,005	100,000						

Extraction Method: Principal Component Analysis.

3.1.4 Scree Test

The term “Scree Test” was given its name by Cattell (1966) related to the Scree test graphical presentation, which has visual similarities to the rock debris or scree at a mountain valley (Cattell, 1966). In a scree plot, the extracted factors or components can be simply identified by observing where they sharply drop off. There are two steps to inspect a scree plot, such as (1) draw a straight line through the smaller eigenvalues where a departure from this line occurs. This point highlights where the debris or break occurs. (2) the point above this debris or break (not including the break itself) indicates the number of factors to be retained. In this research, 6 factors are extracted (Figure 1) in which, as noted, the lowest eigenvalue is 1.021 and the highest 6.859 (table 5).

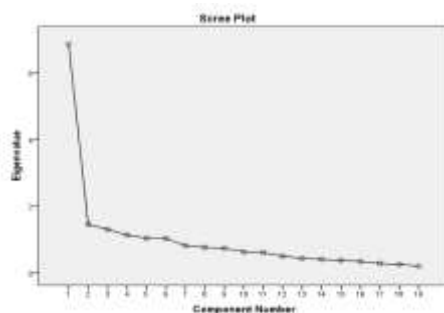


Figure 1: Scree plot (SPSS Output)

3.1.5 Selection of Rotation Techniques

Data analysis in EFA, particularly to identify the extracted factors, can also be done through careful checking whether a variable might relate to more than one factor. That’s what selection of rotation is about. As noted, two rotation techniques are commonly applied i.e., orthogonal varimax rotation and oblique promax rotation. The first technique is the most commonly preferred by researchers in doing EFA as compared to the latter (Thompson, 2004). This research applied orthogonal varimax rotation as presented in table 6.

Table 6: Rotated Component Matrix

VARIABLE	Component					
	1	2	3	4	5	6
VAR00001	0,247	0,098	0,780	-0,060	0,065	0,013
VAR00002	0,731	0,039	0,262	-0,063	0,182	0,312
VAR00003	0,749	0,221	0,164	0,172	0,093	0,163
VAR00004	0,410	0,058	-0,045	0,335	0,635	-0,104
VAR00005	0,038	0,144	0,130	0,122	0,799	0,242
VAR00006	0,757	0,090	0,104	0,211	0,038	-0,208
VAR00007	0,462	0,149	0,574	0,279	0,045	-0,093
VAR00008	-0,017	0,026	0,729	0,380	0,072	0,200
VAR00009	0,142	0,118	0,100	0,168	0,075	0,792
VAR00010	0,513	0,372	-0,047	0,096	0,261	0,273
VAR00011	0,064	0,478	0,461	-0,038	0,202	0,280
VAR00012	0,036	0,793	0,056	0,083	0,118	0,203
VAR00013	0,429	0,582	0,050	0,272	-0,066	0,173
VAR00014	0,400	0,602	0,005	0,255	0,238	-0,133
VAR00015	0,149	0,221	0,200	0,737	-0,013	0,296
VAR00016	0,278	0,612	0,351	0,267	0,127	-0,174
VAR00017	0,610	0,337	0,210	0,097	0,231	0,118
VAR00018	0,212	0,159	0,078	0,699	0,288	-0,001
VAR00019	0,255	0,417	0,294	-0,126	0,529	-0,123

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

Rotation converged in 8 iterations.

As can be seen in the above table, all variables or items crop up under a particular component or factor depending on the biggest loading factor (e.g. variable or item 1 relates factor 3 having biggest loading factor (0.780) and variable 2 is accommodated under factor 1 with the biggest loading factor (0.731).

3.1.6 Interpretation and Labeling

Interpretation deals with examining which variables are attributable to a particular factor and, based on this, a name or theme is attributed. There is a common tradition that, at least, two variables must load on a factor so that a meaningful interpretation can be made. In addition, as noted, labeling a factor is subject to preference of every individual researcher (Henson & Roberts, 2006). Based on that the interpretation of factor grouping and label naming is made as presented in table 7.

Table 7: Factors, Variable and Names

No	Component/ Factor	Variable/ Item	Name
1	Factor 1	2, 3, 6, 10, 17	Altruism Type 1
2	Factor 2	11, 12, 13, 14, 16	Altruism Type 2
3	Factor 3	1, 7, 8,	Altruism Type 3
4	Factor 4	15, 18	Altruism Type 4
5	Factor 5	4, 5, 19	Altruism Type 5
6	Factor 6	9	Altruism Type 6

3.1.7 Concurrent Validity

As noted to assess its concurrent validity a scale should be correlated with another measure on the similar realm. Such has been done by many researchers when adapting a standardized measure (e.g. Khanna, Singh, and Rushton (1993). They tested the Hindi version of SRA scale for concurrent validity by comparing their measure with the altruism scale constructed and standardized by Rai and Singh (1984). In this research the adapted SRA was compared to Carlo and Randall's Prosocial Tendency Measure (1982) and yielded a medium correlation index ($r = 0.534$).

3.1.8 Test-retest Reliability

The last stage of the standardization process in this research was test-and-retest reliability assessment. It involved 30 respondents. In this line the instrument was administered twice to the same respondents with a-30-day time interval. Data obtained from the first test were correlated with the other data from the second test and yielded high consistency index ($r = 0.806$).

IV. CONCLUSION AND DISCUSSION

4.1.1 Conclusion

Based on the analysis, it is essential to conclude the research, as follows:

1. Nineteen statements in the adapted SRA scale are valid and reliable to measure altruistic behavior of pre-service teacher in Indonesia. They are adapted from the original 20-item SRA scale developed by Rushton, Chrisjohn & Fekken, 1981).
2. Six factors are extracted based on Principle Component Analysis which are labelled as Altruism type 1, 2, 3, 4, 5, and 6 respectively.
3. The adapted SRA scale has a medium correlation index, when tested with another measure ($r = 0.534$).
4. The adapted measure has undergone a test-retest reliability assessment and obtained high reliability index ($r = 0.806$).
5. It is necessarily true to confirm that the adapted SRA scale is applicable to measure altruistic behavior of pre-service teacher in Indonesia.

4.1.2 Discussion

The original SRA scale, consisting of 20 statements or items have been adapted to align with the context of Indonesia and is applicable to measure altruistic behavior of pre-service teachers. In the initial process, the number of statements is kept similar with the SRA scale but in the next process of validation one item is deleted due to low coefficient index of item validity in the try-out stage. It is identified as item number 8 of the first draft of adapted SRA. Thus, the measure is now consisting of 19 items. The deleted item is discussed sufficiently.

Item 8 reads, “*Melakukan donor darah*” or “Doing blood donation”. This item, as noted, is deleted due to validity reason. By its concept, it’s reasonable, since doing blood donation needs fixed requirements made by related governmental body i.e. in this context The Indonesian Red Cross or *Palang Merah Indonesia / PMI*. Among other *PMI* standard requirements read “minimum body weight 45 kg’s”, “blood hemoglobin levels of potential donors are at least 12.5 grams / deciliter (g / dl)”, “Normal blood pressure ranges from systole 110-160 mmHg, diastole 70-100 mmHg, “ (PMI, 2013). This implies a clear notion that the willingness to do blood donation is not fully in the hand of the potential donors. In other words, this action is not unconditional. Meanwhile, on the other hands, the act of altruism is very much dependable to the person concerned.

In this line, personally I recommend that the statement be changed with another item which is more dependable, such as the one relates to assisting other people in natural disasters. The revised statement may read, for example “*Menolong orang lain yang tertimpa musibah bencana alam*” or Helping others affected by natural disasters.

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