

Malaysian Multi-Ethnic Discrimination Scale: Preliminary Factor and Psychometric Analysis

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Abstract—The aims of this study were to determine the factor structure and psychometric properties (i.e., reliability and convergent validity) of the Malaysian Multi-Ethnic Discrimination Scale (MMEDS). It consists of 71-items measure experience, strategies used and consequences of ethnic discrimination. A sample of 649 university students from one of the higher education institution in Malaysia was asked to complete MMEDS, as well as *Perceived Ethnic and Racial Discrimination*. The exploratory factor analysis on ethnic discrimination experience extracted two factors labeled 'unfair treatment' (15 items) and 'Denial of the ethnic right' (12 items) which accounted for 60.92% of the total variance. The two sub scales demonstrated clear reliability with internal consistency above .70. The convergent validity of the Scale was supported by an expected pattern of correlations (positive and significant correlation) between the score of unfair treatment and denial of the ethnic right and the score of *Perceived Ethnic and Racial Discrimination by Peers Scale*. The results suggest that the MMEDS is a reliable and valid measure. However, further studies need to be carried out in other groups of sample as to validate the Scale.

Keywords—Factor structure, psychometric properties, exploratory factor analysis.

I. INTRODUCTION

MALAYSIA'S unique aspect is her ethnic diversity, where people of diverse ethnics live together in a plural society. The ethnic diversity in Malaysia is complicated by other form of diversities, such as religious, cultural, regional, economic activity and political orientation. Shamsul Amri Baharuddin [1] claimed that such social structures are bound to create contradiction and tensions and it is not an easy task to maintain ethnic harmony in this plural society. Thus, the spirit of goodwill, mutual respect, cooperation, tolerance, understanding and trust among the multiracial people is very important in building a multi-ethnic nation into a united Malaysia nation [2].

National Unity is very vital and is the key to Malaysia's success. Lee [3] claimed that the most important determinant of Malaysia is success to become a fully developed nation by the year 2020, is national unity. Thus, Malaysians should be more conscious of their role and contribution towards national unity, continue to aim at nurturing and strengthening the spirit of love and loyalty for the country and pride in being Malaysians and continue to strengthen racial harmony and

religious tolerance. To ignore these may lead to unfathomable difficulties and dire consequences, such as the black events of 13 May 1969. The lack of understanding of national identity may eventually cause prejudice, stereotypical, ethnocentric and ultimately lead to social discrimination.

The question of how successfully these diverse ethnic groups are incorporated into the fabric of life in Malaysia is obviously important for Malaysian society. One way to investigate the success of their "incorporation" is to examine and compare the extent to which members of these diverse ethnic groups perceive themselves to be discriminated in various spheres of life [4]. To understand the ethnic discrimination phenomenon among the multi ethnic groups in Malaysia, the measures of ethnic discrimination with detailed specification of the context and domain of ethnic discrimination in Malaysia need to be developed.

In most published studies of ethnic discrimination, the measures of discrimination had often been general, not specific to Malaysia context and the domain of ethnic discrimination did not directly reflect ethnic discrimination phenomenon in Malaysia. For example, The Perceived Racism Scale measures interpersonal and institutional racism during the past years and lifetime, The Everyday Discrimination Scale [5] measures everyday experiences of interpersonal discrimination and includes an item about the nature of the discrimination. The Experiences of Discrimination [6] measures interpersonal and institutional discrimination across seven domains (e.g., school, work, obtaining housing). In [7], respondents indicated their confidence that their group and themselves had been discriminated against on the basis of race, culture, new comer status, or sex. However, neither the domain nor context (e.g., employment, neighbourhood, etc.), or the type of perceived discrimination (other than its suspected basis, such as race or gender), was suitable for the participants in Malaysia.

A. Purpose of Study

The purpose of study are to determine the factor structure, reliability and construct validity of the measure of ethnic discrimination experience in Malaysian Multi-Ethnic Discrimination Scale (MMEDS). The MMEDS consists of 71-items that measure three aspects: ethnic discrimination experience, ethnic discrimination coping strategies and consequences of ethnic discrimination. However, in this study only the findings of the measure of ethnic discrimination experience will be discussed.

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II. METHOD

A. Design of Study

The design of this study was a psychometric validation study which aims to determine the factor structure and to establish the psychometric properties (i.e., reliability and construct validity) of the Malaysian Multi-Ethnic Discrimination Scale (MMEDS).

B. Respondents

Respondents of this study were 649 undergraduate students [388 females (59.98%), 207 males (31.90%) and 54 did not report their sex] selected randomly from one of the higher education institution in Malaysia. They are from all the 13 states in Malaysia, as well as two Federal Territories. Their ages ranged from 20 and 24 years old. The respondents comprised 74.1% Muslim students, 15.1% of students were Christian and 7.7% of students were Buddhist. Random sampling method was used in the selection of the respondents in this study.

C. Measures

The study was based on a set of questionnaire responded by the sample of students from one of the higher educational institution in Malaysia. Among the variables included in the questionnaire were demographic information (i.e. gender, age, ethnicity, religion, original states, etc.), the Malaysian Multi-Ethnic Discrimination Scales designed by the researchers of this study and *Perceived Ethnic and Racial Discrimination by Peers Scale* [11].

Malaysian Multi-Ethnic Discrimination Scale

The Scale is a newly created scale by the researchers based on the findings of their previous study "Exploring the Concept of Stereotype, Prejudice and Discrimination among Multi-Ethnic Group in Sabah, Malaysia" [2], [8], [9]. However, this study will only focus on the domain of ethnic discrimination. From the previous study, three measures of ethnic discrimination had been identified: ethnic discrimination experience; strategies used to cope with ethnic discrimination issues and the consequences of ethnic discrimination. The items were written based on the respondents' verbatim on these three measures and the initial 73-item version of The *Malaysian Multi-Ethnic Discrimination Scale* was developed. Of all, 35 items were generated to measure ethnic discrimination experience, 18 items to measure strategies used to cope with ethnic discrimination issues and 20 items were created to measure the consequences of ethnic discrimination. A 5-point *Likert* scale was used to indicate respondents degree of agreement or disagreement with each of the items (1= strongly disagree, 2 = disagree, 3 = neutral, 4 =agree, and 5 = strongly agree). However, in this study only the measure of ethnic discrimination experience will be discussed.

Perceived Ethnic and Racial Discrimination by Peers Scale

Perceived ethnic and racial discrimination by peers was assessed using a 21-item scale [10]. The Scale was developed based on qualitative work with Black, Latino, and Asian

American adolescents [11]. Respondents responded on a 5-point *Likert* scale ranging from "never" (0) to "all the time" (4) to items about experiences of race or ethnic discrimination by peers (e.g., "How often are you treated unfairly by your peers because of your race or ethnicity?"). This scale consists of two identical factors (eight items each): one based on explicit discrimination (e.g., physical and verbal harassment) and the other on implicit discrimination [12]. This measure has shown good internal consistency with Black, Latino, and Asian American adolescents ($\alpha > .80$ for each ethnic group) [13] and reliability was high for both factors (factor 1, $\alpha = 0.94$ and factor 2, $\alpha = 0.86$). This Scale will be analyzed for evidence of convergent validity of the *Malaysian Multi-Ethnic Discrimination Scale*. It is expected that scores on *Perceived Ethnic and Racial Discrimination by Peers Scale* will be correlated significantly and positively with score on the measure of ethnic discrimination experience of *Malaysian Multi-Ethnic Discrimination Scale*.

D. Data Analysis

Data were analyzed using IBM SPSS Statistic version 21.0. The analysis started with exploratory factor analysis to establish the factor structure of The *Malaysian Multi-Ethnic Discrimination Scale*. With regard to the psychometric properties of the Scale, the reliability of the *Malaysian Multi-Ethnic Discrimination Scale* was assessed using method of internal consistency Cronbach's alpha with a criterion of 0.70 taken as indicating good reliability [14]. Construct validity of the Scale was established by assessing convergent validity where it was expected that score on the measure of ethnic discrimination experience of *Malaysian Multi-Ethnic Discrimination Scale* will be correlated significantly and positively with score on the *Perceived Ethnic and Racial Discrimination by Peers Scale* which measure the same construct. The evidence of convergent validity of the Scale will be further determined by the intercorrelations among the sub scale measured. The criterion for acceptable convergent validity was indicated by correlation coefficient values between 0.40 and 0.70 [15].

III. RESULTS AND DISCUSSION

A. Determining Factorability of the Dataset

To test whether the collected data was appropriate to proceed with a factor analysis, three initial analysis: the correlation matrix, Bartlett's test of Sphericity and the Kaiser-Meyer-Olkin measure of sampling adequacy were conducted. Results of these three analysis supported factorability of the dataset. Evidence for the presence of the zero-order correlations among all items (not shown here) were moderately inter correlated (average range correlation = .30 - .70). Bartlett's test of Sphericity was 31645.177, $p < .001$ and the Kaiser-Meyer-Olkin measure of sampling adequacy was .976.

B. Exploratory Factor Analysis

To establish the initial factor structure of the *Malaysian Multi-Ethnic Discrimination Scale* on the measure of ethnic

discrimination experience, a multistage process is used to decide on the number of factors to extract. First, a parallel analysis, the rational using parallel analysis is that the factors underlying the measures should account for more variance than is expected by chance based on factor extractions using multiple sets of random data (e.g., 1,000 random datasets) [16]. Only those factors associated with a greater eigenvalue than the corresponding factor from the random-number dataset were eligible for retention. Second, the scree plot, where the “leveling-off-point” on the scree line represents the last factor that should be extracted [17]. Third, eigenvalues ≥ 1 where only factors with eigenvalues above 1.00 will be considered, the eigenvalue represents the product of the number of items entered into the analysis and the percentage of variability accounted for by the factor [18].

TABLE I
COMPARISON OF EIGENVALUES FROM THE ORIGINAL FACTOR ANALYSIS AND FOUR RANDOMLY GENERATED DATASETS OF THE MALAYSIAN MULTI-ETHNIC DISCRIMINATION SCALE

Factor	Original Dataset	Mean	Randomly Datasets
1	17.835068	.531997	.591571
2	2.259398	.472384	.515344
3	1.683025	.428297	.466179
4	.624329	.390073	.425129
5	.504131	.355676	.386574
6	.413555	.324888	.357621
7	.354559	.295222	.326913
8	.299104	.267683	.295361
9	.261703	.240521	.267311
10	.205045	.214459	.241404
11	.197095	.190760	.213690
12	.146940	.166718	.191054
13	.136442	.143710	.167792
14	.120255	.120708	.143600
15	.060990	.098445	.119525
16	.042408	.076613	.097135
17	.024470	.055667	.076810
18	.019863	.034701	.055433
19	.006914	.013936	.033329
20	-.015225	-.005988	.013963
21	-.021723	-.025705	-.005707
22	-.039625	-.045910	-.027642
23	-.055680	-.065707	-.047427
24	-.060924	-.085758	-.068503
25	-.069695	-.105488	-.088129
26	-.080080	-.124634	-.107287
27	-.090889	-.144358	-.126600
28	-.105761	-.163976	-.146406
29	-.111198	-.183880	-.167003
30	-.120226	-.204366	-.186722
31	-.135662	-.225595	-.207753
32	-.142143	-.247191	-.228883
33	-.152560	-.270130	-.249145
34	-.158899	-.295479	-.274213
35	-.167384	-.327213	-.299642

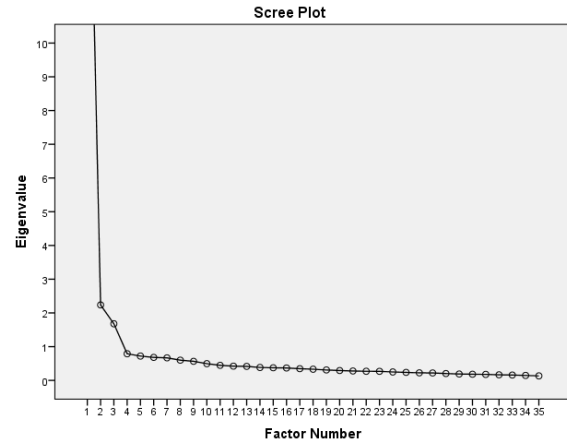


Fig. 1 Scree Plot for the measure of ethnic discrimination experience on Malaysian Multi-Ethnic Discrimination Scale

All 35 items of the measure of ethnic discrimination experience in The *Malaysian Multi-Ethnic Discrimination Scale* were factor analyzed. The results from the parallel analysis indicated that six factors should be extracted based on 1,000 random data sets (Table I). However, the scree plot indicated a 2 or 3 factor solution (Fig. 1). Given parallel analysis results and the scree plot, subsequent factor analyses with Promax Oblique Rotation were conducted to determine whether a 2-factor, 3-factor, or 6-factor should be extracted.

The result of the factor analysis with Promax Oblique Rotation and the criteria of eigenvalues ≥ 1 indicated the two-factor solution was found to be the most interpretable. The two-factor solution accounted for 60.92% of the total variance in the items of ethnic discrimination experience. Items were selected for each factor based on the factor pattern matrix that uses the criteria of a factor loading above .50 on the factor [16], [19]. Based on these criteria, 24 items out of the original 35 items were retained. The two factors and their respective items, factor loadings, eigenvalues and percentage of variance were presented in Table II.

Factor 1 was labeled as ‘Unfair Treatment’, it was constituted by thirteen items and accounting for 55.49% of the total variance of the items. The item values loaded ranged from .511 to .917. These items reflected unfair treatment by other ethnic groups perceived by the individuals. The highest loading items were item 29 ‘Students of other ethnic are arrogant towards me because of my ethnicity’ and item 26 ‘Students of other ethnic groups criticize me because of my ethnicity.’

Factor 2 was labeled ‘Denial of the Right’, it was constituted by eleven items and accounting for 5.43% of the total variance of the items. The item values loaded ranged from .512 to .936. Denial of the Right is defined as the denial

of individual right in using public facilities, admission to the university, holding student’s association post, and receiving government’s scholarship because of the individual ethnicity. The highest loading items were item 4 ‘I was not allowed to join anything because of my *ethnic look*’ and item

2 ‘I was not given the permission to use the facilities at the university because of my ethnicity.’

TABLE II
FACTOR, ITEMS, FACTOR LOADINGS, EIGENVALUES AND PERCENTAGE OF VARIANCE FOR THE MEASURE OF ETHNIC DISCRIMINATION EXPERIENCE ON MALAYSIAN MULTI-ETHNIC DISCRIMINATION SCALE

Items	Factor Loading	
	1 (eigenvalue = 19.42; % variance = 55.49)	2 (eigenvalue = 1.90; % variance = 5.43)
Unfair Treatment		
B29 Students of other ethnic are arrogant towards me because of my ethnicity	.917	
B26 Students of other ethnic groups do not criticize me because of my ethnicity	.902	
B28 Students / lecturers of other ethnic groups consider me less intelligent because of my ethnicity	.896	
B27 Students of other ethnic groups do not want to work with me because of my ethnicity	.894	
B25 Students of other ethnic groups do not respect me because my ethnicity	.886	
B35 Students of other ethnic groups find it difficult to believe me because of my ethnicity	.870	
B32 Students of other ethnic groups do not like to talk / communicate with me because of my ethnicity	.825	
B24 Other ethnic students do not want to stay in a room with me (for example, in the residential college) because of my ethnicity	.784	
B34 Students / lecturers of other ethnic groups look down on my ethnic traditional practices (such as, how to dress, food,...).	.773	
B33 Students of other ethnic groups often advised not to choose my ethnic as a life partner	.767	
B31 Students of other ethnic groups use abusive language when speaking to me because of my ethnicity	.699	
B30 I was given a low grade / low marks by lecturers because of my ethnicity	.667	
B22 I am laughed at because of my ethnicity.		
Denial of the Ethnic Right		
B4 I was not allowed to join anything for having a ethnic look.		.936
B2 I was not given the permission to use the facilities at the university because of my ethnicity		.930
B5 I was not allowed to join anything because my ethnic groups are considered as immigrants.		.925
B1 I was excluded in the selection of students that could enter university because of my ethnicity.		.884
B3 I was not allowed to join anything because of my ethnic skin tones.		.871
B6 I was not allowed to join anything because of my ethnicity is regarded as dangerous / violent / rowdy / criminal.		.728
B7 I rejected when applying for a job (part time) because of my ethnic		.700
B8 I was sidelined while attending classes / lectures (eg, signing the attendance, allocation of duties, work distributions) because of my ethnicity.		.652
B9 I was rejected the scholarship application because of my ethnicity		.644
B10 I was not given important positions in any associations at the university because of my ethnicity		.530
B11 I am not being treated fairly (e.g. signing attendance in class / lecture) because of my ethnicity		.512

C. Reliability

The reliability of the *Malaysian Multi-Ethnic Discrimination Scale* was assessed using method of internal consistency Cronbach's alpha with a criterion of 0.70 taken as indicating good reliability [15]. The Cronbach's alpha value for the total 24 items of the measure of ethnic discrimination experience was $\alpha = .963$ indicating good internal consistency. The results also indicated high level of reliability for the two sub scale: Unfair Treatment ($\alpha = .936$) and Denial of ethnic right ($\alpha = .946$) [Table III].

TABLE III
INTERNAL CONSISTENCY CRONBACH'S ALPHA FOR THE MEASURE OF ETHNIC DISCRIMINATION EXPERIENCE AND ITS SUBSCALE

Scale	Number of Item	Cronbach's Alpha Coefficients
Ethnic Discrimination Experience	24	.963
Unfair Treatment	13	.936
Denial of Ethnic Right	11	.946

D. Validity

Construct validity of the *Malaysian Multi-Ethnic*

Discrimination Scale was established by assessing the correlations (correlated significantly and positively) between the score on two subscale from the measure of ethnic discrimination experience and score on *Perceived Ethnic and Racial Discrimination by Peers Scale* which measure the same construct. As expected, the results showed ethnic discrimination experience scores correlated significantly and positively with on *Perceived Ethnic and Racial Discrimination by Peers Scale* ($r = .507$). Unfair treatment scores had a positive and moderate correlation with score on *Perceived Ethnic and Racial Discrimination by Peers Scale* ($r = .496$). Denial of Ethnic Right scores also showed a positive and moderate correlation with score on *Perceived Ethnic and Racial Discrimination by Peers Scale* ($r = .425$). These results supported the construct validity of the measure of ethnic discrimination experience (Table IV).

The Construct validity of *Malaysian Multi-Ethnic Discrimination Scale* (the measure of ethnic discrimination experience) was further assessed by calculating the correlation coefficients between the subscales and the total score of the ethnic discrimination experience (Table IV). As shown in

Table IV, all correlations were significant. Unfair treatment scores showed a positive and high correlation with score on Denial of Ethnic Right ($r = .711$) and with the total score of ethnic discrimination experience ($r = .935$). The correlation between Denial of Ethnic Right score and the total score of ethnic discrimination experience was $r = .935$. The results

suggested that the greater the respondents perceived they were treated unfairly the greater they perceived their ethnic right was denied by other ethnic groups and the greater their ethnic discrimination experience. These results further confirmed the convergent validity of this measure.

TABLE IV
INTERCORRELATION BETWEEN SUBSCALES OF THE ETHNIC DISCRIMINATION EXPERIENCE MEASURE AND WITH THE PERCEIVED ETHNIC AND RACIAL DISCRIMINATION BY PEERS SCALE

Scale/Subscale	Unfair Treatment	Denial of Ethnic Right	Ethnic Discrimination Experience	Perceived Ethnic & Racial Discrimination by Peers
Unfair Treatment				
Denial of Ethnic Right	.711**			
Ethnic Discrimination Experience	.935**	.914**		
Perceived Ethnic & Racial Discrimination by Peers	.496**	.425**	.507**	

IV. CONCLUSION

An exploratory factor analysis on the Malaysian Multi-Ethnic Discrimination Scale (MMEDS) provided evidence for a two-factor solution for the 24 items of the measure of ethnic discrimination experience. Findings of the study suggested that the psychometric properties of the 24-item of the measure of ethnic discrimination experience were acceptable for research purposes, with all the sub scale of the measure found to have good internal consistency reliability and good convergent validity. In summary, the measure of ethnic discrimination experience of the Malaysian Multi-Ethnic Discrimination Scale appears to have good psychometric properties in terms of factor structure, reliability and validity.

The development of the Malaysian Multi-Ethnic Discrimination Scale had provided an important contribution to the literature, the development and application of the Malaysia local instrument. However, findings of this study should be considered as an initial and preliminary study. There are several limitations regarding the development of this scale that should be taken into consideration in using this scale. The respondents in this study were university students from one of the higher education institutions in Sabah, Malaysia and the limited size of the sample. Thus these findings cannot be generalized to other university students. Further studies should be carried out in other states in Malaysia based on different ethnic groups, other higher education institutions in Malaysia, students from different socio-economic levels and age groups.

ACKNOWLEDGMENT

The research for this paper was financially supported by the Malaysia Ministry of Education, under Long Term Research Grant Scheme (LRGS): Program of Social Cohesion, grant no. LRGS/BU/2011/UKM/CMN.

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