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Validity and Reliability of Burnout Scale for Malaysian Students

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ABSTRACT
This study aimed to develop a burnout scale for school students in Malaysia by confirming its validity and reliability. Burnout is a condition in which the students feel an excessive of workload in meeting expectations set by themselves, their parents and the school. This study involved 2,359 school children in Malaysia. This study was to confirm the validity and reliability of the instrument for 9 items burnout scale. Five-point scale items used in this study. The AMOS 18.0 was used for Exploratory Factor Analysis (EFA) and Confirmatory Factor Analysis (CFA) to examine the burnout scale in school. The results showed all criteria of the congruity index have been met. Two factors had emerged with 9 items and were named as student's Exhaustion (5 items) and Cynicism (4 items). These two factors indicated the reliability of the constructs and the variance value could be accepted. This study successfully produced a burnout scale in the context of school children in Malaysia. Each of the factors can be measured separately depending on the context of the research. The school burnout measurement model can also be a starting point for future study at the school level.

Key words: Burnout, validity, reliability, cynicism, inadequacy, Malaysian students

INTRODUCTION

Burnout cases in schools are increasing including during the learning process. In the learning process, the pressure is arising from the course/subject, the workload or other psychological stress which lead to emotional exhaustion and a sense of inadequacy due to low achievement (Aypay, 2011). Burnout in school can lead to low motivation and high dropout rates. According to Laursen *et al.* (2010), school culture is important in understanding the burnout syndrome. Their findings showed that teenagers who experience burnout at school usually fail and they also have a sense of jealousy towards friends who are more successful. A study by Dyrbye *et al.* (2009) also proved the seriousness of burnout cases among students at schools. Alarcon *et al.* (2009) found that personality factors is a vital part in the development of burnout. Burnout in school is a form of psychological, physical and high stress among students in schools. This typically occurs between students who are not able to cope with work pressure area that demands energy, time and resources. The researchers have found that burnout bring huge impact to organizations and individuals for negative impacts on school engagement and academic achievements (Salmela-Aro and Tynkkynen, 2012). Students who are experiencing burnout become less energetic and less interested in their learning.

The concept of burnout was initiated by a study on the state of harassment in the workplace. However, the concept was found relevant with students and the schools context (Skinner *et al.*, 2008; Salmela-Aro and Tynkkynen, 2012). Burnout students/pupils refer to a situation in which students feel the burden of excessive school works to meet the expectations for success expected by themselves, their parents and also the school. In the context of learning and schooling, stress among students arises from excessive school workload in preparing for the examinations, competition in getting the best grades or from other factors such as school teachers and peers. The pressures have caused psychological stress such as emotional exhaustion, lack of sensitivity, a sense of incompetency and inadequacy at school. The burnout condition causes students to be involved in discipline cases, delinquency and behavior problems and influences them to skip classes, school truancy and then drop out from school (Finn, 1989; Bask and Salmela-Aro, 2013).

Maslach Burnout Inventory-Student Survey (MBI-SS) can be considered as the first inventory developed to measure students' burnout in schools (Schaufeli *et al.*, 2002). The

inventory was initially modified from the Maslach Burnout Inventory-General Survey (MBI-GS) (Maslach and Jackson, 1981). MBI-GS was customized by exchanging the word "work place" with the word "school". For example, in the MBI-GS the word "working" was replaced with "learning" in the MBI-SS. The same study was carried out by Salmela-Aro and Naatanen (2005) to establish a School Burnout Inventory (SBI). The inventory was adapted from Bergen 15 Burnout Indicators as the same procedure done by Schaufeli *et al.* (2002). Reliability and validation studies had been conducted on the SBI to develop burnout as a construct with three sub-constructs namely lethargy, cynicism and efficacy (Salmela-Aro *et al.*, 2009). Each sub-construct has a high correlation between each other. For the purpose of this study, in measuring the sample's burnout, SBI was translated into the Malay Language and a pilot study was conducted for validation and to test the reliability of the items.

Maslach and Pines (1979) conducted a study on 'burnout' from the social-psychological perspective. Their study had produced an inventory called the Maslach Burnout Inventory. This inventory has been widely used to assess three factors in measuring burnout. The factors studied are in terms of emotional exhaustion, depersonalization and personal accomplishment. In addition, Maslach and Pines (1979) believed that the characteristics of the works or duties in an organization are the determining key factors for the probability of a person to suffer 'burnout' (Gold and Roth, 1993). Most of the research on burnout focused on the profession in general leads to a professional service, such as doctors, teachers and employees of other public service providers. Burnout is not just happening in a person as an employee professional service provider. Burnout also abound at various other jobs that is in the field of industrial and organizational (Maslach *et al.*, 2001). However, burnout also occurs among students in schools (Noh *et al.*, 2013; Lee *et al.*, 2013).

This study aimed to determine the validity and reliability of the instrument burnout scale. Burnout instrument refers to Maslach and Jackson (1981). There are three subscales that comprise burnout: Exhaustion, cynicism and inadequacy. Students indicated the frequency of their burnout as stated in these items on a five point likert scale with 1 as completely disagree and 5 as strongly agree.

METHODOLOGY

Participants: In the present study, a questionnaire was collected from a total sample of 2,359 students in Malaysia. The study group included students from 31 secondary schools located in both urban and rural areas. Of this total sample, 1,170 (49.6%) of the participants were boys while 1,189 (50.4%) were girls. The 892 (38%) were in the first grade, 792 (33.5%) were in the second and 675 (28.5%) were in the third grade. Moreover, the sample contains students from all ethnics in Malaysia while the number of Malay, Chinese, Indian and others in this study were 1,740, 266, 237 and 116, respectively.

Measures

School burnout inventory: The SBI is originated from Salmela-Aro and Naatanen (2005) study which is based on the Bergen Burnout Indicator 15 (BBI-15) for working life (Naatanen *et al.*, 2003; Salmela-Aro *et al.*, 2004). This inventory is composed of 10 items measuring three factors of school burnout namely exhaustion at school, cynicism toward the meaning of school and sense of inadequacy at school. Responses are rated on a 5-point Likert-type scale ranging from 1 (completely disagree) to 5 (strongly agree). It should also be noted that the BBI-15 is basically composed of 15 items measuring the three dimensions of work exhaustion, cynicism toward work and sense of inadequacy at work. Afterward, by changing the work context to the school context, the SBI was constructed (Schaufeli *et al.*, 2002) consisting the 9 items with the highest reliability scores and best suited the school context.

Academic achievement: Academic achievement of students in year 6 (age 12-13), form 2 (age 14-15) and form 4 (age 16-17) were collected from each school. Student academic Grade Point Average (GPA) was taken from the subjects they took in school based on school records. Student's GPA was converted to a three point scale: Low = 1, medium = 2 and high = 3.

Student engagement: This study adapted a questionnaire that consists of three main constructs (affective, behaviour and cognitive) to be school engagement that was developed by Lam *et al.* (2009). The questionnaire comprised a total 33 items that measure students engagement based on a five point likert scale ranging from 1 (strongly disagree) to 5 (strongly agree).

Gender: We controlled for students' gender because previous studies have suggested that demographic characteristics influence their perception of burnout, school engagement and achievement. We indicated whether the student is (1) male or (2) female.

Analytical strategy: Current study attempts to develop the Malaysian Student School Burnout Scale (MSSBS) and investigate its reliability and validity. For this purpose, following Aypay (2011), both Exploratory and Confirmatory Factor Analysis (EFA and CFA), recommended by Netemeyer *et al.* (2003) are applied. In order to perform both EFA and CFA, the sample was randomly divided into two equal sub samples. In the first part of the study, EFA is used to analyse the first sub sample with Varimax rotation to determine the number of factors which are needed to explain the reciprocal relationship between items and determine the structure of items in each factor (Pett *et al.*, 2003).

In the second half of the study, CFA is applied to the second sub sample to investigate whether the factor structure determined with EFA is confirmed or not. Afterward, School-Burnout Inventory (SBI) developed by Salmela-Aro

and Naatanen (2005) is used to check the criterion validity of the total scores and sub dimension scores of the MSSBS. The reliability of the instrument is measured with Cronbach's alpha coefficients (both total and sub dimensions) as well as split-half correlations.

RESULTS

Explanatory factor analysis: Explanatory Factor Analysis (EFA) was used on the MSSBS items. The statistical analyses are performed using both the SPSS version 21 (SPSS Inc, Chicago, Illinois) and Stata/SE 11.2 computer software (Stata Corp, 2009). KMO value for sampling adequacy was 0.85 and Bartlett's value ($\chi^2_{(36, N = 1, 180)} = 2.70$, $p<0.001$) was significant.

The correlations, means and standard deviations for the observed school burnout items are presented in Table 1. It can be seen that a low (0.11) to medium (0.57) level of correlation exists between these nine items. The low and medium values of correlation between items show that none of the two items is highly correlated. If any of the correlations are too high (above 0.90), we may need to remove one of the items from the analysis as the two items seem to be measuring the same thing. Similarly, if the correlations are too low (below 0.10) then one or more of the items might load only into one principal component and make its own principal component. In other words, the medium level of correlations among scale sub-dimensions reveals that they measure different contents (Kline, 2005). Following Salmela-Aro *et al.* (2009), we start the EFA by considering all the nine items measuring three different aspects of school burnout that are, exhaustion (EXH 4 items), cynicism (CYN 3 items) and inadequacy (INAD 2 items).

Table 1: Correlation matrix

MSSB items	1	2	3	4	5	6	7	8	9
1. EXH1	1.00								
2. CYN1	0.47	1.00							
3. INAD1	0.40	0.57	1.00						
4. EXH2	0.23	0.28	0.25	1.00					
5. CYN2	0.38	0.40	0.46	0.25	1.00				
6. CYN3	0.30	0.34	0.29	0.28	0.43	1.00			
7. EXH3	0.11	0.14	0.21	0.32	0.18	0.31	1.00		
8. INAD2	0.28	0.32	0.40	0.24	0.37	0.42	0.36	1.00	
9. EXH4	0.31	0.35	0.34	0.36	0.36	0.38	0.22	0.35	1.00
Mean	2.60	2.58	2.79	2.59	2.70	2.62	2.88	3.02	2.40
Std. Dev.	1.11	1.09	1.04	1.22	1.13	1.18	1.14	1.14	1.22

Table 2: Communalities

Items	Initial	Extraction
EXH1	1.00	0.55
CYN1	1.00	0.65
INAD1	1.00	0.59
EXH2	1.00	0.40
CYN2	1.00	0.51
CYN3	1.00	0.48
EXH3	1.00	0.68
INAD2	1.00	0.50
EXH4	1.00	0.42

Extraction method: Principal component analysis

The values of the initial and extraction communalities, which indicate the amount of variance in each variable that is accounted for before and after the factor analysis, are presented in Table 2. By definition, the initial value of the communality in a principal components analysis equals one. Small values of the extraction communalities indicate items that do not fit well with the factor solution and should possibly be dropped from the analysis. Therefore, higher communalities are more desirable. If the communality for an item is less than 0.50, it is a candidate for exclusion from the analysis (Haverila, 2010). All item communalities except EXH2, CYN3 and EXH4 exceeded the 0.50 level for sufficient explanation. However, Bankstahl and Gortelmeyer (2013) identify items with communality values of less than 0.40 to be considered for deletion.

Based on the Table 3, A-two factor solution with eigenvalues over one is emerged from the EFA explaining 53.7% of the variance (Loehlin, 1987). The eigenvalues of the factors are 3.63 and 1.13, respectively. Another way to recognize the number of factors is with a plot of the successive eigenvalues or a scree plot. Using this plot, the decision about the number of factors is arrived at based on the point at which the curve of decreasing eigenvalues changes from a rapid, decelerating decline to a flat gradual slope (Cattell, 1978; Loehlin, 1987). As depicted in Fig. 1 two factors can be determined with the following properties.

The next stage is to find the more related items to each factor. For this purpose, we apply the component matrix after Varimax rotation. The statistically insignificant or relatively poor factor loadings (0.40 or lower) are candidates for deletion (Schaufeli *et al.*, 2002). As can be seen in Table 4, all suggested nine items measuring the student school burnout in Malaysia are registered by high loading factors. Table 4 also shows that CYN1, INAD1, EXH1 and CYN2 are highly correlated to the first factor and EXH3, INAD2, EXH2, CYN3 and EXH4 are representatives of the second factor.

In short, based on the EFA in the first part of the present study, the two-factor solution emerged from factor analysis for the MSSBS. The first factor consists of four and the second factor consists of five items. In the second part of the study,

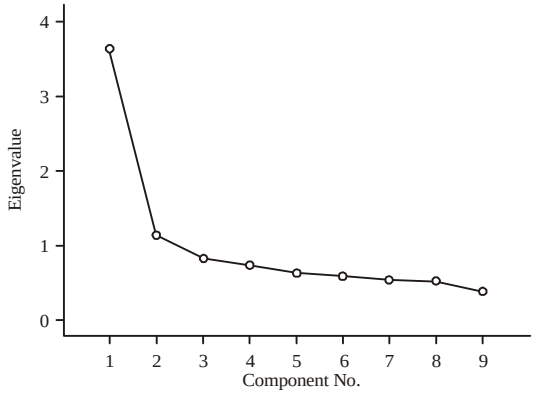

Fig. 1: Scree plot: Eigenvalue against the component number

Table 3: Total variance explained

	Initial eigenvalues			Extraction sums of squared loadings			Rotation sums of squared loadings		
Components	Total	Variance (%)	Cumulative (%)	Total	Variance (%)	Cumulative (%)	Total	Variance (%)	Cumulative (%)
1	3.63	40.43	40.43	3.63	40.43	40.43	2.63	29.26	29.26
2	1.13	12.63	53.07	1.13	12.63	53.07	2.14	23.81	53.07
3	0.82	09.11	62.19						
4	0.73	08.18	70.37						
5	0.63	07.00	77.38						
6	0.59	06.61	83.99						
7	0.54	05.99	89.99						
8	0.52	05.80	95.79						
9	0.38	04.20	100.00						

Extraction method: Principal component analysis

Table 4: Rotated component matrix[a]

	Component	
Parameters	Factor 1	Factor 2
CYN1	0.79	
INAD1	0.74	
EXH1	0.73	
CYN2	0.64	
EXH3		0.82
INAD2		0.61
EXH2		0.60
CYN3		0.59
EXH4	0.45	0.47

Extraction method: Principal component analysis. Rotation method: Varimax with kaiser normalization a. Rotation converged in 3 iterations blanks represent abs (loading) <0.40

we use the second sub sample and applying the CFA method to investigate whether the factor structure is confirmed or not. In other words, once the structure of the factors emerged via EFA, the CFA can provide further evidence concerning the fitness of the model.

The goodness-of-fit of the model is evaluated using absolute and relative indices. The absolute goodness-of-fit indices calculated in this study are the χ^2 goodness-of-fit statistic and the Root Mean Square Error of Approximation (RMSEA) (Browne and Cudeck, 1993). For RMSEA, values smaller than 0.08 indicate acceptable fit and values greater than 0.1 leads to model rejection (Browne and Cudeck, 1993). Since the χ^2 goodness-of-fit statistic is sensitive to sample size, the computation of other relative goodness-of-fit indices is strongly recommended (Bentler, 1990). The relative goodness-of-fit indices computed in the present study are the Comparative Fit Index (CFI) and the Tucker-Lewis Index (TLI) (Tucker and Lewis, 1973). For both relative fit indices, as a rule of thumb, values greater than 0.90 are considered as indicating a good fit (Hoyle, 1995; Goffin, 1993). Based on the calculated indices presented in Table 5, we can conclude that the model factor structure is confirmed.

Figure 2 presents the results of the path diagram. The CFA results indicate that the standardized coefficients of the relationship between factors and items ranged from 0.47- 0.79.

The reliability or the internal consistency of the MSSBS is examined by Cronbach's alpha. Table 6 shows the values of item-test, item-rest and average inter item covariances as well as Cronbach's alpha for each item and the total inventory. As can be seen in Table 6, the resulting two-factor

Table 5: Goodness of fit indices

Fit statistic	Value	Description
Chi2_ms (26)	247.94	Model vs. saturated
p>chi2	0.00	
Chi2_bs (36)	3727.98	Baseline vs. saturated
p>chi2	0.00	
RMSEA	0.07	Root mean squared error of approximation
CFI	0.94	Comparative fit index
TLI	0.92	Tucker-Lewis index

Table 6: Cronbach's alpha coefficient

Items	Sign	Item-test correlation	Item-rest correlation	Average inter item covariance	Alpha
EXH1	+	0.68	0.57	0.57	0.84
CYN1	+	0.75	0.67	0.55	0.83
INAD1	+	0.72	0.64	0.57	0.84
EXH2	+	0.64	0.53	0.57	0.85
CYN2	+	0.71	0.62	0.56	0.84
CYN3	+	0.70	0.61	0.56	0.84
EXH3	+	0.52	0.39	0.62	0.86
INAD2	+	0.66	0.56	0.58	0.84
EXH4	+	0.72	0.62	0.54	0.84
Test scale				0.57	0.86

construct for the MSSBS shows a Cronbach's alpha of 0.86, while all the items have Cronbach's alpha values above 0.8. Based on Johnson and Harris (2002), values for Cronbach's alpha above 0.70 indicate that the scale is internally consistent. Therefore, the reliability scores for Cronbach's alpha coefficients indicate that MSSBS measures student burnout in schools.

Concurrent validity: The final aim of the present study was to examine whether academic achievement and school engagement and would predict school-burnout factors when controlled of gender, thus, providing evidence of the concurrent validity of the school burnout inventory. First, the predictors were added to the final model M2 by estimating the regression coefficients for academic achievement, school engagement and depressive symptoms for each latent factor. The estimation results for the final model, $\chi^2_{(51,\ N\ =\ 2,\ 359)} = 16.40$, $p<0.001$, RMSEA = 0.08, CFI = 0.90, TLI = 0.90, containing only statistically significant regression coefficients, are presented in Fig. 3. The results showed that the lower academic achievement and student's engagement, the higher was the level of student's cynicism and inadequacy.

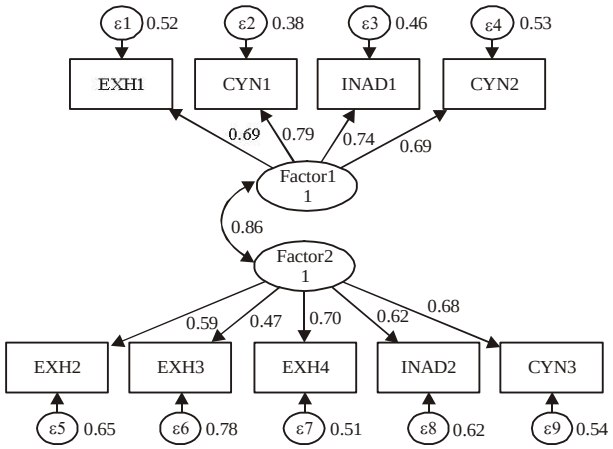

Fig. 2: CFA results for MSSBS

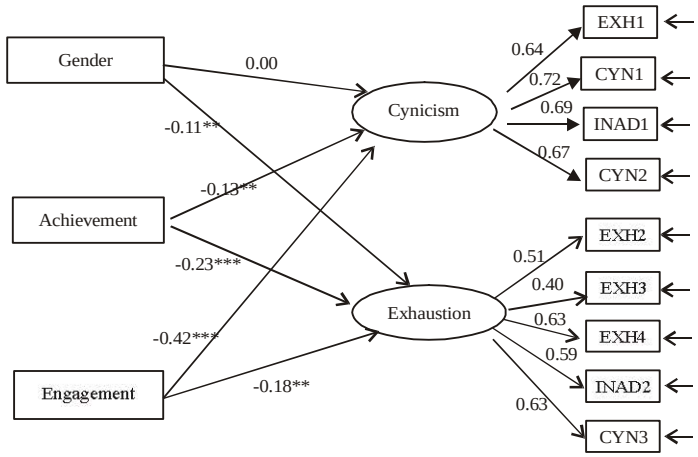

Fig. 3: Estimated-factor model with predictors (only statistically significant regression coefficients are given), [1]1: Girl, 2: Boy, [2]1: Low, 2: Moderate, 3: High, **p<0.01, ***p<0.001

DISCUSSION

This study has successfully developed a reliable and valid instrument of the burnout scale for students Malaysia. The EFA and CFA were used to confirm the validity and reliability values of the instrument. The finding indicates that the MSSBS is comprised of two factors: School exhaustion and cynicism. CFA has confirmed that it is a good instrument. The standard values for CFI and GFI were greater than 0.90. This indicates that a good model was produced (Byrne, 2010). RMSEA value smaller than 0.08 indicates an acceptable fit (Browne and Cudeck, 1993). This study is different than a study conducted by Salmela-Aro *et al.* (2009) which has three factors in the instrument of students burnout scale (lethargy, cynicism and efficacy). This study of Malaysian context found that there are only two factors to explain burnout among students (burnout due to exhaustion and burnout due to cynicism).

This study introduces the concept of burnout among students in school and measurement tools used by Salmela-Aro *et al.* (2009). Overall study results showed that there were two factors that correlate well with the reliability and valid index. Both factors are exhaustion and cynicism. Exhaustion as often staying asleep thinking school work, relationships problems with others, lower school expectations and less confident of school work. Cynicism is as lack of motivation, noticing inefficient and lack of interest in school work. This finding is similar to a study conducted by Schaufeli *et al.* (2006). However, no items were dropped in the resulting model. The end result of this study showed lower students achievement and engagement the higher cynicism and exhaustion. The findings also show that boys have higher burnout problems of female students. The study, thus supported other recent findings on school burnout (Kiuru *et al.*, 2008; Salmela-Aro *et al.*, 2008).

Findings of this study may be considered as a solid foundation for subsequent researchers in measuring burnout in school. Future research may involve the types of school. In addition, another study should be considered on various impacts of excessive workload placed on students based on

different education and several variables such as family background, socioeconomic status, school readiness, absenteeism and dropout rates can also be studied. Problems faced by students can put stress in themselves and in the end will have implications on the dropout cases, in which there is a strong relationship between stress and absenteeism. Truancy occurs due to burnout. Alarcon *et al.* (2009) suggested that, students should be taught to adapt themselves with teaching and learning activities and academic environment by promoting active participation and reduce burnout. The burnout scale has been confirmed in this study as capable to measure the level of burnout among students at the school. It is recommended that future research to be conducted by relating students' burnout scale with various factors such as engagement and academic achievement.

One of the causes of burnout among students is an excessive of workload. This view is supported by Jacobs and Dodd (2003) who stated that workload is an extra burden which is one of the many factors that can increase the possibility of burnout. Primary and secondary school students are required to sit for various competitive examinations and results of the examinations largely determine their future. Therefore, students are always under pressure to learn. Other than the on going competition, students are encouraged to go for tuition in addition to learning activities at school, sitting for a variety of tests and finishing their many homework.

This study was only conducted in adolescents aged 12-17 years who are studying high school. Therefore, more research is needed in the context of a more comprehensive school and university level studies. Further study is also needed to investigate the role of burnout and effect given to the youth in the long term. This study was carried out in Malaysia and as such, researchers should be cautious in generalizing the results to the context of schools in other countries. This study introduces an instrument in school burnout that can be used in other countries as well. Overall, the burnout scale showed high structural, item and scale reliabilities, as well as good concurrent validity, when estimated in the context of gender, school engagement and academic achievement.

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