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Academic motivation assessment scale to Indonesian student: The confirmation of lee's theory

Durrotunnisa[1], Marthen Pali[2], Adi Atmoko[3], Moh. Irtadji[4]
[1-4] Educational Psychology Program State University of Malang East Java, Indonesia
[1,] Guidance and Counseling Program University of Tadulako, Palu, Central Sulawesi, Indonesia
[2] Psychology Program University of Pelita Harapan Surabaya, Indonesia

Abstract
The purpose of this research was to test the measurement model of students' academic motivation. The research data is taken from the State Junior High School students (118 students), consisting of 4 different schools. Validity for this scale is accomplished through confirmatory analysis, while scale reliability uses Cronbach's alpha reliability and composite reliability. Confirmatory factor analysis showed good fit data (χ^2 = 54.005, df = 43, p = 0.121, RMSEA = 0.047, GFI = 0.935, and CFI = 0.976). Internal consistency with Cronbach alpha coefficient was found at 0.765 and composite reliability was 0.721. The result of loading analysis of aitem-aitem factor shows the lowest 0.054 and the highest 0.86. Loading factors on 3 behavior, thought and emotion constructs show the range of 0.68 to 0.87 and statistically significant at p = 0.001. The results show that measurement model the scale of academic motivation is valid and reliable.

Keywords: junior high school, confirmatory analysis, academic motivation, alpha Cronbach, composit reliability

1. Introduction

Motivation is the force behind behavior and provides an explanation for why people do things (Lee, 2005) [23], type of action (Smith, 2015) [35], the energization and direction of behavior (Salkind, 2008) [34], a process that elicit, directs, and maintance behaviors (Micholas, 2014) [27]. Many report the motivation of students as positive school experiencies (Gilman & Anderman, 2006) [13], so motivation is a multifacet construct consisting of the dimensions of behavior, thought, and emotion (Lee, 2005) [23].

Some reasons for the emergence of these three dimensions of behavior, thought, and emotion are: 1) behaviors, in which the researchers see that motivation can be explained through the perspective of students' academic behavior (Good & Brophy, 2000; Meece, Anderman & Anderman, 2006) [14, 26], which promoting effort, involvement, persistence, and performance (Lee, 2005) [23]. Intrinsically motivated behaviors are continually associated with better achievement (Lemos & Verissimo, 2014) [24], and students with intrinsic motivation, they will engage in learning (Saeed & Zyngier, 2012) [33]. 2) thought, where motivation is seen by expectations and goals (Lee, 2005; Patrick, Anderman, & Ryan, 2005) [23, 29], whether the goals are autonomous or controlled (Vansteenkiste, Lens & Deci, 2006) [38]. Students who have an autonomous goal, he will do what he wants to do because it sees the activity interesting and fun (Salkind, 2008) [34]. 3) Emotion, including pride, shame and guilt that can contribute to students' academic motivation (Lee, 2005) [23], positive or negative emotions contribute to improving student motivation (Lopez & Aquilar, 2013) [25].

This research defines academic motivation as the drive to achieve academic success in school as measured by behavioral indicators, thought, and emotion. A high score indicates that the student has an effort and involvement in academic activities, has a motive for academic activity and hopes of reaching goals, and there is a sense of shame and pride in him. In contrast, low scores on academic motivation scales show that students have no effort and involvement in academic activities, no motive for academic activity and hope for reaching goals, and no shame and pride in themselves. Some previous findings suggest that students with high intrinsic motivation, they have good learning strategies, are able to learn from the failures experienced (Nishitani & Matsuda, 2011) [28], and are able to strive for perfect (Stoeber & Rambow, 2007) [36], more adaptive in attitude learning, greater academic success, and higher personal well-being (Vansteenkiste, *et al*., 2005) [39], high initiative, confidence, and willingness to understand something (Rouse & Fantuzzo, 2008) [31]. Conversely students with low motivation, identified by habit of absenteeism, likes to come out and make a commotion, and like to break the rules (Rogers and Kutnick, 1992) [30].

However, if it is a personality review, then intrinsic motivation can be raised through curiosity (Hon-keung, Man-shan, & Lai-fong, 2012) [20]. Intrinsic motivation is also statistically significant in relation to school self-concept, school achievement (Areepattamannil, 2012) [2], self-efficacy (Fawcet, Garton, & Dandy, 2009) [8], and being the main (Burak, 2014) [5].

Related to the measurement of academic motivation, the purpose of this research is to measure the validity of the reliability of the instrument made by the researcher be based on Lee's Theory (Lee, 2005) [23] by using confirmatory analysis and internal consistency test. Researchers found that Lee's theory is still a theoretical model, and has not made the instrument of measurement, so it needs to be translated into

real instruments and tested to a group of respondents.

Prior academic motivation measurements have been made by experts based on specific subject matter areas (Aydin, 2016, Gottfried, *et al*., 2008) [3, 15], relationships with contextual context (home versus school) (Fawcet, Garton, & Dandy, 2009; Federici And Skaalnick, 2014) [8, 9] can also be through simple observations related to student behavior in the classroom, where children who are motivatively at risk, they will have lower academic motivation (Gottfried, *et al*., 2008; Coleman & McNeese, 2009) [15, 7], the focus is usually on student involvement in learning activities (Lee, 2005) [23]. but no one has used 3 indicators as the authors use in this research.

2. Method

2.1 Participants

The sample of this research is 118 students of State Junior High School which is spread in four districts in Malang City, East Java, Indonesia (56 male, 62 female, Mgender = 1.52, SDgender = 0.50). Participants are grade VIII students consisting of 4 schools, where each 1 school represents 1 district area; 32 students (24.57%), Blimbing sub-district 28 students (23, 72%), and Sukun sub-district 29 students (24.57%). The sample was determined by cluster random sampling.

2.2 Measure

The academic motivation scale in this study initially consists of 3 dimensions, 12 indicators and 24 items. Instrumen of academic motivation is designed by the researchers by using Likert-scale answer alternative. Discordable answer using 4-point Likert scale; always (4), often (3), sometimes (2), and never (1). This scale has been validated by 6 experts in the field of psychology and guidance counseling qualified Doctor and Professor, so that the validity of the expert has been fulfilled.

Three dimensions used in research are behavior, thought, and emotion. Aitem behavior, such as 'I work hard to complete the task of the teacher to get good grades from him', 'I was involved in lab activities in the school laboratory because of my curiosity towards scientific knowledge'. Aitem Thought, among them 'I am diligent in learning because I want to be smart', 'I hope to be able to ride the class with good achievement'. Aitem emotion, such as 'I am embarrassed by my friends when my grades are lower than them', 'I am ashamed of myself when I am unable to solve my personal problems or personal problems'. All student answers to the proposed statement on a scale, scored using a 4-point Likert scale. The higher the score indicates the higher the students' academic motivation.

The items that pass the selection are those that have a factor loading value> 0.4 and for the final result, each factor is represented only by one item (if found there are two or 3 items passing the selection simultaneously in one factor). The number of items passed there are 12 items with details of four items representing the behavior dimension, four items representing thought, and four items representing emotion. Each indicator is represented by 1 item (Frydenberg & Lewis, 2009) [10].

2.3 Procedure

2.3.1 Procedures for Determining Factors In Scale

Initially each behavior, thought, and emotion factor has 8 indicators, so the total item is 24 items. Based on the results of the analysis, there are some items that have a value loading factor <0.5, so the items need to be removed. The indicator's validity to the dimensions is set to> 0.4 (Hair, *et al*., 2014: 115) as a minimum level for interpreting the structure, which means that the indicator contributes 50% in forming the developed construct. An indicator that has a loading value of <0.5 will be aborted and not included in the analysis.

In addition, if the value loading loading> 0.5, but it is not an item with the highest loading factor on the indicator, then it will be eliminated. Preliminary analysis results indicate that there are 8 items omitted because factor loading values ranged from -0.131 to 0.370, which means <0.5. In addition there are some items with value loading factor> 0.4 are omitted because there are other items in one indicator that has a higher value, including 1 item on the behavior indicator with loading value 0. 415 <0.600, 1 item on the indicator thought 0.588 <0.653, and 2 other items on emotion indicator 0.667 <0.803, and 0.542 <0.758.

Furthermore re-analysis of the model, because with 12 indicators found criteria model not fit, GFI 0.820 <0.90. The value of chi square / CMIN of 157,831 with a probability of 0.000 <0.05 indicates that there is a difference between the structural model of the empirical model. Models need to be re-modified (by correlating some error term).

3. Results

The final analysis shows that the chi square value has decreased to 54.005 with p value = 0.121> 0.05, which means there is no difference between the measurement model proposed by the empirical model. The value of GFI = 0.935 is greater than the critical value 0.90, the CFI value of 0.976 is greater than the critical value 0.90, the value of TLI 0. 964 is greater than the critical value 0.90, the value of RMSEA 0.047 is smaller than the critical value of 0.08, which means the model is stated fit. The unidimensionality or validity of constructs of the measurement model is determined by the goodfit of fit index (GFI), where the GFI value> 0.9 indicates a good unidimensionality (Kline, 2005; Hair, *et al*., 2014) [22, 18].

Hair *et al*. (2006) [17] states that among many criteria for knowing the fit of a model, it is not necessary to use all the criteria, but sufficient four eligible criteria, in order to avoid redundancy. The final model indicates that the criteria have been met, so there is no need to modify the existing model.

After being declared fit, then tested the reliability of the items using Alpha Cronbach coefficient, and then compared with the construct reliability value as one indicator of convergent validity (Hair, 2014) [18]. The results show that the construct of academic motivation obtained value of Alpha Cronbach reliability of 0.765 and composite reliability of 0.721. Acceptable rules = 0.6 <α <0.7, Poor = 0.5 <α <0.6, Unacceptable = α <0.5 (George & Mallery, 2003; Kline, 2000) [12, 21]. Construct Reliability (CR) is often used to connect with the SEM model. The agreed rule for a good reliability estimate is 0.70, and reliability between 0.6 to 0.7 is

accepted when one or more indicators in the validity of the construct model are either expressed (Hair, 2014) [18]. In conclusion, the construct of academic motivation is stated in the category of "good" because 0.765> 0.700.

4. Discussion

The purpose of this research is to test the model of measurement of academic motivation in junior high school students in Malang city, Indonesia. The results show that there is a suitability between the proposed model and the empirical model. The analysis used was Confirmatory Factor Analysis (CFA), where it was used to decide confirmatory tests on measurement theory (Hair, 2014) [18]. The measurement theory specifies how variables are measured logically and systematically representing constructs formed in theoretical models of academic motivation.

Self-Determination Theory suggests that academic motivation is understood from internally and externally motivated behaviors. Intrinsic motivation is to do a job to gain inherent satisfaction (Xie, Debacker, & Fergusson, 2006) [40], a form of self-determination on motivation, in which a person engages in his own activities to gain satisfaction (Guay *et al*., 2015) [16].

The operational definition of academic motivation proposed in this study is the drive to achieve academic success in school as measured by behavior, thought, and emotion indicators. After passing confirmatory analysis test, the value of loading factor of each construct is 0.820, 0.877, and 0.683. The loading value > 0.5 is considered to have met the validity criteria (Hair, 2014) [18]. Likewise, the confirmatory factor modelor analysis (CFA) model > 2 factors > 2 indicators in one factor, is eligible for the fulfillment of the model criteria (Kline, 2011) [22].

The coefficient of construct determinants in this reseach exhibit that there was a behavior contribution of 67% for the formation of student academic motivation. Behavior in this research is identified through the efforts and involvement of students in academic activities in the classroom.

This supports the findings of Barreto, Vasconcelos, & Orey (2017) [4] which shows there is a relationship between children's involvement in motivational activities. There is a 77% contribution thought to student's academic motivation, where the thought in this research is identified through expectations and goals, both intrinsic and extrinsic. This is in line with the findings of some research (Harter, 1981, Saeed & Zinger, 2012) [19, 33] which shows that student involvement in academic engagement is due to intrinsic and extrinsic reasons. Support outside the self is also able to influence the intrinsic motivation of students, including adult support (Gagne, Ryan, & Bargman, 2003) [11], teacher support (Chirkov & Ryan, 2001) [6], parental support (Acharya & Joshi, 2011) [1]. There is a contribution of 47% of emotion to students' academic motivation, identified through a sense of pride and shame in students. This is a new finding of the study, because in some references these emotional conditions are expressed only through interest and satisfy (Ryan & Deci, 2000; Utvaer & Haugan, 2016) [32, 37].

5. Conclusion

The theoretical model of academic motivation initiated by Lee (Lee, 2005) [23] that the researchers adapted can be used empirically for student culture in Indonesia. The initial instrument of academic motivation used by the researcher was valid and reliable after being tested through confirmatory analysis using AMOS version 20.0 Structural Equation Modeling (SEM). This proves that the students' academic motivation in Indonesia can be identified through thought, behavior, and emotion.

6. Recommendation

This research instrument can be used as an alternative to measure student's academic motivation.

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