Academic Achievement on Student Motivation: Latent Class Analysis across Gender Group

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ABSTRACT

The study of 'Academic Achievement on Student Motivation' has overcome limitation in previous research by including simultaneous consideration of mediating effect, longitudinal relationship and gender factor. Western researchers have found that students have no direction in life after graduation. However, it remains to be seen whether this finding may occur among students in Malaysia since there is no research has been carried out regarding this matter. A longitudinal study was conducted to assess the students' motivation at various time points. Final year students were being targeted to answer a questionnaire that has been approved by the expert in this particular field. This study aims are a) to identifying the best fitting unconditional latent growth model for student motivation across gender group and b) to develop a conditional model to test the potential direct effect of academic achievement on student motivation. The result indicates that a) student motivation was indeed growing linearly every year across gender and b) significant direct effect of academic achievement on intercept of student motivation but obtained non-significant effect on slope of studet motivation. Implications and recommendations for further research are discussed.

Keywords: Academic Achievement, Student Motivation, Gender Group, Longitudinal Effect, Latent Growth Curve Model.

1.0 Introduction

Student Motivation construct is not new in academic field, yet, this construct is always considered as an research outcome. For instance, many western region research on students' motivation that is seem central in psychological and educational research (Pintrich, 2003). Basically, students' motivation is more focusing on primary and secondary school level and thus the learning and teaching context is always prioritized (Murphy & Alexander, 2000). True nature of students' motivation is very complex and need a depth investigation to be comprehended. Currently, four theories are prominent in educational pyschological such as self-efficacy theory, attribution theory, self-

worth theory and achievement goal theory (Seifert, 2004). Among of these established theories, attributional theory is perceived better to link the students' motivation in Malaysia. However, the discussion on students' motivation is not emphasized by researchers in Malaysia, thus we attempt to extend the existence theory of attributional theory. To best of our knowledge, there is no investigation research on students' motivation were conducted by either government or private institution in Malaysia so far. In fact, western researchers noted that the study on students' motivation as an research outcome is always debated.

Therefore, the aim of this paper is to identify the best fitting unconditional latent growth curve model for students' motivation across gender. The implementation of method used is chosen due to its advantage to estimate the growth rate of students' motivation with the passage of time. Further, it will enable us to identify which period should be prioritized for improvement. In doing so, Structural Equation Modeling (SEM), the second generation statistical analysis was selected. However, the procedure to handle this method is not as convenient as the first generation statistical analysis methods such as repeated measure of One Way Analysis of Variance (ANOVA) because SEM requires a normal data with sufficient sample size and minimum three point of Longitudinal Model. Hence, All requirements were first ensured in order to use SEM. Later on, the causal effect between exogenous and endogenous construct were tested based on hypotheses proposed.

2.0 Hypotheses Development

Pintrich & Schunk, (2002) put forth that motivational theories focus on the process that explain goal-directed activity. In educational research, motivation are most often used to explain students' activity choice and performance in learning activities. Hence, motivation is frequently used as a measure in education system (Roeser & Eccles, 1998). Motivation theory will enable us to identify the individuals' goals to pursue in achievement situations (Meece, Anderman, & Anderman, 2006). However, the study of students' motivation is may not sufficient to explain the actual situation in education especially in terms of gender perspective. To date, there are numerous of studies involving gender perspective and were revealed to be important in estimating the students' motivation so that the accurate estimate can be dislosed (Meece, Glienke, & Burg, 2006). Plus, it also revealed that the student motivation can be fluctuate with the passage of time (Gottfried et al., 2001).

Basically, academic achievement is determined when related to the achievement goal theory that is emerged as one of the prominent theory of achievement motivation in many ages (Meece, Andermann, & Andermann, 2006). As this research intended to explore the students' motivation, then, academic achievement is pre-determined. It is believed that achievement is the most important factor to assess the students' motivation in learning activities. To bolster the evidence, McCombs & Whisler, (1997) and Pintrich (2003) were discussed the similar discovery. Considering this factor, it is not surprising that institutional support may be one of the influential factors. Studies focusing on the achievement also emphasized the importance of establishing supportive educators. There is little information concerning the role of educators' support on students in institutions. An increase in educators' support will intentionally increase the performance of achievement.

Parental involvement has been defined in numerous ways and currently was suggested to be one of the second order construct that is manage to explain the attribution of parental involvement in different perspectives. For example, there are some researchers have proposed specific dimension of parental involvement such as (Grolnick & Slowiaczek, 1994; Keith et al., 1993; Sui-Chu & Willms, 1996; and Hong & Ho, 2005; Fan & Chen, 2001). Yet, this study interest is not on parental involvement solely, instead, we are intended to highlight the impact of students' motivation in goverment and private institution. So far, most of the theory established centered that parental involvement is only tied for primary and secondary school students. Therefore, there is a need to review the parental involvement for higher institution level students in order to understand the true nature of this specific construct whether it is worth or unworthy construct in determining the relationship with students' motivation. Indeed, the parental involvement may depends on the region culture itself in order to influence the students' motivation at the higher institution level. For instance, the culture in Malaysia and other countries might be slightly or far too different in term of learning activities. Hence, the result revealed from other regions may not be applicable in Malaysia society. Finally, it is important to develop the hypotheses based on the review discussed earlier:

Hypothesis 1: Institutional Support has a positive effect on Academic Achievement
Hypothesis 2: Parental Involvement has a positive effect on Academic Achievement
Hypothesis 3: Academic Achievement has a positive effect on Intercept of Student Motivation
Hypothesis 4: Academic Achievement has a positive effect on Slope of Student Motivation

3.0 Measures

The study using questionnaire (Likert Scale measure) that includes items on parental involvement, academic achievement mediating construct, institutional support and students' motivation. Each construct consists of 10 items. The content of each items were validated by the expert and experienced in pyschological study. The minimum sample size for this study is 400 sample as recommeded by Hair et al., (2006). They stated that the sample size should be ranged between 5 to 10 times of variables (40 items x 10 = 400 samples). The questionnaire were distributed to seven (7) insitutions in Terengganu state. Later on, the Structural Equation Modeling (SEM) is performed.

Structural Equation Modeling (SEM) is one of the second generation statistical analysis method that has an ability to perform Confirmatory Factor Analysis (CFA) and path analysis with multiple variables simultaneously (Afthanorhan & Ahmad, 2014). It also has the advantage to handle unconditional model of Latent Growth Curve model to replace the outdated method. Subsequently, conditional model is conducted once the best fitting of unconditional model based on global fitness indexes were identified. Global fitness should be achieved in the initial phase so that the estimates obtained is trustworthy.

4.0 UNCONDITIONAL MODEL

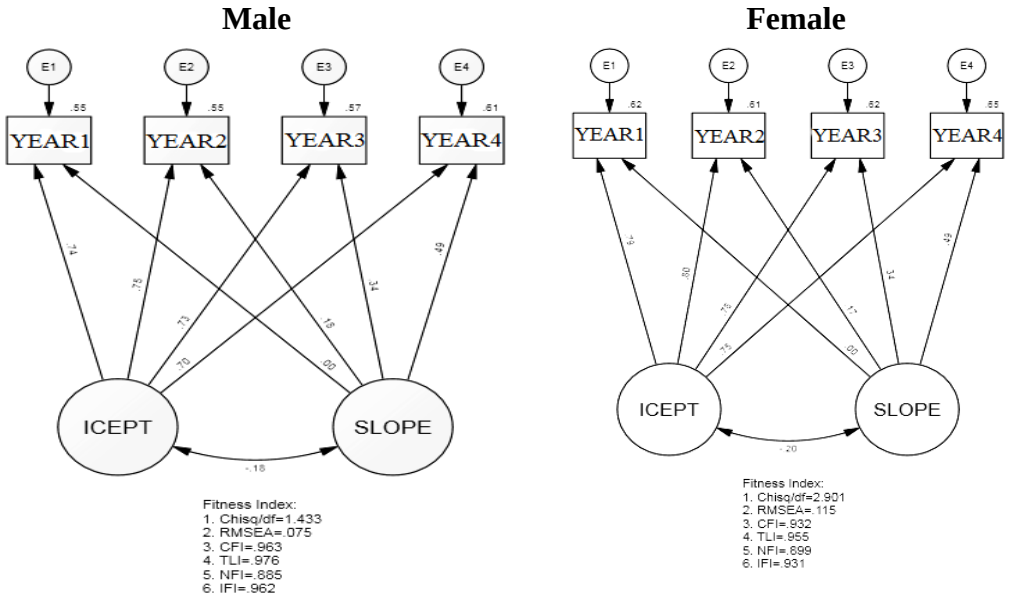

Figure 1: Unconditional Model

Firstly, we developed an unconditional latent growth curve model for students' motivation across gender (Male and Female) that is compatible with the first research objective. To do so, model fit should be established to evaluate the parameter estimates, standard error and measures of explained variances (Antonakis et al., 2010; Hayduk et al., 2005; McIntosh, 2007; McIntosh, Edwards and Antonakis, 2014). A good fit model reflects a good models' quality for the subsequent analysis. An analysis must be executed separately for each group so that estimates and fitness index for each model can be reported. Using a well-known theory of Maximum Likelihood Estimator (MLE), we found that the fitness indexes for unconditional model; Chisquare of normalized by degree of freedom (< 3.0); CFI, TLI, IFI (rangging from 0.931 to 0.976) and RMSEA (rangging from 0.075 to 0.115) which are acceptable across gender.To bolster the explanation of fitness, Zainudin (2015) and Holmes-Smith et al., (2006) contend that the researchers can choose any index to assess the measurement model.

In terms of the parameter estimates exhibited in Figure 1, male (0.00, 0.18, 0.34, 0.49) and female (0.00, 0.17, 0.34, 0.49) were indeed growing linearly during the process of learning across gender that is supported to the research question. Once unconditional model is validated, the conditional model is performed as a final stage in analysis based on the research objective.

Conditional Model

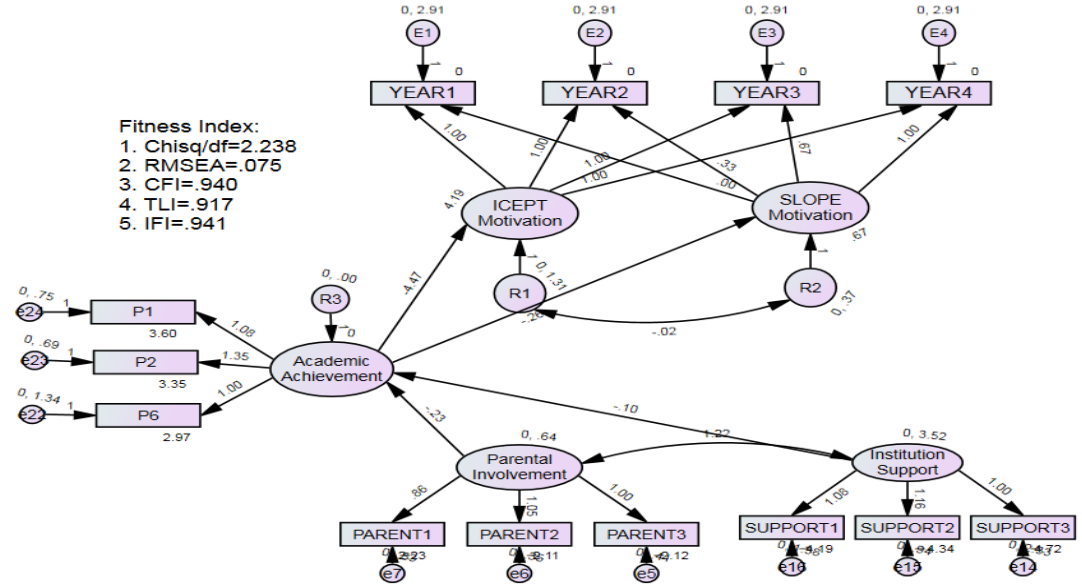

Figure 2: Unstandardized Conditional Model

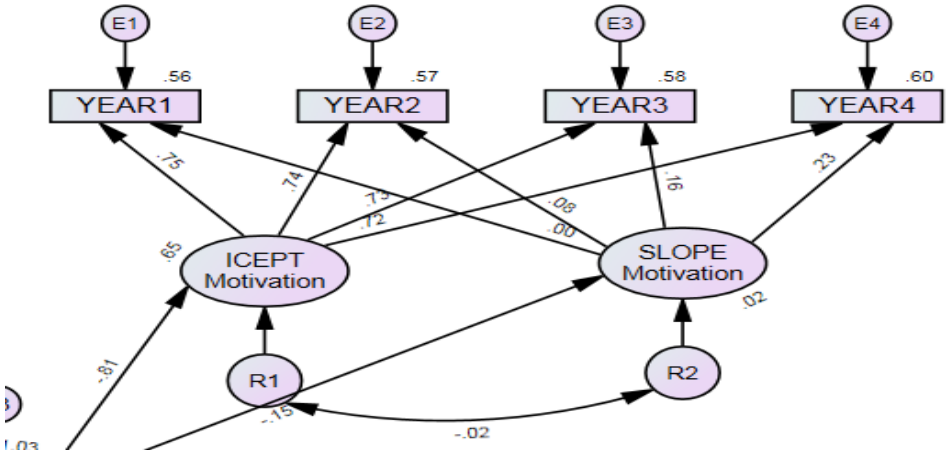

Figure 3: Standardized Conditional Model

After the best fitting unconditional latent growth curve model for student motivation is identified, we developed a conditional model to test the potential relationship between Academic Achievement, Parental Involvement and Institutional Support on Student Motivation. Conditional model is a model that has been extended from unconditional latent growth model. Therefore, the best fitting of unconditional model is necessary to ensure the fitness level of student motivation is achieved and thus has a potential to approximate the accurate estimate for decision making. In doing so, there are three main constructs such as Academic Achievement, Parental Involvement and Institution Support in which regarded as exogenous constructs to influence on Student Motivations (endogenous construct).

Among exogenous constructs, Academic Achievement acts as a mediator construct which can explain double interpretation either in exogenous or endogenous perspective. As mentioned earlier, the student motivation just explain the goal-directed process that is only limited to the motivation theory. Because this study attempt to extend the existence theory of attributional theory, we

attempt to integrate the motivation factor in this situation. Turning now to the model estimation, the path estimates of each hypothesized relationship in the causal model and square multiple correlation (R^2) of dependent construct were examined as reported in AMOS 21.0. We find out that there are three significant of causal effect such as: a) Parental Involvement has a positive impact on Academic Achievement(β= 0.226, CR= 2.328, P= 0.020), b) Institution Support has a positive impact on Academic Achievement (β= 0.102, CR= 2.406, P= 0.016), and c) Academic Achievement has a positive impact on Intercept of Motivation (β= 4.467, CR= 2.859, P= 0.004). Meanwhile, one of non-significant effect occur in the relationship between Academic Achievement and Slope of Motivation (β= 0.264, CR= 0.554, P= 0.580). Subsequently, it is found that the proposed model explain a total variation in endogenous construct is decreasing from 64.9% to 2.2%. Therefore, itcan be conclude that Student Motivation in institution level were worrisome since it is found that they fail to maintain the good motivation. Hence, the best solution is necessary to solve this situation by providing more career intervention between student at Year 3 and Year 4 (furter implicit explanation in discussion topic). It was typically more effective than no intervention as recommended by previous findings (Ryan, 1999; Whiston, Sexton, & Lasoff, 1998).

5.0 DISCUSSION AND FUTURE RESEARCH

Numerous Western studies have found that the programme was essential to influence the student motivation especially after graduated and they have proposed explanation for this discovery. However, there are few studies about whether these research finding and interpretation are applicable to the Malaysia society. Thus, this study need further investigation and exploration to study the Student Motivation issue which means important in education sector. In order to explore the main issue, the study used four waves follow up suvery data, that is, supplemented with latent growth curve model in an attempt to analyze the growth rate of respondent motivation and conditional model to detect the potential relationship with relevant factors.

It was found that the Student Motivation is grow positively across gender which means indicates that their motivation is gradually increasing with the passage of time. Means that, they would initially have low initial scores, and later, they would also have a greater motivation growth rate. In other words, students with low initial motivation would accelerate their motivation improvement in the future. To understand the nature of the low initial score, we read and review a great number of journals, books, and discussion and later on we find out that Parent Education and Institution Support can be a great contribution for improvement. Today, there are numerous programs have been served for education syllabus by government and private institution. Some of them will further their study into undergraduate level via Diploma programme or matriculation program. During undergraduate level, the initial score of student motivation was positive where connoting that the students have a high determination to move forward. They believe if they got an excel achievement during undergraduate program, they have an opportunity to get a better job as expected.

However, their motivation to be more progressive in the future is not persisted. It can be proven by the finding revealed using Structural Equation

Modeling (SEM). At the intercept construct, the program was positive significant relationship on Student Motivation but later on this the result show non-significant relationship on Student Motivation. By inspecting through the passage of time, we find out that the growth rate of Student Motivation between Year 3 and Year 4 (0.16 to 0.23) is lower than Year 1 and Year 2 (0.00 to 0.08) and Year 2 and Year 3 (0.00 to 0.16). As the growth rate is slower in the range between Year 3 and Year 4, one can be conclude that the Student Motivation was dropped in that time.

The high initial score is maybe the influence of Parent Education and Institution Support were performed better to educate the student to be more determined during the first year study. That is, the involving of these constructs in the conditional effect are relevant for investigation on Student Motivation. However, many researchers from previous study attribute the increasing of parental involvement will contribute a great effect on student learning (Epstein, 1991) that is yielded hundreds of results. Further, most of the previous study did not notice Student Motivation as an outcome variable. Instead, they attribute the Student Motivation as a predictor construct along with parental involvement when related to the academic achievement (Jeynes, 2010; Fan & Chen, 2001; Jeynes, 2003; Hill & Taylor, 2004; Fan, 2001).

To ensure our findings is not improper, we find out that our finding is conformity with some of the previous research that is defined Student Motivation as an outcome construct (Gonzalez, Alyssa & Willems, 2005; Walker & Greene, 2009; Sung & Padilla, 1998; Fan & Williams, 2010). So, this study is absolute relevant to employ Parental Involvement as a predictor on Student Motivation as an outcome subject. Parents is that one of the important individual to shape their children to be more productive, educated, determined and motivated person. To be that person, parents should ensure their children activities are always monitored since childhood so that their good attitude are maintained. Then, the parents will motivate their children to choose a better programme that is guarantee to provide a better job after graduated. Thus, the Academic Achievement that implemented in conditional model is suggested to be a mediator construct which means has a potential to play as exogenous and endogenous construct at the same time. An analysis of SEM with AMOS can be handled simultaneously which is more convenient than SPSS package.

Indeed, there are many studies investigate the relationship of Parental Involvement and Student Learning (Jeynes, 2005) but generally speaking that the result revealed is not clear and inconsistent. This study intends to extend the conditional model by including of Student Motivation as an outcome research so that the best finding can be identified for decision making. In the spirit of Jeynes (2005), this article has been examined Parental Involvement and Academic Achievement and its current being modified to relate the Student Motivation and Institution Support. Because Parental Involvement is seem has a positive impact on Academic Achievement and thus induces us to form the Academic Achievement as mediator construct (Christenson, Rounds, & Gorney, 1992; Epstein, 1991; Singh et al., 1995).

Additionally, the Institution Support construct was significant impact on Academic Achievement as disclosed in this study. With this consistent finding, Sanders (1998) and DeBerard, Spielmans, & Julka (2004) also put forth the same thing on this effect. Thus, it is inevitable to connect the relationship between Institutional Support and Academic Achievement since it is really sensible.

Therefore, we proposed that the conditional model that including of Parental Involvement, Institution Support, Academic Achievement and Student Motivation are relevant and it is confirm suit for Malaysia study.

From technical perspectives, this model has several advantages over the western studies. First, it adopts a longitudinal effect of Student Motivation to estimate the growth rate of student every year (Year 1, Year 2, Year 3, and Year 4) in Malaysia institution. Thus, this address the enduring issue of lack of a study to handle Student Motivation issue with Longitudinal Growth Curve Model (LGCM). Using this procedure, the best fitting of unconditional model can be identified and thus sensible to further the strentgh of this model. Second, the study without LGC model would not produce a great impact on the research. Because this method is capable to let the researchers identified which period is dropped when dealing with one construct. In this case, we find out the growth rate of Student Motivation is drop between Year 3 and Year 4. Hence, the future research should be focus on this phase in order to ensure the Student Motivation maintained. Third, the proposed model are justified suit with the Malaysia culture. So, this model can be adopted in the future research for improvement when dealing with Student Motivation using LGC method. Lastly, the LGC model of Student Motivation construct can serve as a pioneer for futhering technical extensions of social sciences study in Malaysia.

In sum, empirically the proposed model performs better in identify the relationship of exogenous and endogenous construct and detect which period need focused, while technically it is well-founded in a social science study.

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