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Exploring the relationship between achievement need and flow in high school students

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Abstract

Academic engagement is the focus, interest, effort, energy and time that students are willing to spend in their learning activities or tasks. It is a question whether academic engagement can be induced by a motivational force namely achievement need, the concern for achieving excellence through individual efforts. This study investigates the role of achievement need in predicting flow in high school students. This study used a preliminary data involving 94 high school students aged sixteen attending two different secondary schools. Students responded to a questionnaire set consisting of a subscale measuring flow and another measuring achievement need. Simple linear regression analysis found that for high school students in this study, achievement need significantly predicts flow. When examined in detail, standard multiple regression analysis found that only two out of three dimensions of achievement need significantly predict flow: commitment and competition. Accomplishment was not found to be a significant predictor to high school students' academic engagement. It is suggested that parents and teachers need to emphasize this achievement need motivation in students so that they become intrinsically motivated and subsequently go into flow when doing their academic tasks to achieve better performance.

Keywords: academic engagement; achievement need; high school students

1. Introduction

Academic engagement can be defined as the focus, interest, effort, energy and time that students are willing to spend in their learning activities or tasks (Marks, 2000). When students are academically engaged, they will invest their attention and energy on school tasks and other achievement-related activities (Hardré, Crowson, DeBacker & White, 2007; Hardré & Sullivan, 2008). Students who are academically engaged are more involved, dedicated and focused compared to students who are not academically engaged - they demonstrate apathy and lack of interest in academic achievement (Newmann, Wehlage, & Lamborn, 1992). Completing homework, coming prepared for classes, regular attendance, and not skipping classes are indicative of student academic engagement.

Schools would be a heavenly center of excellence if all students come with a motivation to learn and willingness to engage in academic tasks. Then, teachers will have an easy task to meet the three major goals of teaching; first, to get students to become involve in academic tasks; second, to get students to become interested in learning; and third, to get students to cognitively engage in what they learn in school (Woolfolk, 2004). Teachers are continuously looking for strategies for improving students' motivation in learning and achieving.

Motivation is significantly desirable in students because motivated individuals are able to accomplish more since they become their best selves and thus strive to achieve at their highest levels (Elliot, Heimpel, & Wood, 2006). It is suggested that when student motivation is at its highest, then achievement can also occurs at the highest rate .

Subsequently, the more motivated students are, the more successful they may become academically. Anderman (1999) found that highly motivated students reported higher satisfaction with their lives, had higher self-esteem, higher intrinsic motivation, and higher grade point averages compared to students who were categorized as having low motivation levels.

1.1 Achievement Need in High School Students

The notion that people possess a relatively stable disposition toward engaging in achievement-oriented activities has existed since at least the 1930s. Atkinson (1957) defined need *for* achievement as the capacity to feel pride in accomplishment McClelland (1987) argued that the need for achievement is particularly important because it is an unconscious motive that drives individuals to perform well or to improve their performance. Many studies (Hollenbeck *et al.* , 1989; Slocum *et al.*, 2002) have found a strong positive correlation between need for achievement and goal attainment. The need for achievement is relatively stable and subsequently is considered as part of an individual's personality (McClelland, 1985).

Individuals with a high need for achievement tend to demonstrate their ability in overcoming difficult tasks at the same time maintaining consistently high standards (McClelland and Watson, 1973; Slocum et al. , 2002). Such individuals prefer to seek quantitative feedback on their performance in order to learn from their mistakes (Boyatzis and Kolb, 1995).

Achievement need as proposed by Atkinson and McClelland has always been dominantly targeted at managers, entrepreneurs and working individuals. Early research often used TAT as a tool to measure achievement need in people, where it asks the subject to project his or her habitual patterns of thought and emotional responses onto the pictures on the cards. Examiners typically focus their attention on one of three areas: the content of the stories that the subject tells; the feeling or tone of the stories; or the subject's behaviors apart from responses. Other studies to measure achievement need used performance-related techniques of data collection such as using a board game where respondent behaviors and responses towards winning and losing were interpreted, and creating a task for participants to work on and she studied the kinds of feedback given in order to conclude about levels of achievement need (McClelland, 1987)..

Research on the existence of achievement need in young people such as school students is lacking. When applied to school students, achievement need can be defined as students' concern for achieving performance excellence and acquire mastery over the learning environment (Murray, 1938). It is a question whether achievement need could be found in teenage school students. Can achievement need become a strong motivational force in influencing students' academic performance? Studies on achievement motivation and academic performance have indicated that there is a positive relationship between the two variables (Entwistle, 1968). It is said that, in the school setting, students with a high need for achievement do not like work that is too easy or too hard. If tasks are too easy, there is no real improvement. If tasks are too hard, then by not completing the task, no improvement was accomplished either. Students' need for success and desire to excel in study, school and other academic-related tasks are shown to have preferences for moderately difficult task, competitiveness, preference for clear goals with competent feedback, responsibility, persistence and high accomplishment (Kunnanatt, 2008; Kluger & Koslowsky, 1988).

1.2 Flow in High School Students

Engagement has been conceptualized by Csikszentmihalyi (1990), through his theory of flow, which is a state of being fully immersed in a specific activity. Academic engagement can be defined as perception of concentration, interest, and enjoyment while interacting in an academic activity. To be in this state of engagement, students need to perceive a balance between the challenge of a task and their capability to perform the task successfully. This ultimate sense of competency will result in a state of engagement, enjoying the task due to the deep interest they have in the task. Being in a flow is described as being in a period of deep, intense involvement in activities that are challenging the person physically and/or intellectually but at the same time do not overwhelm the person's level of skill (Johnson, 2008; Pajares, 2001). Research has shown that being in a state of flow tend to improve commitment, achievement and persistence in a various aspects of life (Csikszentmihalyi , 1990)

When students have the motivation to push them to success, students will arrive in a state of focused engagement, concentration and high focus. Engagement can be seen from three aspects (Fredricks et al.2004). The first aspect is behavioral engagement which refers to positive behavior, effort, and participation in school-related activities based on teacher or direct observation (Kelly 2004). The second aspect is emotional engagement, referring to students'

feelings when doing an activity such as feelings of interest, boredom, happiness, and anxiety (Skinner and Belmont 1993). The third engagement is cognitive, referring to how deep one can process and self-regulate one's investment in the learning process (Newmann 1992). This present study integrated both emotional and cognitive aspects of engagement as measured by Csikszentmihalyi's theory of flow (Csikszentmihalyi 1990; Nakamura and Csikszentmihalyi 2002). During flow, individuals experience immediate, direct rewards from their deep interest and concentration in an activity, resulting in the feeling of intense enjoyment.

Csikszentmihalyi (1975) suggested that one condition of flow is motivation that comes from within and highly motivated individuals were found to experience flow (Csikszentmihalyi & LeFevre, 1989). A number of research have established some link on the positive relationship between flow and improved learning in adolescents, young adults (Rathunde, 2003) and high school students (Shernoff et al. 2003). Research on the positive influences of being in flow have found links between flow and students' perceived learning of the subject matter, students' perceived skill development, and student satisfaction (Rossin et al. 2009). Flow has also been found to completely mediate the relation between academic work characteristics and psychological well-being (Steele & Fullagar, 2009).

The role of achievement need in influencing flow has not been established. To fulfill the gap, this study aims at investigating the existence of achievement needs and flow in high school students, as well as the predictive role of the motivational force on student academic engagement. Thus, the research questions addressed here are 1) How well can achievement need predict flow? 2) Which of the three dimensions in achievement need predicts flow significantly and how much variance in flow can be explained by achievement need?

2. Method

2.1 Study Sample

Data for this preliminary analysis were collected from 94 high school students attending two different high schools in the state of Selangor, Malaysia. All students were 16 years of age and they were in Form Four of secondary education. There were 38 (40.4%) males and 56 females (59.6%). The sample was conveniently selected from a population of daily secondary schools as listed by the Ministry of Education department.

2.2 Procedures

The pilot data was collected during the end of 2009 academic school year. After obtaining approval to conduct the study from the Ministry of Education and the school headmasters, the researcher went to each school to collect data. Students from two intact classes of each school were gathered in a small hall and the researcher was left to introduce herself and brief the students on the purpose of the study. Students were reminded of their recent main examination where they probably had worked hard to achieve their best. Students were reminded to answer honestly to all the items in the questionnaire and there were no right or wrong responses. No time limit was given, but majority of the students took about 30-40 minutes to complete the questionnaire.

2.3 Instrument

This study utilized a questionnaire as a mean of measuring achievement need and state of flow. Literature on numerous studies conducted in the area of achievement need and flow were reviewed, critically assessed and evaluated before the researcher constructed the questionnaire. Various items measuring achievement need and flow can be found from previous research and established instruments, but they were used for Western population, often university students, and also for high school students studying specific subjects such as sports or music. Therefore, the researcher carefully phrased statements or items in order to suit the targeted adolescent students, as well as to fit with the cultural and educational background of the sample.

Operational definitions of achievement need construct and flow were carefully identified and outlined based on previous studies. Based on these operational definitions, statements or items were phrased so that they closely reflect (and thus measure) the constructs. After ensuring that the constructs are well-measured, meaning there are ample items to be tested on, the items for the questionnaire were listed and numbered. Items constructed were reviewed several times to ensure that the language is simple and clear for adolescents to understand. The first pilot work involved getting the list of items looked over by someone experienced in survey work to identify ambiguities and incorrect phrasing that may not be evident to the author. In this step, the researcher had done two things. The items were first written in English, then translated into the national language, Bahasa Melayu. The translated version were then given to three school teachers (one primary school and two secondary school teachers) who have taught Bahasa

Melayu for a significant number of years. The teachers made corrections to the structures of the sentences so that the items are correct in terms of Bahasa Melayu grammars, as well as easy to understand by the targeted respondents.

The second pilot work involved content validation by enlisting the help of at least two experts in the areas to look over the items to maximize the fit to theory or concept being measured. In this aspect, the researcher had referred the corrected versions of the instrument to two academicians in Educational Psychology who are familiar with motivational theories. They looked over the items and cross-checked the items with the measured variables. The researcher had explained to them the underlying assumptions of the study. A list of the constructs and items generated from the constructs being measured were given to the experts for reference. Only minor adjustments were made to the items and the overall verdict from the experts suggested that the items constructed are valid and measure the concepts of motivation as intended by the researcher.

The third pilot work recommended was to collect pilot data for refinement of the scale and to test procedures and working layout. For this step, the researcher first conducted a pilot study with 31 Form Four students attending a secondary school in the district of Shah Alam. A total of 18 boys and 17 girls participated in the study. They were briefed on the purpose of data collection, and asked to make comments and ask questions for items that they do not understand as they responded to the instrument. The students were given ample time to go over the items, and many asked for elaboration or explanation on certain items they found confusing. The researcher noted these items and later made necessary adjustment to the phrasing of the questions.

The final format for all the items is a Likert-type 5-point scale, ranging between 1 (very untrue of me) and 5 (very true of me). Standardizing the survey using 5-point Likert scale is also a strategy to make the instrument looks simple and easy for students to respond to.

2.3.1 Achievement Need Scale

This scale measures students' need for success and desire to excel in study, school and other academic-related tasks. The items represent the characteristics that distinguish the trait in students (Kunnanatt, 2008; Kluger & Koslowsky, 1988). Six traits that have been identified in previous studies include preferences for moderately difficult task, competitiveness, preference for clear goals with competent feedback, responsibility, persistence and high accomplishment. Initially 18 items were successfully developed to measure the six constructs. The dimensionality of the 18 items from the Achievement Need Scale was analyzed using maximum likelihood factor analysis. Based on the scree plot, three factors were rotated using a Varimax rotation procedure. The rotated solution yielded three interpretable factors which are named Commitment, Competition and Accomplishment. Each of the factors accounted for and 13.98%, 13.50%, and 10.81%. Together the three factors explained for 38.28% of the variable variance. Two items were pulled out because they contributed to low Cronbach alpha. Item analyses were conducted on the 16 item. First, each item was correlated with its own scale (with the item removed) and with the other scales. Supporting the measure's validity, items were found to be more highly correlated with their own scale than with the other scale. Coefficient alphas were computed to obtain internal consistency estimates of reliability for the three reference scales. The alphas for Commitment, Competition and Accomplishment subscales were 0.748, 0.828 and 0.700 respectively.

2.3.2 Flow Scale

This scale measures students' deep absorption in an activity that is pleasurable, challenging, and worthy of doing for its own sake. Concentration, interest, and enjoyment occur simultaneously during the flow experience. Being in flow means the students are able to formulate clear goals, high concentration, loss of the feeling of self-consciousness, distorted sense of time, ability level balanced with challenge, effortlessness of action, become absorbed in activity, and direct and immediate feedback. The flow state is intrinsically motivating in that students engage in the learning activities for their own sake rather than for an external consequence (Ryan & Deci, 2000). A total of 27 items were developed to measure the nine constructs of flow. The dimensionality of the 27 items from the Flow Scale was analyzed using maximum likelihood factor analysis. Based on the scree plot, three factors were rotated using a Varimax rotation procedure. The rotated solution yielded three interpretable factors which are named Engagement, Concentration and Ability. Together the three factors explained for 37.63% of the variable variance. The total alpha would be increased if one particular item was deleted. Item analyses were conducted on the 26 items hypothesized to measure Engagement, Concentration and Ability. Results indicate that the items were found to be more highly correlated with their own scale than with the other scale. Coefficient alphas were computed to obtain internal

consistency estimates of reliability for the three subscales. The alphas for Engagement, Concentration and Ability subscales were 0.869, 0.823 and 0.808 respectively.

3. Results

Before further analysis, the data were screened to check for any violations of assumptions for normality, linearity and homoscedasticity underlying the general linear model. Table 1 shows the means, standard deviations, reliability coefficients and intercorrelations for all variables. There was a strong, positive correlation between flow and achievement need ($r = .686$, $p<.01$). This indicates that students with high levels of achievement need are associated with higher levels of flow.

3.1 How well can achievement need predict flow?

Results in Table 2 shows that the correlation coefficient between the two variables is .686 while the coefficient determination for the sample is 47%. The result of estimated coefficient determination for the population is 46.5%. This indicates that 47% of the variance in flow is associated with achievement need. The F-value is used to test the null hypothesis that there is no linear relationship between the independent and dependent variables. Since the significance level associated with the observed value of F is significant ($F=81.925$, $df=1,92$, sig =.000), the null hypothesis can be rejected. The variance of 47% in flow accounted by achievement need is indeed statistically significant. A linear regression analysis was conducted to determine the prediction of flow among high school students from a motivational force namely achievement need. The regression equation for predicting flow is:

Flow = 1.513 Achievement Need + 13.095

3.2 How well do the three dimensions of achievement need predict flow among secondary school students?

A standard multiple regression analysis was conducted to determine how well the three dimensions of achievement need can predict flow among high school students. The three dimensions were commitment, competition and accomplishment. Table 3 shows that the linear combination of achievement need constructs was significantly related to flow, $F (3, 90) = 28.908$, $p<.01$ accounting for 49.1% of the variance in students' flow. Table 4 shows that among three constructs, only commitment and competition significantly predict flow, whereas accomplishment was found not to be significant predictor of flow.

4. Discussion

The present study firstly examined the relationship between achievement need and flow. It was found that the relationship between the two variables was quite strong. Since the accuracy of the prediction depends on the strength of the relationship between the two variables, it can be safely said that the prediction of flow from achievement need is moderately accurate. When students have the necessary ingredients of motivation to push them to success, students will arrive in a state of focused engagement, concentration and high involvement. The current finding is significant because it highlights the importance of school students having achievement need in order to improve their engagement in school work and tasks. As proposed by Csikszentmihalyi (1975), one condition of flow is motivation that comes from within. The desire to excel and achieve in academic tasks that comes from within the students instead of from external push will benefit not only the students but parents and teachers too. Students with high achievement need will be self-directed in their effort to perform well. In addition, students with high motivation will find it easier to experience flow (Csikszentmihalyi & LeFevre, 1989; Haworth & Hill, 1992; Jackson, 1992).

Among the three dimensions of achievement need, commitment and competition were found to be significant predictors of flow. This implies that the more committed students are to their academic work and the more competitive students are in their academic performance, the easier they will get into flow. This adds support to McClelland's proposal that individuals with achievement need desire to perform in terms of a standard of excellence or to be successful in competitive situations (McClelland, 1990). People with a strong need of achievement have personal responsibility for performance. They choose to take personal responsibility in situations of moderate risk significantly more often than those low in achievement.

This study also found that among the three dimensions of achievement need measured, accomplishment is not a significant predictor of flow. At a glance, this can be seen as a surprising result since people with high achievement need typically achieve more during their lives than people with low high achievement (McClelland, 1990). However, it can be argued that school students being at a young age have not achieved considerably enough to proudly say they have accomplished much in their lives. Thus responses to the three items in the dimension of accomplishment were

rated low by the students. “I believe I have been successful so far in my life”; “I have gained many accomplishments in school”; and “I normally receive acknowledgement for my high performance” received low mean ratings from the youngsters. This suggests that analysis of responses from instrument measuring accomplishment in young individuals should not conclude the youths are lacking in achievement need. Probably the older adolescents will give higher ratings to such items compared to younger students.

It is high time that the importance of academic flow is emphasized in school students so that they make an effort to become engaged in their academic tasks and therefore perform better in test and examinations. Being engaged mentally, emotionally and behaviorally is very beneficial and productive to these school students. Many research have established some link on the positive relationship between flow and improved learning in adolescents, young adults (Rathunde, 2003) and high school students (Shernoff et al. 2003). Research on the positive influences of being in flow have found links between flow and students' perceived learning of the subject matter, students' perceived skill development, and student satisfaction (Rossin et al. 2009). Flow has also been found to completely mediate the relation between academic work characteristics and psychological well-being (Steele & Fullagar, 2009).

It is proposed that intrinsic motivations such as interest in school, engagement in learning tasks, and high values for achievement are better predictors for success in academic (Miller & Brickman, 2004; Pajares & Miller, 1994;). It is not incorrect to suggest that achievement need is an intrinsic motivation that must be cultivated in young school students. Having such a strong inner force will propel students to work hard and engage in their studies, thus performing better academically.

5. Limitations

The study’s limitations include the small sample and the subject matter for measuring flow. The small sample used in this current study is part of the researcher’s preliminary attempt to validate the constructed items of the questionnaire. Although the targeted number of students to be included in the pilot test was slightly larger, but a few students failed to turn up on the day of data collections due to having chores in the school activities. However, statistical analysis has shown that all the assumptions for normality, linearity and homoscedasticity underlying the general linear model were not violated. The guidelines provided by Tabachnick and Fidell (2001) regarding adequate sample size for multiple regression ($N>50+8m$) where m is the number of independent variables was also fulfilled. The other limitation or rather an attempt to measure flow in general academic work might be questioned by many since flow has always been investigated in specific subject matter. Is it possible for students to think about or feel and become engaged in their school tasks and activities in general if they are interested in learning, enjoy school and have ambitions to achieve well in school? At least this study put forward the idea that flow can be experienced in any subject or tasks relating to academic performance particularly when students have high achievement need.

6. Implications

The current research has practical implications for school students in term of how to increase their performance in school. The results suggest that achievement need can be a strong predictor to academic engagement. The need for achievement has been found to relate significantly to higher performance in working individuals, thus it is not wrong to say that the same motivation can become a strong force for students to put more effort in their school work especially if they are committed to their goals. The result also highlight the importance of students to become engaged in their academic work such as when doing revision, homework and studying. When students become intrinsically motivated, have the need to achieve, and possess the skill to face the challenge of school tasks, they will experience flow easily. Being engaged, focused and intensely enjoying work has been shown to relate significantly to optimal performance (Eisenberger et al., 2005).

Subsequently, teachers and parents should emphasize to the young students the need to posses achievement need and engage in flow. The adults can guide students on the ways and means of cultivating the need for achievement to gain future success. The adults can teach the youngsters about the importance of achieving the optimal state of flow when doing their school tasks to ensure higher performance. In short, teachers and parents can conduct workshops or include in their conversation with adolescents discussions regarding the significance of the two variables.

7. Future research

This preliminary study provides the groundwork for further investigation of the motivational force that can influence higher engagement in academic work. Larger sample using the appropriate sampling technique can improve the statistical results and the generalizability of the results.

Flow should be integrated in a model for motivation and performance in high school students. The role of flow in influencing students' academic performance has not been highlighted, and the role of intrinsic motivation such as achievement need to help students engage in their studies also has not been emphasized. Further study can work on delineating a path model of motivation and flow that integrate the two variables together so that a more comprehensive picture of how to improve students' academic performance can be attained.

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Table 1. Means, Standard deviations, Reliability Coefficients and Intercorrelations of Variables (N=94)

Variables	Mean	SD	1	2	3	4	5
1. Subscale Achievement Need	3.23	.39	(.80)				
2. commitment	3.80	.48	.916**	(.75)			
3. competition	3.97	.89	.703**	.358**	(.83)		
4. accomplishment	2.80	.65	.349**	.322**	.241*	(.70)	
5. Subscale Flow	3.51	.53	.686**	.665**	.418**	.342**	(.92)

Note. Cronbach alpha coeeficients are indicated in parentheses

*p<.05 (one-tailed). **p<.01 (one-tailed)

Table 2. Linear Regression Analysis of Flow and Achievement need

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.686[a]	.471	.465	10.03841

a. Predictors: (Constant), Achievement Need

b. Dependent Variable: Flow

Table 3. Model Summary of Flow and Three Constructs of Achievement Need

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.701[a]	.491	.474	9.95857

a. Predictors: (Constant), Accomplishment, Competition, Commitment

b. Dependent Variable: Flow

Table 4: Results from Multiple Regression Analysis of Three Dimensions of Achievement Need Predicting Flow

Predictors	*B*	*SE*	*ß*	*t*	*Sig.*	*pr*
Commitment	1.617	.241	.559	6.701	.000	.577
Competition	.978	.417	.191	2.344	.021	.240

Accomplishment	.811	.564	.115	1.437	.154	.150

B = unstandardized beta weights; SE = standard error from the residuals to the regression line; ß = standardized beta weights; t = significance tests for the predictors; Sig. = p value level of significance; pr = partial correlations

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