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Self-Efficacy, Achievement Goals, and Metacognition as Predicators of Academic Motivation

Ghaleb AL-Baddareen ^{a*}, Souad Ghaith ^b, Mutasem Akour ^c

^{a, b, c} *Department of Educational Psychology, Hashemite University, Zarqa 13115, Jordan*

Abstract

The purpose of this study was to investigate the impact of self-efficacy, achievement goals (mastery goals and performance goals), and metacognition on academic motivation of university students in Jordan. A random sample of 145 students from the Hashemite University participated in the current study. The Academic Self-Efficacy Scale, the Goals Inventory, the Metacognitive Awareness Inventory, and the Academic Motivation Inventory were used to measure the four variables consequently. The findings of this study showed that two predictors, mastery goals and metacognition had a significant joint effect on academic motivation. On the other hand, self-efficacy failed to have a significant effect on academic motivation.

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1. Introduction

Many psychologists and educators have long considered students' motivation as an important factor of successful learning [1]. Since the early 1970s, there has been sustained research that focused on how students' motivation influences learning and classroom performance [2]. Research in this area has pointed out that students' motivation predicts both the quality of engagement in school learning [3], and the degree to which students seek out or avoid challenging situations [4]. A student with positive academic motivation has the desire to learn, likes learning-related activities, and believes that studying is important. Positive academic motivation not only helps students to succeed at a university, but also helps them in seeing that learning is rewarding and important in all aspects of life [5]. Researchers have been increasingly interested in understanding students' motivation, and finding ways to predict and improve their academic performance. Many researchers suggested that motivation is related to students' initiation of the task, the amount of effort they spend on the task, and their persistence in completing the task [6] [7].

This study attempts to extend our understanding of university student's motivation by focusing on two theories of social cognitive motivation [8]: self-efficacy (i.e., students' beliefs about their capabilities to complete

* Ghaleb AL-Baddareen. Tel.: +962-079-975-9026

E-mail address: ghaleb_122@yahoo.com

a task successfully), and goal orientation (i.e., students' reasons for doing a task). Bandura [9] stated that people's actions and behaviours are guided by their beliefs about how successful they can be in performing a task. People not only need to have the skills and knowledge to execute a task successfully, but they also need to have a certain level of expectation for success. Judgments of personal efficacy affect what students do by influencing the choices they make, the effort they expend, the persistence and perseverance they exert when obstacles arise, and the thought patterns and emotional reactions they experience.

Individuals who believe that they can successfully complete a task (have high self-efficacy) tend to perform better as compared to those who lack such a belief [10] [11] [12]. In addition, individual's self-efficacy may influence the types of goals they adopt for learning. Such reasons that encourage students to learn or goals they have for learning are termed as goal orientation [13]. It is the goals that individuals set that influence their actions, reactions, and motivation for learning [14]. Researchers of motivation, particularly those adopting the social cognitive perspective, suggest that student's goals and beliefs are also shaped by their perceptions of the learning environment. Therefore, it is essential to examine how student's goals and beliefs are formed and maintained in different learning environments. Students' goal-orientation which relates to the purposes that students have for completing an academic task have received much attention due to their influential role on students performance [3].

Goal orientation has two major types: mastery goal orientation and performance goal orientation [15]. In particular, students with mastery goals focus upon the task, prefer situations where they can expand new skills and knowledge [16], and evaluate themselves using "self-referenced standards", such as "Have I learned?", "Have I improved?" [17]. In addition, mastery-goal students tend to focus on learning and mastery of the content, and have been linked to strong self-efficacy, good metacognition, and good performance. On the other hand, students with performance goals focus upon themselves, and prefer situations where they can demonstrate their ability and compare it with other students [16]. Those students usually evaluate themselves using interpersonal norms, such as "did I do better than other students in the class?", "Do others think that I am smart?" [17]. Performance goals encourage students to focus on scoring better than others or avoiding the appearance of incompetence.

Metacognition refers to awareness and monitoring of one's thoughts and tasks performance [18]; or more simply, thinking about one's thinking [19, p3] which is equivalent to self-regulation. Thus low levels of metacognition and misaligned self-assessments are clearly detrimental to effective self managed learning and ultimately individual performance. Well-developed metacognition enhances individuals' performance by allowing them to optimize the capabilities they possess, and be aware of those capabilities that they do not possess. Self-efficacy, individuals' beliefs in their capabilities to perform a particular behaviour, plays a key role in effective metacognition development.

Zimmerman and Shunk [20] described the eight dimensions of metacognition: self-efficacy, self-awareness, resourcefulness, self-monitoring, goal setting, choice, self-motivation, and attribution. Boekaerts [21] has described motivation and self-regulation as "two close friends". Such relationship is reflected in the description of self-regulated learning (SRL) as an active and constructive process that involves setting learning goals, monitoring, regulating and controlling motivation and behavior to accomplish them. Metacognition is important in learning, and it is a strong predictor of academic success [22]. Students with good metacognition demonstrate good academic performance compared to students with poor metacognition.

Metacognition enables students to be strategic in their learning by, for instance, learning new information rather than focusing on studying information already learned [23]. While positive relationship between metacognition and mastery goals has been widely established [24], the relationship between metacognition and performance goals is less clear. Past research indicated that students with high motivation are more likely to demonstrate self-regulatory and do well academically. Ning and Downing [25] identified significant reciprocal effects whereby students' self-regulation predicted their subsequent motivation. Coutinho [26] indicated that metacognition and mastery goals were good predictors of academic success. Moreover,

Mohsenpour, Hejazi, and Kiamaneesh [27] showed that mastery goals had a significant indirect effect on mathematics achievement through self-efficacy, self-regulation and persistence. However, Berger and Karabenick [28] indicated that self-regulation did not significantly predicted motivation.

The purpose of the present study was to examine the relationship between self-efficacy, achievement goals, metacognition, and academic motivation, based on the hypothesis that the relationship between goals and academic motivation is mediated by metacognition and self-efficacy.

2. Methodology

2.1 Participants

A sample of 145 students was randomly selected from among undergraduate students who were enrolled in two courses, Family Violence and Psychology, offered by the department of Educational Psychology at the Hashemite University. The majority of the participants (65.5%) were sophomores representing all faculties at the Hashemite University including 22 males (15.2%) and 123 females (84.8%).

2.2 Instrumentation

Four instruments were used in the current study. The first instrument was the Academic Self-Efficacy Scale which was developed by Owen and Fromen [29]. This scale consists of (33) items rated on a five-point Likert-type scale ranging from 1 (*strongly low confidence*) to 5 (*strongly high confidence*). Cronbach's alpha was found to be 0.89 and the test-retest reliability index was 0.77.

The second instrument was the Metacognitive Awareness Inventory developed by Schraw and Dennison [30]. It consisted of 52 items rated on a six-point scale ranging from 1 (*strongly disagree*) to 6 (*strongly agree*). Cronbach's alpha was 0.92 and the test-retest index (0.88).

The third instrument was the Goals inventory developed by Rodel, Schraw, and Plake [31]. This instrument comprises 12 items assessing mastery goals (e.g., "I enjoy challenging school assignments"), and five items assessing performance goals (e.g., "I like others to think I know a lot"). All items were scored using a 7-point scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*). The reliability of the instrument was estimated using Cronbach's alpha (0.86 for the scale, 0.83 and 0.72 for two subscales consequently), and the test-retest index (0.82 the scale, 0.86 and 0.88 for the two subscales consequently).

The fourth instrument was the Academic Motivation Inventory developed by Vallerand, Pelletier, Blais, Briere, Senecal, and Vallieres [32]. This instrument comprises 16 items assessing intrinsic motivation and 12 items assessing extrinsic motivation, rated on a 7-point scale ranging from 1 (*does not correspond at all*) to 7 (*correspond exactly*). The reliability of the instrument was estimated using Cronbach's alpha (0.89 for the scale, 0.80 and 0.86 for both subscales consequently), and the test-retest index (0.82 for the scale, 0.86 and 0.84 for the two subscales consequently).

2.3 Procedure

Participants were informed that the purpose of the study was to understand the learning process that each student undertakes. The four instruments (the goal orientation scale, the academic self-efficacy scale, the metacognitive awareness inventory, and the academic motivation scale) were distributed and the students were given two weeks to respond to the instruments; out of 220 students, only 145 properly filled the four scales. Descriptive statistics and correlational analysis were utilized to determine the relationships among the outcome measure and the independent variables. Multiple regression analysis was further used in the analysis of the data.

3. Results

Table 1 presents descriptive statistics for all variables. Significant positive relationships ($p < 0.05$) were found between: mastery goals and metacognition ($r = 0.56$); mastery goals and performance goals ($r = 0.18$); mastery goals and academic motivation ($r = 0.59$); mastery goals and self-efficacy ($r = 0.67$); metacognition and academic motivation ($r = 0.44$); metacognition and self-efficacy ($r = 0.68$); and self-efficacy and academic motivation ($r = 0.46$). However, performance goals did not correlate significantly with self-efficacy ($r = 0.13$).

Table 1: Means, Standard Deviations, and Intercorrelations for Academic Motivation and Predictor Variables (N= 145).

| variables | M | SD | 1 | 2 | 3 | 4 |
|---------------------------|---------|-------|-------|-------|-------|-------|
| Academic motivation | 132.916 | 18.76 | 0.44* | 0.59* | 0.20* | 0.46* |
| Predictor Variable | | | | | | |
| 1. Metacognition | 230.308 | 29.12 | | 0.56* | 0.18* | 0.68* |
| 2. Mastery goals | 54.384 | 8.52 | | | 0.18* | 0.67* |
| 3. Performance goals | 23.58 | 4.5 | | | | 0.13 |
| 4. Academic self-efficacy | 115.929 | 16.5 | | | | |

* $p \leq 0.05$.

To find out the combined effect of self-efficacy, achievement goals and metacognition (independent variables) on academic motivation simultaneous multiple regression analysis was conducted. The combination of metacognition, mastery goals, performance goals, and self efficacy significantly predicted academic motivation of the Hashemite university students, $F(4,140) = 20.57$, $p < 0.001$. The adjusted R^2 was 0.35 indicating that 35% of the variance in academic motivation is accounted for by the combination of the four variables. Since the most parsimonious models are favoured in multiple regression analysis, stepwise multiple regression analysis was conducted on the same data set and the results are shown in Table 2.

Table 2. Stepwise multiple regression analysis summary for metacognition, mastery goals, performance goals, and social self-efficacy in predicting academic motivation (N=145).

| Variable | B | SB | β |
|------------------|---------|-------|---------|
| 1. Mastery goals | 0.464* | 0.076 | 0.495 |
| 2. Metacognition | 0.193** | 0.096 | 0.163 |

Note. $R^2 = 0.36$; Adjusted $R^2 = 0.35$; $F(1, 140) = 40.35$; $p < 0.001$.

* $p < 0.01$; ** $p < 0.001$

Table 2 demonstrates that 35% of the variance of academic motivation of the Hashemite university students is accounted for by the linear combination of two independent variables, mastery goals and metacognition. The regression analysis excluded the other two predictors, self-efficacy and performance goals as they did not contribute significantly to the prediction of academic motivation. Self-efficacy becomes a suppressor variable due to the good relationship with other predictors (mastery goals and metacognition). In terms of the magnitude of contribution, mastery goals made the most significant contribution ($R^2 = 0.34$) to the prediction of academic motivation.

4. Discussion

The results of this study revealed that mastery goals and metacognition have a significant joint effect on academic motivation of university students; that is, mastery goals and metacognition have the capacity to predict

academic motivation of university students. This finding is consistent with other research findings [26] [25] [27]. These findings suggest that students with intent to deeply comprehend information tend to have good academic motivation; whereas students who seek to simply perform well on the tests without understanding the information do not necessarily have good academic motivation. Students with mastery goals are more likely to have good metacognition, and thereby, be better learners than students with performance goals. In addition, mastery goals influence academic motivation through metacognition as students with mastery goals may have superior metacognitive skills and strategies that they use to master information; the use of superior metacognition eventually leads to enhanced academic motivation. On the other hand, the findings of the present study are not consistent with the findings of Berger and Karabenick [28]. These conflicting findings indicate that there was no evidence that self-regulation predicted motivation among students.

Moreover, the findings of the current study revealed that self-efficacy and performance goals did not significantly predicted academic motivation. This might be due to multicollinearity problem for self-efficacy since it has high correlations with other predictors, and multiple regression analysis eliminates all overlap between predictors. In addition, performance goals had weak relationships with academic motivation and self-efficacy. Therefore, students with performance goals are expected to have poor metacognition, which translates to poor academic motivation, and students with performance goals are expected to have low self-efficacy, which translates to poor academic motivation. This finding is consistent with other research findings [26] [27].

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