Academic Self-concept and Motivation as Predictors of Academic Achievement

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ABSTRACT This paper explores the relationship between university students' academic self-concept, motivation and academic achievement. The primary aim of this study was to determine whether academic self-concept and motivation of students enrolled for the Quantity Surveying course at a university in South Africa could predict their level of academic achievement. By means of a non-probability convenience sampling technique, all residential students in their first to fourth year of study who were registered for the major subject Descriptive Quantification in the Department of Quantity Surveying were included in the sample. A questionnaire was used as the data collection instrument and, on completion, data were statistically analysed using SPSS. Relevant literature indicated inconsistent findings about whether a relationship exists between students' academic self-concepts and motivation, and academic achievement. The results of this empirical investigation, as confirmed by the statistical analysis carried out, revealed that significant correlations between academic self-concept, motivation and academic achievement do exist, but that they depend on study year level.

INTRODUCTION

The level of student success at university has far-reaching implications for students' career choices and after-university lives. Research by both McCoach and Siegle (2003) and Kornilova et al. (2009) suggest that self-concept, especially academic self-concept helps to predict students' academic achievement. They state that as much as one-third of the variance in achievement can be accounted for by academic self-concept. Trautwein et al. (2006) define academic self-concept as a person's self-evaluation regarding a specific academic domain or ability. Research findings support the belief that consistent success or failure has an effect on self-concept, and that the level of academic achievement is influenced by an individual's self-concept of ability (Dambudzo 2009). According to Yilmaz (2014) a positive self-concept is one of the most vital elements for student success, and because self-concept is both a personal and a motivational variable, its overall contribution to the variance of academic achievement should be high; individuals therefore seem to be more confident and motivated to perform in a manner consistent with their self-concept contends that. In the context of this study academic concept, as defined by Trautwein et al. (2006), is regarded as the main component of self-concept.

In this study, academic motivation was viewed within the context of Deci and Ryan's (1985) self-determination theory. This theoretical perspective, which has been used in a considerable number of research studies in education (Deci et al. 1991), indicates three types of motivation, namely intrinsic motivation, extrinsic motivation and amotivation. Ryan and Deci (2008), Mnyandu (2001), as well as Garn and Jolly (2014) state that intrinsic motivation seems to be the most desirable form of motivation, but they also agree that extrinsic motivation proves to be important in some educational settings. Amotivation (referring to no motivation) is undesirable for academic achievement and is not conducive to academic achievement at all.

Existing research by Deci and Ryan (2008) has shown that self-determination plays a prominent role in the academic performance of learners. Kushmand et al. (2000) declare that a high level of motivation and engagement in learning has consistently been linked to a reduction in the number of drop-outs, and to increased levels of student success. It has been found that motivational variables are positively correlated to academic achievement (Lau and Chan 2001; Sikhwari 2004; Ahmed and Bruinsma 2006). However, weak correlations between academic achievement and academic motivation variables

have also been found (Areepattamannil and Freeman 2008; Othman et al. 2011).

Areepattamannil and Freeman (2008) as well as Yilmaz (2014) declare that a higher self-concept is associated with greater academic achievement among students. However, research done by Trusty et al. (1996), Yoon et al. (1996) and Ochse (2003), shows evidence to the contrary, namely that humble self-assessments are more conducive to academic achievement. Despite much research, no consistent studies clearly indicating the link between academic self-concept and academic achievement could be found.

This paper reports on research to explore whether academic self-concept and motivation can predict the level of academic achievement, using a sample of students in the four undergraduate study year levels of a major subject namely Descriptive Quantification in the Department of Quantity Surveying at a South African university. Related literature and the research methodology will be discussed next, followed by a discussion on the findings and a conclusion.

Research Studies Exploring the Role of Academic Self-concept and Motivation in Academic Achievement

The academic achievement of students determines whether students are considered to be successful in their studies or not. For this reason, it is crucial to understand which factors are responsible for determining, predicting or causing variance in academic achievement (Ahmed and Bruinsma 2006). Dambudzo (2009) states that education has become concerned with the physical, social and emotional development of the individual with much attention being given to factors other than intellectual ability that contribute to the academic achievement of learners.

Since Prescott Lecky (1892-1941), who was one of the first to point out that students' level of achievement might be related to the perceptions they had of themselves as learners, started his research, studies on the relationship between self-concept, motivation and students' academic achievement in educational settings have been a major focus of research. Reis and McCoach (2000) state that most of the literature on underachievement suggests that underachievers have lower academic self-perception, lower self-motivation and self-regulation, less

goal-directed behaviour, and more negative attitudes toward college than high achievers do. McCoach and Siegle (2003) found that academic self-perceptions and motivation are the two factors that best predict academic achievement. Green et al. (2006) support this finding when they state that motivation and self-concept are closely tied to students' performance, their economic success and eventually their long-term health and wellbeing. In a study on second year university students, Sikhwari (2014) shows a significant correlation between achievement and the self-concept of students, as well as a significant correlation between achievement and motivation scores of the students. He also indicates that it is important that self-concept and motivation should not be treated as separate entities, but rather as an interdependent collective.

Educators have long recognised that students' beliefs about their capabilities play an essential role in their motivation to achieve academically (Zimmerman 2000). This would imply that a student's academic self-concept could determine the motivation that is present in the student. Rodriguez (2009) echoes this view by stating that academic self-concept regulates learning and determines students' motivational orientation. In a study on 181 graduate students, Ahmed and Bruinsma (2006) found that the structural positive relation between academic self-concept and motivation was significant. Therefore, the more positive the students felt about themselves and their academic abilities, the more intrinsically motivated they became in academic tasks (Ahmed and Bruinsma 2006); thus it could be concluded that students with positive academic self-concept are more likely to be intrinsically motivated and achieve academically. According to Spinath and Steinmayr (2007), the assumption that intrinsic motivation for learning and perceptions of one's competences are related is derived from both empirical observations and motivational theories.

The reverse also seems to be true. Mnyandu (2001) contends that learners who are motivated tend to develop an inner confidence and they expect to succeed. This would imply that learners who are motivated to do well in their academic work seem to develop an inner confidence or a more positive belief about their academic abilities, which could be interpreted as a positive academic self-concept. It thus seems that

motivation and academic self-concept influence each other.

McCoach and Siegle (2001) found that high-achieving students exhibited more positive academic self-perceptions and motivation than low-achieving students. This confirms Yaworski et al.'s (2000) view that high achievers are usually those who perceive themselves as being good students. Contrary to the research findings indicated above, Ochse (2003) conducted a study on a sample of 645 university students and found that humble self-concepts were more conducive to academic achievement. Ochse found that underestimators achieved significantly higher marks than both realists and overestimators. According to this study students should rather underestimate their ability and have a more negative or realistic self-concept in order to gain academic success. Ochse (2003) argues that – in an academic context – educators should reconsider the importance of realistic self-concepts. This is clearly in contrast to most popular beliefs about the influence of academic self-concept on academic achievement. A positive self-concept, according to Ochse, was least conducive to academic success. Research done by Yoon et al. (1996) echoes these findings.

McCoach and Siegle (2001) mention that although academic achievement is to a degree determined by students' academic self-concept and motivation, few quantitative investigations have examined the legitimacy of this hypothesis. Ahmed and Bruinsma (2006) reiterate this when they state that an integrative work on the relationships between academic self-concept, autonomous motivation (or similar constructs, like intrinsic motivation) and academic performance is largely lacking. For this reason it is believed that the research reported in this paper will make a contribution.

RESEARCH METHODOLOGY

Research Design

A quantitative method was used to explore whether students' self-concept and motivation could predict academic achievement. Such research is found to be appropriate when statistically investigating the relationships between variables (Bless and Higson-Smith 1995). In this study a non-experimental research design was used. This implies that there was no direct ma-nipulation of the variables. In addition, a descriptive survey research design, which focuses on and describes phenomena as they are, was implemented (McMillan and Schumacher 2006).

Sample

The researchers employed non-probability convenience sampling. Convenience sampling was used because it was convenient for the researchers to use residential students at the Department of Quantity Surveying at a South African university. Students enrolled for the Quantity Surveying course majoring in Descriptive Quantification (year 1-4) were included in the sample which suffices for the purpose of the study. The initial sample size was approximately 260 students. Since some students were absent or did not complete the questionnaires correctly or completely, the actual number of participants was 190. The first-year students represented 47 of the total sample, the second-year students represented 51, and the third- and fourth year-students 56 and 36 respectively.

Data Collection

The questionnaire employed to measure the academic self-concepts of the sample was an adapted version of the Self-Description Questionnaire (lll) (Marsh 1992). In this study, only the four main scales, namely mathematics, verbal, academic and problem solving measuring academic self-concept were included and used in the questionnaire, which consisted of 40 items. The scale used to respond to the questions or statements in the questionnaire was changed to a scale consisting of six responses only, instead of the eight options given in the original version. Marsh and O'Neill (2005) found that there is strong support for the construct validity of both the self-concept and the interpretations based on the Self-Description Questionnaire (lll).

The Academic Motivation Scale (Vallerand et al. 1992) was used to assess the academic motivation orientation of the sample. This scale assesses three motivational orientations, namely intrinsic motivation, extrinsic motivation and amotivation. The Academic Motivation Scale (AMS) was developed for use with college students (Cokley et al. 2001). In this study, the only adaptation made to the questionnaire was to re-

place the word *college* in the original with *university*. In a study done by Fairchild et al. (2005) on 1 406 American college students to test the construct validity of the AMS, they found that this scale provided construct validity evidence in the form of a well-fitting seven-factor model.

The internal consistency was determined by calculating alpha-coefficients of the Cronbach alpha with the help of the SPSS computer software program (SPSS 2009). High to acceptable alpha-coefficients were obtained for all the subscales in both questionnaires used in this study. The data that were used to represent the academic achievement of the sample were the results of the respondents' final examination in their major subject, Descriptive Quantification.

Written informed consent was obtained from the students as well as from the relevant university authorities. The researchers ensured that there was no violation of confidentiality by treating all information as confidential and that no harm was done to participants. Students were informed that their participation was voluntary and that they were free to withdraw at any stage during the research.

Data Analysis

The researchers were informed that all of the students in each study year received the same stimulus and were exposed to the same instructions and input, therefore the respondents were asked to complete the questionnaires after a term test in Descriptive Quantification. The questionnaires were administered to the different study year levels separately.

The students, who were fully informed of the purpose of the research, were asked to complete the questionnaires on the day of their term test in Descriptive Quantification because the researchers were informed by the lecturer that it would be the easiest and best way to ensure optimum cooperation, participation and student response.

The data were analysed using SPSS version 17. The following statistical techniques were implemented to analyse the data: the Pearson product moment correlation, hierarchical regression, the Mann Whitney U-test and the level of statistical significance.

The Pearson product moment correlation was implemented to investigate the relationships between the various constructs. Hierarchical

regression was implemented to explore whether academic self-concept and motivation could predict the level of academic achievement of students in all four of the undergraduate study year levels.

RESULTS AND DISCUSSION

The results for the four study year groups were investigated separately, and are presented accordingly, mainly because this approach enabled the researchers to differentiate the findings for the different year groups, and also because students in the different year levels wrote different examination papers.

Before determining whether academic self-concept and motivation could predict the level of academic achievement of students in all four of the study year levels at the Department of Quantity Surveying, the relationship between the predictor variables, namely academic self-concept and motivation, and the criterion variable academic achievement was investigated. For this purpose the Pearson product moment correlation coefficients were calculated. These coefficients are presented separately in Table 1.

From Table 1 it appears that for the first-year group neither of the predictor variables showed a significant relationship with the criterion variable academic achievement. It would thus seem that there was not a significant relationship between academic self-concept and academic achievement and motivation and academic achievement in the first-year students. For the second-year group the predictor variable academic self-concept did have a significant relationship with the criterion variable academic achievement, on the 5% level of significance. A positive correlation existed between academic self-concept and the academic achievement of second-year students. This means that the higher a second-year student's academic self-concept was, the higher his or her academic achievement. For the second-year group, there did not appear to be a significant relationship between motivation and academic achievement. For the third-year group, the predictor variables academic self-concept and amotivation had a significant relationship with the criterion variable academic achievement, on the 5% level of significance. A positive correlation existed between academic self-concept and the academic achievement of the third-year students. This

Table 1: Correlations between the predictor variables and the criterion variable for the four study year levels

Variables	First year (n=47)							
	MS	VB	AC	PS	MI	ME	MA	MT
Academic performance	0.06	0.09	-0.06	0.21	-0.06	0.06	0.07	-0.01
SDQ – Maths (MS)	-	-0.10	0.11	0.23	0.26	0.26	-0.11	0.29
SDQ – Verbal (VB)		-	0.56**	0.58**	0.15	-0.02	-0.31*	0.09
SDQ – Academic (AC)			-	0.62**	0.45**	0.19	-0.35*	0.38**
SDQ– Problem solving (PS)				-	0.21	0.02	-0.04	0.15
Intrinsic motivation (MI)					-	0.60**	-0.16	0.93**
Extrinsic motivation (ME)						-	-0.43**	0.86**
Amotivation (MA)							-	-0.31*
Motivation total (MT)								-

Variables	Second year (n=51)							
	MS	VB	AC	PS	MI	ME	MA	MT
Academic performance	0.23	-0.01	0.33*	0.03	0.18	-0.10	-0.12	0.05
SDQ – Maths (MS)	-	0.07	0.27	0.38**	0.22	0.08	-0.33*	0.17
SDQ – Verbal (VB)		-	0.53**	0.60**	0.25	0.08	-0.33*	0.19
SDQ – Academic (AC)			-	0.49**	0.61**	0.28*	-0.40**	0.51**
SDQ –Problem solving (PS)				-	0.30	0.14	-0.46**	0.25
Intrinsic motivation (MI)					-	0.55**	-0.22	0.89**
Extrinsic motivation (ME)						-	-0.32*	0.87**
Amotivation (MA)							-	-0.30*
Motivation total (MT)								-

Variables	Third year (n=56)							
	MS	VB	AC	PS	MI	ME	MA	MT
Academic performance	0.07	-0.23	0.27*	-0.01	0.10	-0.12	-0.39**	-0.01
SDQ – Maths (MS)	-	0.05	0.28*	0.26	0.33*	0.03	0.02	0.22
SDQ – Verbal (VB)		-	0.19	0.44**	0.10	-0.29*	0.04	-0.11
SDQ – Academic (AC)			-	0.05	0.36**	0.01	-0.52**	0.23
SDQ –Problem solving (PS)				-	0.21	-0.13	0.16	0.06
Intrinsic motivation (MI)					-	0.45**	-0.25	0.87**
Extrinsic motivation (ME)						-	-0.03	0.84**
Amotivation (MA)							-	-0.17
Motivation total (MT)								-

Variables	Fourth year (n = 36)							
	MS	VB	AC	PS	MI	ME	MA	MT
Academic performance	0.14	-0.10	0.19	-0.14	-0.06	-0.05	-0.23	-0.06
SDQ – Maths (MS)	-	-0.07	0.34*	0.41*	0.31	-0.01	-0.07	0.19
SDQ – Verbal (VB)		-	0.08	0.19	0.13	0.02	-0.20	0.09
SDQ – Academic (AC)			-	0.03	0.40*	-0.01	-0.15	0.25
SDQ –Problem solving (PS)				-	0.07	-0.07	0.08	0.01
Intrinsic motivation (MI)					-	0.58**	-0.09	0.92**
Extrinsic motivation (ME)						-	-0.22	0.86**
Amotivation (MA)							-	-0.16
Motivation total (MT)								-

**p <= 0.01
*p <= 0.05

means that the higher a third-year student's academic self-concept was, the higher his or her academic achievement would be. A higher negative relationship existed with respect to amotivation. In this instance it indicates that the higher the amotivation of the third-year student, the less likely he or she would be to achieve academically. Thus, it appears as if the more a third-year student lacks motivation, the less likely he or she is to perform academically. This seems to

be an obvious conclusion; however, this was not the case with students in the first and second years of study, and is also in contrast with studies from researchers such as Ahmed and Bruinsma (2006), Rodriguez (2009) and Yilmaz (2014) who showed a positive correlation between academic self-concept and academic achievement. It would be useful to investigate the possible reasons for this. For the third-year group, there did not appear to be a significant

relationship between motivation and academic achievement. For the fourth-year group, neither of the predictor variables academic self-concept and motivation indicated a significant correlation with the criterion variable academic achievement. It thus appears as if no significant relationship existed between academic self-concept and academic achievement and motivation and academic achievement in the fourth-year students.

From Table 1 it also seems that there was no significant relationship between the total score of motivation and the academic achievement of any of the four study year groups. The relationships between motivation and the academic achievement of the four study year groups were very small (ranging between -0.01 and -0.06). It would therefore seem that motivation did not significantly affect the academic achievement of the respondents. This proofs the hypothesis of McCoach and Siegle (2001) wrong, which is stating that academic achievement is to an extent determined by academic self-concept and motivation. Because the sub-scale amotivation of the Academic Motivation Scale did show a significant relationship with the academic achievement of the third-year students, it was decided to work with the sub-scales of the Academic Motivation Scale rather than with the total score of motivation in the analyses that follow.

The Hierarchical Regression Analyses

Hierarchical regression analysis was done in order to determine if the contributions of the different predictor variables, namely academic self-concept and motivation, to the variance in the academic achievement of students were significant or not. Hierarchical regression analyses were done on the complete model of predictor variables that included both academic self-concept and motivation and all of their subscales, namely intrinsic motivation, extrinsic motivation, amotivation, mathematical self-concept, verbal self-concept, academic self-concept and problem-solving self-concept. Hierarchical regression analyses were done separately for the four study year groups, and the results are indicated in Table 2.

Table 2: An explanation of variance by the complete model per study year group

Group	R	R^2	Sum of squares	p
First year	0.353	0.125	520.8	0.597
Second year	0.528	0.278	3444.3	0.039
Third year	0.543	0.295	1891.2	0.014
Fourth year	0.393	0.154	470.5	0.649

From Table 2 it is clear that for the first-year students (12.5%) and the fourth-year students (15.4%) the complete model does not succeed in explaining a significant variance in academic achievement. However, in terms of the second-year students (27.8%) and the third year students (29.5%), the complete model does indeed succeed in explaining a significant proportion of the variance in academic achievement on the 5% level of significance. For the second- and

Table 3: The contribution of the different variables to the R^2 for the second-year students

	Variables in analysis	R^2	Contribution of R^2: full minus reduced model	f^2	F
1.	[self-concept] + [motivation]	0.278	1-5=0.095	2.886*	0.13
2.	[self-concept] + intrinsic motivation	0.187	2-5=0.004	0.221	
3.	[self-concept] + extrinsic motivation	0.227	3-5=0.044	2.561	
4.	[self-concept] + amotivation	0.259	4-5=0.076	4.615*	0.11
5.	[self-concept]	0.183			
6.	[motivation] + [self-concept]	0.278	6-11=0.182	2.709*	0.25
7.	[motivation] + mathematics	0.152	7-11=0.056	3.038*	0.07
8.	[motivation] + verbal	0.098	8-11=0.002	0.102	
9.	[motivation] + academic	0.201	9-11=0.105	6.045*	0.13
10.	[motivation] + problem solving	0.097	10-11=0.001	0.051	
11.	[motivation]	0.096			

[ ] = shows set predictors
** p≤ 0.01
*　p<= 0.05

third-year groups, the contributions of the specific set of predictor variables and the individual predictor variables' contribution to the explanation of the variance in academic achievement were examined by the hierarchical regression analysis. The information for the second-year group is provided in Table 3.

The results in Table 3 indicate that all the predictor variables together account for 27.8% ($R^2 = 0.278$) of the variance in the academic achievement of the second-year students. The calculated R^2-value is significant on the 5% level of significance [$F_{7;43} = 2.369$; $p<0.05$]. Therefore, academic self-concept and motivation account for 27.8% of the variance in the academic achievement of the second-year students.

The motivation scale (intrinsic motivation, extrinsic motivation and amotivation combined) makes a significant contribution to the explanation of variance in the academic achievement of second-year students on the 5% level of significance. Motivation, on the other hand, explains 9.5% of the variance in the academic achievement of second-year students. The corresponding f-value (0.13) denotes a result with powerful practical value. When looking at the motivation scales separately, Table 3 indicates that amotivation does indeed deliver a significant contribution to the variance in academic achievement on the 5% level of significance. The corresponding effect size denotes a small to medium effect, and the result is thus of minor importance. The negative link between amotivation and academic achievement indicates that students with high scores in amotivation were inclined to show low academic achievement.

The academic self-concept scale (mathematics, verbal, academic and problem solving combined) delivers a significant contribution to the explanation of the variance in the academic achievement of second-year students on the 5% level of significance [$F_{(3;43)}=2.886$], while academic self-concept explains 18.2% of the variance in academic achievement of the second-year students. The corresponding f-value (0.25) is denotative of a result with powerful to big practical value.

In terms of judging the academic self-concept scales individually, Table 3 indicates that both the mathematics and academic scales delivered a significant contribution to variance in the academic achievement of the second-year students on the 5% level of significance. Both the mathematics and academic sub-scales of the academic self-concept scale explain 5.6% and 10.5% respectively of the variance in academic achievement. The corresponding effect sizes, however, show that only the findings in respect of the academic self-concept (0.13) are of average practical value. In Table 1 it has already been shown that there was a positive relationship between academic self-concept and academic achievement in second-year students that is significant on the 5% level of significance.

In Table 4 the results of the hierarchical regression of the third-year students are indicated. The results in Table 4 indicate that all the predictor variables explain 29.5% ($R^2 = 0,295$) of

Table 4: The contribution of the different variables to the R² for the third-year students

Variables in analysis			R^2	Contribution of R^2: full minus reduced model	f^2	F
1. [self-concept]	+	[motivation]	0.295	1-5=0.121	2.746[*]	0.17
2. [self-concept]	+	intrinsic motivation	0.174	2-5=0.000	0.000	
3. [self-concept]	+	extrinsic motivation	0.222	3-5=0.048	3.084	
4. [self-concept]	+	amotivation	0.245	4-5=0.071	4.702[*]	0.09
5. [self-concept]			0.174			
6. [motivation]	+	[self-concept]	0.295	6-11=0.120	2.042[*]	0.17
7. [motivation]	+	mathematics	0.178	7-11=0.003	0.186	
8. [motivation]	+	verbal	0.263	8-11=0.088	6.089[*]	0.12
9. [motivation]	+	academic	0.178	9-11=0.003	0.186	
10. [motivation]	+	problem solving	0.175	10-11=0.000	0.000	
11. [motivation]			0.175			

[ ] = shows set predictors
[**] p≤ 0.01
[*] p<= 0.05

the variance in the academic achievement of the third-year students. This calculated R^2-value is significant on the 5% level of significance [$F_{7;43}$ = 2.369; $p < 0.05$]. Therefore, academic self-concept and motivation combined explain 29.5% of the variance in the academic achievement of the third-year students. The motivation scale (intrinsic motivation, extrinsic motivation and amotivation combined) delivered a significant contribution to the variance in the academic achievement of the third-year students on the 5% level of significance [$F_{(3;48)}$ = 2.746]. Motivation explains 12.1% of the variance in the academic achievement of the third-year students. The corresponding f-value (0.17) denotes a result with powerful practical value. In terms of the separate motivation sub-scales, namely intrinsic motivation, extrinsic motivation and amotivation, Table 4 indicates that amotivation is also, in this case, significant on the 5% level of significance in explaining the variance in the academic achievement of third-year students. However, the corresponding effect size denotes a small effect, and the result is thus of minor importance. The negative relationship between amotivation and academic achievement shows that students with a high score on the amotivation sub-scale were more inclined to indicate poor academic achievement. The academic self-concept scale (mathematics, verbal, academic and problem-solving combined) delivers a significant contribution to the explanation of the variance in the academic achievement of the third-year students on the 5% level of significance [$F_{(3;48)}$=2,746]. Academic self-concept explains 12% of the variance in academic achievement. The corresponding f-value (0.17) denotes a result with powerful practical value.

In terms of judging the sub-scales of the academic self-concept scale separately, Table 4 shows that the verbal self-concept sub-scale is significant on the 5% level of significance in its contribution to the explanation of variance in the academic achievement of the third-year students. Verbal self-concept, on its own, declares about 9% of the variance in the academic achievement of the third-year students. The corresponding effect sizes, however, indicate that the result tends to be of average practical value. In Table 3 it was already shown that a negative relationship existed between verbal self-concept and academic achievement that is significant on the 5% level of significance. This indicates that,

in this study, the higher a student's verbal self-concept, the lower was his or her academic achievement.

CONCLUSION

The findings of this study lend little support to some of the theories that gained popular acclaim in the twentieth century and spawned a number of programmes for empowering people by bolstering their self-perception and confidence and motivation. The literature study indicated that, in previous studies, a positive academic self-concept was related to higher academic achievement. It also indicated that humble self-concepts could be more conducive to academic achievement. With regard to motivation as a factor that could possibly contribute to academic achievement, it has been found that motivational variables are positively correlated to academic achievement. Conversely, weak correlations between academic achievement and motivation have also been found.

In the empirical research reported here, a positive correlation was found between academic self-concept and academic achievement with the second- and third-year students. Academic self-concept explained 18.2% of the variance in academic achievement of the second-year students and 12% of the variance in the academic achievement of the third-year students. In the case of both the second- and the third-year students, these results were found to have powerful practical value. The investigation showed that the variance in academic achievement could not be explained by the academic self-concepts of the first- and fourth-year Quantity Surveying students. The empirical investigation found that there was no significant relationship between motivation and academic achievement in the first-, second-, third- and fourth-year students. Therefore, no correlation was found between these two variables in the students. This is consistent with some of the research findings in the literature. Motivation could also not explain the variance in the academic achievement of the first- and fourth-year students. Motivation did, however, explain variance in the academic achievement of second- and third-year students. Accordingly, motivation explained 9.5 and 12.1% of the variance in the academic achievement of the second- and third-year students respectively. The empirical investigation also indicated that

these results were of high and powerful practical value.

A significant relationship was only found between amotivation and academic achievement in the third-year students, and not in the other three study year levels. The literature review indicated that amotivation led to poor academic performance. However, in respect of the first-, second- and fourth-year students, if a student was not motivated at all, it did not necessarily imply that he or she would perform poorly academically.

This study contributed to integrating the relationships between academic self-concept, autonomous motivation (or similar constructs, like intrinsic motivation) and academic performance, which have been reported earlier in this paper as being largely lacking. For this reason it is believed that the research reported in this paper makes a valuable contribution in this regard.

RECOMMENDATIONS

Although one should view the findings of the present study cautiously because of the sample and the use of only quantitative research methods, it adds new, useful knowledge about the relationship between academic self-concept, motivation and academic achievement. This study confirmed that students' academic self-concept and their motivation do not necessarily predict their academic achievement. This study delivered inconsistent results. The differences in the results across the four study year groups in the Department of Quantity Surveying are noteworthy in that the relationship between motivation and academic achievement and also between self-concept and academic achievement was not consistent between these four study year groups. As with the relationship between academic self-concept and academic achievement, more quantitative as well as qualitative research is recommended to identify and clarify possible reasons for the inconsistencies in the findings of the relationship between motivation and academic achievement. Possible reasons for the inconsistency could be attributed to a number of factors, such as the students' academic achievement in previous years, their intellectual ability, the influence of different lecturers, poor or good class attendance, and different study methods.

Despite the fact that no significant relationship was found between motivation and academic achievement for all four of the study year levels, it is further recommended that lecturers encourage high motivation in their students, as well as being informed about the importance of students' academic self-concept as a factor which has the potential to influence academic achievement.

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