

## **ABILITY BELIEFS AND ACADEMIC ACHIEVEMENT: LESSONS FOR KENYAN TEACHERS**

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### **Abstract**

Academic underachievement remains a challenge towards the realization of requisite completion and transition rates. The present study sought to provide an understanding of one of the mechanisms through which achievement can be explained by investigating the extent to which students' ability beliefs predict academic achievement. Towards that objective, students' sex and ability beliefs were put in a predictive model. The study was carried out among 421 form three students (218 male, 203 female) from 36 schools in Mombasa, Kenya. The 8-item Implicit Theories of Intelligence Scale was used. Findings show a significant model, with gender significantly contributing to its predictive ability. Though incremental beliefs insignificantly predicted achievement, they increased the likelihood of achievement. Entity beliefs were associated with a drop in achievement. Significant sex differences in achievement were found in favour of male students. The present study adds a new perspective to the literature on ability beliefs in Kenya. It confirms that students' beliefs predict academic achievement.

**Keywords:** Academic achievement, entity beliefs, incremental beliefs, learning, motivation

## 1. Introduction

Poor academic achievement locks out many students from pursuing higher education or joining technical colleges resulting in low quality of entrepreneurship, industrialization and vocational capacity within the county. This is in addition to the risk of reduced economic opportunities and access to information. This study sought to find the extent to which perceived ability beliefs predict academic achievement among secondary school students.

Poor academic achievement in school tests remains a major concern to stakeholders in education. Due to the high premium placed on academic achievement in society, evaluative situations often force learners into a zero-sum reward game where only a relative minority is rewarded while dampening the motivation and confidence for the relative majority (Liem, Ginns, Martin, Stone & Herrett, 2012). This poor achievement potentially locks out many students from admission to institutions of higher learning. This in turn, is likely to affect the quality of future human resources. School dropout arising from poor academic achievement has also been associated with social deviance (UNICEF, 2006).

Available research on academic underachievement in Kenya has cited examination anxiety (Mukolwe, 2015), teachers' characteristics and facilities and instructional materials (Gakure, Mukuria & Kithae, 2013; Mwangi & Nyagah, 2013). Findings of research carried out in Western countries focusing on the relationship between ability beliefs, and academic achievement are contradictory and inconclusive.

Studies around the world support the notion that students' ability beliefs play a significant role in their learning and motivation in the classroom. For example a body of research has shown that individuals' implicit beliefs about ability are significantly related to academic achievement (Olatunde, 2010; Sheldrake, Mujtaba & Reiss, 2015). Literature indicates that students with incremental views of ability significantly perform better than students who hold fixed mindsets (Atwood, 2010; Dweck, 2010). Stipek and Gralinski (1996) found that the belief that intelligence is relatively fixed was also associated with the belief that performance is relatively stable and that intelligence is global on its effects on performance. In a related study, Blackwell, Trzesniewski and Dweck (2007) found that an incremental theory of intelligence at the beginning of junior high school predicted higher mathematics grades at the end of the second year of high school controlling for the effect of mathematics achievement scores before entering junior high school. Further, Henderson and Dweck (1990) as cited in Blackwell *et al.* (2007) found that students who endorsed an

incremental view scored significantly higher grades than those who endorsed more of an entity view in the first year of junior high school controlling for prior achievement.

Beliefs about intelligence have important implications for students because they affect students' goals in school, their belief in the usefulness of effort and the way they explain their failures including the strategies they adopt when they encounter failure (Dweck & Master, 2009) and ultimately influence academic achievement. However, research findings are inconsistent depending on methodology used for the study. Additionally, no relationship has been found between the type of mindset students have and their gender, ethnicity, or prior levels of achievement (Atwood, 2010; Dweck, n.d.)

While cross-cultural studies from Asia corroborate findings from western countries (Law, Chan & Sachs, 2008; Pillay, Purdie & Boulton-Lewis, 2000), the ability beliefs of students learning in the African context still remain largely under researched. A small body of research in Kenya in the area of ability beliefs and the link with academic achievement is narrow and inconsistent; focusing on negative effects of maladaptive ability beliefs (Otieno, 2015) and linkages between self-concept and academic achievement (Mucherah, Felicia, Kyle & Travis, 2010). Significant correlations were found in the study by Mucherah *et al.*

As the reviewed literature show, most of the studies concerning ability beliefs have been carried out in Western countries thus severely limiting the extent to which the findings can be generalized to samples of secondary students in Africa. Therefore, this study sought to establish the extent to which ability beliefs predict academic achievement among secondary school students. The study sought to investigate the distribution of ability beliefs, the extent to which ability beliefs predict academic achievement and sex differences in achievement controlling for ability beliefs.

## **2. Method & materials**

The sample for the study was 421 form three students consisting of 218 male and 203 females selected using purposive and simple random sampling methods. Students' perceived ability was measured using the 8-item Implicit Theories of Intelligence Scale (Dweck, 2000). Items refer to students' perceived competence as applied to school work. The scale contains four incremental and four implicit theory items and assesses general beliefs about ability. This scale contains eight items which were adapted by replacing the word 'you' for 'I' and changing the item structure to reflect a five point Likert scale format. Sample items include 'my intelligence is something about me that I personally can't change very much'. This

instrument was chosen for this study because it displays good internal consistency ( $\alpha = .82$  to  $.97$ ) and test-retest reliabilities at 2 weeks in the original test ( $\alpha = .80$  to  $.82$ ,) (Dweck, Chiu & Hong, 1995) and in other studies (Castella & Bryne, 2012). The internal consistency reliability test was done for the instrument. In the pilot study, the instrument displayed good internal consistency and a moderate Cronbach alpha score of 0.57.

### 3. Results

#### *Respondents' Ability Beliefs*

Ability beliefs were measured at two levels, incremental and entity. Students' mean scores on incremental and entity subscales were computed across gender and the findings presented in Table 1.

**Table 1 Means of Ability Beliefs**

Gender	Ability beliefs			
	Entity		Incremental	
	Mean	SD	Mean	SD
Male	8.74	3.27	17.32	2.01
Female	8.56	3.25	17.41	2.13
Total	8.65	3.26	17.36	2.07

Findings in Table 1 show that on average, students hold higher incremental beliefs ( $M = 17.36$ ,  $SD = 2.07$ ) than entity beliefs ( $M = 8.65$ ,  $SD = 3.26$ ). Further, while male students reported higher means on entity beliefs ( $M = 8.74$ ,  $SD = 3.27$ ), their female counterparts reported slightly higher means on incremental beliefs ( $M = 17.41$ ,  $SD = 2.13$ ).

#### *Prediction of academic achievement from ability beliefs*

Simple linear regression was used to find out the extent to which ability beliefs predict academic achievement using the enter method with ability beliefs as the independent variable and academic achievement as the dependent variable. The model fit the data well,  $F(2, 418) = 3.66$ ,  $p = .03$ . Entity beliefs significantly and negatively predicted academic achievement ( $\beta = -.31$ ,  $SD = .16$ ) while incremental beliefs were insignificant predictors.

Further, the study sought to find a predictive model of academic achievement. The logistic regression equation had students' sex and ability beliefs as the independent variables while academic achievement was the dependent variable. The model was significant,  $\chi^2(3) = 31.88$ ,

$p < .001$ . The model explained variance in achievement of 7-10% and correctly identified 61.5% of students who achieved. Gender significantly contributed to the prediction of academic achievement. Females were .34 less likely to achieve as male students. Though insignificant, incremental beliefs increased the odds of academic achievement by 1.03. Table 2 presents the findings.

Table 2 *Logistic regression model of prediction of academic achievement*

	B	S.E.	Wald	df	Sig.	Exp(B)
Gender(1)	-1.07	.20	27.72	1	.00	.34
Entity beliefs	-.06	.03	2.77	1	.10	.95
Incremental beliefs	.03	.05	.24	1	.63	1.03
Constant	.48	1.04	.20	1	.66	1.58

#### *Sex differences in academic achievement*

Finally, the study sought to investigate sex differences in academic achievement. Initially, ability beliefs were used as covariates. ANCOVA found significant sex differences,  $F(1, 417) = 30.20, p < .001$ , Partial Eta Squared = .07. Male students were found to report higher achievement than female students. Entity and incremental beliefs did not significantly contribute to the model's ability to discern sex differences in achievement.

Not controlling for covariates, t-test found significant differences in academic achievement,  $t(417.46) = 6.57, p < .001$ . Male students achieved higher grades than female students.

#### **4. Discussion of Findings**

This study sought to find out if ability beliefs predict academic achievement. Descriptive findings show that students hold higher incremental beliefs. In particular, the findings indicate that in comparison, males score higher on entity beliefs while females scored slightly higher on incremental beliefs. Inferential analysis found out that while entity beliefs negatively and significantly predicted academic achievement, incremental beliefs positively but insignificantly predicted academic achievement. These findings support Dweck (2010) who found that students with incremental beliefs of ability significantly outperform their classmates who hold fixed mindsets. Similarly, Blackwell *et al.* (2007) and Sheldrake *et al.* (2015) found that students' ability self beliefs influenced their GCSE grades.

These findings support the notion that students who perceive themselves as competent and capable and worthy of success are deemed to achieve superior academic performance. This is in line with findings of a longitudinal study by DuBois and Cooper (2004) who found that positive beliefs have a favourable influence on academic achievement.

#### **4. Implications**

Findings of this study have implications for practice. Teachers need to recognize the key role that a student's mindset plays in learning and ultimately in academic performance, hence develop the incremental beliefs in their students. Schools should also develop an enabling environment where negative labelling of some schools as 'poor performing' is discouraged. This will turn around development of negative beliefs about one's ability based on the schools' 'label'. Parents should be educated on the need not to peg children's overall worth on their academic achievement as it lowers their self-worth in the long term. Parents should also be regularly reminded that the socialization within the family setting leads to internalization of gender rules and ideologies thus children should be brought up with the perception that they are able to climb to the highest levels of academic achievement regardless of their gender. Curriculum developers need to come up with diverse programs other than academic evaluation in schools. This will ensure that students find worth in other domains that are also socially valued.

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