

## Academic Identity Status Measure: Psychometric Properties when Used among Secondary School Students in Kenya

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Rec date: Nov 05, 2015; Acc date: Dec 29, 2015; Pub date: Dec 31, 2015

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### Abstract

The study examined the internal consistency, factor structure, and predictive validity of the academic identity measure (AIM), a pioneer measure of academic identity status. Data were collected from 390 students (average age 16.65; SD=1.31) in 10 secondary schools in Embu County, Kenya. The factor structure of the AIM corresponded to that reported in previous studies among high school and college students. Furthermore, significant correlation and predictive equation was found between AIM subscales and academic achievement. The AIM yielded data with sufficient psychometric properties among secondary school students. In addition, the findings add support to cross-national generalizability of the factor structure of the AIM.

**Keywords:** Psychometric properties; Commitment; Experiences; Conceptualized

### Introduction

An area that continues to attract considerable research attention is the influence of identity processes on academic outcomes. The importance of tests and measures in identity research has led to the development of several valuable resources. Most of these are self-report instruments developed in North America and normed with college samples [1]. A few issues pertinent to the global utility of some of the measures have not been adequately resolved.

This study focuses on the academic identity status measure (AIM) which was developed by Was and Isaacson [2]. Notably, the AIM was developed in North America and it was normed with a sample of American college students. The tool has mainly been validated upon university and secondary school students in America and Asia. There is need to make the academic identity status literature applicable beyond American and Asian academic contexts. In fact Was and Isaacson [2] recommended that further reliability testing and additional evidence for construct and predictive validity. We believe that there is need to establish the relevance of the academic identity status construct and the psychometric properties of the AIM using non-college student populations especially in non-American cultures.

One way of enhancing applicability of identity measures is by ascertaining the extent to which their measurement structures vary across cultures [1]. Aligned with this view, we focused on the applicability of the AIM among secondary school students in Kenya. In the next sections, we present an overview of the identity status model, identity status measurement, and results from our study.

### Identity Status Model

Identity is one's basic sense of self. It is usually a product of the dynamic interplay of biology, socialization, culture, and psychology within a specific context. As identity develops, it influences the social wellbeing of individuals. Studies on how identity processes affect

academic achievement is framed upon different traditions but majority borrow from Eriksons' seminal work on ego identity [3]. Of these traditions, James Marcia's [4,5] identity status model is quite popular.

The identity status model views identity in terms of the dual processes of self-exploration and commitment. Exploration is a process characterized by consideration of alternatives while commitment is characterized by settling upon a set of choices and/or values. The two processes polar identity development. Marcia identified four identity statuses or styles by means of which adolescents navigate through identity-defining roles and values. The identity statuses are determined by the extent to which one has explored and committed to an identity. These are diffused, foreclosed, moratorium, and achieved identity statuses. Each identity status is linked to various personality features, subjective experiences, and styles of interpersonal interaction [6]. A major strength of the identity status approach is that it offers a structured model for understanding how variables attendant to the processes of exploration and commitment interact to influence identity development. Consequently, the model has enabled researchers to focus on individual differences in identity formation.

In 2008, Was and Isaacson [2] came up with a model of identity status specific to academics. Was and Isaacson defined academic identity status as one's view of oneself in academic setups as informed by one's choices and commitment to school roles, values, and goals. This definition was well aligned with the context-specificity hypothesis. Germane to Marcia's Identity status paradigm [7], the academic identity status model suggested four statuses: diffused, foreclosed, moratorium, and achieved. These statuses are inferred from students' academic behaviour, choices, value for academic work, and source of direction.

In the model, each academic identity status is empirically associated with a set of personality characteristics that may or may not be adaptive in school set-ups. Diffused academic identity is characterized by a failure to make academic values-related decisions. Students with diffused academic identity demonstrate little educational involvement, disorganization, low self-esteem and low autonomy. Such a student has apathy, disinterest, a very weak commitment to school tasks and is

least prepared to achieve academically [2]. Foreclosed academic identity involves unquestioningly adapting academic values and goals that have been prescribed by significant others. Students with foreclosed academic identity seek approval from parents, teachers, and friends. In school, they have a rigid and inflexible commitment driven by the need to demonstrate ability to fulfill the prescribed tasks. Such students have difficulties solving problems under stress [8].

Moratorium academic identity is defined as a time of indecision and exploration when a student is going through academic uncertainty and is yet to commit to values and goals [2]. Such students have a weak commitment to school tasks, are anxious and unsatisfied with school. They are also likely to temporarily reject parental and school values. On the other hand, achieved academic identity is the healthy conclusion to the academic identity crisis. Students reach this status after exploring the options and making a strong self-chosen commitment to a set of academic values and goals. From a Marcian perspective, this status is the peak of identity development [6]. Students in this status are more introspective, planful, and logical in decision-making. Such students also have high self-esteem, and work effectively under stress [9].

## Identity Status Measurement

Several measures have been developed to assess identity status. The Marcian identity statuses emerged from the identity status interview which lasted 30 to 45 minutes and covered themes of vocation, religious, and political values. The domains of sexual self-expression and sex-role values were added later on [7]. In this interview, identity was measured by capturing status exploration and/or commitment in more than one domain. However, this yielded only a global measure of the individual's score. Some measures like the Ego Identity Process Questionnaire (EIPQ) measure dimensions of exploration and commitment in eight different domains.

Another popular measure of identity status is the Extended Objective Measure of Ego-Identity Status II (EOM EIS II) [10]. The EOM EIS II comprises of 64 items that measure the four identity statuses within eight identity-defining areas clustered into two domains. These measures generally use a Likert-type scale format to test whether an individual expresses a presence or absence of exploration or commitment with regard to each statement. Other measures of identity status that do not solely focus on exploration and commitment have also emerged (see Meeus [11] for a review). A key criticism leveled against these measures is that they only provide a global measure of identity status [2] and their results may not reflect the specific effect of identity status on some outcomes.

While developing the academic identity status model, Was and Isaacson [2] came up with the Academic Identity Status Measure (AIM). The AIM is a self-report measure containing four subscales each with 10 items. The four subscales include items to measure four academic stages. The 10 items within each identity status subscale represent the ten key topics of concern to students in school set ups. Participants respond to each of the items on a 5-point Likert scale of 1 (not at all like me) to 5 (very much like me). Studies done in America, Europe, and Asia indicate that academic identity status influences academic achievement across students in elementary, high school, and college levels [8-9,12].

A few issues pertinent to the global utility of the AIM have not been adequately resolved. Notably, the AIM was developed in North America and normed with a sample of American college students. The

tool has mainly been validated upon university and secondary school students in America and Iran. The need to conduct further research exploring the application of the AIM among students in Non-American contexts is emphasized [2]. Notably, the validity of the AIM as used to study secondary school students in African contexts remains underexplored. Of methodological concern is whether the academic identity statuses captured by the AIM, may be used to categorize students in African educational contexts. It also remains unclear whether the AIM-measured academic identity status, can reliably predict the academic achievement of secondary school students.

This study attempted to address two of the issues raised above. First, we aimed to investigate whether academic identity status measure exhibits (i) its expected factor structure and (b) its predictive validity when its scores are correlated with a sample of Kenyan secondary school students' scores in termly examinations.

## Psychometric Properties of the Academic Identity Measure

### Factor structure

As with many original scale developers, Was and Isaacson [2] had the burden of proof that all the items in the hypothesized AIM subscales loaded reasonably to the corresponding academic identity statuses. They tested the instrument among 421 undergraduate students enrolled in an Introduction to Psychology course in a Midwestern state university. The results indicated that the measurement items represented the theoretical subscales to a reasonable degree. Specifically, a confirmatory factor analysis constraining the 40 items to load on four correlated latent factors yielded an acceptable fit to the input data. The results demonstrated that the four AIM subscales are internally consistent and that the four academic identity statuses are empirically robust and separate constructs. Thus the described model comprising of four statuses was supported. However, available studies on academic identity status among secondary school students [8] have not evaluated the factor structure of AIM. Therefore, there is a need for further evidence of the relevance of the academic identity status construct and the psychometric properties of the AIM among non-college students especially in non-American cultures.

### Internal consistency

Internal consistency reflects the extent to which various items in an instrument measure the same thing. The internal consistency is popularly reported using coefficient alphas ( $\alpha$ ) and it is widely believed to judge the precision and quality of the data obtained through scales in Psychology [13]. Robust alpha coefficients for AIM have been reported in studies among high school students [8] and college students [2,9,14] in Iran and America (Table 1). Notably, the alphas reported among Iranian high school students [8] were lower than those reported in studies among college students in America (Table 1). However, Hejazi et al., [8] used a translated version of the AIM (English to Persian and Persian to English).

It is argued that coefficient alpha is sensitive to the conditions of testing and the appropriateness of the language to the population tested [13]. This assertion persuaded us to contend that the variation in the AIM's alpha levels for the studies in different cultural contexts may point to its possible differential reliability occasioned by translation; or cultural differences, or even the age differences among of the samples.

Certainly, more studies on AIM are needed among secondary school students in non-American cultures in order to ascertain or disconfirm this disconcerting possibility. This was a motivation for the present study.

Study	Sample (Mean age; sd)	Internal consistency ( $\alpha$ )			
		D	F	M	A
Fearon [14]	N=163 community college students in Southwest USA (Mage=22.8 years; sd=6.4)	0.79	0.71	0.78	0.82
Hejazi et al. [8]	N=301 Secondary school students in Iran (Mage=15.2 years; sd=0.68).	0.52	0.51	0.79	0.81
Was and Isaacson [2]	N=421 undergraduate students at a Midwestern state university, USA. (Mage not indicated).	0.76	0.77	0.85	0.76
Was et al. [9]	N=407 undergraduate students at a Midwestern state university, USA. (Mage not indicated).	0.76	0.77	0.85	0.76

Note. D: diffused academic identity status; F: foreclosed academic identity status; M: moratorium academic identity status; A: achieved academic identity status.

**Table 1:** Internal consistency alphas of AIM in previous studies.

## Validity of the AIM

The studies involving AIM have mainly reported two types of validity: construct validity and criterion-related validity. Construct validity concerns the extent to which a particular instrument for data collection is aligned to the theory behind its construction while criterion-related validity endeavours to relate the scores of a particular instrument to those obtained using another measure of the same construct [15]. Was and Isaacson [2] used the discriminant form of construct validity whereby correlations were computed between AIM scores and the scores of the identity strategies inventory (ISI 3) [16], a measure of identity processing style. All correlations were small to moderate suggesting that AIM produced scores that differed significantly from those of the ISI 3. This indicated that academic identity may be separate and distinguishable from global identity.

The form of criterion-related validity evaluated for the AIM is the predictive validity. This mainly involves correlating an instruments scores with those of theoretically relevant outcomes [13]. Was and Isaacson [2] correlated AIM scores with final grades in an introduction to psychology course. Other studies [8-9,14] have used the same criteria and obtained similar results. Evidence from these studies indicates that only achieved academic identity status correlates positively with academic grades. However, it is important to note that the Iranian study used back translation to enhance the validity of the AIM among high school students [8].

The present study investigated the construct and predictive validity of the AIM especially when used among secondary school populations. Discriminant validity of the subscale items was established through factor analysis while predictive validity was established by correlating the AIM subscale scores with students' grades in mid-term and end of term examinations.

## Method

### Participants and procedure

The sample comprised of 390 students (198 boys; 193 girls). The participants' age ranged from 14 to 23 years. The mean age of boys was 16.68 (SD=1.36) while the mean age of girls was 16.63 (SD=1.26). The overall mean age was 16.65 (SD=1.31). All the participants were Kenyan nationals. Three participants had not filled one to three in the questionnaire while two displayed a single mind set by marking one answer throughout the questionnaire. The five questionnaires were not included in the data analysis. 385 students gave complete data on the AIM translating to 98.71% return rate.

Form three students were selected for the study for two reasons. First, in Kenya, form three students are in middle and late adolescence. In this age, identity was expected to have started differentiating into different statuses. Further, these students had been in secondary school for at least three years and had already selected subjects for the KCSE examination [17]. The students were likely to have definite academic values and to be pursuing certain academic goals. Second, using secondary school students in Kenya helped address a gap in literature regarding identity development in high school students outside America and Asia.

Data were collected during the first school term of year 2015 within 10 public secondary schools in Mbeere South Sub County of Embu County, Kenya. The schools included in the study were in four categories: One boys only boarding, one girls only boarding, one co-educational boarding and seven coeducational day. In each selected school, participants' selection was based on the following inclusion criteria: Being a form three student for two consecutive months; having sat all the required examinations for the class, and having been graded in those exams by the teachers.

The distribution of participants in the selected schools was: 61 participants from the boys' school, 48 from the girls' school, 49 from the co-educational boarding school, and 232 from seven coeducational day schools. The sample size constituted 18 per cent of the accessible population. The was deemed sufficient for the study. According to Vanvoorhis and Morgan, [18], a sample size of above 10 per cent of the accessible population is large enough for detecting differences, associations, and for multiple regression analysis.

In line with ethical guidelines, the study was cleared by the National Commission for Science Technology and Innovation (NACOSTI). In addition, school principals gave permission to conduct the study in their schools. The students could refuse participation in the data collection any time they wanted to. Filling of the questionnaires was done during regular class time supervised by the researcher. The participants were given background information and instructions. The researcher also explained the rating scales with a few sampled items. The average time for filling the questionnaires was 25 minutes. Thereafter, class teachers provided the researcher with the results for the participants in form three mid-term and end of term one examinations.

## Measures

### The academic identity status measure (AIM)

This study used an adapted version of the AIM [2]. The adapted AIM contained four subscales: diffused, foreclosed, moratorium and

achieved each with 10 items. The participants responded to each of the 40 items on a four-point scale ranging from 1 (Strongly disagree) to 4 (Strongly agree). The subscale scores ranged from 10 to 40. Through a pilot study, the original AIM was modified by changing its focus from college to secondary school. In addition, a four-point Likert scale was used instead of the five-point scale used in the original AIM. Although a number of scholars argue in favour of using a mid-point in Likert scales (see Tsang [19] for review), in this study we modified the AIM to a four-point scale persuaded by the argument that mid-points do not necessarily improve the internal consistencies and construct validity of a measure [20,21].

### Academic Achievement

Academic achievement was calculated as the average score inferred from the total points obtained in mid-term and end of term one form three examinations in the year 2015. The scores were then transformed into T- scores to make them comparable across the different schools. The obtained T-scores ranged from 23 to 72 with skewness and kurtosis statistics of - 0.36 and - 0.42 respectively. The academic achievement data was thus considered to be sufficiently normally distributed as per the criteria outlined by Schmider et al., [22]. Using the scores, the participants' academic achievement was categorized into high, average, or low. The cut off scores for each category were as

follows: 59 to 76 as high, 41 to 58 as average, and 23 to 40 as low. The researcher conceptualized academic achievement using examination marks given by teachers as done in other studies among secondary school students in Kenya [23,24].

### Statistical Analysis

The obtained data were analyzed by computing the descriptive statistics and internal consistency estimates for the four sub-scales of AIM. In addition, correlations were computed for the study variables. An exploratory factor analysis (Principal component) established the construct validity of the AIM. A standard multiple regression analysis was also done to establish the predictive validity of the AIM.

### Results

The descriptive statistics for each item in the adapted AIM are presented in Table 2. For this 40-item scale, the least item mean score was 1.13 for item 3 on the diffused academic identity status subscale (I don't worry about my marks and I don't set academic goals for myself). The highest item mean score was 3.75 for item 1 on the achieved academic identity status (University education is a high priority for me and I am willing to do everything in order to achieve it).

Item	Range	M	SD	Item	Range	M	SD
D1	1-4	1.30	0.69	M1	1-4	1.95	0.95
D2	1-4	1.47	0.77	M2	1-4	1.87	0.85
D3	1-3	1.13	0.36	M3	1-4	2.55	0.90
D4	1-4	1.37	0.74	M4	1-4	2.19	0.92
D5	1-4	1.39	0.70	M5	1-4	2.35	0.97
D6	1-3	1.20	0.43	M6	1-4	2.35	0.94
D7	1-4	1.46	0.74	M7	1-4	2.39	0.96
D8	1-3	1.17	0.41	M8	1-4	2.62	0.98
D9	1-4	1.47	0.72	M9	1-4	2.48	0.96
D10	1-4	1.55	0.75	M10	1-4	2.43	0.97
F1	1-4	2.54	0.98	A1	1-4	3.75	0.60
F2	1-4	2.63	0.99	A2	1-4	3.15	0.91
F3	1-4	1.36	0.64	A3	1-4	3.57	0.67
F4	1-4	2.39	1.00	A4	1-4	3.62	0.66
F5	1-4	2.87	1.00	A5	1-4	3.47	0.73
F6	1-4	1.38	0.64	A6	1-4	3.02	0.87
F7	1-4	1.74	0.87	A7	1-4	3.36	0.76
F8	1-4	1.94	0.98	A8	1-4	3.71	0.59
F9	1-4	2.34	0.99	A9	1-4	3.50	0.72
F10	1-4	2.55	1.04	A10	1-4	3.11	0.89

Note. N: 385; D: Diffused academic identity status; F: Foreclosed academic identity status; M: Moratorium academic identity status; A: Achieved academic identity status.

**Table 2:** Descriptive statistics for academic identity measure items.

The descriptive statistics, internal consistency estimates for, and intercorrelations among the study variables are presented in Table 3. The alpha coefficients for the four subscales of the adapted AIM were relatively high ranging from 0.71 to 0.86. In this study, the overall alpha coefficient for the AIM was 0.77. The correlations between the AIM subscales were small to moderate. The highest correlation was found between diffused and moratorium academic identity statuses, while the lowest was between foreclosed and achieved academic identity statuses. Positive correlations were found between diffused, foreclosed and moratorium academic identity statuses. However, the three academic identity statuses had negative correlations with achieved academic identity status. All correlations were significant except the

correlation between foreclosed and achieved academic identity statuses.

The study found very weak to moderate correlations between the AIM sub scales and academic achievement ranging from (r (383)=-0.06, p=0.27), to (r (383)=0.38, p=0.00). Diffused, foreclosed, and moratorium academic identity statuses had weak negative correlations with academic achievement. Only achieved academic identity status subscale had the highest and the only positive correlation with academic achievement. Interestingly, moratorium academic identity status had the weakest correlation with academic achievement.

Variable	M	SD	α	1	2	3	4	5
AIM Subscale (no of items)								
Diffused (10)	13.52	3.57	0.74	-				
Foreclosed (10)	21.74	4.45	0.71	0.30**	-			
Moratorium (10)	23.18	5.95	0.81	0.46**	0.30**	-		
Achieved (10)	34.28	4.31	0.86	-0.26**	-0.09	-0.31**	-	
Academic Achievement								
First term exam scores	50.00	10.00		-0.08	-0.07	-0.06	0.38**	-
Note. N=385. AIM: academic identity measure. **p<0.01 (2-tailed).								

**Table 3:** Descriptive statistics, alpha coefficients, and intercorrelations of study variables.

A standard multiple regression analysis established how the four academic identity statuses predicted academic achievement. As presented in Table 4, the resultant regression model explained only 14% of variance of students' academic achievement (Adjusted

R<sup>2</sup>=0.14). The regression equation was significant (F (4, 380)=17.02, p<0.001). Achieved academic identity status had the highest contribution in the equation and it was the only significant predictor.

Predictors	Unstandardized coefficients		Standardized coefficient	t	Sig	95% CI	
	β	SE	β			LL	UL
Constant	-0.00	0.05		-0.07	0.95	-0.10	0.09
Diffused AIS	0.00	0.06	0.00	0.07	0.94	-0.10	0.112
Foreclosed AIS	-0.06	0.05	-0.06	-1.26	0.21	-0.16	0.04
Moratorium AIS	0.09	0.06	0.09	1.55	0.12	-0.02	0.20
Achieved AIS	0.40	0.05	0.40	0.80	0.00	0.30	0.50
Model <sup>a</sup> : R=0.39, R <sup>2</sup> =0.15, Adjusted R <sup>2</sup> =0.14, SE=9.26, F (4,380)=17.02, p<0.001							
Note. N=385. AIS: Academic Identity Status; LL: Lower Limit; UL: Upper Limit.							

<sup>a</sup>Regression model summary.

**Table 4:** Predicting academic achievement based on academic identity status.

An exploratory factor (principal component) analysis was completed using the entire sample (N=385) to establish the construct validity for the adapted AIM. This analysis resulted in a four-factor solution for the 40-item measure with item loadings ranging from 0.34 to 0.70. The four-factor solution is summarized in Table 5.

Item	Estimate <sup>a</sup>	Loadings				Item	Estimate	Loadings			
		1	2	3	4			1	2	3	4
D1	0.17	-0.09	-0.08	0.36	0.16	M1	0.22	0.42	-0.18	0.09	-0.05
D2	0.29	0.24	-0.13	0.42	-0.19	M2	0.45	0.61	-0.12	0.24	-0.03
D3	0.31	0.06	-0.04	0.54	-0.07	M3	0.40	0.61	-0.08	0.11	0.07
D4	0.24	0.16	-0.07	0.44	0.11	M4	0.57	0.70	-0.08	0.26	0.08
D5	0.43	0.23	-0.01	0.61	0.09	M5	0.49	0.67	-0.07	0.16	0.10
D6	0.33	0.05	0.02	0.56	0.11	M6	0.29	0.51	-0.10	0.03	0.13
D7	0.46	0.42	-0.02	0.51	-0.16	M7	0.45	0.64	-0.10	0.17	-0.06
D8	0.50	0.03	-0.21	0.67	0.03	M8	0.29	0.53	0.02	0.01	-0.06
D9	0.49	0.22	-0.01	0.67	0.50	M9	0.46	0.67	-0.11	0.03	-0.03
D10	0.29	0.23	-0.02	0.47	0.10	M10	0.51	0.68	-0.06	0.10	0.17
F1	0.36	-0.01	-0.02	0.08	0.60	A1	0.48	0.10	0.69	0.01	0.03
F2	0.28	-0.11	0.13	-0.09	0.49	A2	0.21	-0.11	0.40	-0.15	0.10
F3	0.27	0.21	-0.23	0.25	0.34	A3	0.38	0.01	0.58	-0.20	0.06
F4	0.24	0.25	0.11	0.01	0.40	A4	0.44	-0.13	0.64	-0.01	-0.11
F5	0.31	0.11	0.10	-0.01	0.54	A5	0.39	-0.22	0.57	-0.13	-0.04
F6	0.26	0.10	-0.22	0.24	0.38	A6	0.35	-0.30	0.47	-0.09	0.19
F7	0.31	0.02	-0.08	0.27	0.48	A7	0.36	-0.07	0.60	-0.03	0.01
F8	0.24	0.13	-0.07	0.18	0.43	A8	0.42	-0.13	0.63	-0.09	-0.04
F9	0.32	-0.08	0.00	0.03	0.56	A9	0.45	-0.21	0.62	-0.12	0.02

F10	0.35	<b>0.29</b>	-0.11	0.11	0.49	A10	0.25	0.04	0.48	0.13	-0.06
Variance explained <sup>b</sup>				5.71	5.00			12.04	7.41		
Total variance explained <sup>c</sup> 35.71											
Note. D: Diffused academic identity status; F: Foreclosed academic identity status; M: Moratorium academic identity status; A: Achieved academic identity status.											
<b>Bold type indicates item/factor loading.</b>											
<sup>a</sup> Sum of squared loadings for this four-factor solution.											
<sup>b</sup> Percentage of variance explained by each factor.											
<sup>c</sup> Percentage of variance explained by the four factor solution.											

**Table 5:** Factor structure coefficients for the academic identity measure.

The total variance explained for this solution was 35.71%. Factor 1, Moratorium academic identity status, accounted for 17.55% of the total item variance, Factor 2, Achieved academic identity status, accounted for 9.09% of the total item variance, Factor 3, Diffused academic identity status, accounted for 8.75% of the total item variance, while Factor 4, Foreclosed academic identity status, accounted for 5.00% of the total item variance. Fit indices (KMO=.83, Bartlett's Test of Sphericity=4099.95, df=780, p<0.01) indicated that there was considerable and significant contribution of each of the AIM items in measuring academic identity status.

## Discussion

This study makes a timely contribution to the extant literature on the academic identity status. It gives additional information on the psychometric properties of the AIM, a pioneer measure of academic identity status. The study analyzed data obtained from 385 form three students drawn from secondary schools in Embu County, Kenya.

This study offers current evidence of the reliability and validity of the AIM. We found the four subscales of the adapted AIM to have reliabilities similar to the ones reported in studies among college students [2,14] and high school students [8]. These findings offer further evidence of the reliability of the AIM as reported among students in America and Iran. That there were small to moderate correlations between the adapted AIM subscales suggested that the academic identity statuses may be separate and distinguishable from each other. The factor analysis results supported the factor structure of the AIM as outlined by Was and Isaacson [2]. The version of AIM used in this study had item loadings within the recommended range of 0.30 to 0.74 for valid AIM items [2]. In fact, all the 40 items on the AIM met the criteria for retention despite the few modifications done in its wording. This constitutes new evidence for the factor structure equivalence of the AIM within a different culture.

In addition, this study gave evidence of the predictive validity of the AIM. The results generally corroborated the findings among undergraduate students that achieved academic identity status had the strongest predictive value on academic achievement when compared to others statuses [2,9,14]. The results were also in line with those found among first year Iranian high school students that diffused and foreclosed academic identity statuses had negative predictive values on academic achievement [8]. Taken with those of earlier studies, the findings may further substantiate the view held by Was and Isaacson [2] that an achieved academic identity may be superior to any other identity status in explaining students' academic achievement.

The findings had some notable contrasts with those reported in the previous studies. In this study, achieved academic identity status had the greatest and the only significant predictive value on students' academic achievement. This was different from the findings by Hejazi et al., [8] that diffused and foreclosed academic identity statuses had significant predictive values with diffused academic identity status predicting the greatest amount of variance academic achievement among Iranian high school students. A study among American college students, reported that moratorium academic identity status had significant predictive value on academic achievement [14]. In our study, the findings for the moratorium academic identity status were somewhat paradoxical. Although this status accounted for the second largest percentage of total item variance in the factor analysis, it had the weakest correlation with academic achievement. Statistically this may be okay, but the paradox could be a pointer to an element of context-specificity of academic identity statuses in prediction of academic outcomes.

## Limitations

The reader is advised to beware of the following methodological concerns in the current study. First, we did not establish the concurrent validity of the AIM. Second, we used a 4-point scale for the adapted AIM while the previous studies employed a 5-point scale. According to Tsang [19] differences in the scaling of an instrument may introduce epistemological differences in the interpretation of its scores. Third, the sample comprised of form three students in public secondary schools in one sub-county within Embu County. There may be some important regional differences within the Kenyan society. Students' academic identity status may vary with contextual and economic factors across geographical areas. Schwartz and others [1] advise that differences in the influence of psychological constructs and processes ought to be interpreted based on situational and cultural contexts. Therefore, caution is advised when generalizing these results. Fourth, the AIM yields self-report data making it difficult to rule out a degree of subjectivity in the findings.

## Conclusion

The AIM as used in the present study appears to be a promising instrument yielding data with sufficient psychometric properties among the secondary school students. The study yielded results that supported the hypothesized measurement structure of the AIM. All the items fit in their respective subscales on the data collected among secondary school students in Kenya. This adds to the evidence of the measurement equivalence of the Academic Identity Measure. In

addition, the findings provide additional support to cross-national generalizability of the factor structure of the AIM. We are particularly convinced that the AIM is applicable for studying identity among Kenyan secondary school students. Future studies may investigate the psychometric properties of the AIM using a comparative approach either across cultures or students of different academic levels within same contexts.

## References

1. Schwartz SJ, Adamson L, Ferrer-Wreder L, Dillon FR, et al. (2006) Identity status measurement across contexts: variations in measurement structure and mean levels among White American, Hispanic American, and Swedish emerging adults. *Journal of Personality Assessment* 86: 61-76.
2. Was CA, Isaacson RM (2008) The development of a measure of academic identity status. *Journal of Research in Education* 18: 94-105.
3. Erikson EH (1968) *Identity, youth and crisis*. New York, (NY): Norton.
4. Marcia JE (1966) Development and validation of ego-identity status. *J Pers Soc Psychol* 3: 551-558.
5. Marcia JE (1967) Ego identity status: relationship to change in self-esteem, "general maladjustment," and authoritarianism. *J Pers* 35: 118-133.
6. Kroger J, Martinussen M, Marcia JE (2010) Identity status change during adolescence and young adulthood: a meta-analysis. *J Adolesc* 33: 683-698.
7. Marcia JE (1993) The ego identity status approach to ego identity. In Marcia JE, Waterman AS, Matteson DR, Archer SL, Orlofsky JL (Eds.) *Ego identity: A handbook for psychological research* 1-21.
8. Hejazi E, Lavasani MG, Amani H, Was CA (2012) Academic identity status, goal orientation, and academic achievement among high school students. *Journal of Research in Education* 22: 291-320.
9. Was CA, Al-harthi I, Stack-oden M, Isaacson RM (2009) Academic identity status and the relationship to achievement goal orientation. *Electronic Journal of Research in Education Psychology* 7: 627-652.
10. Adams GR, Bennion L, Huh K (1989) *Objective measure of ego identity status: A reference manual*. Ontario, Canada.
11. Meeus W (2011) The study of adolescent identity formation 2000-2010: A review of longitudinal research. *Journal of Research on Adolescence* 21: 75-94.
12. Jelenic M (2013) *Identity status?: The impact on academic performance*. University of Nevada, Las Vegas.
13. McCrae RR, Kurtz JE, Yamagata S, Terracciano A (2011) Internal Consistency, Retest Reliability, and Their Implications for Personality Scale Validity. *Personality and Social Psychology Review*, 15: 28-50.
14. Fearon DD (2012) *Identity Correlates of Academic Achievement: How Influential are Self, Academic and Ethnic Identity Statuses among College Students?*e. Baylor University.
15. Cohen L, Manion L, Morrison K (2011) *Research methods in education* (7th edn.) New York, NY: Routledge.
16. Berzonsky MD (2003) Identity style and well-being: does commitment matter? *Identity: An International Journal of Theory and Research* 3: 131-142.
17. Ministry of Education Science and Technology (2014) *basic education statistical booklet*. Nairobi, Kenya.
18. Vanvoorhis CRW, Morgan BL (2007) *Understanding Power and Rules of Thumb for Determining Sample Sizes*. *Tutorials in Quantitative Methods for Psychology* 3: 43-50.
19. Tsang KK (2012) The use of midpoint on Likert Scale: The implications for educational research. *Hong Kong Teachers' Centre Journal* 11: 121-130.
20. Adelson JL, McCoach DB (2010) Measuring the mathematical attitudes of elementary students: The effects of a 4-point or 5-point Likert-type scale. *Educational and Psychological Measurement*, 70: 796-807.
21. Kulas JT, Stachowski AA, Haynes BA (2008) Middle response functioning in Likert-responses to personality items. *Journal of Business and Psychology* 22: 251-259.
22. Schmider E, Ziegler M, Danay E, Beyer L, Bühner M (2010) Is it really robust?? Reinvestigating the robustness of ANOVA against violations of the normal distribution assumption. *Methodology* 6: 147-151.
23. Mutweleli SM (2014) *Academic motivation and self-regulation as predictors of academic achievement of students in public secondary schools in Nairobi County, Kenya*. Kenyatta University, Nairobi, Kenya.
24. Wawire CK (2010) *Predictors and consequences of self-handicapping and defensive pessimism among students in selected high schools in Nairobi Province, Kenya*. Kenyatta University, Nairobi, Kenya.