

# Predictive influence of locus of control on adult learners' academic attitude and engagement

 Sunday Abidemi Itasanmi<sup>1\*</sup>,  Oluwatoyin Ayodele Ajani<sup>2</sup>,  Dahunsi Emmanuel Mabayoje<sup>3</sup>,  Stella Ifeyinwa Odiaka<sup>4</sup>

<sup>1,3,4</sup>Department of Adult Education, University of Ibadan, Nigeria.

<sup>2</sup>Language and Social Sciences Education, University of Zululand, KwaDlangezwa, South Africa.

\*Corresponding author: Sunday Abidemi Itasanmi (Email: [itasunny2000@gmail.com](mailto:itasunny2000@gmail.com))

## ABSTRACT

**Purpose:** The primary purpose of this study was to empirically examine the predictive influence of locus of control (internal and external) on adult learners' academic attitude and engagement using the theory of andragogy.

**Design/Methodology/Approach:** The study adopted a quantitative research approach and data were collected from 216 adult learners participating in literacy programmes in Oyo State, Southwest Nigeria. The study's data collection tool was a structured questionnaire that focused on four domains: demographic parameters, locus of control (internal and external), academic attitude and academic engagement. A partial Least Square-Structural Equation Modelling (PLS-SEM) analysis with SmartPLS software was used to analyze the collected data.

**Findings:** The findings of the study indicated that adult learners' academic attitude significantly influenced their academic engagement. It was revealed that the internal locus of control had a significant positive impact on the academic attitude and engagement of the adult learners. Furthermore, the relationship between academic attitude and engagement was moderated by internal locus of control. However, the external locus of control had no significant effect on the academic attitude and engagement of adult learners.

**Conclusion:** Interventions aimed at improving adult learners' academic attitude and engagement should take into account the role of the internal locus of control. Strategies such as goal-setting and self-reflection critical to developing a stronger internal locus of control may be effective in promoting positive academic attitudes and engagement among adult learners.

**Practical Implications:** This study's results have implications for both literacy organizers and facilitators regarding support strategies to maximize learners' engagement, motivation and effective learning.

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**Keywords:** Academic attitude, Academic Engagement, Academic success, Andragogy, Locus of control, Adult learning, SEM.

## 1. INTRODUCTION

The field of adult learning and education has continued to emphasize the difference between how children and adults learn. Children and adults both experience the process of learning new skills. The primary difference in their learning is based on the fact that adults have autonomous decision-making responsibilities in society while children are still learning to be independent social beings (Chakanika, Sichula, & Sumbwa, 2016; Eduedify, 2022). Knowles (1980) used his andragogy theory to specifically draw the attention of academics and practitioners to the differences in adult learning. Thus, it prompts a great discussion on how learning for adults should be approached (O'Neill & Thomson, 2013). According to him, adult learning must be self-driven and learner-centered rather than using the teacher-centric approach that is frequently used for teaching children. Adult learners are particularly driven to learn and acquire practical knowledge and abilities. Adult learners bring experiences, insights and

connections from their prior learning to the new learning environment and this often influences their academic success and opens up new opportunities for personal and professional growth (Graham, 2017; Tare, Cacicio, & Shell, 2023).

The term academic success has been amorphous in nature that's why scholars and researchers hesitate to define it or explain what constitutes learner success (York, Gibson, & Rankin, 2019). Academic success has been related to learners completing summative assessments based on specified learning goals (Cachia, Lynam, & Stock, 2018). According to Kuh, Kinzie, Buckley, Bridges, and Hayek (2006), academic success includes learners' academic achievement, engagement, satisfaction, acquisition of relevant skills and competencies and persistence as well as attainment of learning outcomes and knowledge retention after purposeful learning activities. This definition highlights the fact that academic success is a wide and complex concept. However, the concept encapsulates all generally accepted outcomes within the educational context (York et al., 2019). Adult learners' academic achievement is assessed in terms of increased literacy abilities in reading, writing and arithmetic within the framework of adult learning. It can also be measured in terms of advances in life-enhancing skills, more positive attitudes and learning engagement (NWT Literacy Council, 2020). Adult learners' academic achievement is thus dependent on elements such as motivation, self-regulation, support systems, learning techniques, self-efficacy and other personal and contextual aspects that might impact adult learning (Sogunro, 2015). Nevertheless, research has shown that adult learners' locus of control plays a significant role in their academic success (Hrbáčková, Hladík, & Vávrová, 2012; Sujadi, 2020).

Locus of control refers to an individual's belief about the extent to which they have control over the events that affect their lives (Neill, 1997). Rotter (1966) defined locus of control as the extent to which people believe that there is a dependent relationship between their actions and outcomes. The locus of control was originally conceptualized as a unidimensional construct but it was dichotomized by early researchers into internal and external locus of control. However, some other scholars conceive it from a multidimensional angle and this led to categorizing people as having either an internal or external locus of control or being placed on a continuum within each dimension (Levenson, 1981). People with an internal locus of control believe that the outcome they experience is a product of their actions and decisions while those with an external locus of control believe that their outcomes are largely determined by external factors such as luck or the actions of others (Ryon & Gleason, 2014).

Educational researchers investigate how learners' locus of control orientation influences their academic success generally and particularly how it relates to their motivation, commitment, self-efficacy, metacognition and achievements (Albert & Dahling, 2016; Au, 2015; Hrbáčková et al., 2012; Joo, Lim, & Kim, 2013; Klein & Keller, 1990; Prasetyanti, 2017; Sarwar & Ashrafi, 2014). For instance, locus of control is a significant predictor of learner satisfaction (Joo et al., 2013), performance and confidence (Klein & Keller, 1990) and academic skills and achievement (Agnew, Slate, Jones, & Agnew, 1993). Furthermore, research has shown that learners with an internal locus of control are more academically competent, have a more advanced approach and have less debilitating exam anxiety than those with an external locus of control (Kader, 2013; Sibuea & Marianum, 2022). Research has indicated that adult learners with an internal locus of control tend to be more self-directed, motivated and proactive in their learning whereas adult learners with an external locus of control tend to be more passive in their learning and appear less likely to take initiative or seek out new learning opportunities (Cannonier, 2014; Cascio, Botta, & Anzaldi, 2013; Taylor & Boss, 1985).

Despite the extensive studies on locus of control as a trait-level predictor, only a few studies (Atibuni, Ssenyonga, Olema, & Kemeza, 2017; Singh, Kumar, & Srivastava, 2021) have attempted to understand its predictive influence on learners' academic attitudes and engagement. Many studies are therefore required in this area especially among adult learners considering how the current debate on learning and its optimization among them is increasingly concentrated on the non-intellectual aspect of learning (affective domain) which has a great influence on their academic success (Mellard, Krieschok, Fall, & Woods, 2013; Topalá, 2014). Thus, understanding the predictive influence of locus of control on adult learners' academic attitude and engagement would likely help adult educators and literacy organizers to better support and facilitate learning that is tailored to the needs and preferences of individual adult learners.

The current study's purpose is exploratory in nature and is expected to empirically contribute to the existing literature on locus of control and associated variables. We sought to examine the predictive influence of locus of control (internal and external) on adult learners' academic attitude (predisposition to learning) and engagement

(degree and intensity of participation in learning activities). Furthermore, we investigated how the relationship between academic attitude and engagement is moderated by internal and external locus of control.

### 1.1. Research Hypotheses and Study Model

First, it was hypothesised that adult learners' academic attitudes would greatly impact their academic involvement based on the study's objective. Second, it was hypothesized that both internal and external locus of control will significantly influence adult learners' academic attitude and engagement. Lastly, it was hypothesized that the relationship between academic attitude and engagement will be significantly moderated by internal and external locus of control. The study's hypotheses are stated as follows:

*H<sub>1</sub>: Academic attitude (AA) significantly influences academic engagement (AE).*

*H<sub>2</sub>: The external locus of control significantly influences AA.*

*H<sub>3</sub>: The external locus of control significantly influences AE.*

*H<sub>4</sub>: The internal locus of control significantly influences AA.*

*H<sub>5</sub>: The internal locus of control significantly influences AE.*

*H<sub>6</sub>: The relationship between AA and AE is significantly moderated by the internal locus of control.*

*H<sub>7</sub>: The relationship between AA and AE is significantly moderated by an external locus of control.*

The following are the study's proposed models. Figure 1 illustrates the predictive influence of internal and external locus of control on adult learners' academic attitude and engagement.

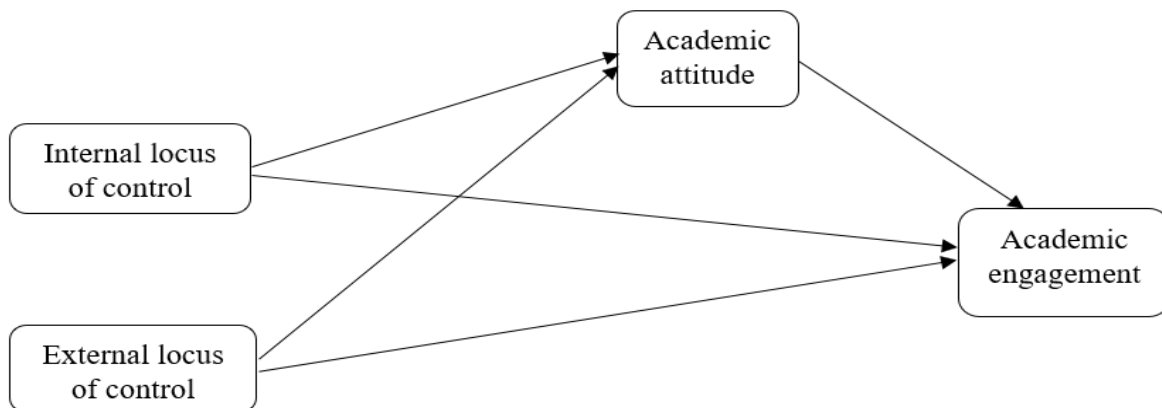


Figure 1. Shows the predictive influence of internal and external locus of control on adult learners' academic attitude and engagement .

Figure 2 illustrates the moderation role of internal and external locus of control on the relationship between academic attitude and engagement.

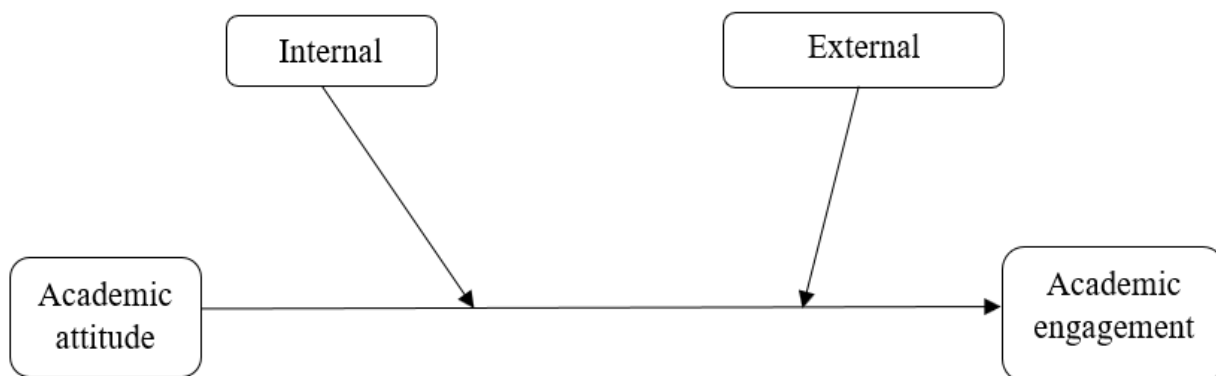


Figure 2. Displays the moderation role of internal and external locus of control on the relationship between academic attitude and engagement.

### 1.2. Theoretical Framework: The Theory of Andragogy

The term andragogy originated from the Greek words *andr* which means "man" and *agogus* meaning "leader of". Andragogy therefore means "leading men" and this can be rephrased as "leading adults" (Loeng, 2018; Mews, 2020). Andragogy has been defined as the art and science of helping adults learn (Knowles, 1980). In contrast, the term pedagogy refers to the art and science of educating children (Esra, 2011). The origin of the concept of andragogy could be traced to a German teacher Kapp (1833) when he used the word to describe elements of Plato's theory of education (Loeng, 2017). The terminology was further expanded by Lindeman and Brookfield (1987) who were considered one of the foremost contributors to the field of adult education in the 1920s. Lindeman (2013) revitalized the concept of andragogy and continued advocating for the art of teaching adults in both formal and informal settings. However, the modern form of andragogy displays the stamp of Malcolm Knowles, an American educator who popularized the theory of andragogy especially in Western countries (Boulter, 2021; Henschke, 2015; Loeng, 2018).

In general, the theory of andragogy is based on a set of assumptions about adult learners that distinguish them from child learners. The first assumption is based on the need to know. The theory of andragogy posits that adults require an understanding of the inherent utility and value of the learning material before embarking on learning. Therefore, helping adult learners become aware of the need to know is the first step in engaging them in learning activities (Knowles, 1980). The second assumption is about the self-concept. Andragogy proponents argued that as a person matures, his self-concept changes from a dependent personality to an autonomous and self-directing personality. Adult learners include being perceived and regarded as capable of self-direction by others (Knowles, 1980; Machynska & Boiko, 2020). The third assumption of the theory of andragogy deals with the role of experience in learning. The theorists believed that adult learners come into the learning environment with a higher quality of experience compared to children. Thus, employing experiential techniques such as problem-solving activities, role-playing and group discussion could enhance their learning engagement (Knowles, 1984; Ozuah, 2016). A fourth assumption of andragogy is that of readiness to learn. It was believed that the applicability and promptness of using new information to address problems in everyday situations determine an adult learner's willingness to learn (Knowles, 1984). The fifth assumption deals with orientation to learning. It is believed that adults' orientation to learning is problem-centred, task-driven or life-centred and this contrasts with pedagogy where orientation to learning is subject-centred. The sixth assumption of andragogy addresses the motivation to learn (Akintolu & Letseka, 2021). Adults may be influenced to some extent by external motivation, their primary driving forces are internal including self-esteem, personal motivation and the desire to attain goals (Ozuah, 2016). These andragogical assumptions provide a unique perspective on adult learning by drawing on the life-stage view of adult learners. The already developed sense of self among adult learners enables them to be self-directing which makes them more responsible for their decisions and lives. Hence, adult learners know what they want to learn based on their pressing needs which are intrinsically motivated (Ho & Lim, 2020). In other words, according to this theory, adult learners have strong internal motivation, experience and developed self-perceptions. Therefore, understanding the predictive influence of adult learners' locus of control on their academic attitude and engagement through the lens of andragogy may provide insight into factors that influence their academic attitude and engagement. This may help engender a framework of practice and provide guidance for choosing the best contextual strategies that may improve learners' academic attitudes and engagement. It is believed that the andragogical concepts, especially the concepts of self-directedness, past experience and motivation may have a substantial impact on the extent of control adult learners have over the results of their learning activities. Several studies have extensively discussed the theory of andragogy and its principles as well as its applications in various domains of learning. Its alignment with the locus of control especially concerning adult learners' academic attitude and engagement is lacking in the literature (Henschke, 2015; Itasanmi, Muibi, & Adedore, 2023; Loeng, 2023; Purwati, Mardhiah, Nurhasanah, & Ramli, 2022) Underpinning this study with the theory of andragogy will thus provide an empirical understanding of the link between andragogy and locus of control within the context of adult learners' academic attitudes and engagement.

## 2. METHODOLOGY

### 2.1. Design

The study adopted a quantitative research approach using a cross-sectional survey method to collect data from the study's participants. This design is considered the most appropriate to generate data that will sufficiently allow the

testing of the predictive influence and moderation role of internal and external locus of control on adult learners' academic attitude and engagement based on the proposed model for the study.

### 2.2. Participants

The participants consist of learners who enrolled in adult literacy programmes in Oyo State, Southwest, Nigeria. The researchers chose Oyo State because of its proximity and based on the fact that the learners have the same characteristics as other learners enrolled in literacy programmes in other states of the country. Analysis of the demographic information of the participants indicates that the majority (41.7%) of them are middle-aged adults whose ages fall between 40-59 years. Over half (57.4%) of the participants are female and almost two-thirds (68.52%) of them are married. Moreover, half of the participants (64.4%) are unemployed while the majority of them (46.3%) are in the beginner's class of the literacy programme. [Table 1](#) presents the demographic characteristics of the participants.

**Table 1.** Demographic characteristics of participants.

Variable	Freq.	Percentage
Age		
20-39 (Young adult)	82	37.96
40-59 (Middle age adults)	90	41.67
60 & above (Older adult)	34	15.74
Missing	10	4.62
Gender		
Male	92	42.59
Female	124	57.41
Marital status		
Single	45	20.83
Married	148	68.52
Divorced/Widowed	23	10.65
Employment status		
Employed	77	35.65
Unemployed	139	64.35
Literacy class level		
Beginner	100	46.3
Intermediate	92	42.6
Advanced	24	11.1

### 2.3. Instrument

A structured questionnaire with closed-ended items was used as an instrument of data collection for the study. The questionnaire focused on four domains: demographic characteristics, locus of control, academic attitude and academic engagement. The demographic characteristic covers questions on their age, gender, marital status, employment status and literacy class level. The locus of the control domain was measured with the [Levenson \(1981\)](#) scale. The original version of the scale has three subscales: internal, powerful others and chance. It is believed that high scores and chance subscales reflect orientation towards the external locus of control. Thus, this study adopted the powerful others subscale to represent the external locus of control. Both internal and external (powerful others) locus of control were measured with eight items each and using a 6-point Likert scale of strongly disagree (1), disagree somewhat (2), slightly disagree (3), lightly agree (4), agree somewhat (5) and strongly agree (6). The academic attitude scale is a twelve items scale adapted from [Kara \(2010\)](#). On the other hand, the academic engagement scale is a ten items scale adapted from [Hart, Stewart, and Jimerson \(2011\)](#). Both scales were anchored on a 4-point Likert scale of strongly disagree (1), disagree (2), agree (3), and strongly agree (4). [Table 2](#) shows the variable construct of the study.

**Table 2.** Variable construct for the study.

Construct	Dimension	Items
Locus of control	Internal	Whether or not I get to be a leader depends mostly on my ability.
		Whether or not I get into a car accident depends mostly on how good I am as a driver.
		I usually succeed in implementing my plans.
		My kindness determines how many friends I have.
		I generally have control over my life.
		I am usually able to protect my interests.
		I generally have to put forth a lot of effort to acquire what I want.
		My life is determined by my actions.
	External	I believe that powerful individuals have a major influence on what happens in my life.
		Although I might have good abilities, I will not be given leadership responsibility without appealing to those in positions of power.
		My life is chiefly controlled by others.
		People have less chance of protecting our interests when they conflict with those of strong groups.
		I have to please others in order to get what I want.
		I probably wouldn't have many friends if significant people decided they didn't like me.
		The other driver is mostly responsible for whether or not I have a car accident.
I make sure that my goals align with those who have authority over me in order for them to be successful.		
Academic attitude		I am very interested in learning.
		I enjoy learning new things in class.
		I know how to learn from my experiences.
		My thoughts change as I learn new topics.
		Learning difficult subjects gives me pleasure.
		It is necessary to constantly learn to make effective and correct decisions about the problems encountered in life.
		Learning is a process that continues until death.
		I want to improve communication with people by learning new things.
		Learning new things helps me succeed in what I do.
		It's fun trying to learn a new subject.
		I am anxious to learn.
		My goals grow as I learn.
Academic engagement		I try hard to do well in the literacy programme.
		When I'm in class, I participate in class activities.
		When I run into a difficult homework problem, I keep working at it until I think I've solved it.
		When learning new information, I try to put the ideas in my own words.
		When I study, I try to connect what I am learning with my own experiences.
		I pay attention in class.
		If I have trouble understanding a problem, I go over it again until I understand it.
		I try to think about topics and decide what I'm supposed to learn from them rather than studying them by just reading them over.
		When I study, I figure out how the information might be useful in the real world.
		I hardly make it through my classes.

**2.4. Data Collection Procedure**

The Department of Adult Education at the University of Ibadan and the Oyo State Agency for Adult and Non-Formal Education (OYO-ANFE) approved the study's conduct. Literacy facilitators guiding the learning of adults in

the state were contacted and the objectives of the study were highlighted to them. Their willingness to serve as research assistants for the study was sought and granted. They were properly trained on how to administer the questionnaire to the participants. An opportunity was provided to make clarifications on issues related to the questionnaire administration especially in seeking the consent of the participants and assuring them about the confidentiality of the information provided. The state was clustered into three based on the senatorial district i.e., south, north and central. A leader for each zone was appointed and given the mandate to coordinate the activities of the facilitators in their respective zones in terms of the questionnaire administration. During the data collection, participants were addressed and informed about the objectives of the study and they were informed that participation is voluntary. A total of two hundred and sixteen adult learners consented and participated in the study within six weeks of the questionnaire administration.

### 2.5. Data Analysis

Demographic information and reliability tests were descriptively analyzed using the Statistical Package for Social Sciences (SPSS) while SmartPLS software was used to perform the Partial Least Square-Structural Equation Modelling (PLS-SEM) analysis. Fit indices used were Root Mean Square Error of Approximation (RMSEA), Bentler-Bonett Normed Fit Index (NFI), Minimum Discrepancy Function by Degrees of Freedom divided (CMIN/DF) and Standardized Root Mean Square Residue (SRMR). The goodness of fit was ascertained between the measurement model and the observed data before testing the study's hypotheses.

## 3. RESULTS

Table 3 reveals the reliability analysis results of the study's variables namely: academic attitude (AA), academic engagement (AE) and internal and external locus of control. It was indicated in the table that the Cronbach's Alpha (CA) values obtained are above the 0.7 recommended threshold. Moreover, Composite reliability (CR) and Average Variance Extracted (AVE) values obtained exceed the 0.5 thresholds recommended by Hair (2017). These results show the absence of multicollinearity among the examined variables and the presence of internal consistency in the measured variables.

Table 3. Reliability test.

Variables	Cronbach's alpha (CA)	Composite reliability (CR)	Average variance extracted (AVE)
AA	0.809	0.862	0.511
AE	0.815	0.867	0.522
External	0.731	0.766	0.522
Internal	0.713	0.741	0.5

Cross-loading analysis was carried out to see whether there was convergent validity among the constructs of the variables that were examined in the study. Table 4 shows that all cross-loadings obtained exceed 0.5 indicating the existence of convergent validity in the measurement construct of the variables. However, all the items with a factor value of less than 0.5 were eliminated from the model. Thus, model fitting can be done.

Table 4. Cross loadings.

Construct	AA	AE	External	Internal
AE1	0.551	0.764	0.278	0.392
AE10	0.372	0.629	0.165	0.282
AE3	0.517	0.799	0.239	0.47
AE5	0.507	0.707	0.215	0.356
AE7	0.565	0.775	0.219	0.405
AE9	0.433	0.641	0.18	0.271
AA10	0.73	0.572	0.234	0.44
AA11	0.709	0.547	0.16	0.296
AA2	0.751	0.492	0.182	0.418
AA3	0.681	0.477	0.211	0.357

Construct	AA	AE	External	Internal
AA7	0.686	0.361	0.214	0.409
AA9	0.729	0.47	0.197	0.4
E1	0.157	0.181	0.71	0.211
E5	0.191	0.223	0.705	0.354
E7	0.245	0.244	0.752	0.243
I1	0.538	0.522	0.359	0.896
I3	0.306	0.211	0.089	0.637
I5	0.218	0.254	0.314	0.539

Inter-construct analysis was performed to confirm the discriminant validity of the measurement items. Correlations among the latent variables with the square root of AVEs were calculated. Table 5 reveals that the obtained square root of the AVEs (diagonal values) for the latent variables exceeded the corresponding correlation coefficient values of other calculated factors. This confirmed the discriminant validity of all the latent variables.

Table 5. Inter-construct correlations.

Variables	AA	AE	External	Internal
AA	0.715			
AE	0.687	0.722		
External	0.28	0.303	0.723	
Internal	0.542	0.51	0.374	0.707

Note: The bolded diagonal values are the square roots of the AVE values.

### 3.1. Model Fit Analysis

Model fit indices were calculated to confirm if the model parameters meet the appropriate criteria of model quality and goodness of fit. Table 6 shows the values obtained for Standardized Root Mean Squared Residual (SRMR) (0.091), NFI (0.925), CMIN/DF (1.901) and RMSAE (0.065) of the model are all within the recommended threshold. For instance, the obtained CMIN/DF value of 1.901 is less than 3 as recommended by Kline (2005). Furthermore, the obtained RMSEA value of 0.065 is within the suggested acceptable level (0.05-0.08) as recommended by MacCallum, Browne, and Sugawara (1996).

Table 6. Model fit result.

Endogenous latent variable	Accepted values	Obtained values
SRMR	<0.10	0.091
NFI	>0.90	0.925
CMIN/DF	<5.0	1.901
RMSEA	<.08	0.065

### 3.2. Hypotheses Testing

The results in Table 7 indicate that AA had a significant positive impact on AE ( $\beta = 0.573$ ,  $t=6.651$ ,  $p < 0.01$ ), the internal locus of control had a significant positive impact on AA ( $\beta = 0.509$ ,  $t=9.441$ ,  $p < 0.01$ ) and AE ( $\beta = 0.169$ ,  $t=2.117$ ,  $p < 0.05$ ). Furthermore, the internal locus of control significantly moderates the relationship between AA and AE ( $\beta = 0.292$ ,  $t=4.721$ ,  $p < 0.01$ ). However, the external locus of control had no significant effect on AA ( $\beta = 0.089$ ,  $t=1.660$ ,  $p > 0.05$ ) and AE ( $\beta = 0.079$ ,  $t=1.514$ ,  $p > 0.05$ ). Similarly, the external locus of control does not moderate the relationship between AA and AE ( $\beta = 0.051$ ,  $t=1.672$ ,  $p < 0.10$ ). These results suggest that H1, H4, H5 and H6 are supported while H2, H3, H7 are not.

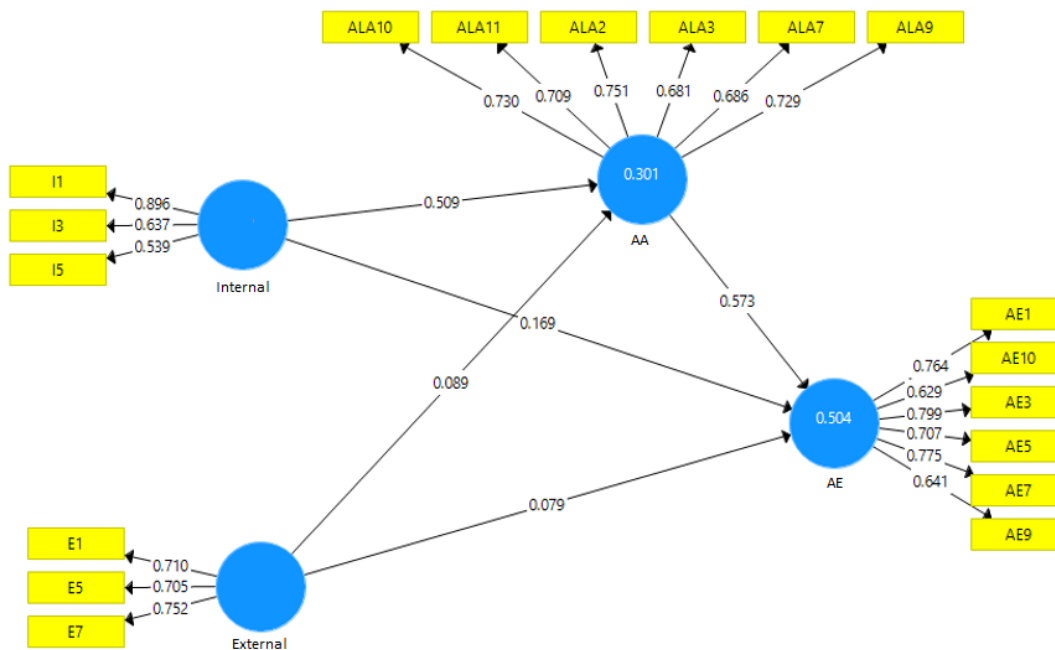


**Table 7.** Structural model path coefficients result.

Relationship	Coefficient	T	P-values	Decision
AA -> AE	0.573	6.651	0.000	Supported
External -> AA	0.089	1.66	0.097	Not supported
External -> AE	0.079	1.514	0.130	Not supported
Internal -> AA	0.509	9.441	0.000	Supported
Internal -> AE	0.169	2.117	0.034	Supported
AA -> Internal ->AE	0.292	4.721	0.000	Supported
AA -> External ->AE	0.051	1.672	0.095	Not supported

Note: Significant at >0.05.

Figure 3 displays the SEM with model parameters. The figure indicates that 50.4% ( $R^2=0.504$ ) of the total variation in AE was explained by the independent variables (AA, internal and external locus of control). Furthermore, 30.1% of the total variation in AA is explained by the internal and external locus of control. According to Henseler, Ringle, and Sinkovics (2009) and Hair, Sarstedt, Ringle, and Mena (2011), these R square values for the fitted model suggest moderate levels of predictive accuracy of the model. Figure 3 shows the summary of the fitted model containing coefficients and factor loadings.



**Figure 3.** SEM with model parameters.

#### 4. DISCUSSION AND IMPLICATIONS

The empirical results indicated that adult learners' academic attitude significantly influenced their academic engagement. This result implies that adult learners' level of involvement, motivation and participation in learning activities is based on their beliefs and emotions towards their academic pursuits. This result is consistent with the results of similar studies (Archambault, Janosz, Fallu, & Pagani, 2009; Erdoğan, 2019; Güngör, 2021; Rural et al., 2022). This outcome supported McDonough (2014) claim that adult learners' academic engagement is significantly influenced by the level of their attitude towards and commitment to learning. The result shows a great connection to one of the cardinal assumptions of the theory of andragogy. The theory of andragogy posits that adults have unique learning needs and preferences and they are self-directed and motivated to learn based on their life experiences and relevance to their work and personal lives (Ferreira, MacLean, & Center, 2018). This indicates that adult learners are likely to engage in learning activities more when they perceive the learning activities as relevant to their goals, interests, and experiences. Thus, their academic attitudes towards learning, including their beliefs

about the value of their studies and their expectations of success may have a significant impact on their academic engagement (Chametzky, 2014; McDonough, 2014). Adult learners' positive academic attitude, including their self-efficacy and self-regulatory behaviours plays a crucial role in their academic engagement (McDonough, 2014). Results obtained also revealed that internal locus of control significantly and positively influenced adult learners' academic attitude and engagement. External locus of control has no significant impact on adult learners' academic attitude and engagement. This result aligns with previous research findings (Alias, Akasah, & Kesot, 2012; Atibuni et al., 2017; Sagone & De Caroli, 2014). The result points to the fact that adult learners' academic success is largely determined by internal factors especially regarding the inherent benefits of learning activities i.e., improving their skills and enhancing their learning outcomes leading to higher academic engagement and motivation (Aljohani & Alajlan, 2020). Their academic attitude and engagement are not dependent on luck or fate (Nolot, 2011). This outcome supported the andragogy principles that adults are more driven to learn by internal causes such as their need to solve issues or build their self-esteem than by external factors such as grades or rewards (Knowles, Holton III, Swanson, & Robinson, 2020; Wil, 2020).

The relationship between academic attitude and engagement was positively moderated by the internal locus of control. The external locus of control does not moderate the relationship between academic attitude and engagement among adult learners. This result is consistent with the research findings of Singh et al. (2021). This result implies that adult learners' beliefs and emotions towards academic pursuits and their level of participation in learning activities are based on the degree of their belief that they are responsible for their academic success or failure. It is not based on other people's actions and decisions. In other words, adult learners who believe that their academic success is within their control have a higher likelihood of actively engaging in learning activities and persevering in the face of challenges compared with those who put the responsibility for their success or failure on others. Those whose academic success or failure is dependent on others are likely to feel helpless or powerless in academic situations which can lead to negative attitudes and disengagement from learning activities (Committee on Learning Sciences: Foundations and Applications to Adolescent and Adult Literacy, 2012). In particular, this outcome supported the idea of andragogy's emphasis on the value of self-directedness and intrinsic motivation as the basis of adult learning (Loeng, 2020; Manning, 2019). Internal locus of control is an important factor in the self-directed learning process as it influences how adult learners approach and engage with their learning activities (Dağal & Bayındır, 2016).

## 5. CONCLUSION

The objective of this study was to investigate the predictive influence and moderation role of internal and external locus of control on adult learners' academic attitude and engagement. The results of the study revealed that adult learners' academic attitudes have a positive impact on their academic engagement. This indicates that a positive academic attitude can promote active engagement in the learning process and vice versa among adult learners. Therefore, educators, literacy facilitators and organizers should consider the role of academic attitude in designing learning interventions and strategies to promote positive academic engagement among adult learners. Furthermore, the result showed that internal locus of control significantly influenced adult learners' academic attitude and engagement while external locus of control had no significant effect on attitude and engagement. It thus becomes imperative for literacy facilitators to consider ways to promote an internal locus of control among adult learners to enhance their academic attitude and engagement for successful learning. The results further revealed that the relationship between academic attitude and engagement was moderated by an internal locus of control. Therefore, interventions aimed at improving adult learners' academic attitude and engagement may need to take into account the role of the internal locus of control. Strategies such as goal-setting and self-reflection critical to developing a stronger internal locus of control may be effective in promoting positive academic attitudes and engagement among adult learners.

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## INSTITUTIONAL REVIEW BOARD STATEMENT

The Ethical Committee of the University of Ibadan, Nigeria has granted approval for this study.

## TRANSPARENCY

The authors confirm that the manuscript is an honest, accurate, and transparent account of the study; that no vital features of the study have been omitted; and that any discrepancies from the study as planned have been explained. This study followed all ethical practices during writing.

## COMPETING INTERESTS

The authors declare that they have no competing interests.

## AUTHORS' CONTRIBUTIONS

All authors contributed equally to the conception and design of the study. All authors have read and agreed to the published version of the manuscript.

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