

**ACADEMIC PERFORMANCE OF IMMIGRANTS OF AFRICAN HERITAGE IN STEM:  
A LOOK AT TWO WORLD CONTINENTS**

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# ACADEMIC PERFORMANCE OF IMMIGRANTS OF AFRICAN HERITAGE IN STEM: A LOOK AT TWO WORLD CONTINENTS

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## Abstract

Ogbu and Simons' (1998) and Ogbu's (2003) *cultural-ecological theoretical framework* postulates that voluntary immigrants, those who chose to migrate to a new land, would perform well academically because of their perceived beliefs that they could get a good education and could succeed more in their "new" land of opportunity than in their "native" country. However, does the aforementioned notion hold true for both African and Afro-Caribbean immigrants to North America (USA & Canada) and Europe (U.K.)? The present study addresses a gap identified by Pinder (2010); in which, she called for more studies to explore and document differences in African heritage students' performances in North America and Europe. Thus, this study examines and compares the academic performance of African and Afro-Caribbean immigrant students in STEM in North America and Europe. Findings do suggest that African students consistently do well academically in North American countries and in the U.K. (Europe), and these findings align with Ogbu's cultural-ecological assumptions about voluntary immigrants' performance in a "new" land of opportunity. On the other hand, although data findings suggest Afro-Caribbean students are performing well academically in North American countries, data findings also suggest that they are underperforming in comparison to their peers in the UK, this finding conflicts with that of Ogbu and Simons' cultural-ecological assumption.

***Key words: cultural-ecological framework; African heritage students' academic performance; migration to North America and Europe***

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## INTRODUCTION

- ▶ Across geographic regions, the academic performance of immigrants, particularly those of African heritage, such as African and Afro-Caribbean students appear to present mix or somewhat contradictory and perplexing results for researchers.
- ▶ Specifically, Africans and Afro-Caribbean immigrants to North America (Canada and the USA) are reportedly performing very well academically, far outperforming some of their native and non-native peers (Burrell, Fredericks, & Fleming, 2013; Codjoe, 2007; Giraldo-Garcia & Bagaka, 2013; Pinder, 2010, 2012, & 2013; Samuel, Smolska, & Warren, 2001; Williams, Fleming, Jones, & Griffin, 2007).
- ▶ On the other hand, data findings out of the UK (part of Europe) are contradicting North American findings. For example, Haughton (2013) and Strand (2006) present results which show that Black Caribbean immigrant students are underperforming in comparison to other immigrant and non-immigrant groups in the U.K.
- ▶ The African immigrant group seem to be that one group of Black immigrants that appear to be consistently doing well academically in both the UK and in North America.

### Purpose

- ▶ Pinder (2010) called for more studies to be conducted that can compare Black immigrant students' performance in the UK and North America. Pinder also suggested that further studies be conducted that can test the alignment of Ogbu and Simons' (1998) and Ogbu's (2003) cultural-ecological theory to UK's academic findings with immigrants of African heritage.
- ▶ The current study was conducted in order to attempt to address the gap identified in the literature by Pinder (2010). Thus, the current study examines the academic performance of immigrants of African heritage in STEM, compares the groups' academic performance in the UK and North America, and attempt to establish links between the beliefs of Ogbu and Simons' and Ogbu's cultural-ecological model and students' performances in the UK and North America. Can Ogbu's theory effectively explain or account for immigrants' academic performance in both North America and the UK?

### Theoretical Framework

- ▶ Ogbu and Simons' and Ogbu's cultural-ecological model is predicated on the grounds that immigrants who chose to migrate to a new "land" would do well academically and socially because of their positive beliefs that they can acquire a "good" education and upward social mobility more in their "new" country than in their "native" country. But, does this theoretical notion hold true/steady?

## **Method of Selecting Articles for this Research Study**

- ▶ This study is a literature review and it discusses theoretical and research studies, and both empirical and non-empirical sources were utilized as a part of the review process. The articles, books, and conference proceedings that were used represent a broad range of works spanning many fields, such as: anthropology, sociology, African and African American studies, science, mathematics, engineering, and education. These works look at academic performance/achievement and culturalized aspects of the Black immigrant student schooling. Journals, books, and publications, such as: the *Canadian Journal of Education*, *McGill Journal of Education*, *Anthropology and Education Quarterly*, *Journal of African American Studies*, *International Journal of Education and Culture*, *Black American students in an affluent suburb: A study of academic disengagement*, *Issues and Innovations in STEM Education Research: Theoretical and Empirical Studies by Early Career Researchers*, and the *American Society of Engineering Education conference proceedings* were used. The Literature Review sections were broken into two key sections: African and Afro-Caribbean Students STEM Academic Performance in the UK (Europe), and African and Afro-Caribbean Students STEM Academic Performance in North America (USA & Canada).

## **African and Afro-Caribbean Students STEM Academic Performance in the UK (Europe)**

- ▶ The following literature review, which cites Haughton (2013), Hampshire County Council (2008), Royal Society of Chemistry (2006), and Strand (2006), gives an account of African and Afro-Caribbean immigrant students STEM academic performance in the UK:
  - Haughton (2013) wrote an article entitled “*Why are British Africans better in school than Caribbeans? Exam results are showing an increasing disparity between the two groups.*” In his article, Haughton reported that while the achievement gap in the 2011-2012 GCSE had narrowed between Black immigrant students and their high achieving Indian immigrant peers, Black Caribbean students were found to be the group that was negatively influencing the achievement gap.
  - According to Haughton (2013), statistics show that 58% of African students are performing at the UK’s national level and are achieving at least 5 GCSEs (General Certificate of Secondary Education) at grades A-C including mathematics; whereas, only 49.8% of Black Caribbean students are doing so.
  - Additionally, data out of the University of Oxford (as cited by Haughton) showed that British Africans were two times more likely to be accepted by a top UK university than immigrant students from the Caribbean.
  - Similar results to that reported by Haughton (2013) were also reported by the Hampshire County Council (2008). According to the council, Black Caribbean

students performed well below national standards in mathematics and science and slightly below national level in English at the KS3 level.

- The Royal Society of Chemistry (2006) report concurs with the previous reports that Caribbean pupils (also Pakistani and Bangladeshi pupils) are the lower performers on the high school GCSE exit exams; whereas, Chinese and Indian pupils are the higher performers.
- Strand (2006) revealed the following data:

**Table 1: KS2 and GCSE Results of Caribbean and African Students in the UK**

	KS2 Exam Results	GCSE Results
Black Caribbean	74% scored a level 4	42.7% got 5+ A-C grades
Black Africans	82% scored a level 4	51.4% got 5+ A-C grades

### **African and Afro-Caribbean Students STEM Academic Performance in North America (USA & Canada)**

- ▶ The following literature review, which cites Burrell, Fredericks, & Fleming (2013), Giraldo-Garcia & Bagaka (2013), Pinder (2010, 2012, & 2013), Samuel, Smolska, & Warren (2001), Williams, Fleming, Jones, & Griffin (2007), gives an account of African and Afro-Caribbean immigrant students STEM academic performance in North American countries, namely the USA and Canada.
- ▶ Burrell et al. (2013) conducted a mixed-methods longitudinal study with 15 Black male engineering students, eight were African Americans (4 in mechanical engineering, 2 in civil engineering, 1 in electrical engineering, and 1 in chemical engineering) and seven were internationals—five Africans and two Afro-Caribbeans (4 in electrical engineering, 1 in civil engineering, 1 in computer engineering, and 1 in chemical engineering). The students were selected by random stratified sampling and all were students at an historically black university in the northeastern USA.
- ▶ Results revealed that international students performed better than their peers because of “high expectations” from their teachers. This high expectation of good academic performance was expected of some internationals than some natives (Burrell et al., 2013). Additionally, Burrell et al. cited a US Census report, which indicated that African immigrant students had the highest college graduation rate of any other immigrant ethnic group or native-born American racial group.

- ▶ Giraldo-Garcia and Bagaka (2013) conducted a quantitative study in which they used 1669 Black internationals (Africans + Afro-Caribbeans; voluntary immigrants to the USA) and Black natives (African Americans; involuntary immigrants to the USA) and 8,682 White students from the NCES Educational Longitudinal Study of 2002.
- ▶ Giraldo-Garcia & Bagaka examined the educational success of African heritage voluntary and involuntary immigrants to the USA and compared each group's educational success to that of their White peers. Giraldo-Garcia & Bagaka found that there was a statistically significant Black-White achievement gap in math and reading for the Black voluntary immigrant students to White students grouping and for the Black involuntary immigrant students to White students grouping (all students' socio-economics were controlled for). However, the Black-White achievement gap was narrower between voluntary Black immigrants (Africans + Afro-Caribbeans) and White students than it was between involuntary Black immigrants (African Americans) and their White peers.
- ▶ Similarly, Williams et al. (2007) conducted a mixed-methods study with nine African American and Afro-Caribbean college freshmen in the USA and found that the Afro-Caribbean students scored higher than African American students on their first year science and mathematics examinations.
- ▶ Samuel et al. (2001) in their mixed-methods Canadian study of 1954 voluntary immigrants (Caribbean islanders, Russians, Chinese, Latin Americans, and Indians) found that voluntary immigrants to Canada fared better academically than their native peers. They also found that the immigrants cited a "less rigorous" Canadian educational system than their "native" countries' educational system as a reason for their academic success. Thus, these students felt that they had a better chance of academic success in Canada than in their countries of origin.
- ▶ Pinder (2010, 2012, & 2013) conducted three studies in which she: (1) utilized 87 African heritage science students, all drawn from the east coast of the USA (this was for a quantitative, causal-comparative study), (2) utilized 18 Afro-Caribbean students and 7 Caribbean parents (this was for a mixed-methods study), and (3) conducted a literature review to examine the possible influence of cultural differences and parental involvement on African heritage students' academic performance.
- ▶ In Pinder's three studies conducted, she found that Caribbean students of African descent living in the USA outperformed their African American peers in science, and second-generation Caribbean immigrants were the group that seemed to be heavily influenced by their parents' positive outlook and belief in the success of the American educational system (the USA being their "new" land of opportunity as voluntary immigrants).

## DISCUSSION, CONCLUSION, AND FUTURE RESEARCH

- According to the cited literature out of the USA and Canada (North America), Afro-Caribbean students are stated to be performing well in STEM courses, such as mathematics, science, and engineering (Burrell et al., 2013; Pinder, 2010, 2012, & 2013; Samuel et al., 2001; Williams et al., 2007).
- ▶ However, according to the cited literature out of the UK (Europe), Afro-Caribbean students are underperforming in mathematics and science when compared to Black African immigrants (Haughton, 2013; Strand, 2006) and to Indian and Chinese immigrants (Royal Society of Chemistry, 2006).
- ▶ Thus, data findings out of the UK and North America seem to indicate: (1) Afro-Caribbean students are performing very well in STEM courses in North America, but are also underperforming in STEM courses in the UK, and (2) African students are consistently doing well in STEM courses in both the UK and in North America.
- ▶ Cultural-ecological theory posits that voluntary immigrants to a “new” land of opportunity would do well because of the immigrants’ positive views of their new host country and belief that they can get ‘ahead’ more in their new land of opportunity than in their native country. This theory can be offered to possibly account for the North American findings that Black voluntary immigrants from the Caribbean and Africa are doing well; far outperforming their native peers in Canada and the USA.
- ▶ Cultural-ecological theory may also account for Africans performing very well in the UK, but, the underperformance of Afro-Caribbean students in the UK somewhat contradicts Ogbu and Simons’ (1998) and Ogbu’s (2003) cultural-ecological theory that voluntary immigrants migration to a “new” land of opportunity often lead to them succeeding.
- ▶ The current study was a literature review, which utilized data findings from previously conducted studies to support the researcher’s claims. However, quantitative or mixed-methods studies comparing the academic performance of Afro-Caribbean and African students in STEM in the UK and North America should be conducted to fill in the existing gap in the research literature. Additionally, the findings of the suggested studies can be used to test Ogbu and Simon’s and Ogbu’s cultural-ecological model.

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(see: [research.iupui.edu/enterprise/archive/2013/enterprise-08-19.html](http://research.iupui.edu/enterprise/archive/2013/enterprise-08-19.html)).

- ▶ Pinder has published one book entitled "*Issues and Innovations in STEM Education Research: Theoretical and Empirical Studies by Early Career Researchers*." She is currently working on a second book, which is entitled "*Socio-cultural Issues in K-16 STEM Education: Global Perspectives on Race, Gender, and Migration Flows*." Dr. Pinder has also published numerous journal articles and conference proceedings and her work has been cited in peer-reviewed dissertations and journal articles.
- ▶ Dr. Pinder's research studies look at equity issues, cultural issues, and innovations in science and mathematics education. Dr. Pinder has specifically looked at: (a) the employment of conceptual change strategies and inquiry learning with Black/African American science students; (b) immigrant populations and their science and mathematics learning patterns in the United States and the Caribbean; (c) children's/students' game play and science and mathematics learning (game theory and learning); and (d) racial and gender equity issues in science and mathematics.