A Study of Student Anxiety towards Research in Two Undergraduate Programmes in a Ghanaian University

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Abstract: *This study used the Attitude Towards Research Scale developed by Papanasatasiou (2005) and validated with the Rasch Rating Analysis by Papanasatasiou and Schumaker (2014), to investigate the attitudes and anxiety level towards research among two sets of students pursuing undergraduate programmes in education and nursing in a Ghanaian University. The study employed an action research methodology and descriptive statistics to study and analyse the responses of 93 nursing students (B.Sc Nursing) and 35 education students (B.Ed.) who registered and participated in introductory undergraduate research methods courses in the 2016/17 academic year. The study employs descriptive and relational statistics in order to gauge and understand students' attitudes and anxiety towards research in the two programme areas. The participants' responses were analyzed through means and independent sample t-tests with the IBM/SPSS version 21 statistical package. The findings indicated no statistically significant differences among students in the two programme groups on the ATR, even though there were lower mean differences relating to research methods difficulty and relevance of research to the lives of participants.*

Keywords: *Attitudes towards research, research methods anxiety.*

1. INTRODUCTION

There seem to be considerable anxiety among students who take introductory research methods classes across disciplines in tertiary institutions in many parts of the world. This is against the back drop of the recognition that research methods ought to be a core component in many undergraduate degree programmes. Indeed, the requirements of presenting research papers and engaging in varied forms of research are integral to any successful tertiary education. (Onwuegbuzie & Daley 1999; Murtonen & Lehtinen 2003; Onwuegbuzie & Wilson 2003; Murtonen, 2005; Crooks, Castleden & Van Meerveld, 2010). However, Papanastasiou, 2005; Papanastasiou and Zembylas, 2008, among others have reported the negative perceptions and anxiety introductory research methods courses engender among students across disciplines. This is worrying because of the importance research and critical thinking plays in meaningful academic pursuits, professional growth and everyday life.

2. REVIEW OF THE LITERATURE

Rorive and Brint (2013) have cited an extensive corpus of literature in higher education that links effective faculty-sponsored research to a variety of benefits and outcomes. These include; student persistence, increased college GPA, enhanced student confidence, academic growth, the likelihood to pursue graduate studies and experience graduate school success (Nagda et al. 1998, Lopatto 2004; Fechheimer, Webber & Kleiber 2011; Blackburn et al 1981, Jacobi 1999, Koch and Johnson 2000; Pascarella and Terenzini 1991, Astin 1993, Tinto 1998; Hathaway et al. 2002; Russell, Hancock & McCullough, 2007; Nnadozie et al. 2001). Lopatto, 2007) had earlier reported more extensive benefits of undergraduate research disseminated in a study (Survey of Undergraduate Research Experiences – SURE). If undergraduate research has been found to offer such obvious benefits, then it is important to give considerable attention to the teaching and practice of research in undergraduate education.

The research literature suggests a close relationship between students' attitudes towards an academicsubject and their overall achievement (Erdogan, Bayram, &Deniz, 2008; Reynolds & Walberg, 1992; Konting, 1990). When such attitudes are positive students tend to do well in such courses.It is imperative that if the benefits indicated by research will be fully attained then the attitudes of students towards research needs to be changed.

Earley (2014) in a synthesis of literature on research education in the United States indicated the challenges in teaching research methods and the fact that it is considered a complex domain by many. The conclusions from fifty-one of the articles he reviewed, indicated that students enrolled in introductory research methods courses show the following characteristics;

Fail to see the relevance of the courses to their major and lives, are typically anxious or nervous about the course and difficulty, are uninterested and poorly motivated to learn, they come to the course with poor attitudes, and come to the course with misconceptions (pp. 245-246)

What this and other studies confirm is the multi-dimensional nature of the anxiety towards research among students at all levels and across disciplines. Van der Westhuizen (2015), has cited several studies that have been used as measures for students ATR in several disciplines and under different research methodologies. These include studies are in: (music – Dorfman & Lipscomb, 2005; nursing – Halabi & Hamdan- Mansour, 2010; Mehrdad, Salsali, & Kazemnejad, 2008; medical school - Siemens, Punnen, Wong, & Kanji, 2010; education - Ozturk, 2011; agriculture – Rezaei & Zamani-Miandashti, 2013). He further mentions other measures developed and employed to investigate students' attitude towards qualitative and mixed method research (Roberts & Povee, 2014b; Roberts & Povee, 2014a).

There literature on undergraduate education is not silent on strategies for teaching of research methods to undergraduates (Sizemore and Lewandowski, 2009). However,not too many of them it may seem, discuss strategies for increasing student interest and learning in these courses in the teaching learning process (although there are exceptions in Shostak et al. 2010; Takata &Leiting 1987; Waltermaurer & Obach 2007, cited in Pfeffer & Rogalin, 2012). In a case study, Pfeffer and Rogalin (2012), suggest a 3-strategy methodological research approach that involve the incorporation of active learning assignments, incorporation of cross-method and cross-discipline guest discussion facilitators and focus on research methods in the "real world", in research methods teaching.

3. PURPOSE OF STUDY

Papanastasiou and Zembylas (2008) loosely refer to the construct of research methods anxiety as "the complex array of emotional reactions which occur when students encounter research methods in any form and at any level" (p. 156). These researchers stressed that students experience such anxiety both at the epistemological and experiential levels where difficulties manifest in understanding concepts about research and doing research. On wuegbuzie and Wilson (2003) have identified dispositional, situational and environmental factors as causes of this anxiety. The purpose of this research was not to add to the extant literature on the underlying causes of research anxiety, but establish whether such research methods learning anxiety exists in the study context so as to inform our teaching methodologies.

4. MATERIALS AND METHODS

The study employed an action research methodology (Bryman& Bell, 2011) and descriptive and inferential statistics to study and analyse the responses of 93 nursing students (BSc Nursing) and 35 education students (B.Ed) These students registered and participated in introductory undergraduate research methods courses in the 2016/17 academic year in a Ghanaian university. A self-administered Attitude towards Research (ATR) Scale developed by Papanasatsiou (2002) and validated with the Rasch Rating Analysis by Papanasatasiou and Schumaker. (2014), was administered to students at the end of the last day in class. The questionnaire consisted of 30 questions on a seven-point Likert scale which ranged from strongly disagree (7) to strongly agree (1). Two additional questions were included to capture information on students' gender andprogramme of study.

5. RESEARCH QUESTIONS

The research questions that are examined in this study are the following:

a. What are the levels of anxiety experienced by undergraduate students enrolled in the two research methods classes?

b. To what extent do the students in the two programmes differ in their attitudes towards research?

c. Are there gender differences among the students in the two programmes in their attitudes towards research?

6. HYPOTHESES

a. There is no statistically significant difference between students in the two programmes on their attitude towards research methods

b. There is no statistically significant difference between the students towards research on the basis of gender

7. DATA ANALYSIS

The participants' responses were analyzed through means and Pearson correlation with the IBM/SPSS version 21 statistical package. Means were computed between the groups and independent t-tests were run to test the hypotheses.

8. RESULTS AND DISCUSSION

The table of statistics (Table 1) shows that the lowest scores for the factors the relevance of research to life ($M = 3.70$) and research difficulty ($M = 3.90$). Interestingly, the respondents had a higher positive attitude towards research ($M = 5.23$) and the research anxiety was not the lowest mean ($M = 4.45$). The mean for the useful of research was the highest among the factors ($M = 5.99$).

Table1: *Statistics*

Attitudes Towards Research Subscales	Mean	SD
Research Usefulness	5.99	0.79
Research Anxiety	4.45	1.31
Positive Attitude Towards Research	5.23	1.07
Relevance to Life	3.70	0.96
Research Difficulty	3.90	1.55

The following statistics were shown by the participants from the two programmes in Table 2. Participants from the B.Edprogramme ($N = 35$) presented the following in the *Attitudes towards Research Subscales*: Research Usefulness $M = 5.84$ ($SD = 0.76$), Research Anxiety M = 4.78 (SD = 0.79), Positive Attitude M = 4.82 (SD = 0.94), Relevance in Life M = 3.75 (SD = 1.18), and Research Difficulty M = 4.02 (SD = 1.55). In comparison participants from the B.Sc Nursing programme (N = 94) showed the following in the *Attitude towards Research Subscales*: Research Usefulness $M = 6.04$ ($SD = 0.79$), Research Anxiety M = 4.33 (SD = 1.27), Positive Attitude M = 5.38 (SD = 0.94), Relevance in Life M = 3.67 (SD = 0.86), and Research Difficulty M = 3.85 (SD = 1.56).

Table2: *Group Statistics*

Group Statistics					
	Programme	N	Mean	Std. Deviation	Std. Error Mean
Research_Usefulness	BEd	35	5.8444	.76231	.12885
	BSc Nursing	94	6.0479	.79964	.08248
Research_Anxiety	BEd	35	4.7812	1.38689	.23443
	BSc Nursing	94	4.3311	1.27900	.13192
Positive_Attitude	BEd	35	4.8238	1.28366	.21698
	BSc Nursing	94	5.3841	.94665	.09764
Relevance_Life	BEd	35	3.7571	1.18583	.20044
	BSc Nursing	93	3.6792	.86915	.09013
Research_Difficulty	BEd	35	4.0286	1.55272	.26246
	BSc Nursing	94	3.8564	1.56340	.16125

To test the first null hypotheses *that there is no statistically significant difference between students in the two programmes on their attitude towards research methods*, an independent sample t-tests was conducted. As a prelude to the test, a test of normality was run and the results are shown in Table 3. The Shapiro-Wilk test indicated a sufficiently normal data distribution for an independent sample t-test

Table3: *Tests of Normality*

Tests of Normality							
	Programme	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
		Statistic	df	Sig.	Statistic	df	Sig.
Research_Attitude	BEd	.075	35	.200[*]	.983	35	.849
	BSc Nursing	.064	93	.200[*]	.979	93	.141

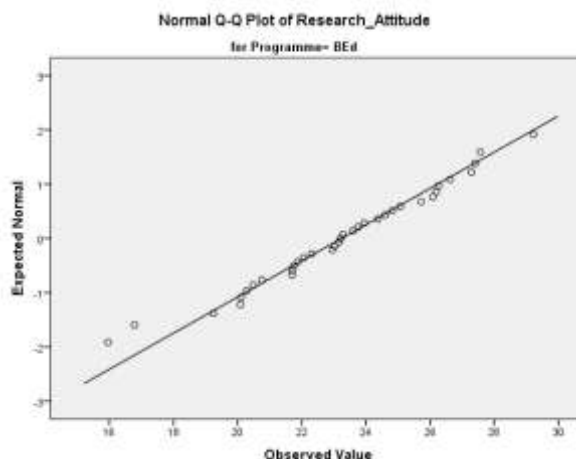This is further confirmed from Q-Q plot in Figures 1 & 2 below.

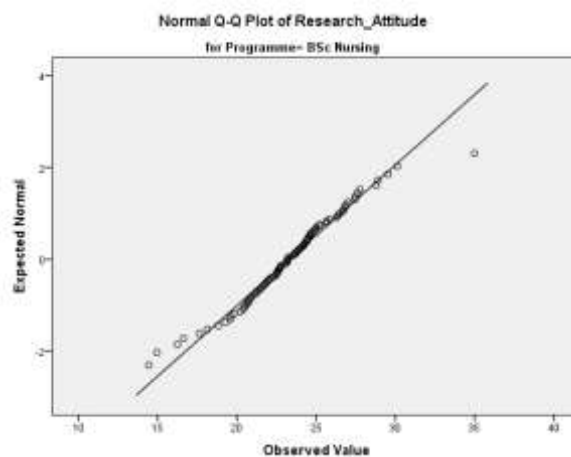**Figure1:** *Q-Q Plot for B. Ed Participants*

Figure2: *Q-Q Plots for B.Sc Nursing Participants*

Additionally, the homogeneity of variances as accessed in the Levene's test, $F(126) = -.102$, $p = 0.816$. The independent t-test run indicated: $t(126) = -.102$, $p = .916$ (Table 4). We therefore accept our null hypothesis that there is no statistically significantly difference between students in the two programmes on their general attitude towards research. A further look at Table 5, which shows the result of the independent t-test on the five subscales of the *Attitudes Towards Research scale* confirms the overall acceptance of the null hypothesis.

Table4: *Independent Samples Test(Programme)*

Independent Samples Test(Programme)										
		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Research_	Equal variance	.054	.816	-.10	126	.919	-.06474	.63342	-1.3182	1.18878

				t	df	Sig.(2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Attitude	s assumed			2					6	
	Equal variances not assumed			-.106	66.179	.916	-.06474	.60957	-1.28172	1.15225

Table5: *Independent Samples Test (ATR Subscales)*

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig.(2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Research_ Usefulness	Equal variances assumed	.054	.817	-1.301	127	.196	-.20345	.15640	-.51293	.10603
	Equal variances not assumed			-1.330	63.660	.188	-.20345	.15299	-.50911	.10221
Research_ Anxiety	Equal variances assumed	.515	.474	1.737	127	.085	.45012	.25915	-.06270	.96294
	Equal variances not assumed			1.673	56.858	.100	.45012	.26900	-.08856	.98880
Positive_ Attitude	Equal variances assumed	3.505	.063	-2.701	127	.008	-.56025	.20743	-.97071	-.14978
	Equal variances not assumed			-2.355	48.438	.023	-.56025	.23793	-1.03853	-.08196
Relevance_ Life	Equal variances assumed	5.866	.017	.407	126	.684	.07793	.19134	-.30073	.45659
	Equal variances not assumed			.355	48.407	.724	.07793	.21977	-.36385	.51972
Research_ Difficulty	Equal variances assumed	.001	.979	.557	127	.578	.17219	.30901	-.43929	.78366
	Equal variances not assumed			.559	61.319	.578	.17219	.30804	-.44370	.78808

In the second null hypothesis that states that *there is no statistically significant difference between the students towards research on the basis of gender*. Table 6 shows the descriptives where the means between the male and female students are the same. The result of the t-test: the independent t-test run indicated: $t(105) = .035$, $p = .972$ (Table 7) no statistically significant difference between respondents on the basis of gender. Table 7 which shows the result of the independent t-test on the five subscales of the *Attitudes Towards Research scale,* indicates the overall acceptance of the null hypothesis.

Table6: *Descriptives*

	Gender	N	Mean	SD	Std. Error Mean
	Male	35	23.2563	2.87	.48507
Overall ATR	Female	72	23.2347	3.00	.35366

Table7: *Independent Samples Test (Gender)*

Independent Samples Test (Gender)									
		Levene's Test for Equality of Variances		t-test for Equality of Means					
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference
									Lower / Upper
Overall ATR	Equal variances assumed	.055	.815	.035	105	.972	.02156	.60974	-1.18745 / 1.23057
	Equal variances not assumed			.036	70.249	.971	.02156	.60031	-1.17564 / 1.21876

Table8: *Independent Samples Test*

Independent Samples Test										
		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig.(2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Research_ Usefulness	Equal variances assumed	.923	.339	1.164	105	.247	.18516	.15901	-.13013	.50045
	Equal variances not assumed			1.245	80.317	.217	.18516	.14878	-.11090	.48122
Research_ Anxiety	Equal variances assumed	2.900	.092	-.662	105	.510	-.18409	.27828	-.73587	.36768
	Equal variances not assumed			-.625	58.525	.534	-.18409	.29459	-.77367	.40548
Positive_ Attitude	Equal variances assumed	3.120	.080	.210	105	.834	.04728	.22557	-.39999	.49455
	Equal variances not assumed			.194	55.499	.847	.04728	.24427	-.44215	.53671
Releva	Equal	1.61	.206	.363	105	.717	.06865	.18915	-	.44369

nce_Life	variances assumed	6						.30639		
	Equal variances not assumed			.341	57.968	.734	.06865	.20104	-.33378	.47108
Research_Difficulty	Equal variances assumed	.067	.796	-.293	105	.770	-.09544	.32563	-.74109	.55022
	Equal variances not assumed			-.298	70.720	.766	-.09544	.31977	-.73308	.54221

The purpose of this research was to establish the existence of research anxiety among students who took courses in research methods using the ATR scale, so as to inform teaching methodologies in the study context.

The two hypotheses tested to answer the two research questions indicated that there *is no statistically significant difference between students in the two programmes on their attitude towards research methods* and *there is also no statistically significant difference between the students towards research on the basis of gender* (Bandele & Adebule, 2013; Ojo, 2007), even though the data in Table 2 indicate some differences in means across the subscales of the ATR. However, the statistics in Table 1 on the ATR subscales indicated the lowest means for the participants in both programmes, were in *relation to the relevance of the course to their lives (3.70)* and *anxiety about the difficulty of the research course (3.90).*

9. CONCLUSION

These findings seem to agree with the extensive body of literature reviewed by Earley, 2014, on the two subscales of the ATR. That is students do not see much relevance of the courses in research methods to their lives and also experience difficulty in studying them. The implications of these for pedagogy are significant. Kilburn, Nind & Wiles (2014), in a thematic review of 24 papers on how teachers facilitate methods learning found emerging pedagogical dialogue regarding teaching. The study suggests that active, experiential, and reflexive forms of learning deepen students understanding and possibly remove the difficulties and anxieties associated with research methods learning. Providing hands on and active learning pedagogy is suggested by the research literature as the best pedagogic direction to take in reducing students anxieties in college research methods courses (Nind, M., Kilburn, D., & Luff, R.2015; Barraket, 2005).Probably when students are assisted to see the relevance of "doing research" through student-centered teaching and participative learning methods, the difficulty in learning and other anxieties will be reduced.

REFERENCES

[1] Papanastasiou E. C. (2005). Factor structure of the 'Attitudes Toward Research' scale. *Statistics Education Research Journal,* 4(1), 16-26.

[2] Papanastasiou E. C.& Schumacker, R. (2014).Rasch rating scale analysis of the Attitudes Toward Research Scale.Journal of Applied Measurement. 15(2):189-199.

[3] Onwuegbuzie, A.J., & C.E. Daley. 1999. Perfectionism and statistics anxiety. *Personality and Individual Differences* 26: 1089–102.

[4] Murtonen, M., & E. Lehtinen. 2003. Difficulties experienced by education and sociology students in quantitative methods courses. *Studies in Higher Education* 28: 171–85.

[5] Onwuegbuzie, A.J., & V.A. Wilson. 2003. Statistics anxiety: Nature, etiology, antecedents, effects, and treatments: A comprehensive review of the literature. *Teaching in Higher Education* 8: 195–209.

[6] Crooks, V. A., Castleden, H., &van Meerveld, I. T. (2010) Teaching research methods courses in human geography: Critical Reflections, *Journal of Geography in Higher Education,* 34, 155-171.

[7] Papanastasiou, E. C., &Zembylas, M. (2008). Anxiety in undergraduate research methods courses: Its nature and implications. *International Journal of Research & Method in Education* 31(2). 155–167.

[8] Rorive, V. M., &Brint, S. (2013). Undergraduate student participation in research: 2011-12 Tracking report.

[9] Erdogan, Y., Bayram, S., &Deniz, L. (2008). Factors that influence academic achievement and attitudes in web based education. *International Journal of Instruction, 1*(1), 31-48.

[10] Reynolds, A. J., & Walberg, H. J. (1992). A process model of mathematics achievement and attitude. *Journal for Research in Mathematics Education, 23*(4), 306-328

[11] Konting, M. M. (1990). *Educational Research Methods.* Kuala Lumpur: Dewan Bahasa &Pustaka.

[12] Earley, M. A. (2014). A synthesis of the literature on research methods education. *Teaching in Higher Education*. 19 (3), 242–253.

[13] Van der Westahuizen, S. (2015). Reliability and validity of the attitude towards research scale for a sample of industrial psychology students. *South African Journal of Psychology*. 45(3) 386–396.

[14] Sizemore, O. J., & Lewandowski, G. W. (2009). Learning might not equal liking: Research methods course changes knowledge but not attitudes. *Teaching of Psychology*. 36(20).

[15] Pfeffer, C. A., &Rogalin, C. L. (2012). Three strategies for teaching research methods: A case study. *Teaching Sociology,* 40(4), 368–376.

[16] Bryman, A. & Bell, E. (2011). *Business Research Methods* (3rd. ed.). Oxford, UK: Oxford University Press.

[17] Bandele S.O. &Adebule S.O. (2013). Patterns of university graduating students' attitude to research work. *International Journal of Educational Research and Technology*. 4 (3), 98-103.

[18] Ojo O.O. (2007): Attitude of university graduating students to research: Implications for counselling. *Journal of Educational Foundations and Management*, 5(1), 1-8.

[19] Kilburn, D., Nind, M., & Wiles, R. (2014). Learning as researchers and teachers: The development of a pedagogical culture for social science research methods? *British Journal of Educational Studies,* 62(2), 191-207.

[20] Nind, M., Kilburn, D., & Luff, R. (2015). The teaching and learning of social research methods: Developments in pedagogical knowledge, *International Journal of Social Research Methodology*, 18(5), 455-461, DOI: 10.1080/13645579.2015.1062631

[21] Barraket, J. (2005). Teaching research method using a student-centred approach? Critical reflections on practice. *Journal of University Teaching and Learning Practice,* 2(2), 65-74.

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