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Relationship Between Personality Traits and Lecturers' use of Digital Technology for Teaching Research Methods in Federal Universities

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Abstract
The study ascertained the relationship between personality traits and lecturers' use of digital technology for teaching research methods in federal universities in South-East, Nigeria. The study was guided by three research questions and tested three corresponding hypotheses. Correlational research design was utilized for the study. The population of the study comprised all 72 educational research method lecturers in federal universities in South-East, Nigeria. No sampling was done as the population is of manageable size. Data were collected using two sets of questionnaire. Data collected were analyzed using Pearson Product Moment Correlation. The findings of the study revealed that very high positive and significant relationship existed between openness and lecturers' use of digital technology for teaching research methods. Additionally, a low positive and insignificant relationship existed between conscientiousness and lecturers' use of digital technologies. It was recommended among others that university authorities should provide institutional support and technological infrastructure to shape the relationship between openness and lecturers' use of digital technologies for the teaching of research methods.

Key Words: Personality, Traits, Digital Technology, Research Methods and Teaching.

Introduction

Research is an integral part of university programme. Thus, it expected of any university student to undertake research ahead of the completion of their programme. However, students' foray in research activities can hardly be successful without a successful foundation in research method courses. This is because research method courses, when well-taught by lecturers, expose the students to identifying a problem; formulating research questions; reviewing literature; devising appropriate methodology; collecting data; analyzing data; drawing conclusions and making recommendations. It goes without saying that research method courses are of immense relevance to both undergraduates and postgraduates. The teaching of research method courses could be enhanced with the use of digital technology especially for modern day students who have become accustomed to the use of digital technology.

Digital technologies embody devices or applications that can be used for sundry purposes such as teaching, learning and research. These digital technologies include computers, laptops, tablets clickers, smart board, projectors and smart phones which aid teachers in their facilitation of pedagogical strategies (Boma, 2022). These technologies could be utilized by research method lecturers to improve instruction. In tertiary institutions in Anambra State, Onyemaechi *et al*. (2025) intently observed that lecturers are lagging behind in the use of digital technologies for delivery of instruction in comparison to their students. Suffice it to say that the increasing integration of digital technology into teaching paradigms has thrust the individual differences of lecturers specifically personality traits into the spotlight.

Personality trait is a description of an individual's uniqueness which distinguishes them from another. Gana *et al*. (2020) defined personality traits as consistent dissimilarities in the behaviours and characteristics of two or more individuals. The expectation is that research method lecturers bring their personality traits to bear in their instructional decisions to enable their students comprehend the concepts they are taught. The five personality model by Veloso Gouveia *et al*. (2021) identified the behaviour dimensions of extraversion, agreeableness, conscientiousness, neuroticism and openness. However, the current study would be beaming the searchlight on openness, conscientiousness and extraversion. This may not be separated from the fact that Joy and Venkatachalam (2024); Abd Aziz *et al*. (2023); Joshi, Das and Sekar (2023); Stan (2022) and Men and Noordin (2019) strongly supported the proposition that personality traits (especially openness, conscientiousness and extraversion) play a substantial role in lecturers' use of technology in teaching.

Openness personality trait is a unique feature of being curious and sensitive to new ideas. Lecturers high in openness are more willing to try new statistical packages, data visualization tools, online survey tools, perhaps even incorporate machine learning tools or advanced analytics. They may be more comfortable incorporating flipped classrooms, remote labs, simulation, or collaborative data work. So in research methods, lecturers high in openness may design assignments requiring students to use statistical software, use online collaboration, or simulate experiments.

Conscientiousness embody variations in an individual's sense of organization and responsibility. Given that research methods courses require rigor and consistency in setting deadlines, grading, ensuring students follow protocols, conscientious lecturers are likely to adopt technology that enhances order. However, Joyce and Venkatachalam (2024) found conscientiousness did not significantly correlate with technology acceptance among students. This suggests that while for students this trait may not be as important, for lecturers it might be more strongly predictive. Furthermore, conscientious lecturers may mitigate techno-stress by planning ahead, practicing tools, and organizing their workflow.

Extraversion captures an individual's ability to adapt to social situations. In research methods teaching, extraversion may manifest in more frequent use of synchronous remote teaching, discussion forums, peer review, group work via technology. Lecture-based components may see less difference. Thus, extraverted lecturers likely see collaborative technology tools as beneficial and may integrate them more than introverted ones.

It is interesting to untangle how three out of Big Five personality dimensions predict, moderate, or mediate instructors' acceptance, use, and well-being in technologically rich teaching environments. Understanding this relationship in the context of teaching research methods courses in public universities is especially important because these courses tend to demand rigor, clarity, and the use of specialized software, data tools, and statistical platforms. Thus, the focus of the present study was to ascertain the relationship between personality traits and lecturers' use of digital technology for teaching research methods in federal universities in South-East, Nigeria.

The study was guided by the following research questions:

1. What is the relationship between openness and lecturers' use of digital technology for teaching research methods in federal universities in South-East, Nigeria?
2. What is the relationship between conscientiousness and lecturers' use of digital technology for teaching research methods in federal universities in South-East, Nigeria?
3. What is the relationship between extraversion and lecturers' use of digital technology for teaching research methods in federal universities in South-East, Nigeria?

The following hypotheses were tested at 0.05 level of significance:

1. There is no significant relationship between openness and lecturers' use of digital technology for teaching research methods in federal universities in South-East, Nigeria.
2. There is no significant relationship between conscientiousness and lecturers' use of digital technology for teaching research methods in federal universities in South-East, Nigeria.
3. There is no significant relationship between extraversion and lecturers' use of digital technology for teaching research methods in federal universities in South-East, Nigeria.

Literature Review

Personality traits influence lecturers' technology adoption. Joy and Venkatachalam (2024) study on university students yielded insights that could potentially apply to lecturers, revealing that extraversion had a strong positive correlation with perceived usefulness of mobile learning technologies; conscientiousness did not significantly correlate with technology acceptance factors while openness correlated positively with attitude and perceived usefulness. Similarly, Vaid and Harari (2021) found that extroversion was found to be a significant predictor of online social

networking activities and online social network strength. Although lecturers are distinct from students in roles and responsibilities, these same trait-technology relationships may apply: for example, lecturers high in openness might be more willing to explore/data manipulate or experiment with software or novel pedagogical tools in research methods, whereas agreeableness may support collaborative technology usage, say in co-teaching or peer-reviewed tasks, and extraversion might influence how lecturers interface with students via technology (e.g. synchronous discussion, forums).

Men and Noordin (2019) focused on the L2 (second language) learning context and found that among TESL undergraduates, personality traits such as openness, extraversion and conscientiousness were positively related to the level of motivation toward ICT integration. These motivation levels are relevant because motivation often serves as a proximal antecedent to technology use: if lecturers are motivated (e.g., believing technology will help engage students, enhance teaching research methodology, etc.), then they are more likely to adopt, experiment, and integrate technology tools (Men & Noordin, 2019). Thus, in a research method courses, lecturers whose personalities score high on openness, conscientiousness, extraversion or agreeableness are more likely to be motivated to use statistical packages (e.g. SPSS, R), online data-collection tools, learning management systems, or even collaborative platforms for sharing research data. Similarly, Burtăverde *et al*. (2021) found that conscientiousness was found to be positively linked with the use of productive and utility applications, such as Facebook (academic), work-related mobile applications, and learning applications.

Joshi *et al*. (2023), via meta-analysis, provide stronger evidence: aggregating across many studies, they found that Big Five traits reliably affect ICT use. Particularly, openness (or "intellect/imagination") and conscientiousness were among the strongest positive predictors; extraversion and agreeableness sometimes helped but often with more variability across studies (Joshi *et al*., 2023). Such meta-analytic evidence supports a robust conclusion: personality traits are not marginal but central in predicting ICT use. For lecturers teaching research methods, conscientiousness might translate to better planning, regular updating of course materials with technological tools, careful evaluation of what works; openness might translate to experimentation with new statistical tools, use of virtual labs, or incorporation of technology in students' research practice.

As Stan (2022) emphasized, technology-related teaching skills (TPCK/TPACK) are critical. Even a lecturer with an otherwise favourable trait profile (high openness, high conscientiousness) may avoid using technology if they lack training or knowledge about how to integrate it in research methods teaching. For example, using statistical software, managing data visualization tools, teaching online data collection, etc. Conversely, well-developed TPCK enables leveraging personality traits positively. Abd Aziz *et al*. (2023) on "Personality differences in the use of digital technology: Technostress, satisfaction and performance expectancy" similarly suggested that different personality traits influence not only whether technology is used, but how it is used—whether lecturers feel satisfied, whether expectations of performance are met, and how much technostress they experience. For example, lecturers high in conscientiousness or openness may have higher performance expectancy and feel more satisfied with tools when they align with pedagogical goals.

A cursory look at the reviewed studies shows that much as personality traits and use of digital technology have been subjects of intensive research, none of the researches captured use of digital technology for the teaching of research method course. This apparent gap gave impetus to the current study.

Method

Research Design: The study utilized correlational research design. Accordingly, McCombe (2019) defined correlational research design as one that measures the relationship between two variables without the researcher controlling either of them. The design was deemed appropriate for the study as the researcher sought to ascertain the relationship between personality traits and lecturers' use of digital technology for teaching research methods in federal universities.

Population and Sample Size for the Study: The population consisted of all 72 educational research method lecturers in federal universities in South-East, Nigeria. No sampling was necessary due to the manageable population size.

Procedure: Data collection was done using two well-structured questionnaires designed by the researchers which were titled "Personality Traits Questionnaire (PTQ)'' and ''Lecturers' Use of Digital Technology for Teaching Questionnaire (LUDTTQ)'' PTQ was adapted from Personality Trait Scale (PTS) by John and Srivastava (1999) that designed the original work of big five taxonomies. The five sub-scales include: agreeableness, extraversion, openness, neuroticism and conscientiousness with three items, three items, three items, five items, five items and three items respectively. PTS has 19 items and was constructed in such a manner that the respondents responded by opting for one of five response categories viz: Strongly Agree (SA), Agree (A), Undecided (U), Disagree (D) and Strongly Disagree (SD) with numerical indices of 5, 4, 3, 2 and 1. PTS was modified to reflect a four-point response scale of Strongly Agree (SA), Agree (A), Disagree (D) and Strongly Disagree (SD) with numerical indices of 4, 3, 2 and 1. Additionally, the PTS was modified to reflect extraversion, openness and conscientiousness. LUDTTQ was developed by the researchers, and is made up of 12 items. This was constructed in such a manner that the respondents were asked to select one of four options viz: Very High Extent (VHE), High Extent (HE), Low Extent (LE) and Very Low Extent (VLE).The validation of the drafts of PTS and LUDTTQ was done by three experts in the Department of Educational Foundations, Nnamdi Azikiwe University, Awka. The reliability of PTS and LUDTTQ were ascertained using Cronbach alpha statistics to obtain coefficient values of 0.71 and 0.75 respectively which are above 0.70 as recommended by Shrestha (2021). Data collection for the study was undertaken by the researcher through the help of five research assistants who were postgraduate students. The justification for the use of postgraduate students was anchored on their assumed depth of research knowledge. The researcher followed up on the research assistants through phone calls to ensure effective retrieval of the PTS and LUDTTQ.

Data Analysis: Pearson Product Moment Correlation Coefficient was utilized in answering the research questions by finding the relationship between the two variables. In taking decisions in research questions, Nworgu (2015) suggestions were used. Thus, the correlation coefficient (r) with scores:

±0.00 – 0.19 = Very low relationship
±0.20 – 0.39 = Low relationship
±0.40 – 0.59 = Moderate relationship
±0.60 – 0.79 = High relationship
±0.80 – 0.10 = Very high relationship.

Testing of hypotheses was undertaken with p-value of correlation at 0.05 alpha level. In taking decisions regarding the hypotheses, a null hypothesis was rejected if the probability value (p-value) was less than or equal to significant value of 0.05; if otherwise (p>0.05), the null hypothesis was not rejected.

RESULTS

Table 1: Pearson r on Relationship between Openness and Lecturers' Use of Digital Technology for Teaching Research Methods in Federal Universities

Source of Variation	n	r	p-value	Remark
Openness				
	72	0.802	0.00	Sig
Use of Digital Technologies				

Data in Table 1 show that there is a very high positive relationship between openness and lecturers' use of digital technology for teaching research methods in federal universities in South-East, Nigeria. This is evident by the size of Pearson's Correlation Coefficient r, which is 0.802. In addition, there is a significant relationship between openness and lecturers' use of digital technology for teaching research methods in federal universities in South-East, Nigeria. The calculated r (0.802) has *p*-value <0.05.

Table 2: Pearson r on Relationship between Conscientiousness and Lecturers' Use of Digital Technology for Teaching Research Methods in Federal Universities

Source of Variation	n	r	p-value	Remark
Conscientiousness				
	72	0.317	0.27	Not Sig

Use of Digital Technologies				

Data in Table 2 show that there is a low positive relationship between conscientiousness and lecturers' use of digital technology for teaching research methods in federal universities in South-East, Nigeria. This is evident by the size of Pearson's Correlation Coefficient r, which is 0.317. Additionally, there is no significant relationship between conscientiousness and lecturers' use of digital technology for teaching research methods in federal universities in South-East, Nigeria. The calculated r (0.317) has *p*-value <0.05.

Table 3: Pearson r on Relationship between Extraversion and Lecturers' Use of Digital Technology for Teaching Research Methods in Federal Universities

Source of Variation	n	r	p-value	Remark
Extraversion Use of Digital Technologies	72	0.645	0.03	Sig

Data in Table 3 show that there is a high positive relationship between extraversion and lecturers' use of digital technology for teaching research methods in federal universities in South-East, Nigeria. This is evident by the size of Pearson's Correlation Coefficient r, which is 0.645. Furthermore, there is a significant relationship between extraversion and lecturers' use of digital technology for teaching research methods in federal universities in South-East, Nigeria. The calculated r (0.645) has *p*-value <0.05.

Discussion

Relationship between openness and lecturers' use of digital technology for teaching research methods

The finding of the study indicated that a very high positive and significant relationship existed between openness and lecturers' use of digital technology for teaching research methods. This suggests that lecturers with higher levels of openness are more likely to adopt digital technologies in their teaching of research methods. Put differently, lecturers high in openness are more willing to try new statistical packages, data visualization tools, online survey tools, perhaps even incorporate machine learning tools or advanced analytics in their teaching practices. Much as many of the studies dwelt on students' personality traits and their adoption of technology, these same trait-technology relationships may apply. In line with the finding of the present study, Men and Noordin (2019) found that personality traits such as openness were positively related to the level of motivation toward ICT integration among undergraduates. Lecturers given to openness trait may be more comfortable incorporating flipped classrooms, remote labs, simulation, or collaborative data work. Similarly, Joy and Venkatachalam (2024) found that openness correlated positively with attitude and perceived usefulness of mobile technologies among undergraduate students.

Relationship between conscientiousness and lecturers' use of digital technology for teaching research methods

The finding of the study showed that a low positive and insignificant relationship existed between conscientiousness and lecturers' use of digital technology for teaching research methods in federal universities in South-East, Nigeria. This shows that much as conscientiousness contributes to lecturers' use of digital technology for teaching research methods, its contribution is not considerable. This may be linked to the fact that the afore-mentioned relationship is moderated by contextual factors such as institutional policies and lecturer motivation. In agreement with the finding of the present study, Joy and Venkatachalam (2024) found that conscientiousness did not significantly correlate with technology acceptance factors among undergraduate students. Thus, the rigor and consistency exemplified by conscientious students and lecturers could predispose them to making less use of digital technology. In contrast to the finding of the present study, Burtăverde *et al*. (2021) found that conscientiousness was found to be positively linked with the use of productive and utility applications,

such as Facebook (academic), work-related mobile applications, and learning applications. This contradiction may be traceable to disparities in sample characteristics.

Relationship between extraversion and lecturers' use of digital technology for teaching research methods

The finding of the study showed that a high positive and significant relationship existed between extraversion and lecturers' use of digital technology for teaching research methods in federal universities in South-East, Nigeria. This depicts that the more extraverted a lecturer is, the higher the tendency for them to use digital technology for the teaching of research methods. Evidently, extraverted lecturers tend to be more sociable and enthusiastic which may lead them to engage with digital technologies that facilitate interaction and collaboration with students. Consistent with the finding of the present study, Men and Noordin (2019) found that among TESL undergraduates, extraversion was positively related to the level of motivation toward ICT integration. This motivation level is relevant because motivation often serves as a proximal antecedent to technology use: if lecturers are motivated (e.g., believing technology will help engage students, enhance teaching research methodology, etc.), then they are more likely to adopt, experiment, and integrate technology tools (Men & Noordin, 2019). Thus, in a research methods course, lecturers who are extraverted would be inclined to using technologies such as multimedia resources, online discussions and interactive simulations that allow them to express themselves creatively and communicate effectively with their students. Similarly, Burtăverde *et al*. (2021) found that conscientiousness was found to be positively linked with the use of productive and utility applications, such as Facebook (academic), work-related mobile applications, and learning applications.

Conclusion

In view of the findings of the study, it was concluded that personality traits positively correlated with lecturers' use of digital technology for the teaching of research methods. In addition, the personality traits of openness and extraversion relationship with digital technology were significant, that of conscientiousness was insignificant.

Recommendation

Based on the findings of the study, the following recommendations were made:

1. University authorities should provide institutional support and technological infrastructure to shape the relationship between openness and lecturers' use of digital technologies for the teaching of research methods.
2. University authorities should offer professional development opportunities that will bridge the gap in conscientious lecturers' use of digital technologies for the teaching of research methods.
3. Ministry of Education should provide pedagogical frameworks to strengthen the relationship between extraversion and lecturers' use of digital technologies for the teaching of research methods.

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