



Longitudinal Designs, Associated Theories, and Communication Research in Africa

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Abstract

This paper is an effort to promote the adoption of longitudinal designs and mainstream them in communication research in Africa, especially Nigeria. The concept and types of longitudinal research are explained. The reasons why longitudinal approaches are indispensable to communication research are discussed. This task is crucial since the trend among African and Nigerian researchers is to consign longitudinal approaches to the sidelines while overly emphasizing cross-sectional designs. The paper takes a cursory journey down the road of media effects theory, among others, to show that the cumulative effects of the media can better be researched with longitudinal systems than with cross-sectional ones. Three empirical works are reviewed to show the weaknesses of using only cross-sectional methodologies to study every kind of communication problem while strengthening the case for longitudinal systems. The recommendations expose researchers to the threat of extinction that longitudinal designs face as well as motivate the longitudinal habit.

Keywords: Communication research, longitudinal research, media effects research, media studies, research design, Nigeria, Africa.

Introduction

A prima facie assessment of literature shows that longitudinal designs are rare to find in studies that originate from Africa and Nigeria, especially. While not making any categorical claim or providing numbers on the use of the longitudinal system and its purported marginalization, this plausibility serves as enough motivation to explain how the adoption of the system can intensify in the country.

Longitudinal study designs in media and communication research in Nigeria may have become more marginal among researchers over the last one or two decades, unlike the cross-sectional designs which are well mainstreamed. It appears communication researchers in Nigeria and Africa are keeping away more and more from longitudinal research in favor of cross-sectional or 'one-off' designs. The reasons for keeping away are uncertain. In any case, it is not in the primary purview of the article to ascertain the reasons why communication researchers shy away from being longitudinal in approach. The paper is rather focused on popularizing and mainstreaming longitudinal research among African and Nigerian researchers.

Objectives of the Study

The objectives of this study are to:

- i. Create awareness of the essentialness of longitudinal study designs in media research
- ii. Promote more interest and wider adoption of longitudinal approaches in African and especially Nigerian communication scholarship

Significance of the Study

The primary significance of this work is scholastic. Media and communication academics will find in this paper a keen argument interrogating the bases of the assumptions which inform our choice of methodology for any research. In the work, the case is made for communication scholars to prioritize the longitudinal methodological paradigm and to consider mainstreaming it just like the cross-sectional system which arguably appears more popular in African and Nigerian media scholarship.

The work also bears significance to the work of media professionals like journalists and public relations practitioners as it

provides some answers to questions on how media effects work on audiences. Communication policy in Africa and Nigeria will also benefit from the paper, as it draws from examples of public communication research policy of the American jurisdiction. Lastly, society at large will benefit from the work, as its larger subject matter predicates the soul of society, namely, the mass media.

Methodology

The methodology adopted for this work is qualitative, specifically literature analysis. It is a non-empirical study, drawing its submissions from empirical studies carried out by other scholars.

Longitudinal Research: Definitions and Types

When research is described as longitudinal, it is to contrast with cross-sectional research. Neuman (2014) explains that while on the one hand, cross-sectional research gathers data at a one-time point and creates a kind of ‘snapshot’ of social life, on the other hand, “longitudinal research gathers data at multiple time points and provides more of a ‘moving picture’ of events, people, or social relations across time” (p.

44). Cross-sectional research is like taking a still photograph of social life while longitudinal research is like capturing a motion picture of a given aspect of social relations within society. This is instructive, in light of the seeming evasion of longitudinal approaches by communication researchers in Nigeria.

Longitudinal research is of three types. These are discussed below:

Time-Series Study

Time-series studies are that type of longitudinal research in which data is collected in a series of *specified time points*. Collecting data on the weekly viewership numbers of a given television sitcom is a good example of a time-series study.

Panel Study

A panel study is a type of longitudinal study that collects data from a panel of *the same people*. An example of a panel study would be researching the effects of a given campus radio show that collects data from members of the same university class when they are in their first year, then later when they are in their second year, and then lastly when they are in their third year.

Cohort Study

Cohort studies are longitudinal studies that collect data from a cohort of people who *share a similar life experience* or people who *experienced a common life event*. For example, collecting data from survivors of war just after the war and then later after 10 years is an example of a cohort study.

From the foregoing, the common strand in longitudinal studies is that they all collect data at *multiple time points* as opposed to collecting data at a single time point. Even though time-series studies are the only type of longitudinal research that has “time” in its name, care should be taken to not mistake it as the only type of longitudinal research that collects data at multiple time points. The other two types of longitudinal research also collect data at multiple time points. Time-series studies have “time” in their name only because even though the other two types of longitudinal research also collect data at multiple time points, in time-series studies, the times for collecting data are organized as a *series* – more regular, more specified, and more evenly spaced out than in the other two types of longitudinal research.

Why Longitudinal Approaches Are Important to Communication Research

While it cannot be denied that some questions in communication research can be answered by collecting data in a cross-sectional way, many of the questions in media and communication experience cannot be adequately answered except by collecting and analyzing longitudinal data. It is not that cross-sectional research cannot answer every question; it can; but it cannot answer every question *adequately* (Boukes, 2021; Omojola et al., 2018).

Later in this paper, some studies are reviewed, showing how, in certain communication situations, longitudinal data collection approaches yield richer and more robust empirical results than cross-sectional ones. In the first study reviewed, we are inclined to ask: Had longitudinal approaches been in the mainstream in communication research in Nigeria, would the researcher of that study not have opted for a longitudinal approach rather than the cross-sectional one that they adopted? That researcher may have used a cross-sectional design as she did, not because cross-sectional approaches were best suited for answering the questions of her study but because

in the paradigm of the research jurisdiction in which she found herself, longitudinal approaches were far from her radar, and not in the spectrum of choices accessible to her.

Backgrounding longitudinal approaches is like trying to cut off the right of the two hands of communication research. This is not just speaking figuratively. Longitudinal research is, in actuality, a *right hand* that communication research cannot afford to cut off. Two strong reasons why longitudinal approaches are important, even indispensable, to communication research are discussed next.

Reason Number One: Longitudinal approaches are better suited than cross-sectional methodologies for researching media effects.

With what is now known about media effects in theory, we know that longitudinal approaches are better suited than cross-sectional methodologies for researching media effects (Lecheler & De Vreese, 2019; Folayan et al., 2018; Odiboh et al., 2017). The subject of media effects being a leading area of interest in media and communication research (Karlsen, Beyer & Steen-Johnsen, 2020), any weakness in the mastery of

longitudinal methods probably means a weakness in Nigeria's ability to competently research this key area of interest in media and communication research. To understand why longitudinal approaches are better fitted than cross-sectional designs for researching media effects, it will help to travel briskly down the road of the history of the evolution of media effects theory to see the different research traditions that each of the eras of media theory influenced.

The history of media effects theory can be broken into three eras:

- 1) The Era of Direct Effects
- 2) The Era of Limited Effects
- 3) The Era of Cumulative Effects

The Era of Direct Effects encompasses theoretical work beginning at the turn of the century and ending sometime in the 1930s (Werder, 2009; Sparks, 2010). The blanket assumption of that era was that the masses were nearly helpless against the overpowering influence of the mass media. Although not much empirical evidence could be garnered to support this assumption of an all-powerful media and a helpless audience, a certain radio broadcast in 1938

provided “real-life anecdotal evidence” (Werder, 2009, p. 632) that reinforced this paradigm among researchers around the world over. At the time, radio was the dominant medium in American society. Sparks comments that “if there was any doubt about the potential of radio to influence people quickly and in large numbers, those doubts ended on the night of October 30, 1938” (Sparks, 2010, p 50). Sparks’ retelling of the events of that October night is rendered here nearly in full:

On that particular evening, the CBS radio network broadcast a radio drama as part of its *Mercury Theatre on the Air*. A young man by the name of Orson Welles narrated a radio adaptation of “War of the Worlds”, a science fiction story written by H. G. Wells. An estimated audience of about 6 million listeners tuned in. ...The premise of the show was simple. Listeners would be lulled into a sense of relaxation and even boredom as the show began with classical music. Then, a radio announcer would interrupt and refer to an atmospheric disturbance that had been reported over

Nova Scotia. Listeners would then be returned to the light music until the announcer interrupted again. Over the course of the one-hour program, what started as an atmospheric disturbance turned into an alien invasion by Martians who had landed their invading craft in Grover’s Mill, New Jersey.

In retrospect, one would think that the discerning listener would easily recognize that the reported events were nothing more than a fictional drama. But the realistic format of cutting away from the music to feature what sounded like live news reports apparently fooled about 1 million people in the show’s audience. In some cases, random events helped to promote the illusion of reality. In the town of Concrete, Washington, a power failure occurred while the radio announcer was informing Americans that the Martians were disrupting power and communications across the country. Needless to say, the residents of Concrete didn’t need any more reason to

believe the broadcast was true. But even without such events, people up and down the eastern seaboard went into a panic. CBS eventually apologized to the public for its miscalculation (Sparks, 2010, p. 50).

Noting that October 30 was a night before Halloween gives some insight into why that radio broadcast could have had that much of an instant effect on its audience. Also, a research team at Princeton University undertaking a “postmortem” (Sparks, 2010, p. 50) of the broadcast provides further learning. One of their findings is that the broadcast had that much of an instantaneous effect on the behavior of the audience because “by and large most Americans”, at that time, “had tremendous trust and confidence in the media” (Werder, 2009, p. 632).

An enormous trust in the media among the audiences of that day and a blanket assumption among the scholars of that era that audiences were nearly helpless against the media while the media were all-powerful on the audiences, combined to influence the magic-bullet or hypodermic-needle orientation that the theories of that era were modeled after. Sparks (2010) explains that

according to the magic-bullet or hypodermic-needle view of mass communication, “the communication of a message in a mass medium can be compared to shooting a gun that contains a magic bullet or to injecting someone with a hypodermic needle” (p. 51).

The effect of that radio broadcast on the night of October 30, 1938, was like the effect of “shooting a gun that contains a magic bullet” or of “injecting someone with a hypodermic needle”. It was instantaneous. Researchers of that direct effects era assumed wholesale that the effect of whatever media on its audiences will always be like the effect of that October 30 broadcast – instantaneous, like the effect of a magic bullet or a hypodermic needle; and because they assumed that the effect of all media at all times will always be instantaneous, their approaches for data collection in researching media effects were always one-off.

However, two years after the 1938 October 30 radio broadcast, a turning away from the magic bullet/hypodermic needle orientation began. A team of researchers, Paul F. Lazarsfeld from Columbia University, Bernard Berelson from Stanford, and Hazel Gaudet from Princeton, in 1940, commenced an elaborate

research project to ascertain the effects of media messages of the United States Presidential campaigns on voter behavior at the United States Presidential Elections of 1940 and 1944 (Lazarsfeld, Berelson, & Gaudet, 1948; Berelson, Lazarsfeld, & McPhee, 1954).

In what was later to be known as *The People's Choice* study, the three aforementioned researchers along with their team of 15 other interviewers selected 600 households in Erie County, Ohio, wherein a total of 2,400 individual voters were interviewed in a series of 7 times throughout the presidential campaigns. Through the analysis of these periodic interviews of the subjects and control groups, the team was able to track the decision-making process and therefore the dynamics of the effect of the media.

A breakthrough of this study was the development of the Two-Step Flow Model of Communication, a paradigm shift in media and communication theory of that day; but was not the only breakthrough because the study also reshaped how scholars in Europe and America began to study media effects. *The People's Choice* study pioneered the use of longitudinal approaches for researching media effects. Klapper

(1957; 1960), after the *People's Choice Study*, had been published in 1948, corroborated the fittingness of longitudinal approaches for effects research, citing not a few longitudinal studies to make the point that “mass communication ordinarily does not serve as a necessary and sufficient cause of audience effects, but rather functions among and through a nexus of mediating factors and influences” (Klapper, 1957, p. 457; 1960, p. 5; Omojola, 2009), and also that the mass media are “one among a series of factors, working in patterned ways their wonders to perform” (1957, p. 457).

With the introduction of television in the 1940s and 1950s and its rise to becoming the dominant medium in American society in the 1960s, both theory and research began to return to an orientation of strong effects because the coming and rise of television saw a proliferation of imitative crimes, particularly among young people. Liebert and Sprafkin (1988) detail a number of these crimes in their book about the effects of television on children. One of the examples they provide is cited as it was reported in the *New York Journal American*:

Police arrested an 11-year-old who admitted having burglarized Long Island homes for more than \$1,000 in cash and valuables. His accomplice was identified as a 7-year-old friend. The boy said he learned the technique of burglary by seeing how it was done on television (Liebert & Sprafkin, 1988, p. 8).

Reports like the foregoing stirred much concern in American society. However, even though both the people and their government raised reservations about the violence on television, neither the people nor their government could lay their hands on any scientific studies that had established any cause-and-effect relationship between the violence on TV and the aggressive behavior manifest in society. The government began to make grant funding available for studies on media effects and the studies began to yield fruits. A new paradigm ultimately emerged from these research works of the 1960s and 1970s. It ultimately came to be known as the cumulative effects perspective of Mass Communication.

By cumulative effects, it meant that the mass media ultimately prove effectual “as a

result of cumulative exposure to similar content rather than exposure to a single event. In other words, over time audiences start to adopt the media’s framing of reality as their own representation of it.” (Werder, 2009, p. 633). The key phrase in the foregoing is the phrase, “over time”. Media effects were now known to occur over time, as opposed to previous assumptions which evaluated effects on a one-off basis.

The research that contributed to the production of this new knowledge about media effects used more sophisticated scientific techniques than before in media effects research, including experiments and quasi-experiments (Werder, 2009; Sparks, 2010). The new knowledge produced about media effects as occurring *over time* now informs an enlightened research tradition that researches media effects *longitudinally*, that is, in a time series study, in a panel study, or a cohort study, as opposed to the more primitive traditions of researching media effects using one-off approaches. As the effects of the mass media are now known to occur over time than on a one-off basis (Feezell, Glazier & Boydston, 2021), the approaches for researching such effects which occur over time should, like the occurrence itself, be longitudinal.

Reason Number Two: Explaining occurrences with theories like the Cultivation Theory, Agenda-Setting Theory, and Spiral of Silence Theory is possible only with the benefit of longitudinal data.

Reason Number 2 is closely related to Reason Number 1. Perhaps this reason for explaining occurrences with cumulative effects theories being possible only with the benefit of longitudinal data is the stronger reason why communication researchers cannot afford to watch longitudinal research slide to the margins. The following sheds more light on this regard.

As a classic example of the cumulative effects of the media, Cultivation Theory is in Werder’s estimation “the strongest media effects model to date since the magic bullet theory” (Werder, 2009, p. 633). Propounded by Gerbner (1970), cultivation theory holds that “through repeated, heavy exposure to television, people begin to view the world as similar to the television world” (Werder, 2009, p. 633). The key words are “*repeated exposure*”. Cultivation theory explains not just exposure but *repeated exposure*. It explains the effect of repeated exposure over time (Solomon, Ginzburg, Ohry, &

Mikulincer, 2021). To prove that cultivation has occurred, therefore, the data has to first show a course of *repetition* of exposure over time and then show also the progressive effect of the exposure as it is repeated at various time points. Only by longitudinal approaches can such data be collected.

Similarly, only by longitudinal approaches can agenda-setting be adequately researched (Smyrnaiois & Rebillard, 2019; Damstra & Boukes, 2021). Conceptualized by Maxwell McCombs and Donald Shaw, Agenda-Setting Theory explains the mass media as being powerful in controlling what is being thought about even though they may not be as powerful in controlling what is being thought (McCombs & Shaw, 1972). This much about the theory is well understood by most communication scholars. What appears to not be as well understood is that “the agenda-setting effect is based on the assumption that the media agenda actually precedes the public agenda” (Werder, 2009, p. 634). The keyword here is “*precede*”.

In agenda-setting, one agenda – the media agenda – precedes another agenda – the public agenda. In explaining agenda-setting theory, Pearce (2009) states that “the more someone sees an

issue being covered in the news, the more this person will feel this is an important issue” (p. 625). So, to prove that agenda-setting has occurred, the data must first show that an issue in question was first raised in the media as an important issue and that the public kept seeing that issue raised *more and more* in the media as important, and then ultimately, that the public ultimately gets to accord importance to the said issue that the media raised as important. Again, only by longitudinal approaches can such data be collected.

Only by longitudinal approaches, as well, can data that can prove the Spiral of Silence Theory be collected. Created by Noelle-Neumann (1974), the theory is based on the idea that:

...dissidents of a prevailing (media-created) idea will not speak out against it if they perceive themselves to be in the minority and thus avoid the risk of isolation and rejection. This behavior pattern in turn leads others, maybe more moderate voices, to also keep silent since they come to believe that most people agree with the majority viewpoint. In the end, the process spirals into relative silence and can

lead to the demise of viewpoints even though they might actually be held by a substantial number of people (Werder, 2009, p. 634).

The description of the “*process*” of the spiral of silence, beginning first with the silence of the minority voices, then the silence of the moderate voices, then the ultimate silence of most voices, is a self-evident argument why data for proving the spiral of silence can better be collected by longitudinal than by cross-sectional approaches.

Review of Empirical Studies

The following three studies are reviewed to support the argument that longitudinal approaches to data collection can better answer certain questions in communication research than cross-sectional designs can.

Influence of Violent Television Cartoon Programs on Children in Enugu Metropolis (Ekwe, 2018)

The central quest of this study by Ekwe was to identify the changes that come about in children when they are exposed to the effects of TV for too long in their daily lives. Cultivation Theory was the main framework theory. Before discussing the data collection

approach adopted for the study under review, a summary of the findings will help provide context for the argument that the present paper seeks to make. In the study under review, under “Summary” in Chapter 5, it is stated as follows:

The impact of these [Euro-American] attitudes, perceptions, and constructions on children in Nigeria who watch these animated cartoon productions is evident from the way they relate to Ben 10 and Kim Possible. These relations may be imperceptible to the casual observer but data showed that the two cartoon characters are idols, image ideals and role models to children who watch animated cartoons in Enugu yet both these characters are not representative of the children they interact with every day. This is because Ben 10 and Kim Possible are ideal Euro-American white and might give the children the impression that black children cannot be heroes since they are not portrayed in these animated cartoons. Children in this study like Ben 10 and Kim because they represent power, control and are heroic in outlook.

This researcher feels that these constructions are a possible

reason why Nigerian children are prone to adoring white characters. If these two heroes were black and representative of children their age and in their environment, it could have as implication in how they see themselves. The data showed that children in the study spend a lot of time watching these programs therefore it is prudent to ask what perceptions and attitudes are being reinforced, and the implication of this on how they construct their wordier self-worth.

Itemizing the findings summarized in the study under review will read thus:

- i. The impact of Euro-American attitudes is evident in children in Nigeria who watch Euro-American cartoon productions;
- ii. Even though the cartoon characters in the productions are racially different from the children who watch in Enugu, the children idolize the cartoon characters and hold them as role models;
- iii. The children in Enugu who watch the productions like the heroics and heroism of the cartoon characters but

end up thinking they, being racially different, cannot be heroes like the cartoon characters that they watch in the productions;

- iv. Children spend time watching these cartoon productions.

The study under review sought to unearth the effects of Euro-American cartoon productions on the behavior of children in Enugu who watch these productions, but by the ‘quality’ of the findings stated, it does not seem like much new learning in Cultivation Theory was achieved by the study under review. With due respect for all the scholarly effort by the researcher of the work under review, and without being defacing, the ‘findings’ of the study under review come across like knowing that we already had even without the benefit of empiricism. Not much new knowledge about the cultivation effects of those Euro-American media products on those children in Enugu seemed to have been produced.

The undoing of the study under review is likely to be connected to the data collection approach selected for the study. The approach adopted is stated under “Research Design” in Chapter 3 thus: “The research design adopted for this study is the cross-sectional survey design”. Longitudinal rather than cross-sectional data, for a study on cultivation like this one under

review, may have yielded richer and more incisive results; results which could have been more deserving of the term, ‘empirical’.

An exemplary approach to data gathering which the study under review could have taken a cue from is cited in the study under review itself. On pages 23 and 24 of the study under review, the results of a certain study conducted on 450 school children in New Jersey, USA, are summarized. The results of that study are itemized as follows:

- i. Some 73 percent of children who were heavy viewers gave the TV answer to a question asking them to estimate the number of people involved in violence in a typical week compared to 62 percent of light viewers;
- ii. Children who were heavy viewers were more fearful about walking alone in a city at night;
- iii. Children who were heavy viewers also overestimated the number of people who commit serious crimes;
- iv. Children who were heavy viewers of action-adventure programs were indeed

found to be more fearful of life in the everyday world than were light viewers.

Most reviewers will agree that the results of this New Jersey study exude an air of empiricism that the Enugu study seems to be short of. The results of the New Jersey study provide us with new knowledge about cultivation, unarguably. The results not only come across as sure and assured, but they also come through as categorical. No wonder it was a longitudinal study. For one, it was “after 6 weeks of controlled viewing” that the “heavy viewers of action-adventure programs were indeed found to be more fearful of life in the everyday world than were light viewers”. We see in this instance that cultivation is better researched longitudinally than cross-sectionally.

A Meta-Analysis of New Media’s Public Agenda-Setting Effects, 1972-2015 (Luo, Burley, Moe & Sui, 2019)

In this study, Luo, Burley, Moe, and Sui analyzed empirical studies on agenda-setting conducted by other scholars from 1972 to 2015. Under a subsection titled, *Time Lag in Agenda-Setting Research*, the study under review established that it is with “repeated exposure to the media agenda” that the

salience of any issue is reinforced for the public agenda. For instance, in one of the studies analyzed, a team of researchers “examined agenda-setting effects by five media outlets on four issues, revealing that a time lag of 7 days produced the largest number of significant correlations relative to time lags of 1 day to 6 days”. Depending on the nature and other dynamics of the issue in question, some studies showed that it would take “3 to 4 months for the media agenda to transfer to the public agenda”, while “other studies suggest it may take 2 to 6 months”.

In many of the studies analyzed by Luo et al., where both content analysis and survey were combined in the methodology, with data on the media agenda collected side by side with the data on the public agenda, data collection was spread out longitudinally – at multiple time points. With such a longitudinal approach, the data collected was incisive and the learning they provided on agenda-setting was fresh. Here again, with agenda-setting as with cultivation, longitudinal approaches than cross-sectional approaches prove to gather richer, fresher data.

A Test of the Spiral of Silence Theory on Young Adults’ Use of

Social Networking Sites for Political Purposes (Chen, 2011)

The opening lines of the abstract of this study by Chen read thus:

“This study aims to test two steps of the spiral of silence theory: (1) assessment of the climate of opinion and (2) willingness to speak out about controversial political issues concerning young adults’ political use of the social networking site, Facebook, to communicate with their close friends and broader circle of friends.”

To test these two steps, needless to say, the researcher of the study under review collected data at more than one-time point. In other words, it was a longitudinal study. The researcher made the point in justifying his choice of methodology that since it was a study to test the spiral of silence, data had to be collected at more than one-time point.

Recommendations Going Forward

Going forward, the following are this paper’s recommendations for winning back longitudinal approaches from the fringes to the mainstream of communication research in Nigeria:

- 1) Communication research centers in Nigeria should

wake up to the awareness of the ‘threat of extinction’ faced by longitudinal research, and respond with steps and policies akin to declaring a state of emergency in longitudinal research.

- 2) Renewed attention should be given to the teaching of research methods in longitudinal approaches, especially at the postgraduate levels of communication and media studies.
- 3) Academic supervisors of research projects, dissertations, and theses should encourage their trainee researchers to consider study areas and methodologies that tend toward longitudinal approaches.
- 4) Students who show an interest in longitudinal studies should be rewarded with added encouragement.

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