International Journal of Early Childhood Special Education (INT-JECSE)
DOI:10.48047/INTJECSE/V15I4.50 ISSN: 1308-5581 Vol 15, Issue 04 2023

Validity and reliability of qualitative research

Dr. Melloud Sidali [(1)], Dr. Trifa Mohamed [(2)]
[(1)] Higher National School of Management, The Managerial Innovation, Governance and Entrepreneurship Laboratory (Algeria), ORCID Number: 0000-0003-1162-2238.
[(2)] Mohammed Seddik Benyahia university, Jijel (Algeria), ORCID Number: 0000-0002-6989-5733.
The Autor's E-mail: *s.melloud@ensmanagement.edu.dz*[(1)], *mohamed.trifa@univ-jijel.dz* [(2)]

Received: 09/2023 ***Published: 11/2023***

Abstract
The present article examines the necessary conditions for conducting scientific work, with a particular emphasis on the quality and value of the results produced. Every scientific discourse must imperatively meet requirements of clarity, coherence, and reliability. Epistemological choices and associated methods play a crucial role in research, as they ensure targeted, efficient, and valid data collection. This article primarily focuses on the works of Guba and Lincoln regarding the theme of naturalistic inquiry and its criteria for validity. This new paradigm of "naturalistic inquiry" is contrasted with the conventional or rationalistic paradigm to highlight its advantages. By analyzing and comparing these approaches, the article explores how naturalistic inquiry provides a promising alternative for scientific research, offering an innovative perspective on how to approach complex phenomena in the real world.
Keywords: Epistemology, Methodology, Naturalistic Inquiry, Trustworthiness

Introduction

The positivist paradigm, or conventional rational research, has dominated scientific research for several centuries. Its spectacular successes, particularly in physics and medicine, have given it universal recognition and undisputed credibility. The experimental method, used in laboratories where the various aspects of the research were virtually controlled, has enabled researchers to obtain reliable, valid and generalizable results, reinforcing objectivity as a pillar of modern science. However, some researchers are questioning whether this approach is still the most appropriate for tackling complex and varied fields, where the subjects of research may be less tangible and more difficult to master objectively. Opening up to complementary approaches, such as qualitative research or other paradigms, could enable scientific issues to be tackled in a more holistic way that is adapted to their specific nature. This methodological diversification could enrich our understanding of the world and lead to significant discoveries in various fields of research.

However, some critics view qualitative research in a negative light, describing it as sloppy, imprecise and subjective. Yet it is precisely this subjectivity that constitutes the essence of qualitative research and gives it credibility. Faced with phenomena that are essentially in the form of representations, feelings, motivations and purposes, the naturalist paradigm seems better suited and better equipped than the positivist paradigm to apprehend them. Nevertheless, the question of reliability remains essential if valid scientific knowledge is to be produced, whether it stems from a rationalist or a naturalist discourse. By seeking methodological rigor and exploring different avenues of validation, qualitative research can gain in credibility while retaining its richness and depth in the analysis of complex and subjective phenomena.

- Can we conduct qualitative research without running the risk of producing knowledge that is judged to be biased and inaccurate because it is contaminated by our personal biases?
- Is it possible to carry out qualitative research without running the risk of being labelled as sloppy or lazy?
- What guarantees does the naturalist paradigm offer for the scientificity, reliability and validity of the knowledge it produces?

- What terms does the naturalist paradigm use to describe the validity and reliability of its discourse?

The sections of this article will attempt to provide a convincing answer as to the usefulness of the naturalistic approach and related techniques for providing an accurate account of reality. The aim of the article will be to present the advantages and disadvantages of the rationalist and naturalistic paradigms, with particular emphasis on the techniques employed by naturalistic enquiry to produce knowledge that faithfully reflects the reality being studied. It will provide researchers who identify with this paradigm with the tools they need to tackle intangible realities (such as opinions) with complex and varied content. By exploring these approaches, their axioms, methods and criteria for scientific validity, the article aims to deepen our understanding of research methods and enable us to better appreciate their actual applications in the field of research.

1. What is a naturalist survey?

According to Guba and Lincoln (1982), naturalistic enquiry is an enquiry paradigm, i.e. a pattern or model for conducting enquiry. It is often claimed that it takes place in a natural setting (hence the term 'naturalistic'), that it uses a case study format and that it relies heavily on qualitative rather than quantitative methods, but none of these characteristics defines naturalistic enquiry. While all of these statements are essentially correct, none of them, or all of them together, capture the full meaning of the term 'paradigm'. Paradigms differ from each other in far more fundamental ways than where the research is conducted, the format of the research report or the nature of the methodology used. A paradigm is an axiomatic system characterized by different hypotheses about the phenomenon being studied.

Our two authors (Guba and Lincoln, 1982) wonder why anyone would consider using a competing paradigm when the rationalist paradigm has acquired such widespread legitimacy and achieved such resounding success.

It seems that several elements can be cited as counter-arguments. Firstly, Guba and Lincoln (1982), believe that the judgement that the rationalist paradigm has achieved remarkable success in social and behavioral investigations is wrong. The data collected in these fields has not proved aggregable; where, for example, is the useful residue of over 100 years of research in psychology and education? Furthermore, researchers have repeatedly found that it is impossible to apply the paradigm according to its own basic principles; random sampling, for example, is virtually impossible for both political and ethical reasons [1]. The impact of research on practice is also conspicuous by its absence.

Naturalistic enquiry has many features that recommend it for other reasons. For example, it offers unparalleled contextual relevance and richness; it demonstrates a sensitivity to process that is virtually excluded in paradigms that emphasize control and experimentation, because it focuses on the study of phenomena in their natural context, without attempting to control them artificially. This approach makes it possible to grasp the complex interactions between the various elements and processes at play in real situations; naturalistic enquiry is guided by a

[1] In some contexts, random sampling may be **politically** sensitive or unwise. For example, in situations of political conflict, social tension or government restrictions, access to the population or to certain communities may be restricted or prohibited. Researchers may be denied access to certain areas, making random sampling difficult or impossible. Random sampling may raise **ethical** concerns, particularly with regard to respect for the rights and welfare of participants. For example, in some medical or social studies, it may be considered ethically unacceptable to randomly select participants for a control group who do not have the same rights as the participants. does not receive the treatment or intervention being studied, as this could have negative consequences for their health or well-being. In such cases, researchers must seek alternative sampling or study methods to ensure that participants are treated ethically.

theory rooted in the data - the naturalist does not look for data that corresponds to a theory, but develops a theory to explain the data. Finally, naturalist approaches take full advantage of the significant power of human beings a s instruments (Guba and Lincoln, 1982). As researchers, human beings play an essential role in t h e process of naturalistic enquiry, and their active involvement is seen as a major asset.

2. The fundamental axioms that distinguish the naturalist from the rationalist paradigm of enquiry

Axioms can be defined as the set of unproven (and unprovable) propositions accepted by convention or established by practice as t h e basic elements of a conceptual or theoretical structure or system (Guba and Lincoln, 1982). Axioms also have other properties (Guba and Lincoln, 1989), as illustrated below:

1. Axioms are arbitrary and can be assumed for any reason, even if it's just for the sake of the game.

2. The axioms are not obviously true, nor do they need to seem so; indeed, some axioms seem very odd at first glance.

3. Different systems of axioms have different utilities depending on the phenomenon to which they are applied. These utilities are not determined by the nature of the axiom system itself, but by the interaction between these axioms and the characteristics of the domain in which they are applied. For example, Euclidean geometry is suitable for terrestrial spaces, but Lobachevskian geometry is better for interstellar spaces.

4. The decision to use one or other of the alternative axiom systems in a given case is made by testing the fit between each system and the case, a process analogous to that of testing the fit of the data to the hypotheses before deciding which statistic to use to analyze them.

Thus, the axioms described below should not be judged on the basis of their self-evident truth, common sense or familiarity to the researcher, but on the basis of their appropriateness to the phenomena proposed to be investigated. When rationalist axioms are appropriate, the rationalist paradigm should be used; when naturalistic axioms are appropriate, the naturalistic paradigm should be used. Five axioms differentiate the rationalist and naturalist paradigms; these are summarized in Table 1.

Table 1. axiomatic differences between the rationalistic and naturalistic paradigm

Axioms About	**Rationalistic Paradigm**	**Naturalistic Paradigm**
Reality	Single, tangible, convergent, fragmentable	Multiple, intangible, divergent, holistic
Inquire/ respondent relationship	Independent	Inter-related
Nature of truth statements	Context-free, generalizations – nomothetic statements – focus on similarities	Context -bound working hypotheses – idiographic statements – focus on differences
Attribution / explanation of action	Real causes, temporally precedent or simultaneous; manipulable; probabilistic	Attributional shapers; interactive (feed-forward and feed-back): non-manipulable; plausible.
Relation to Value to inquiry	Value-free	Value-bound

Source: (Guba and Lincoln, 1982, p. 367)

Axiom 1: the nature of reality

For rationalists, there is a single, tangible reality (physics & observable and often measurable), fragmentable into independent variables and processes, each of which can be studied independently of the others; research can converge on this reality until, finally, it can be predicted and controlled.

Naturalists claim that there are multiple intangible realities (representations) that can only be studied holistically; research into these multiple realities will inevitably diverge (each research raises more questions than it answers), so that prediction and control are unlikely outcomes, although a certain level of understanding can be achieved. This is not to say that tangible objects, events and processes are not involved in human behavior. However, it is not these tangible objects that interest us, but the meaning and interpretation that people attribute to them, because it is these constructs that influence their behavior (Guba and Lincoln, 1982). These constructs have no reality but exist only in people's minds. There are as many constructs as there are people to create them (Guba and Lincoln, 1982). It is impossible to converge on a common or typical reality, because each reality is idiosyncratic (Guba and Lincoln, 1982).

Axiom 2: The investigator-object relationship

For the rationalist, the investigator is capable of maintaining a discrete distance between himself and the object of investigation. In the exact sciences and the life sciences, it is not unreasonable to postulate the ability of the investigator to maintain a discrete distance from the phenomenon being studied (Guba and Lincoln, 1982). Balls rolling down inclined planes, chemicals interacting in a test tube or cells subdividing under a microscope are unlikely to be influenced by the fact that someone is observing them, any more than the observer is likely to be influenced by what he or she is observing (Guba and Lincoln, 1982).

For the naturalist, the interviewer and the object interact to influence each other; this mutual interaction is particularly present when the object of the survey is another human being (respondent). Just as the interviewer can influence the behavior of the respondent, the respondent can also influence the behavior of the interviewer. Images of what the respondent might be like or how they might respond guide the interviewer in the development of their instruments. Images of what the interviewer wants, or what he will do with the answers, guide the respondent in his treatment of the instruments. Images of what the respondent meant by a response guide the interviewer in coding, interpreting and even accepting the respondent's feedback, and so on. (Guba and Lincoln, 1982). If interactivity could be eliminated by some magical process, the naturalist would not think the compromise worthwhile, for it is precisely this interactivity that enables the interviewer to be an intelligent instrument (Guba and Lincoln, 1982).

Axiom 3: The nature of truth statements

The objective of research for a rationalist is to develop a body of nomothetic knowledge; this knowledge is best encapsulated in generalizations, which are truth statements of enduring value that do not depend on context. Such statements are the cornerstones of most disciplines. Indeed, the term nomothetic science implies precisely the development of law-like generalizations that provide reliable bases for prediction and control (Guba and Lincoln, 1982). However, it is questionable whether it is possible to make generalizations that will always be true.

In their article entitled "Epistemological and Methodological bases of Naturalistic Inquiry", Guba and Lincoln (1982) cite Cronbach's (1975) use of an interesting metaphor to make this point. Generalizations, he argues, are like radioactive substances; they decay and have half-lives. He gives numerous examples drawn from the exact sciences and the social/behavioral

sciences, for example: the failure of DDT in the fight against parasites as genetic transformations make them resistant to the insecticide; the displacement of stars in their course that makes stellar maps obsolete. Bronfenbrenner's conclusion that the class differences in children's education observed in the 1950s were just the opposite of those observed in 1930. It is therefore problematic to make generalizations about human behavior without risk. However, this does not mean that there can never be a transfer from one situation to another. What we mean is that it is impossible to make statements about human phenomena that would be true in all circumstances, whether over time or in different contexts. For the rationalist, the aim of the investigation is to develop an ideographic corpus of knowledge; accompanied by a detailed description - of the situation he is studying, in order to make judgements about transferability possible, should anyone ask (Guba and Lincoln, 1982).

Axiom 4: Attribution/explanation of action

For the rationalist researcher, any action can be explained as the result (the effect) of a real cause that precedes the effect in time (or is at least simultaneous with it). The search for causality is the driving force behind conventional research. For the rationalist, an action can be explained in terms of multiple interacting factors, events and processes that shape and are part of it; researchers can, at best, make plausible inferences about the patterns and networks of this shaping in a given case (Guba and Lincoln, 1982). In other words, the naturalist prefers to think in terms of multiple factors and conditions, all of which interact, backwards and forwards, to shape themselves each other. Actions can be understood not as having been **caused**, but as having **emerged from the** constant interaction of their shapers, who are all part of the action, indistinguishable from it, shaping it and being shaped simultaneously.

Axiom 5: The role of values in the survey

Research is value-free for the rationalist and can be guaranteed as such by virtue of the objective methodology employed. The data, it is often said, 'speak for themselves', i.e. they transcend the values of the investigators and respondents (Guba and Lincoln, 1982).

Naturalists, on the other hand, assume that enquiry is inevitably rooted in value systems that characterize the interviewer, the respondent, the chosen paradigm, the substantive theory selected and the social and conceptual contexts. It is more sensible to recognize and take account of values, as far as possible, than to delude oneself about their importance or to hope that methodological hedges will compensate for their intrusion. For Guba and Lincoln (1982), enquiry is linked to values in at least five ways, described in the following corollaries:

Corollary 1: Surveys are influenced by the interviewer's values as expressed in the choice of a problem and in the framing, delimitation and focus of that problem.

Corollary 2: Research is influenced by the choice of paradigm that guides the study of the problem.

Corollary 3: Research is influenced by the choice of a substantive theory used to guide the collection and analysis of data and the interpretation of results.

Corollary 4: Research is influenced by the values inherent in the context.

Corollary 5: With regard to corollaries 1 to 4 above, research is either in resonance with values (reinforcement or congruence) or in opposition to values (conflict). The problem, paradigm, theory and context must be congruent (value resonance) in order to produce meaningful results (Guba and Lincoln, 1982).

3. The question of reliability in scientific research

The fundamental question when it comes to reliability is simple: How can an investigator persuade his audience (including himself) that the results of a survey are worth paying attention to

and taking into account ? What arguments can be put forward, what criteria can be invoked, what questions can be asked, that would be persuasive on this point? By convention, investigators have found it useful to ask themselves four questions (Lincoln and Guba, 1985):

1. Truth Value: How can we establish confidence in the "truth" of the results of a particular survey for the subjects (respondents) with whom and in the context in which the survey was carried out?

2. Applicability: How can we determine to what extent the results o f a particular survey can be applied in other contexts or with other subjects (respondents)?

3. Consistancy: How can we determine whether the results of a survey would be repeated consistently if the survey were repeated with the same (or similar) subjects (respondents) in the same (or similar) context?

4. Neutrality: How do we establish the extent to which the results of a survey depend solely on the subjects (respondents) and the conditions of the survey and not on the prejudices, motivations, interests, perspectives, etc. of the interviewer? (Guba, 1981).

The equivalent terms used by the naturalist paradigm to qualify these concerns are indicated as follows:

- **Truth Value:** In the rationalist paradigm, **internal validity** is logically determinable by demonstrating isomorphism or verisimilitude between the data from a survey and the phenomena that these data represent; not surprising when starting from the evidence of a single reality on which the survey can converge. However, it is not possible to test isomorphism directly, as this would require absolute knowledge of the reality of the real world. Rationalists therefore fall back on the strategy of eliminating all plausible alternative explanations. Thus, a consequence of the rationalist approach is that hypotheses can never be directly confirmed (since t h e isomorphism test is not possible), but they can be refuted (by showing that a plausible alternative hypothesis has a high probability of being correct).

Nevertheless, the fundamental idea of isomorphism is useful, because in the naturalist's framework, the analogy of isomorphism to reality must be isomorphism to the respondents' perceptions (several realities existing in the minds of individuals). Thus, when it comes to establishing truth value, naturalist investigators are mainly concerned with testing the credibility of their results and interpretations with the various sources (audiences or groups) from which the data were obtained. The verification of credibility is often called "checking members**",** i.e. it consists of testing the data with the members of the groups, the sources of human data concerned. (Guba, 1981).

- **Applicability:** In the rationalist paradigm, applicability, or **external validity or generalizability**, requires that the investigation be conducted in such a way as to render chronological and situational variations irrelevant to the results. If this condition can be met, the conclusions will obviously be relevant in any context. Generalizations are considered to be durable, i.e. unchanging over time, as statements of truth that do not depend on context and are valid in any context. But Cronbach (1975) asserted that all generalizations "decay" like radioactive substances, having half-lives, so that after a certain time each generalization is "more historical than scientific". This judgment underlines the validity of the naturalist's hypothesis that rationalist generalizations are not possible because phenomena are intimately linked to the times and contexts in which they occur (Guba, 1981). However, these facts do not exclude the possibility of a certain **transferability** between two contexts because of certain essential similarities between them. To determine the extent to which transferability is likely, we need to know a great deal about the contexts of transfer and reception, to have what Geertz (1973) called a It is also

important to document the "in-depth" (or thick) description of each one. Yin (2003) suggests that qualitative researchers should document their case study procedures and as many of the steps in those procedures as possible. He also recommends the development of a detailed case study protocol and an extensive database (Creswell, 2009).

If the in-depth descriptions demonstrate an essential similarity between two contexts, then it is reasonable to assume that the tentative conclusions from context A are equally likely to apply to context B (although, to be sure, an empirical test should be carried out). For the naturalist, the analogous concept to generalization (or external validity) is therefore **transferability**, which itself depends on the degree of similarity (adequacy) between two contexts. The naturalist does not seek to formulate generalizations that are valid at all times and in all places, but to formulate working hypotheses that can be transferred from one context to another depending on the degree of adequacy" between the contexts. (Guba, 1981).

Table 2. Scientific and Naturalistic Terms Appropriate to the Four Aspects of Trustworthiness

Aspect	Scientific Term	Naturalistic Term
Truth Value	Internal Validity	Credibility
Applicability	External Validity Generalizability	Transferability
Consistancy	Reliability	Dependability
Neutrality	Objectivity	Confirmability

Source: (Guba, 1981, p. 80)

Consistancy: In the rationalist paradigm, the concern with consistency [2] stems from the fact that instruments must produce stable results if they are to be meaningful. Validity is a direct function of reliability (Guba, 1981) [3]. The naturalist is also concerned about consistency, and for the same reasons; naturalistic instruments, like rationalistic instruments, are unlikely to produce credible (the equivalent of valid) results if they lack consistency. However, coherence is a more complex concept for the naturalist than for the rationalist. The latter, believing in a single reality on which the investigation converges, can consider all the deviations instrumental as an error, but the

[2] **Consistency** in comparative qualitative analysis (CQA) is a key criterion for assessing the validity and robustness of a study's conclusions. It refers to the repetition of patterns or configurations found in different case studies or contexts. More specifically, a qualitative comparative analysis is considered consistent if the same combinations of conditions lead to the same result in different case studies, thereby increasing confidence in the conclusions and the validity of the approach.

[3] **Validity and reliability** are two essential concepts in research and measurement, and they a r e often linked, but they represent different aspects. **Validity** refers to the extent to which a research instrument or measurement method actually measures what it claims to measure. In other words, it examines whether a study accurately measures what it purports to measure, and whether the conclusions and results of the study are accurate and relevant to the research questions posed. A study can be considered valid if it reliably measures the phenomenon or variable of interest. **Reliability** refers to the consistency and stability of the results of a measurement or research method. If a measurement is reliable, it should produce consistent and reproducible results when the same measurement is used repeatedly under similar conditions. A measurement is considered reliable if it is not subject to random error and if it provides consistent results.

naturalist, believing in a multiple reality using human beings as instruments that change not only because of "error" (e.g. fatigue) but also because of evolving ideas and sensitivities, must consider the possibility that some of the instabilities observed are real. (Guba, 1981).

- **Neutrality:** Neutrality is commonly referred to as **objectivity** in the rationalist paradigm (Guba, 1981). Objectivity is generally opposed to subjectivity (Lincoln and Guba, 1985). Objectivity is presumed to be guaranteed by the methodology; if the methods are explicit, open to public scrutiny, reproducible, where the investigator has no direct contact with the subject, then objectivity is assured (i.e. investigator bias is effectively eliminated) (Guba, 1981).

In this sense, the usual criterion of objectivity is intersubjective agreement; if several observers can agree on a phenomenon, their collective judgement can be considered objective. What several individuals experience is objective and what a single individual experiences is subjective (the quantitative sense of objectivity). Another conventional approach to the problem of establishing objectivity is that of methodology; this involves using methods which, by their very nature, protect the study from contamination by human weaknesses (Lincoln and Guba, 1985). The conventional concept of objectivity can be considered from three angles:

a) Objectivity exists when there is an isomorphism between the data in a study and reality.
b) Objectivity exists when an appropriate methodology is used to maintain an adequate distance between the observer and the observed.
c) Objectivity exists when the survey is value-free (Lincoln and Guba, 1985).

In the social sciences, it is well known that cultural and ethnic biases can be built in. Naturalists are particularly aware of this problem because they understand the multiple realities that can be encountered (including multiple value systems) and the role that their own predispositions can play when they see themselves as instruments. For Scriven (1972), naturalists shift the burden of neutrality from the investigator to the data, demanding proof not of the certifiability of the investigator or his methods, but of the confirmability of the data produced (the qualitative sense of objectivity). (Guba, 1981).

Inquiry can be affected by:	**Which produce effects of:**	**To guard against which we:**	**In hope this action will lead to:**	**And produce findings that are:**
Masking or competing factors	Confounding	Control and / or randomize	Internal Validity	Contamination-proof
Situational	Atypicality	Require		

Table 3. The rationalistic Treatment of Trustworthiness

variations		probability sampling	External Validity	Context-proof
Instrumental drift or decay	Instability	Replicate	Reliability	Inconsistency-proof
Investigator predilections	Bias	Insulate the investigator	Objectivity	Investigator-proof

Source: (Guba, 1981, p. 82

Example of reading line 1 as suggested by Guba (1981): The survey may be affected by masking or competing factors, which produce confounding effects, against which we control and/or randomize, in the hope that this action will lead to internal validity and produce results free from contamination.

4. The question of reliability in the naturalistic paradigm

The investigation may be affected by patterns of factors. These patterns may include causal relationships, associations, interdependencies or other correlation models between variables or factors under investigation, which produce unintelligibility effects. To take account of this, during the study Guba (1981) advocates prolonged engagement, persistent observation and peer debriefing, triangulation, referential adequacy materials and member checks. Once the study is complete, structural corroboration and member checks are carried out in the hope that these actions will lead to credibility and produce plausible results.

Table 4. The naturalistic Treatment of Trustworthiness

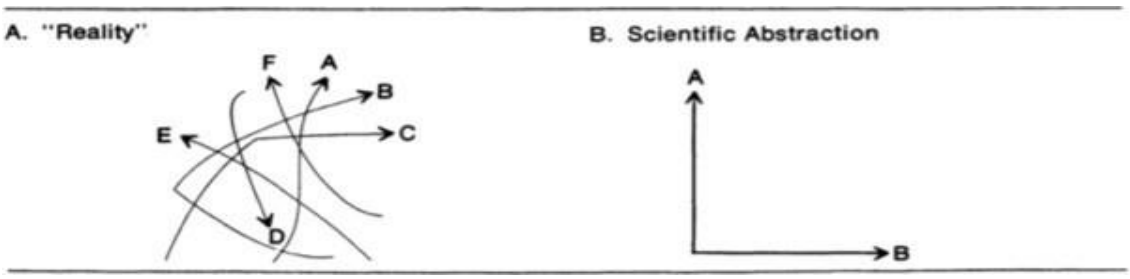
		To take account of which we:			
Inquiry can be affected by	**Which produce effect of:**	**During**	**After**	**In the hope these actions will lead to:**	**And produce finding that are:**
Factor patterning	Noninterpretability	Use prolonged engagement. Use persistent observation. Use peer referential adequacy materials. Do member check.	Established structural corroboration (coherence). Established referential adequacy. Do member checks.	**Credibility**	Plausible
Situational uniquenesses	Noncomparability	Collect thick descriptive data. Do theoretical / purposive sampling.	Develop thick description.	**Transferability**	Context-relevent
Instrumental changes	Instability	Use overlap methods. Use stepwise replication. Leave audit trail.	Do dependability audit (process).	**Dependability**	Stable
Investigator		Do	Do	**Confirmability**	Investigat

predictions	Bias	triangulation. Practice reflexivity.	confirmability audit (product).		or-free

Source: (Guba, 1981, p. 83)

1. Credibility. Whereas rationalists are concerned with guarding against masking or competing factors (sources of error) which are expected to disrupt (confound) the investigation, naturalists wish to take account of the bewildering array of interlocking factors with which they are confronted, and which pose formidable problems of interpretation. The rationalists' solution to this problem is to abstract several variables of particular interest, relegating the rest to the status of controlled or random variables. The naturalists' solution is to treat the patterns in their entirety, but to take certain measures that take account of the complexity. The situation is very similar to that shown in Figure 1. The 'reality' of the situation is that many factors, having various relationships (correlations, as rationalists would say) with each other, form a 'whole' that cannot be understood if it is dissected. This is precisely what rationalists do: they select several variables and integrate them into a design which, by definition, considers them to be orthogonal (Figure 1B). Rationalists attach certain variables to the design (i.e. they place them in a specific relationship determined not by nature but by the design) and detach certain others (i.e. they treat variables linked in nature as if they were independent). This linkage/detachment is the ultimate effect of the rationalists' solution of control and/or randomization. (Guba, 1981).

Figure 1: Reality versus Scientific Abstraction: Tying and Untying variables



Source: (Guba, 1981, p. 84)

Naturalists reject this approach as detrimental to the phenomena they seek to understand. Instead, they adopt certain other procedures that nevertheless preserve the holistic situation. The naturalist's alternative methods and confidence criteria that can be used during the study include:

1.1 Prolonged involvement in a site also requires the interviewer to be involved in a site long enough to detect and take account of distortions that might otherwise creep into the data. First and foremost, the interviewer has to deal with personal distortions. The simple fact of being a 'stranger in a strange land' draws undue attention to the interviewer, with the over-reactions that this implies. Philip Jackson (1968) points out that during his year-long study in a Californian classroom - where he sat virtually every day - even his sneezing continued to attract attention until the end of the year, even though no one paid any attention to the sneezing of one of the 'regular' members of the class (Lincoln and Guba, 1985).

Spending an extended period on a site allows local people to adapt to the presence of researchers and to convince themselves that they do not represent a threat. Researchers have time to verify their own developing perceptions, for example by keeping diaries. If, six months after the start of the engagement on the site, the newspapers continue to mention the inhabitants and characterize their way of life in the same way, it is likely that the researchers continue to view the situation in terms of their initial predispositions and have learned nothing from their

presence on the site. Researchers must, however, be careful to avoid becoming excessively involved with the respondents, what anthropologists call 'going native' (Guba, 1981). The more time the researcher spends in the field, the more accepted he becomes, the more he appreciates the local culture, and the more likely it is that his professional judgements will be influenced. (Lincoln and Guba, 1985).

1.2 Persistent observation, to identify pervasive qualities as well as atypical characteristics. Prolonged interaction with a situation or environment enables researchers to understand what is essential or characteristic of it. At the same time, they learn to eliminate aspects that are unimportant while continuing to pay attention to those that, although atypical, are nonetheless essential (Eisner, 1979) (Guba, 1981). These objectives require the naturalist to continually engage in provisional labelling of factors considered salient, and then to explore them in detail, to the point where either the initial assessment is deemed erroneous, or the factors are thoroughly understood. To satisfy this reliability criterion, the naturalist must be able to describe in detail how this process of provisional identification and detailed exploration was carried out (Lincoln and Guba, 1985). Researchers must be able to demonstrate that they have spent sufficient time at the site to justify their characterization of it (Guba, 1981).

1.3 Peer debriefing, to allow researchers to test their developing ideas and confront in-depth questions. Researchers should regularly detach themselves from the site and seek interaction with other professionals able and willing to take on the debriefing function; for example, academic colleagues or members of a thesis committee. The researchers must present their reflections to this 'jury' of peers and deal with the questions they raise. Their (reflexive) diaries and their activities in the field must reflect a timely readjustment of the investigation, in line with the criticisms obtained during these debriefings (Guba, 1981).

Peer debriefing is a useful technique for establishing credibility. It involves exposing oneself to a disinterested peer in a manner parallel to an analytical session and with the aim of exploring aspects of the investigation that might otherwise remain implicit in the mind of the investigator. Such a debriefing serves multiple purposes. **Firstly**, from the point of view of credibility, the process keeps the investigator 'honest', by exposing him or her to the questions of an experienced protagonist who is doing his or her best to play devil's advocate. The debriefer's task is to ensure that the interviewer is as fully aware as possible of his or her position and process (remembering that if it is not possible to get rid of one's values, it is at least possible to be aware of the role they play) (Lincoln and Guba, 1985). **Secondly,** debriefing provides an initial and in-depth opportunity to test working hypotheses that may emerge in the mind of the interviewer. **Thirdly,** debriefing provides an opportunity to develop and initially test the next steps in the emerging methodological design (Lincoln and Guba, 1985). **Finally,** debriefing sessions provide the investigator with an opportunity for catharsis, clearing the mind of emotions and feelings that may cloud judgement or prevent the emergence of sound next steps (naturalistic enquiry is a solitary activity). (Lincoln and Guba, 1985).

1.4 Triangulation, in which different sources of data, different researchers, different perspectives (theories) and different methods are compared with each other in order to cross-check data and interpretations (Denzin, 1978). For example, no piece of information should be accepted unless it can be verified from at least two sources. As far as possible, the research team should be divided so that the perceptions of several researchers can be compared. Different theories should be applied to the data to provide alternative explanations that can be tested. Different methods, such as questionnaires, interviews and literature reviews, should be used where possible. In the field, cross-examination techniques should be used when reports from different informants are contradictory (Guba, 1981). Denzin (1978) suggested that there are four different modes of triangulation: the use of multiple and different sources, methods, investigators and theories (Lincoln and Guba, 1985).

1.5 A collection of referential matching materials, whereby documents, films, videotapes, audio recordings and other 'raw' or 'slice of life' data items are collected against which results and interpretations can then be tested (Eisner, 1979). So, for example, if the investigation is about teachers' behavior in the classroom, videotapes of actual classrooms can be made and stored. Later, when it is asserted that teachers behave in a particular way, this assertion can be verified by reference to the archives (Guba, 1981).

1.6 Member checks, whereby data and interpretations are continually tested as they are obtained from members of the various audiences and groups from which the data is sought. The process of member checking is the single most important action that interviewers can undertake, as it lies at the heart of the credibility criterion. The methods that can be used after the study has been completed are as follows:

1.6.1 Establish corroboration or structural consistency, i.e. test each piece of data and interpretation against all the others to ensure that there are no internal conflicts or contradictions. Of course, some data may be contradictory because they come from different sources, represent different points of view, etc. Interpretations must also take account of possible rival explanations and negative or deviant cases (Patton, 1980). Finally, the overall report or case study must demonstrate coherence, i.e. consistency, synchronicity, logic and unity (Guba, 1981).

1.6.2 Establish referential adequacy, i.e. test the analyses and interpretations made after completion of the field part of the study against the documents, recordings, films, etc. that were collected or specially produced for this purpose during the course of the study. Researchers must, within the limits of time and budget, have collected referentially adequate material during the course of the study. (Guba, 1981).

1.6.3 Member checks, i.e. testing the overall report or case study with the source groups before giving it its final form (Guba, 1981).

2. Transferability. Naturalists avoid generalizations on the grounds that virtually all social/behavioral phenomena are context-dependent. It is not possible, they believe, to develop statements of "truth" that have general applicability; rather, they must be content with descriptive or interpretative statements about a given context (Guba, 1981). In the course of a study, naturalists:

- **Purposive sampling** [4], i.e. sampling that is not intended to be representative or typical (such an objective focuses the investigator on similarities and only makes sense when attempting to generalize) but which aims to maximize the range of information discovered. The nature of the sampling process is governed by emergent ideas about what is important and relevant. (Guba, 1981).
- **Gather "thick" descriptive data** that will enable this context to be compared with other possible contexts to which transfer might be considered (Geertz, 1973). If transferability depends on a match of characteristics, it is up to the interviewers to provide the information

[4] Purposive sampling is a non-random sampling technique used in research where the researcher deliberately selects specific individuals, groups or cases based on predefined criteria relevant to the research objectives. The aim is to focus on participants who can provide valuable, in-depth information or represent unique perspectives related to the study objectives. This sampling method is often used in qualitative research, case studies and exploratory studies. By intentionally selecting participants with certain characteristics or experiences, purposive sampling allows researchers to collect rich, meaningful data that can effectively answer their research questions.

needed to test the degree of adaptation (Guba, 1981).

- **Once the study is complete, the naturalists will:** Develop a detailed description of the context to enable judgements to be made about suitability for other contexts. Investigators should provide, as an appendix to their reports or in a supplement accessible to interested parties, a full description of all contextual factors affecting the investigation (Guba, 1981).

3. Dependability. Naturalists are concerned about the stability of data but must take into account the apparent instabilities that can arise either because different realities are being explored, or because of instrumental changes arising from emerging ideas on the part of the investigator as instrument (Guba, 1981). Two measures are recommended to deal with these situations:

- **Overlapping methods,** a type of triangulation process in which different methods are used in tandem (Campbell & Stanley, 1963; Webb, Campbell, Schwartz, & Sechrest, 1966). This approach is generally advocated to overcome the invalidities of individual methods; two or more methods are combined in such a way that the weakness of one is compensated for by the strengths of the other. But it is clear that if similar results are found using different methods, the case for stability is also strengthened. This so-called 'multiple operations' survey strengthens both the credibility and stability arguments. The investigators had to be able to report on the use of several methods and to demonstrate that these methods had been chosen because they were complementary (among other possible reasons) (Guba, 1981).

- **Step-by-step replication,** analogous to the reliability of 'split-half' tests, in which two separate research teams (the original team split in two) deal separately with data sources that have also been split in two. However, due to the evolving nature of naturalistic designs, the two teams cannot be allowed to continue the investigation to completion until the results have been compared. Arrangements need to be made for communication between the teams at key stages, perhaps even on a daily basis, in order to cross-check developing knowledge and decide on appropriate next steps. These communication sessions should be properly documented. (Guba, 1981).

- **Investigative auditing,** Guba (1981), cites the example of a Price, Water house auditor is called in to audit the books of the General Electric Company, he has two responsibilities: (1) to examine the method of accounting by which GE's books are kept, to check that the method used is among those generally accepted by the accounting profession (i.e. to ensure that no 'creative accounting' has taken p l a c e), and (2) to certify that the 'bottom line' is correct, i.e. that there is supporting documentation (data) for each entry and that the addition (interpretation) is correct. As far as reliability is concerned, it is the first of these applications that is relevant, i.e. the examination of the method. For example, naturalists, in the course of a study:

- **Establish an "audit trail"** that will enable an external auditor to examine the processes by which the data was collected and analyzed, and the interpretations that were made. The audit trail takes the form of documentation (the interview notes taken, for example) and an account of the process (in the form of a daily diary kept by the investigator). After completing a survey, naturalists:

- **Organizes a "reliability" audit** by an external auditor - someone competent to examine the audit trail and comment on the extent to which the procedures used conform to generally accepted practice. It should be noted that such a reliability audit focuses primarily on the investigation processes (Guba, 1981).

4. Confirmability. Naturalists have moved on from the concept of the objectivity of the investigator to the concept of the confirmability of data (and interpretations). In the interests of confirmability, two of the measures that naturalists can take during a study are as follows:

- **Triangulation.** As already mentioned in relation to credibility, this means collecting data from different perspectives, using different methods and drawing on different sources in order to test an investigator's bias as rigorously as possible. Wherever possible, other researchers should also be involved. An investigator should provide documentation from at least two sources for each assertion; alternative possibilities and negative cases should be discarded, and so on (Guba, 1981).

- **Practicing reflexivity** [5]**,** Practicing reflexivity means "intentionally revealing to your audience the underlying epistemological assumptions that lead you to formulate a series of questions in a particular way, and finally to present its results in a particular way" (Ruby, 1980). An essential technique for practicing reflexivity is to keep a permanent diary in which introspections are recorded daily (Spradley, 1979); these introspections can then be tested during the peer debriefings already mentioned. Once the study is complete, the naturalists:

- **Organize a confirmability audit** which undertakes the second of the two audit tasks described above, i.e. an audit certifying that data exists to support each interpretation and that the interpretations have been made in a manner consistent with the available data. This type of audit focuses on the products of the survey and requires detailed documentation. The audit may be carried out at the same time by the same external agent responsible for carrying out the reliability audit.

Conclusion

Our article has provided enlightening answers to crucial questions about qualitative research approaches in the natural environment. By focusing on the methods and techniques adopted by naturalist researchers to faithfully reflect observed reality, we have helped to unveil a set of fundamental practices. Recommendations from eminent researchers such as Guba and Lincoln have highlighted the possibility of generating relevant knowledge under certain well-defined conditions. Data triangulation, peer review, reflective journaling and auditing, among other techniques, have been judiciously employed in qualitative research to ensure the validity and reliability of the results obtained. The concepts of credibility, transferability, reliability and, finally, confirmability have emerged as the pillars of coherent, controlled qualitative research. By focusing on these principles, we have demonstrated the quality and robustness of this research process in the context of qualitative research in the natural environment. It is important to note that this field continues to evolve. Other prominent researchers such as: Le Compte & Goetz (1982), Eisner (1991), Lather (1993), Wolcott (1994b), Angen (2000), Whittemore, Chase, & Mandle (2001), Richardson & St. Pierre (2005) (Creswell, 2013), have presented innovative approaches that complement or enrich the earlier work of Guba and Lincoln. Their contributions highlight the continuing vitality of naturalist research and the constant exploration of new avenues to strengthen the validity of our investigations.

In sum, our paper has not only answered essential questions about qualitative research in the natural environment but has also highlighted the crucial importance of following rigorous methodologies to ensure the reliability and validity of results. While celebrating the foundations laid by the forerunners of the field, we also embrace the opportunities offered by contemporary advances to keep our research at the cutting edge of scientific relevance.

[5] Reflexivity can be broadly described as qualitative researchers engaging in ongoing review and explanation of how they have influenced a research project. However, the extent to which researchers engage in reflexivity depends on the methodological approach they have adopted for their study. In the case of epistemological reflexivity researchers are required to ask questions about their methodological decision-making and are encouraged to reflect on epistemological decisions about the research and its outcomes (Dowling, 2008, p. 748).

References

Creswell, J. W. (2009). *Research Design, Qualitative, Quantitative and Mixed Methods Approches* Third Edition. SAGE, Éd. USA.

Creswell, J. W. (2013). *Qualitative Inquiry and Research Design*, Third Edition. SAGE, Éd. USA.

Diebel, A. E. (2008). *The SAGE Encyclopedia of QUALITATIVE RESEARCH METHODS* (Vol. 1 & 2). SAGE, Éd. USA.

Dowling, M. (2008). *The SAGE Encyclopedia of QUALITATIVE RESEARCH METHODS* (Vol. 1&2). SAGE, Éd. USA.

Guba, E.G and Lincoln, Y.S (1982). EPISTEMOLOGICAL AND METHODOLOGICAL BASES OF NATURALISTIC INQUIRY. *Educational Communications and Technology Journal, 4.30*, 233-252.

Guba, E.G and Lincoln, Y.S (1989). *Fourth Generation Evaluation.* SAGE PUBLICATIONS Edition. London.

Guba, E. G (1981). Criteria for Assessing the Trustworthiness of Naturalistic Inquiries. *Educational Communication and Technology, Vol. 29, No. 2 (*Summer, *1981), pp. 75-91 Published by: Springer*, 75-91.

Guba, E.G and Lincoln, Y. S (1985). *Naturalistic Inquiry*. SAGE Publication Edition. London.