

Demystifying nursing research terminology. Part 1

Cite this article as: Welford C, Murphy K, Casey D (2011) Demystifying nursing research terminology. Part 1. *Nurse Researcher*. 18, 4, 38-43.

Received February 12 2010; accepted October 29 2010

Correspondence to Claire Welford
Email: claire.welford@nuigalway.ie

Claire Welford RGN, Dip NS,
BNS Hons, MSc, PGC TLHE is
HRB nursing research fellow

Kathy Murphy RGN, BA(Hons),
RNT, DipNurs, MSc, PhD is
head of school

Dympna Casey RGH, BA, MA,
PhD is senior lecturer

All at the School of Nursing and
Midwifery, National University of
Ireland, Galway, Ireland

Abstract

Aim This article aims to provide clear explanations of the research approaches available for nursing research.

Background There are numerous research approaches available to the nurse researcher. There is also some ambiguity in the literature in relation to research terminology and this often leads to confusion about which approach to adopt.

Data sources A review of the available and most up-to-date literature.

Discussion The most commonly adopted approaches in nursing research are described and discussed.

Conclusion This article explains the research paradigms and the rationales for choosing particular paradigms while part two will provide an explanation of the methodological options available to the researcher. A table is included that summarises the key information related to each paradigm.

Implications for practice/research These articles will be particularly useful for the novice researcher or for the doctoral student.

Keywords

Paradigms, research strategies, research methodologies, nursing research

Introduction

There are many research paradigms, methodologies and strategies available to nurse researchers. As research evolves, more and more approaches are being added to this mixed bag of options. One of the first requirements when planning research is to establish which paradigm and subsequently which methodology or strategy can best answer the research question. This can be a daunting task for novice researchers because there are many conflicting definitions of approaches published and terminology is often used interchangeably. The aim of these articles is to present an overview and explanations of the approaches most commonly used in nursing and healthcare research. They also aim to remove some of the confusion and ambiguity that the novice researcher might face when considering the many options.

Research paradigms

Paradigms are sets of practices and beliefs. They are characterised by ontological, epistemological and methodological differences in their approaches to

research and contribution to knowledge. According to Denzin and Lincoln (1994), 'ontology' questions what is the real world and what can be known about it, 'epistemology' questions the relationship between the knower and what can be known, and 'methodology' questions how researchers can go about finding out what they believe can be known. Thus the researcher's ontology directs the epistemology and subsequently the methodology, and the paradigm provides a framework or a lens through which to view or accomplish an investigation. A paradigm may also be referred to as a 'disciplinary matrix', 'research tradition' or 'worldview' (Allen *et al* 1986).

Weaver and Olson (2006) suggested that there is no single paradigm superior to the others, but that different paradigms can inform different aspects of nursing practice, the choice of research paradigm often being guided by the state of knowledge about a particular area of nursing. There are many paradigms recognised in nursing research. Denzin and Lincoln (1994) described six main paradigms: constructionism, interpretivism, feminism,

positivism, post-positivism and critical theory. Creswell (2003) preferred to consider paradigms as theoretical perspectives and described four: post-positivism, participatory/advocacy, social constructionism and pragmatism. Weaver and Olson (2006) also described four paradigms: positivism, post-positivism, critical social theory and interpretivism. For this article, we decided to describe these paradigms using Crotty's (1998) framework, which categorises a paradigm according to its theoretical perspective, its ontology, its epistemology, its methodology and its method:

- The theoretical perspective or philosophical stance lies behind the methodology in research questions and can include positivism, post-positivism, interpretivism, critical theory and others.
- The ontology challenges the researcher to consider what world they believe in.
- The epistemology is concerned with the theory of knowledge embedded in the theoretical perspective. It informs the research and can include objectivism, subjectivism and others.
- The methodology is the strategy or plan of action that links methods to outcomes and governs the choice of methods. Methods are the techniques and procedures and might include questionnaires, interviews and focus groups.

Using Crotty's (1998) framework, we developed a summary table (Table 1) to demonstrate how these categories are linked. It is not an exhaustive list of categories but an example of the more commonly adopted approaches so serves as an 'at a glance' summary. The most frequently adopted paradigms will now be discussed.

Positivism

Positivists adopt an ontology that assumes that the world is 'real', ordered and regular (Young 2008) and that reality is driven by immutable natural laws and mechanisms (Denzin and Lincoln 1994). Hesse (1980) stated that the positivist paradigm is reductionist and deterministic. The researcher using this paradigm strives for objectivity and uses measurement to test hypotheses (Young 2008). Maintaining tight control over the context of the problem allows the researcher to make generalisations about the concepts being studied (Young 2008).

Positivism uses scientific methods of enquiry to describe and predict patterns in the physical world (Suppe and Jacox 1985). Theory is established deductively through formal statistical testing of hypothesis (Lincoln and Guba 1985). The goal of

positivist research is thus control and prediction (Weaver and Olson 2006).

According to Reason and Bradbury (2008), positivists are traditionally committed to a view of scientific neutrality – in other words, the researcher separates the facts from their values. Epistemologically, positivists are wedded to an individual vision of the world, in which individuals are believed to have their own minds and this determines behaviour (Reason and Bradbury 2008). Positivists are objective or dualist and maintain that there should be separation between those who study reality and those who experience it (dualism). Gaventa and Cornwall (2008) argued that this epistemological view can distort the 'real' world view that positivists hold. However, Guba and Lincoln (1994) stated that it is this objectivity that enhances its credibility because scientific neutrality requires the researcher to separate the facts from their values.

The methodological approaches for positivist research are scientific in their enquiry. Methods include questionnaires and experiments. Some have argued that this approach makes participants the objects of another's enquiry rather than subjects of their own (Gaventa and Cornwall 2008). Denzin and Lincoln (1994) stated that positivist research designs involve early identification and development of the research question, development of a set of hypotheses, choice of a research site and establishment of sampling strategies, research strategies and methods of analysis.

Post-positivism

Post-positivism refers to a research paradigm that was developed after positivism was developed. Post-positivists challenge the idea that there is 'absolute' truth of knowledge (Phillips and Burbules 2000). Ontologically, the post-positivist paradigm maintains that reality can never be completely known. The epistemology of post-positivism is objective and knowledge is sought through replication (Weaver and Olson 2006).

As with positivism, the goal of post-positivist research is control and prediction, and theory is established deductively. However, post-positivist research focuses on falsifying hypotheses (Lincoln and Guba 1985) and Campbell and Russo (1999) stated that post-positivism, unlike positivism, recognises that discretionary judgement is unavoidable in science, that proving causality with certainty in explaining social phenomena is problematic and that knowledge is relative rather than absolute. Denzin and Lincoln (1994) stated that post-positivist research attempts to respond in a limited way to the criticisms of positivist research.

Table 1 Explaining research approaches using Crotty's (1998) framework

Research question	Paradigm/ theoretical perspective	Ontology	Epistemology
What is the truth? What is a plausible What can we establish with certainty?	Positivism.	'Real' ordered and regular world.	Objective/ dualist.
What causes or influences outcomes?	Post-positivism.	Reality can never be fully known.	Objective.
How have people in this setting constructed reality? What are the consequences?	Constructionism.	Local and specific constructed realities. Sociological. The human world. Emancipatory. Relativity.	Subjective.
How do people cope, deal with or describe their situations?	Pragmatism.	Practical world/ . situational responsiveness.	Subjective/ practical.
What is the culture of this group of people?	Interpretivism.	People and culture.	Subjective.
What is the meaning of the lived experience of this phenomenon for this group of people?	Interpretivism/ pragmatism.	The lived experience.	Objective/subjective.
What can participants reveal to generate a theory?	Interpretivism.	Open to new ideas – no fixed assumptions.	Objective/ pragmatic.
How can understanding and meaning from multiple perspectives explain an experience?	Interpretivism/ constructionism.	Individuals attach meaning to their actions.	Multiple perspectives.

Patton (2002) described the post-positive approach as using empirical evidence to distinguish between more and less plausible claims and to test and choose between rival hypotheses. Methodologically, post-positivists do not place as much emphasis as the positivists on early design of strategies and methods, but this approach allows the research to shape its own journey (Denzin and Lincoln 1994). As with positivism, post-positivism uses controlled research methods, precise instrumentation and empirical testing (Guba and Lincoln 1994). Pearson (1990) argued that post-positive research neglects the 'whole' person by studying the parts, but Schumacher and Gortner (1992) argued that post-positive research attempts to address holism.

Interpretivism

Interpretivists emphasise understanding the 'meaning' individuals place on their actions (Weaver and Olson 2006). Mutual recognition between the researcher and the participant is fostered and valued (Horsfall 1995). Phenomena are studied through the eyes of the people in their lived situations and interpretivism assumes multiple situated realities in which context gives meaning to phenomenon (Weaver and Olson 2006).

Ontologically, interpretivism is about 'truth' being viewed from multiple perspectives and multiple realities that are holistic, local and specific (Forde-Gilboe *et al* 1995). With regards to epistemology, it has been argued that this creates

Methodology	Methods
Experimental, manipulative, scientific verification of hypotheses.	Quantitative, such as experiments and surveys. Strong focus on reliability and validity.
Measurement of objective reality. Testing hypotheses.	Numerical observations. Experiments, surveys and more.
Action research, case study, mixed methods.	Qualitative and quantitative approaches, such as interviews, observations and questionnaires, triangulation, reflection and intervention.
Different methods are appropriate for different situations – mixed methods.	Qualitative and quantitative approaches, such as interviews, observations and questionnaires.
Ethnography. Case study.	Participant observation and field notes. Interviews.
Phenomenology.	In-depth interviews. Narratives.
Grounded theory.	In-depth and open interviews.
Case study.	Multiple, including interviews, observations, documentary analysis and questionnaires.

a paradox of how to develop an objective science from subjective experience (Denzin and Lincoln 1994). Rabinow and Sullivan (1987) stated that this paradox can be overcome by denying the opposition of objectivity and subjectivity. In other words, objectivity and subjectivity do not need to be separated but can exist together.

Weaver and Olson (2006) stated that the goal of interpretive research is to understand and find meaning in experience from multiple perspectives. Thus, theory emerges inductively. Methodologically, it has many options, such as case study, phenomenology and grounded theory. It can employ methods that can reveal these multiple perspectives, such as observations and interviews,

and can combine qualitative with quantitative approaches. According to Morse and Field (1995), interpretive research recognises that the participant is the expert and that there is no single ultimate or correct interpretation of reality. Hypotheses can be formulated and tested to generate theory and established theory is sometimes used to explain the research data.

Pragmatism

Derived from the Greek word for action, pragmatism is about determining the value of an idea by its outcome in practice. It calls for a theory to be designed and tested in practice (Weaver and Olson 2006). According to Creswell (2003), there are many

forms of pragmatism but the main aim is for claims to knowledge to arise out of actions, situations and consequences. Ontologically, pragmatism recognises the existence and importance of the natural or physical world and has a high regard for the reality of and influence of the inner world of experience in action (Johnson and Onwuegbuzie 2004). Murphy (1990) explains that in pragmatism the 'truth' value of an expression is determined by the experiences or practical consequences of belief in, or use of, the expression. In other words, there may be academic definitions or explanations of a concept but how it is understood or applied in everyday practice is what pragmatism is about. Johnson and Onwuegbuzie (2004) stated that pragmatists consider empirical and practical consequences in judging ideas and take an explicitly value-oriented approach to research. Johnson and Onwuegbuzie (2004) also stated that epistemologically, pragmatism rejects traditional dualism and generally prefers more moderate and commonsense versions of philosophical dualisms based on how they work in solving problems (interactions between the subject and the object). Creswell (2003) stated that pragmatists are interested in 'what works'.

Patton (2002) added that pragmatism allows the researcher freedom with methodological choices; methodological decisions are made according to their appropriateness for answering the research question and multiple methods can be used to gather data. Pragmatism is not committed to any one system of philosophy or reality and applies mixed methods of qualitative and quantitative forms of enquiry (Creswell 2003). Weaver and Olson (2006) supported this and stated that a pragmatic approach can move nursing beyond the boundaries and restrictions of a single paradigm towards theory construction tailored to fit particular situations.

Mertens (2003) argued that pragmatism may fail to answer the question: 'For whom is a pragmatic solution useful?' However, Johnson and Onwuegbuzie (2004) stated that pragmatists view theories instrumentally – they become true and they are true to different degrees and to different people based on how well they work. Workability is judged on the criteria of predictability and applicability.

Constructionism

Social constructionism is principally concerned with explaining the processes by which people come to describe, explain or otherwise account for the world, including themselves (Gergen 1985). Furthermore, Gergen (1985) stated that these forms of understanding are of critical significance in social life, as they are integrally connected with many other

activities in which people engage. Constructionists believe that human beings have evolved the capacity to construct and interpret reality (Patton 2002).

Ontologically, constructionists believe that reality is ongoing, dynamic and reproduced by people acting on their interpretations and their knowledge of it. Epistemologically, constructionists are subjective. This becomes important in social and nursing research when the researcher wishes to gain an understanding of how a phenomenon is interpreted and implemented in practice. Crotty (1998) asserted that the focus of constructionism is the collective generation and transmission of meaning. It is concerned with the study of social institutions, issues of power and alienation and envisioning new opportunities (Gillis and Jackson 2002). The researcher works in a group or community, respects the expertise of the participants and collaborates with them to bring about change. It is emancipatory but the focus is on the process not the product (Thorne *et al* 1999). Research becomes a means for taking action and a theory for explaining how things could be.

Combining action and reflection, this paradigm enables research to bring about transformation (Mill *et al* 2001). Theory and knowledge are illuminated through shared meanings of social interactions. Thus a major focus of social constructionism is to uncover the ways in which individuals and groups participate in the creation of their perceived social reality. Methodologically, it generally uses action research methods and will triangulate between qualitative and quantitative approaches. Specifically, it enables the researcher to look at the ways social phenomena are created, institutionalised and made into tradition by humans.

Rationale for choosing a research paradigm

Weaver and Olson (2006) stated that the practice of situating research in paradigms, as well as the knowledge resulting from research processes, must be considered in the light of its ability to advance the social mission of nursing and to enhance health and wellbeing.

While there may be no consensus on which paradigm is particularly appropriate for nursing research, it is important to remember that this is largely to do with different research questions being developed by researchers with different beliefs. If we imagine the paradigms on a continuum with positivism on the far right and constructionism on the far left, we gain a sense of what they mean. The continuum moves from an objective positive epistemology towards a subjective one; somewhere

in the middle of this continuum are the practical and dualist views. Similarly, the continuum moves on the right from an ontological view of a real, ordered and structured world to a world of multiple realities constructed by humans; somewhere in the middle is the ontology that the world is practical and situationally responsive. This imagery of a continuum is useful for the researcher when attempting to frame the research. If the research question requires experiments, testing hypotheses, conducting surveys or making correlations then the paradigm will be positivism, which believes in a real ordered and regular world. If the researcher wishes to understand the lived experience then interpretive or pragmatic paradigms will underpin the research. If, however, the researcher wishes to understand how participants construct their realities, attach meaning to their worlds and subsequently introduce ways that can improve this experience then the research will be constructionist in its theoretical

underpinnings. Crotty's (1998) framework suggests that once the theoretical perspective or paradigm has been established, the researcher can choose the methodology that best meets its epistemological and ontological beliefs and subsequently answers the research question.

Conclusion

The first part of this article has focused on the nursing research paradigms available to the researcher. It has served to orientate the reader to the options available and furthermore contributed to demystifying the sometimes confusing and conflicting terminologies used in nursing research. The next article in this two-part series focuses on the research methodologies and strategies that are available to the researcher subsequent to having established the appropriate paradigm. Both of these steps are integral to undertaking good, clear research that is planned around its theoretical underpinnings.

Online archive

For related information, visit our online archive of more than 6,000 articles and search using the keywords.

This article has been subject to a double-blind review and checked using antiplagiarism software

References

- Allen D, Benner P, Diekelmann NL (1986) Three paradigms for nursing research: methodological implications. In Chinn P (Ed) *Nursing Research Methodology: Issues and Implementation*. Aspen, Rockville MD, 22-38.
- Campbell DT, Rosso MJ (1999) *Social Experimentation*. Sage Publications, Thousand Oaks CA.
- Creswell JW (2003) *Research Design: Qualitative, Quantitative and Mixed Methods Approaches*. Second edition. Sage Publications, Thousand Oaks CA.
- Crotty M (1998) *The Foundations of Social Research: Meaning and Perspective in the Research Process*. Allen & Unwin, Crows Nest, New South Wales, Australia.
- Denzin NK, Lincoln YS (1994) *Handbook of Qualitative Research*. Sage Publications, Thousand Oaks CA.
- Forde-Gilboe M, Campbell J, Berman H (1995) Stories and numbers: coexistence without compromise. *Advances in Nursing Science*. 18, 1, 14-26.
- Gaventa J, Cornwall A (2008) Power and knowledge. In Reason P, Bradbury H (Eds) *The Sage Handbook of Action Research: Participative Inquiry and Practice*. Second edition. Sage Publications, London, 172-189.
- Gergen KJ (1985) The social constructionist movement in modern psychology. *American Psychologist*. 40, 3, 266-275.
- Gillis A, Jackson W (2002) *Research For Nurses: Methods and Interpretation*. FA Davis, Philadelphia PA.
- Guba EG, Lincoln YS (1994) Competing paradigms in qualitative research. In Denzin NK, Lincoln YS (Eds) *Handbook of Qualitative Research*. Sage Publications, Thousand Oaks CA, 105-117.
- Hesse M (1980) *Revolutions and Reconstructions in the Philosophy of Science*. Indiana University Press, Bloomington IN.
- Horsfall JM (1995) Madness in our methods: nursing research, scientific epistemology. *Nursing Inquiry*. 2, 1, 2-9.
- Johnson RB, Onwuegbuzie AJ (2004) Mixed methods research: a research paradigm whose time has come. *Educational Researcher*. 33, 7, 14-26.
- Lincoln YS, Guba EG (1985) *Naturalistic Inquiry*. Sage Publications, Newbury Park CA.
- Mertens DM (2003) Mixed methods and the politics of human research: the transformative-emancipatory perspective. In Tashakkori A, Teddlie C (Eds) *Handbook of Mixed Methods In Social and Behavioral Research*. Sage Publications, Thousand Oaks CA, 135-164.
- Mill JE, Allen MN, Morrow RA (2001) Critical theory: critical methodology to disciplinary foundations in nursing. *The Canadian Journal of Nursing Research*. 33, 2, 109-127.
- Morse JM, Field PA (1995) *Nursing Research: The Application of Qualitative Approaches*. Second Edition. Chapman & Hall.
- Murphy JP (1990) *Pragmatism: From Peirce to Davidson*. Westview Press, Boulder CO.
- Patton MQ (2002) *Qualitative Research and Evaluation Methods*. Third edition. Sage Publications, Thousand Oaks CA.
- Pearson A (1990) *Nursing: From Whence to Where?* Deakin University Press, Victoria, Australia.
- Phillips DC, Burbules NC (2000) *Postpositivism and Educational Research*. Rowman & Littlefield, Lanham MD.
- Rabinow P, Sullivan WM (1987) *The Interpretive Turn: A Second Look*. University of California Press, Berkeley CA.
- Reason P, Bradbury H (Eds) (2008) *Handbook of Action Research: Participative Inquiry and Practice*. Sage Publications, London.
- Schumacher KL, Gortner SR (1992) (Mis) conceptions and reconceptions about traditional science. *Advances in Nursing Science*. 14, 4, 1-11.
- Suppe F, Jacox AK (1985) Philosophy of science and the development of nursing theory. *Annual Review of Nursing Research*. 3, 241-267.
- Thorne SE, Kirkham SR, Henderson A (1999) Ideological implications of paradigm discourse. *Nursing Inquiry*. 6, 2, 123-131.
- Weaver K, Olson JK (2006) Understanding paradigms used for nursing research. *Journal of Advanced Nursing*. 53, 4, 459-469.
- Young PK (2008) An examination of five approaches to nursing education research. *Nursing Education Perspectives*. 29, 2, 94-99.