

Quality in qualitative methods

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Abstract

This paper briefly considers the role for qualitative methods in presence research and discusses underlying issues in the use of such an approach. We conclude by suggesting that the qualitative work in presence may be enhanced by the adoption of rigour criteria akin to those employed in the social sciences and outline a set of such criteria.

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1. Introduction

A small but rewarding body of presence research has espoused qualitative methods, preserving the rich, situated and varied nature of experiential data in the construction of an account which nonetheless adds to the general understanding of the phenomena of presence. The domains in which qualitative methods have been applied include applications as varied as Martian geology, games and navigation in virtual cityscapes. Researchers have variously proposed – to take just a few extant examples - that a qualitative approach:

- *places emphasis upon description rather than explanation, and attempts to represent reality as experienced by participants and overcomes many of the limitations [in constraining participants' responses] of other, more-structured quantitative work [1, pp.435 and 436];*

and serves

- *to shed light on how participants subjectively characterized [the phenomena of interest] which could inform further explorations [2, p.1];*
- *to gain substantial insight into [a] phenomenon and its relationship to other factors [3, p. 415];*
- *to contextualize these [quantitative] findings [4, p.128];*
- *to indicate where (and sometimes why) [a user performance issue] occurred [5, p.418];*

We believe qualitative methods merit wider application. The material that follows is intended as a resource in support of this, both for the reporting of qualitative material and the reviewing of its significance. We discuss the nature and underlying assumptions of qualitative methods, then turn to the question of rigour.

This introductory section distinguishes qualitative *data* from qualitative *analysis*, takes a brief glance at the epistemological position of qualitative work, and disentangles the quantitative/qualitative dichotomy from the subjective/objective divide.

2. Qualitative data and qualitative analysis

Qualitative data including transcripts of interviews, concurrent verbalisations, written commentaries, notes of observations, sketches and sketch maps, video records and so forth is quite commonly analysed using *quantitative* techniques. Quantitative content analysis for example, is widely applied in many disciplines and entails coding, counting and often statistical analysis and comparison. (Note that coding is also used by qualitative researchers, but more as a means of organising and interpreting a mass of data than as a basis for quantitative comparison). Further, most avowedly qualitative reports adopt loose quantitative terms such as 'most interviewees', or 'a few concerns'.

The matrix below illustrates the various qualitative/quantitative possibilities. The discussion here owes much to Bernard [6], from where the matrix is redrawn.

		Data	
		Qualitative	Quantitative
Analysis	Qualitative	a	b
	Quantitative	c	d

Cell **a** represents qualitative data analysed qualitatively, typically (but not exclusively) taking an interpretivist position. An analysis, for instance, of interview data which elicits how participants make sense of BIPs (breaks in presence), perhaps focussing the interplay of technological and real-world frames of reference would fall into this category. It is the type of study which is the focus of the remainder of this paper.

However, the same interview data analysed quantitatively would fall into cell **c**. A simple quantitative analysis here might count and compare instances of technological and real-world descriptors, or a more sophisticated cluster analysis might be performed.

Cell **b** in Bernard's matrix relates to the interpretation of, and ascription of meaning to, quantitative results: typically the discussion section of a research report.

Finally, cell **d** is the familiar, often statistically-based, analysis of questionnaire results (excluding open-ended responses), physiological data, experimental results and so on. To return to our BIPs example, an analysis might be conducted of the relationship between number of BIPs experienced and scores for sense of presence from a standard presence questionnaire.

This being said, qualitative researchers themselves differ widely on the boundaries of their chosen approach. Research is rarely – if ever – wholly quantitative or wholly qualitative. For our purposes here, we consider qualitative research in presence to be where – as in cell ‘a’ of the above matrix – qualitative data has been collected and the analysis takes a descriptive form, which may or may not include the use of comparative or loosely quantitative vocabulary.

2.1 Epistemological positions in qualitative studies

Most qualitative studies adopt an interpretivist paradigm, but this is not always the case, as we discuss below. Interpretivist approaches have their roots in the social sciences and are directed towards understanding how the intricacies of how relationships between features of interest work, how participants perceive, attribute meaning to, and account for the experiences and events which befall them. The previous example of how people make sense of breaks in presence in a specific VE setting is typical here. Such studies are, therefore, necessarily context-bound and accordingly the criteria for their validity do not concern generalisability, but address various aspects of the fidelity of the interpretation to the data. Interpretivist work typically draws on a small number of cases – often single cases – but provides particularly careful description of analytic procedures supported by generous illustration from the primary material. Grounded theory will be familiar to many readers as the best documented instance of a structured approach to interpretivist research.

Qualitative research in the positivist tradition, however, seeks to establish what consistent causal relationships or patterns exist in the domain of interest, the criterion for validity being the generalisability of conclusions. The ultimate aim is to establish universally applicable theories and relationships, which are objectively true, and are independent of the values of the researchers involved. Spagnoli *et al.* [7] provides an example. While this is primarily a proposal for the adoption of discourse and interaction analyses in presence research, the authors illustrate their argument through data from several studies identifying recurrent patterns of action taken by participants in a VE, their orientation to local and cultural resources and the relationship to the sense of presence engendered.

These theoretical debates notwithstanding, many researchers in the area of the human aspects of new technologies are relaxed about combining these radically differing epistemologies. There are not infrequent instances of interpretivist work undertaken as a prelude to hypothesis

generation and testing, for example, just as quantitative surveys may follow initial qualitative investigations. Further, the strong interpretivist position that research findings are always partial, situated and relative, [12] does not prevent interpretivist researchers from the careful, heavily qualified consideration of how their conclusions may extrapolate to other contexts.

2.2 Objective and subjective techniques

Finally, while most objective techniques, such as the monitoring of physiological responses, generate quantitative data, others, such as the description by an observer of movement in a VE may result in qualitative material. Similarly, the data obtained from subjective techniques may be quantitative (e.g. responses to rating scales) or qualitative (e.g. open ended responses or commentaries). As noted above, the qualitative material may subsequently be quantified by categorisation and counting.

3. Rigour and quality

The nature of rigour in qualitative research is contested, indeed characterised by Denzin and Lincoln [8] as a “crisis of legitimisation”. As we have observed, much qualitative research is fundamentally different from quantitative research, in epistemological assumptions, techniques adopted, reporting practice and the position of the researcher. It must, therefore be conducted, read and evaluated against a different set of criteria. Qualitative work in the positive tradition, makes claims for rigour through mechanisms which parallel those adopted in quantitative studies. Broadly, these aim to address the representativeness of the data gathered and thus the generalisability of the conclusions made. Studies in this vein take care to select study samples which reflect the general population and contexts of interest, to check consistency of participant responses (for example) against corresponding data from other sources (for example interview data against questionnaire data), and may buttress conclusions drawn from qualitative analysis with quantitative material. Data may also be analysed from across a large corpus of material acquired from similar contexts.

The legitimisation of interpretative qualitative work, by contrast, is concerned rather with matters of completeness, detail, fidelity and accuracy: does the analysis accurately reflect issues from the source material and how far have the analyst’s own theoretical stance and role in the data gathering process influenced the data itself and its interpretation and discussion? Have the details which ground the conclusions in the particular context been preserved? This is why rigorous reports from this school of analysis are so heavily illustrated by raw data, so that readers may make their own assessments of the validity of the analyst’s interpretation. For the same reasons, the interviewer’s questions or similar interventions are often retained in any transcripts or other media presented, and where personal characteristics such as gender or other

aspects of the researcher-participant relationship may have influenced participants' behaviour this is noted explicitly.

Many discussions of interpretive qualitative methods propose specific criteria by which quality may be judged. The composite list below is largely drawn from [9, 10, 11, 12] and focuses on issues of relevance to presence research. Following Gaskell and Bower [11], each criterion is classified either as an indicator of confidence (c) that the research data exists as reported and that the grounds for interpretations made can be identified, or of the relevance (r) and usefulness of the findings in support of the theoretical framework adopted or as new insights into the domain of interest.

- Evidence of prolonged engagement with the data, reflexively reviewing and re-reviewing its interpretation (c).
- Triangulation, whether through the use of multiple data sources, multiple methods or multiple researchers (c). In the presence context, such sources/methods might include written and graphic accounts of a VE or its real-world counterpart, interviews, the analysis of participants' behavioural responses from video recordings and so forth. It is always good practice for the analysis and, particularly, coding of material to be cross-checked for consistency between researchers. [2] provides an illustration of complementary methods – content and thematic analysis – and notes “credibility checks’ by an additional researcher.
- Thick description, providing as much detail as possible as to the context of data collection and the local context of data extracts, so that a judgement can be made as to how far the findings may transfer to other settings (c, r). Relevant material here would include the time interval between experiencing a VE and describing that experience, whether participants were interviewed individually or in a group, the instructions given to participants and so forth, just as in a more quantitative paradigm. The point about full reporting of the context of data extracts relates to the reader's ability to judge the validity of the researchers' interpretation. Similarly, space permitting, it is sometimes better to include a sequence of conversational exchanges rather than isolated phrases or sentences.
- Generous samples of raw data (c). Both this and the above criterion can be satisfied more fully by making raw data available by the web.
- Evidence of open-mindedness through engagement with negative cases in the refinement of working hypotheses or interpretations – such cases should be included in the discussion of the findings. (c) Such data also contribute to what [11] term ‘surprising’ findings (r).

- Clear statements of theoretical stance adopted, and identification of possible researcher bias (c)
- Participant review of findings and interpretations (but note that participants are not always in a position to review theoretically motivated discussion or findings which explore such phenomena as ‘taken-for-granted’ assumptions, behavioural responses of which they may not have been aware or tacit knowledge.) (r)
- Thorough documentation of the analysis process itself, including any coding procedures and the tracing of emergent theories. (c)

We suggest that recognition and adoption of these quality indicators is essential if qualitative research in presence is to realize its full potential and be accepted by the community on footing equivalent to quantitative work.

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