

The 'horrors' of scientific research

SEVERAL articles published recently in *The Psychologist* have outlined a 'new paradigm' in psychological research: qualitative approaches (e.g. Cooper & Stevenson, 1998). These articles have touched on features that can enhance the 'trustworthiness' of qualitative studies. My aim here is to explore these in more detail.

I will describe what have been identified as the 'horrors' of any scientific enquiry (Woolgar, 1988). Using examples from my own research, I will show how, within a qualitative study, these can be dealt with. Confronting these 'horrors' and working with them can transform them into methodological virtues.

What are the 'horrors'?

Woolgar (1996) says that the 'traditional' or 'received' view of science, and the one on which scientific method is based, is that it effectively deals with the connection between the object of study and its representation (explanation). However,



SALLY JOHNSON gives an account of her attempts to deal with the methodological problems of a qualitative study.

Woolgar argues that because of the 'methodological horrors' of scientific research it is impossible, in principle, to make effective connections between representations and their underlying reality.

These 'methodological horrors' are described as indexicality, inconcludability and reflexivity (Woolgar, 1988, pp.32–33).

- *Indexicality* refers to the notion that a representation is always linked to a particular time or setting, and that it will change as settings and situations change.
- *Inconcludability* is the idea that accounts are never conclusive and can always be added to.
- *Reflexivity* refers to the continual process of the impact of the researcher's previous knowledge of a phenomenon on the way in which it is represented. This representation, in turn, influences further conceptualisations of it, and so on.

These 'horrors' are seen as applying to all scientific enquiry, whether in the natural or social sciences, whether quantitative or qualitative.

Rather than seeing these 'horrors' as insurmountable, as is suggested in Woolgar's critique of science, certain qualitative theorists (e.g. Henwood & Pidgeon, 1992) have suggested ways in which the 'gap' between objects and their representation can be minimised. The notion of 'trustworthiness' sets out criteria by which qualitative psychological research should be judged. 'Trustworthiness' measures — that is, certain good practices — have, in particular, been used as a way of reducing the 'gap' between an object of study and its explanation (e.g. Banister *et al.*, 1994).

In quantitative methodology, the concepts of validity, reliability and generalisability are employed in an attempt to deal with the 'horrors'. But it has been argued that these are not appropriate in the qualitative paradigm and must be reformulated (see e.g. Lincoln & Guba, 1985; Robson, 1993).

Based on Lincoln and Guba, Robson proposes that, to ensure 'trustworthiness', the concepts of credibility, dependability and transferability better serve qualitative assumptions than the notions of validity, reliability and generalisability.

Outline of the research project
My illustrations of how to attempt to enhance 'trustworthiness' in a qualitative study come from a recent research project. I was aiming to investigate how mature women students coped with the transition to professional higher education programmes.

The method adopted combined a reflexive ethnographic approach with a feminist perspective (Webb, 1992). Ethnography is defined by Hammersley and Atkinson (1983) as the participation of the researcher in people's daily lives for an extended period of time. The idea is to become intimate and familiar with their understandings, customs, lives and behaviours in their 'natural' setting.

I used a 'feminist-standpoint' perspective (Harding, 1987), said to hold together the tensions within feminism (Banister *et al.*, 1994). This perspective aims to understand women's lives from a committed feminist exploration of their experiences of oppression (Maynard, 1994).

Students on three programmes in two areas of professional education (social work

and healthcare studies) were the participants. To ensure a prolonged and substantial involvement, I adopted a multi-methods, two-phase design to cover the period of transition over two consecutive years.

The research methods included: 40 semi-structured informal interviews; becoming a participant observer over the first few weeks of the programmes, in both formal and informal settings; and asking the new students to keep a loosely structured diary over the introductory element of their programme.

The data were analysed using a 'grounded theory' approach (Glaser & Strauss, 1967). Transcribed interviews, participant-observation field notes and diaries were systematically explored to find themes that were grounded in the participants' own accounts.

The study concludes that the overarching theme of importance is one of continuity. This is in contrast to psychological theories of transition, which emphasise discontinuity. Aspects of continuities, in terms of what women 'bring' from the spheres they are involved in outside higher education — for example, as wives, mothers and women — centrally impinge on their sense of who they are and their current situation. It is these continuities that influence the women's ability to cope (Johnson, 1997).

Indexicality

In Robson's (1993) reformulation of 'trustworthiness' measures in qualitative research, transferability is equated with external validity: that is, the extent to which the findings are generalisable to other populations.

The 'horror' of indexicality is the implication that transferability is not possible, because explanations are only linked to a particular time and setting. However, reporting sufficient detail about particular instances and the theoretical framework makes it possible for others to assess how the data link with a body of theory, and thus whether they can be transferred to other settings.

I tried to make explicit the specifics of the situation and setting, so that the reader would be able to judge these influences and hence the findings' wider applicability. But I did make suggestions as to the transferability of the findings, putting the onus on myself to relate these to the theoretical framework.

For instance, I drew on Breakwell's (1986) theory of coping with threats to identity. In one of her case studies, she

examines how and why women entering 'sexually atypical' areas of employment — 'men's work' — might feel threatened and encounter problems. This has resonances with the situation of women entering higher education, as much of the literature highlights that women are entering a male-dominated environment (see e.g. Edwards, 1993; Sperling, 1991).

Breakwell's theoretical framework was also extended, as the experiences of the women in the study had parallels to other recent studies of mature women students in higher education. Thus by linking the experiences of the women in my study to other similar research and related theory, the findings' applicability to other similar situations and settings was enhanced.

Additionally, using multiple sources of data gathering — as I did in this study — can greatly increase a study's transferability (Marshall & Rossman, 1989).

Moving on to another 'trustworthiness' measure, reliability from the quantitative perspective is seen as corresponding to dependability in the qualitative (Robson, 1993). Reliability is the extent to which the same results would be obtained by using the same research tool.

Banister *et al.* (1994) say that this, together with internal validity, rests on the assumption that it is possible to replicate research. They argue that a qualitative researcher never makes the claim that a study is totally replicable — to repeat would constitute a different piece of work. Therefore indexicality is acknowledged, but is not seen as an insurmountable 'horror'.

There are ways of achieving a degree of dependability, however. Robson (1993) says it can be achieved by taking a clear, well-documented and systematic approach to the process of collecting and analysing data. This is then open to the scrutiny of the reader in line with acceptable principles and standards.

Marshall and Rossman (1989) suggest keeping a research diary where design decisions and records are kept. I did this throughout the course of the study, and the methodology chapter of the subsequent report was based on this diary.

For instance, on the first day of data collection in the second phase (year) of the study I wrote:

Most of the day was spent carrying out participant observation. There seems to be plenty of information which will elaborate the general themes from the analysis of last year's data but I really want to find out more about the theme

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of what it means to be a woman entering higher education.

In the methodology chapter, I describe the aim of the first phase of the study as being to explore generally the issues involved in the transition to professional higher education. Some of these issues were also relevant to other students, for instance, men and younger students. The aim of the second phase was to elaborate these themes but, additionally, to focus on aspects that were particularly relevant to being a woman.

This 'focused conceptual development' is a way of achieving 'local theoretical reflections' in grounded theory, because it focuses on, and more fully explores, a limited set of themes (Pidgeon & Henwood, 1997). Providing this amount of detail means that the research process and research decisions can be laid open to the scrutiny of the reader.

The 'trustworthiness' measures of dependability and transferability are a potential way of lessening the impact of the methodological 'horror' of indexicality. By providing enough detail of the methodological aspects (including the sample, situations and settings), linking the data to a theoretical framework, and using a multi-methods approach, the study need not stand in isolation. These measures enable connections to be made with other studies that involve different situations and settings.

Inconcludability

A further 'horror' described by Woolgar (1988) is the lack of conclusiveness of any explanation. Banister *et al.* (1994) argue that

the problem of inconcludability can be minimised by various means. One of these is by welcoming others' accounts.

I gave a number of presentations on my analysis and conclusions to colleagues at the institution involved, at conferences and to participants. The feedback so gained informed the development of the study. For instance, interviewees were sent a copy of an early draft of the findings, and their feedback was incorporated into the final report. These measures also address issues of reflexivity, in that the researcher's influence is minimised by including the accounts of others.

Banister *et al.* (1994) also suggest that sampling in a qualitative study is different from statistical sampling in quantitative research. In quantitative research, sampling and sample sizes are used to support a study's generalisability; but as numbers involved in a study increase, the detail and importance of each participant's response is lost. The aim in qualitative research is to treat each piece of research as a single case study. This enables an in-depth examination of the meanings that underlie particular cases, which is another way of minimising inconcludability.

By adopting a participant observation approach, I was able to build up relationships and become familiar with the 'culture'. By being involved for a significant period of the transition, and over two successive years, a degree of 'persistent observation' and 'prolonged involvement' was achieved (Robson, 1993).

Comparing data from one source with that from another or 'triangulating' (Robson, 1993) can also enhance the detail of the description of particular phenomena, as findings can be further validated.

Banister *et al.* argue that the problem of inconcludability can also be lessened by the qualitative researcher following changes during the course of the study. Towards the end of the study, my thinking about the women's transition changed as the data and analysis became richer. It shifted from seeing women as 'coping' with the transition to an emphasis on seeing them as 'managing' it.

The term 'coping' reflects a sense of personal responsibility for negotiating the transition. 'Managing', on the other hand, emphasises that women manage the continuities and changes despite the difficulties they face.

Gathering detailed information from multiple perspectives and sources in a focused case study, which allows for changes in interpretation, provides what

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has been called a 'thick description' (Geertz, 1973). This description, it could be argued, allows relatively strong conclusions to be drawn about that particular situation and setting.

The issue of inconcludability could be seen to have parallels with the 'trustworthiness' measure of credibility (equated to internal validity in quantitative research). The accurate identification of the phenomenon under investigation lessens the 'horror' of inconcludability.

Reflexivity

Reflexivity refers to the ways in which the researcher influences the research. Banister *et al.* (1994) recommend conducting a 'reflexive analysis' to explore and make explicit these influences. Reflexivity is implicit in both the ethnographic and feminist approaches that I adopted.

Hammersley and Atkinson (1983) emphasise the importance of reflexivity in ethnography, because they argue that the researcher cannot 'escape the social world in order to study it' (p.15). They say that researchers should set about understanding the effects they will have. This was done throughout the study.

For instance, a few women commented that meeting me for interview prior to coming to the university provided them with a point of contact. It gave them a chance to talk about beginning their

programme, which they said was helpful. I had, therefore, influenced their experience.

A further aspect of reflexivity, in ethnography, relates to the method synonymous with it: participant observation. Part of the process of participant observation is analysing how researchers are personally affected by the social situation they are investigating (May, 1993).

As I became a mother while carrying out the research, I could empathise with concerns expressed by many women about combining motherhood and education. On my first day back at work after maternity leave, I wrote in my research diary:

Officially back! Found it quite hard in some ways because not enough sleep but also getting brain back into thinking — the theoretical and more difficult aspects are really difficult to get into again.

Trudy (whose child was 17 months old at the time of interview) said that having a baby 'scrambles your brain'. Just before she began the programme, she similarly noted the difficulties of going back to work after a year's maternity leave.

As I was having to deal with the continuities of researching after becoming a mother, my situation was not that dissimilar to the women with children in my study. These women were dealing with the

any impact this had on the process of research.

These are examples of ways in which the 'horror' of reflexivity can be reduced and 'trustworthiness' enhanced. Essentially, they involve a reflexive analysis to make known the influences of the researcher on the research process.

Conclusions

I have attempted to show how the 'trustworthiness' criteria for evaluating a qualitative study in psychological research (Henwood & Pidgeon, 1992) can be operationalised. However, qualitative research is not a homogeneous approach, and there are ongoing debates as to how, and even whether, such criteria can be developed.

For instance, the approach to 'trustworthiness' described here originates mainly from naturalistic research. Hammersley (1996) argues that naturalistic research is based on realism; the view that research is concerned with 'lifting the veil' that covers reality, thus revealing what is going on. This view, he points out, is contested by constructivists such as Woolgar and other qualitative researchers influenced by post-structuralism.

Recent publications on qualitative research in psychology highlight the diversity of approaches (see e.g. Banister *et al.*, 1994; Hayes, 1997; Richardson, 1996). It has also been argued that there is still much work to be done on developing universal criteria against which qualitative studies can be judged (Smith, 1996).

While the debates continue, I would argue that there is common ground in relation to good practice. Qualitative researchers (indeed all researchers) need to ensure what Mason (1996) describes as rigour and transparency of process and what Harding (1991) has identified as 'strong objectivity'. These can be achieved by adopting 'trustworthiness' measures. They minimise the 'gap' between the object of study and its representation, thus transforming the 'horrors' of scientific research into methodological strengths.

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continuities of motherhood as they became students. By analysing my own experience, I was acknowledging that I was part of the social context under investigation.

Reflexivity is central to feminist research, because of feminists' concerns about the way research has been, and is, carried out without questioning certain assumptions. Reflexivity within 'feminist-standpoint' research involves a critical analysis of the notion of 'objectivity'.

Objectivity is seen as being a particular kind of (culturally masculine) subjectivity, where the processes of knowledge production are assumed to be value-free, there being no consequent need to make them explicit (Banister *et al.*, 1994). However, feminists argue that a critical or 'strong objectivity' (Harding, 1991) should be employed where researchers make known their interpretative processes, including their own agendas and background.

As part of the reflexive analysis, I explored my own background. I described my personal characteristics, origins, research interests, motives for conducting the study, how the project arose, how it was funded and how it was approached theoretically, epistemologically and methodologically. I also analysed encounters with the research participants, examining similarities and differences between myself and them and detailed