

USING QUANTITATIVE AND QUALITATIVE METHODS WITHIN ONE STUDY

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Summary. This paper discusses mixed methodology which can be utilized in different stages of the research (Ponto, 2004). The paper also provides a discussion on Interpretative Phenomenological Analysis (IPA). The strengths and weaknesses of using nomothetic and idiographic approaches are critically debated and issues concerning reliability and validity of mixed measures are also discussed. An argument is put forward that quantitative and qualitative methods can be successfully employed within the same study and that this should be considered as strength rather than a weakness.

Generally speaking methodology of any study is driven by the research questions and Ponto (2004) used survey in stage one and Interpretative Phenomenological Analysis in stage two. The rationale for using survey is that the information obtained can provide data about groups of people and concerns the same variables since all participants are asked the same standardised questions (Robson, 2002). Furthermore, most survey studies are carried out to make inferences about groups of people on the basis of data obtained from individuals representing the group (Robson, 2002). The questionnaire survey enables data to be collected in a standardised, structured and systematic way (De Vaus, 2002). Usually either cross-sectional measurements are taken at one point in time or longitudinal measurements are taken at several different times. The most commonly used questionnaire formats involve closed or open-ended questions and the content and the structure of questions enable researchers to measure variables identified in the research objectives. Ponto (2004) used questionnaires in stage one and topical-guided¹ (Moustakas, 1994) and semi-structured interviews in stage two.

¹ Topical-guided interviews explore definite topics but do not have set questions and are therefore not structured.

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Semi-structured interviews are semi-standardised where the researcher has a number of topics to cover but may alter their sequence and probe for further information, thus exploring many dimensions of the topic. This type of interview makes the respondents feel involved and provides data which are more individually meaningful than data from structured interviews (Robson, 2002). Semi-structured and unstructured interviews require that the researcher is open-minded and allows the interviewee the freedom to talk about aspects of the topic, which the researcher may not have considered.

Semi-structured interviewing works well with the IPA approach as proposed and described by Smith (1996) because it enables participants to provide a fuller, richer account and it also allows the researcher to explore interesting areas which may emerge during the interview. When interviewing the ethical considerations may become an issue, especially if the researcher and the interviewee develop a trusting relationship. Therefore it is important to establish, at the beginning, that the interview should not compromise the role of the interviewee or the interviewer.

Mixed methodology has been successfully employed and reported for some time (Bryman, 1990). It is often considered useful as each method can complement the other, as long as epistemological consistency is maintained (Hammersley, 1995). Tashakori and Teddlie (1998) argue that diversity of methodological approach can have a positive influence on the outcomes of the research. Furthermore they conclude that "the paradigm of pragmatism can be employed as a philosophical underpinning for using mixed methods and mixed models, especially with regard to issues of epistemology, axiology, and ontology. Pragmatism rejects the «either-or» decision points associated with the paradigm wars" (pp. 167-168). This position reconciles both quantitative and qualitative approaches to research and well justifies the combining of mixed methods within the same study.

Approaches to research: epistemological and ontological issues

While considering the approaches to the research, the main issues concern the role of research theory and the best way of explaining how the chosen methodology would complement the research process. Any approach to research is likely to be influenced by the ontological and epistemological positions of the researchers practising within a particular paradigm. Ontological considerations involve assumptions about the nature of existence and of reality, whereas epistemology is concerned with the nature of knowledge (Mason, 1996). Research within the positivist paradigm explains ontological issues by means of precise measurements and controlled experimentation, often attempting "objectively" to determine factors which influence thought and behaviour (Yardley, 2001). The constructivist position is based on Piaget's theory (Piaget, 1970) and explains ontological questions by putting emphasis on the individual, allowing multiple mental constructions of reality which are very much influenced by individuals and their particular experiences (Lincoln, 1992). The constructionist posi-

tion is different as it takes away the emphasis from the individual but instead considers the knowledge to be created through social interrelations between the individual and the situation (Kvale, 1996). According to Gergen (1994, p. 49) the social constructionist view is based on assumptions that "the terms and forms by which we achieve an understanding of the world and ourselves are social artefacts, products of historically and culturally situated interchanges among people". Gergen (1994, p. 51) further states that "the degree to which a given account of the world or self is sustained across time is not dependent on the objective validity of the account but on the vicissitudes of social process". The importance of language in human relations is also recognised by Gergen (1994) and particularly the way language functions in different interactions.

The social constructionist view assumes that there are many socially constructed realities influenced by social and cultural interchanges, which may be different for individuals, even though these individuals may come from the same culture or society. The social constructionist view also maintains that knowledge and meaning are socially constructed through action, which can be either conceptual or social (Murray & Chamberlain, 1999). In terms of research, the role of the researcher becomes very important, both as an interpreter and as a collector of interpretations who is also involved in reflexivity.

In relation to epistemological considerations, the positivist approach values scientific objectivity which, in psychology, is invariably concerned with the measurement of psychological variables and the establishment of general laws about human behaviour (Murray & Chamberlain, 1999). The social constructionist view is that the researcher and the researched can become an interactive entity (Lincoln, 1992) and thus create new knowledge. The social constructionist view is akin to the author's belief that the interaction between researcher and researched will inevitably influence them both and may cause changes in their perception of things by co-creating new meanings. However, this view does not exclude a belief that positivistic methods can also be useful in research. Therefore it is argued that the use of an eclectic and pragmatic methodological approach could reconcile both views by using different methods within the same study. A similar view is offered by Yardley (2001) who states that, ultimately, all human enquiries involve imagination and interpretation, intentions and values but must also provide empirical knowledge.

Moreover, Bryman (1990) states that quantitative methods can facilitate qualitative research methods and that the same is true of qualitative research. For instance, information obtained from questionnaire responses can be further supplemented by conducting an interview. This combination is likely to provide much more meaningful data than that obtained from a questionnaire alone. However since surveys and interviewing reflect nomothetic and idiographic approaches to research the strengths and weaknesses of these methods will be considered in the next section.

Strengths and weaknesses of nomothetic and idiographic approaches

The strength of the nomothetic approach is that it allows the researcher to collect data from a representative group or groups of people. An example of nomothetic methodology is a questionnaire survey, which enables the collection of large amount of data and by process of averaging can generalize the findings to a larger population providing careful sampling is used. Questionnaire surveys can be replicated and the results can be compared with previously reported findings. Nomothetic methodology is well suited to studies where attributes, attitudes or opinions of people are sought but aspects of situations or explanations can also be explored (Breakwell et al., 2000; Robson, 2002).

However, although a large quantity of data can be collected, the data tend to lack details on how people arrive at their answers as there is no opportunity to probe and to find out why people responded to the questions the way they did. Another weakness of the nomothetic methodology is that the interest centres not on individuals but in general profiles and statistics from which generalizations can be made about the population (Breakwell et al., 2000).

The strength of the idiographic approach is that it enables collection of very rich data about the phenomenon being investigated by focusing on individuals. Examples of an idiographic method are in-depth or semi-structured interviewing. These types of interviewing allow for exploration of attitudes, emotional states, beliefs or meanings as well as providing an opportunity to observe non-verbal cues. Interviewing also offers an opportunity to follow up interesting responses and to ask for clarifications if needed. Furthermore, qualitative interviewing allows flexibility in the order of questions and also enables the researcher to modify the questioning if responses should require it (Mason, 1996; Robson, 2002).

The weakness of the idiographic approach is that usually small numbers of potentially atypical cases are researched (Breakwell et al., 2000). Interviewing is time consuming in terms of data collection, transcribing the tapes and data analysis. Although copious rich data are generated, the findings are not readily generalizable to the population at large as small samples are usually involved (Robson, 2002).

Strengths and weaknesses of cross-sectional and longitudinal studies

A cross-sectional approach involves collecting data once from people in different conditions and thus allows the researcher to gain a 'snap shot' view of several groups. The strengths of cross-sectional studies are that they are quick to administer and to analyse. Furthermore if a random, representative sample is chosen then the statistical evidence is likely to provide a degree of confidence in the findings. However, the results from such studies depend on the quality of responses from individual participants (Breakwell et al., 2000). The weaknesses of cross-sectional studies are that the

responses may be influenced by time of administration effects, for instance if something is happening nationally and is covered by the media the responses may be affected by this. Order effects can also confound the results, when for instance all "a" responses are given, as can cohort effects when groups from the same generation give similar responses (Robson, 2002).

A longitudinal design involves collection of data from the same sample at least twice and the time interval between data collection can vary from days to decades. The strength of the longitudinal approach is that it employs repeated measures on the same group of people thus enabling the researcher to observe changes or stable characteristics in the individuals studied or in their experience. The weakness of longitudinal studies is that they take longer to complete, the individuals can move away and groups may change. There are also practical constraints associated with longitudinal studies, as once research is commenced decisions made at the beginning cannot be changed, unless the study is fairly unstructured (Coolican, 1994). It also has to be noted that both approaches can be confounded by either developmental or work-related changes of the participants.

Reliability and validity of research

The reliability and validity of research must be appropriately addressed when employing mixed methodology. The difference between how researchers using qualitative and quantitative data analysis view validity and reliability is summed up by Hinds et al. (1990). They state that with qualitative data analysis, researchers tend to emphasise and evaluate the transparency and credibility of the findings, whereas with quantitative analysis researchers emphasise the objectivity and replicability of the findings. The reliability of qualitative research is more difficult to ascertain, particularly if positivist explanations of the term are used. However, if reliability within qualitative research is considered to mean "consistency of meaning" (Madill, 2000) then inviting colleagues to perform independent analysis of data can demonstrate appropriate level of objectivity and reliability (Ashworth, 1997).

The validity of research in qualitative data analysis is much enhanced by the systematic use of feedback from the participants who can verify the authenticity of representation (Munhall, 1994). Reason and Rowan (1981) consider the issue of validity of qualitative data analysis to be of critical importance, as does Smith (1996) who addresses validity issues in his IPA framework.

An outline of the Interpretative Phenomenological Analysis framework

J. A. Smith (1996) has used the IPA framework in different studies and has written widely about interpretative phenomenological analysis. This framework offers a structured and direct approach to practising phenomenology. According to Smith

et al. (1999, p. 218) "the aim of IPA is to explore in detail the participant's view of the topic under investigation". He argues that the theoretical orientation of the IPA approach is phenomenological as it is concerned with the individual's perceptions. When discussing the methodological underpinning of IPA, Smith (1996) states that the aim is to explore the participant's world and to gain an inside view of the topic being investigated. Thus the attempt is to achieve the participant's personal perspective on, or personal perception of, the event or object being investigated. While recognising the dynamic nature of the research process, Smith et al. (1999) accept that complete and direct access to the participant's personal world is not possible and is dependent on the researcher's own conceptions of the participant's world.

J. A. Smith (1996) explains that the dual components of IPA are phenomenological and interpretative. The term IPA acknowledges the dual nature of the process of interpretative activity, where a researcher tries to understand how participants make sense of experiences while examining the meanings these experiences hold for the participants. Smith (1996) views the philosophical underpinning of IPA as being influenced by Husserl (1970), who attempted to explain how people experience events by directing inquiry to the perceptions and meanings of such an experience.

According to Smith (1996) the IPA methodology is also influenced by Symbolic Interactionism, an approach which claims that meanings people attribute to events should be of importance to researchers and that these meanings can only be attained as a result of interpretation. Through interpretation the events are ascribed new meaning and new understanding. However if the interpretation is only based on meaning recollection then such understanding could be suspicious (Alvesson & Skölberg, 2000). The issue of validity of interpretations has to be solved through showing as many interpretations as possible so that the most plausible interpretation is arrived at. Smith et al. (1999) assert that it is important to differentiate between IPA and discourse analysis, as both share the commitment to the importance of language and qualitative analysis. But while, IPA is concerned with cognitions that is, with understanding of what a particular respondent thinks or believes about the topic under discussion, discourse analysis regards oral reports as verbal behaviours in their own right which should be the focus for analysis. Smith et al. (1998) admit that IPA is related to grounded theory, which originates from sociology. Nonetheless, they assert that "IPA is distinctly psychological in origin and orientation and refers to a specific theoretical position and consequent methodological approach" (p. 6). Smith (1999) particularly suggests that IPA is potentially valuable in health psychology. He also states that IPA can be used in terms of cognitive psychology, the theoretical link being the process of analysing meaning and what people are experiencing which refers IPA back to phenomenology.

J. A. Smith et al. (1999) believe that IPA is best suited to an idiographic case study approach where the analysis slowly builds up from a detailed analysis of individual cases to prudent claims for a whole group. They outline the format for IPA methodology stating that purposive sampling is often used where a specific small group is identified. An interview schedule is used flexibly with a preference for semi-structured interviewing with ample open questions so that the interview is more like a conversa-

tion. The interview data are transcribed verbatim and initial analysis involves reading the script several times, looking for everything that strikes the researcher as interesting or significant about what the respondent is saying.

Stage one of analysis seeks to identify key words and terms. Summaries, associations and connections or preliminary interpretations are generally made in the left margin of the transcript at this stage, while in the right margin Smith et al. (1999) suggest that emerging theme titles can be written, which are now more grounded in psychology. Smith (1999) is against identifying meaning units and considers that they are too prescriptive and may stifle the process of analysis. In stage two Smith recommends looking for connections between the themes. Some themes can be clustered but they must be cross-referenced and care must be taken to check that they connect with the transcript and reflect what was said. An ordered table of themes can be made and at this point some themes can be removed, but the reduction of themes should be explained and all themes cross-referenced.

In stage three the translation of the table into a narrative account takes place. The aim is to convince the reader that these findings are important and can be supported by examples of real statements from participants. The transcript of one participant may be written up as a case study and all the other scripts may be analysed in the same way. It is possible to use themes from the first script as a master theme list or the process used for the first transcript can be used for each subsequent transcript.

Once all the transcripts are examined, the analysis should move on to searching for shared themes, which should then be analysed. The next stage usually involves exploring patterns, connections and tensions between different conceptual groupings. These can be represented diagrammatically. Finally the analytical themes can be translated into a narrative account. Smith recognises that this process may be difficult and demanding but urges that the crucial part of the analysis is dependent on the interpretative analytical skills of the researcher. Smith (1996) is in favour of qualitative research methods in health psychology, while being aware of concerns about qualitative approaches within mainstream psychology, which aspires to the status of a natural science. He believes that "science is a multifaceted activity that is well able to accommodate qualitative approaches to psychology. Indeed, according to some writers and practitioners of science, a psychology that involved a move towards qualitative methodology would be more in keeping with contemporary definitions of what science is and what it can achieve" (Smith, 1996, p. 191).

Smith recognises the importance of validity in qualitative research but is against evaluating it in terms of quantitative research. Instead, he suggests a practical way of validating qualitative research. He believes that 'internal' coherence is important for the validity of qualitative research, particularly whether the research is internally consistent and whether it deals with contradictions and ambiguities and if it offers alternative readings. Smith (1996) considers the presentation of evidence to be very important and suggests that ample presentation of raw data should be available so that the reader can interrogate interpretations being made. Smith (1996) takes into account suggestions made by Yin (1994) and Lincoln and Guba (1985) regarding the inde-

pendent audit of data and believes that using an independent auditor may be desirable for validating findings.

In considering the value of triangulation, Smith (1996) recognises that this could be viewed as a very viable research strategy for validating findings, although not necessarily an attempt to get at an absolute truth. His view on the value of participant validation is that, even in the most democratic research some power relations will arise, making it difficult for participants to question the researcher's interpretations. Ashworth (1993) has a similar view on the topic of participant validation, and acknowledges that there are some disagreements among researchers as to whether participant validation through participant agreement is the best way of providing validity for qualitative research. Furthermore, Ashworth (1993) considers resistance and eager acceptance to be pervasive possibilities in all social interactions, which may also interfere with participant validation.

Reflexivity

This section discusses the concept of reflexivity, because it is generally recognised that qualitative research should involve active reflexivity or critical self-scrutiny by the researcher (Smith, 1996). This means that the researchers should be aware of their role in the research and in the process of generating knowledge (Alvesson & Skölberg, 2000). Gergen and Gergen (1991) explain reflexivity as a critical reflection, which also involves examination of the research process from many positions, thus enabling one to achieve an expansion of understanding. Furthermore Gergen and Gergen (1991) maintain that reflexivity helps to redress the power inequalities between the researcher and the researched in order to construct meaning. Hollway (1989) also believes that in qualitative research, the researcher and the researched should achieve as equal a relationship as possible and that participants should be considered not as subjects but as fellow human beings. Similarly, Bannister et al. (1994) see the researcher and the researched as collaborators in constructing and producing research findings. Smith (1996, p. 195) too believes that reflexivity should be utilised as a valuable part of research activity and suggests that "the reflexive focus can be upon the participant, the investigator, or both". Whereas, Ashworth (1997) asserts that the process of data production involves reflexivity on the part of the researcher, particularly when involved in interpretation and formulation of findings. These views are compatible with the author's belief that the participants should be treated as equal and should be encouraged to interpret their statements when the researcher reflects on any statements.

Conclusion and summary

This paper has offered rationale for the use of mixed methodology and debated epistemological and ontological issues that should influence any research. The stren-

gths and weaknesses of nomothetic and idiographic approaches have been examined as these approaches can be relevant to different stages of research involving mixed methodology. The strengths and weaknesses of cross-sectional and longitudinal studies have also been considered as they can inform design of the research. Phenomenological methodology has been discussed in relation to the IPA framework which has been outlined in some detail, as this framework can be useful for data collection and analysis in health psychology (Smith, 1996; Ponto, 2004).

This paper is concluded by highlighting the following insight, mixed methodology is no longer considered unacceptable and in fact many researchers now believe that qualitative and quantitative research methods are compatible (Tashakkori & Teddlie, 1998). Moreover, it is believed that, although nomothetic and idiographic approaches have different origins, they can nevertheless be successfully combined and may complement the outcomes of the research. Furthermore (Ponto, 2004) argued that the use of mixed methodology can help to overcome the weaknesses inherent in using each approach alone.

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