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# Methodological thinking in psychology: Starting from mixed methods

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## ABSTRACT

*The aim of this paper is to revise the development of the methodological thinking in psychology, underlying the central role of mixed methods. The article is based on a discussion on the main general aspects of mixed methods, in order to show that mixed methods does necessarily produce a new starting point in the mismatch between quantitative and qualitative methods. Through the discussion of these aspects, the paper highlights conditions in which mixed methods can become fruitful instruments of research.*

**Keywords:** methodology, psychological thinking, mixed methods, paradigms, quantitative and qualitative analysis

## INTRODUCTION

In this paper we will present some general aspects of thinking in psychology. The analysis of this matter draws on a much longer line of methodological development concerned with a number of studies in different fields of psychology. We start from the idea that a choice of methods in any particular study should take into account a range of well-founded methods that are available, rather than being guided only by researchers' affinities for some methods or paradigms. Choices of methods should never be made in the abstract, but in response to what is the most appropriate way of investigating a research question. The most effective forms of enquiry may involve the complementary use of more than one type of method. For this reason, we think

that mixed methods are a possible new starting point in the mismatch between quantitative and qualitative methods. As there are multiple reasons for mixing methods, eg the well-known triangulation, exploring different levels of the same phenomenon, enriching theory (Todd, Nerlich, McKeown, Clarke 2004; Lewins, Silver 2007), we aim at underlying conditions in which mixed methods are fruitful instruments of research.

## Background issues: Methodological thinking in psychology

Over recent years, psychologists have focused upon the need to understand culture at different levels of analysis and by various methods, because 'systems as wholes have qualities its elements do not have' (Toomela 2007a: 76). Given that sci-

ence is a part of culture, we cannot develop science independently of culture. For this reason, the understanding of the current situation in methodology of science (and specifically in psychology) requires an attention to the relationship between a research methodology and a specific culture.

The history of psychology is a source of ideas for ways to improve methodology, because the methodological evolution is not a simple progress from an inferior level to a superior one. The starting point of each psychological methodology is an element that could determine and develop more sophisticated methodologies. As suggested by Molenaar (2007), the reorientation in psychological methodologies involves the adaptation of state of the art time series designs and analysis techniques to the special needs of psychological research. Toomela (2007b) affirms that modern mainstream psychology is more concerned with accumulation of facts than with general theory, and the focus on qualitative data in addition to quantitative data is rarely visible. In order to overcome the limitations of methods used in psychology, we have to look back into the history of methodological thought, before to invent new methods of research: many fundamental questions have not been asked because of limited methodological thinking. According to the traditional opposition between German–Austrian and American approaches in psychology before World War I, the science has seemed a development along the American path. The main attributes that psychologists recognised as part of this approach were: objective scores without qualitative descriptions; fragments without whole and relationships; individual trait differences isolated from more basic type differences and case studies; accumulation of facts without a complex thinking.

It is a long time since humanistic psychology has made progress in the United States, or since qualitative analysis has been prioritised above quantitative analysis, or since case studies have

taken precedence over typical laboratory situations (Yurevich 2007). Within current psychology, its interpretation as a multi-paradigmatic discipline is acquiring greater relevance. This is the result of the spread of a postmodernist methodology maintaining that no single correct explanation of reality under study exists. Even if in the context of a postmodernist science there is hardly any point in debating whether psychology is developing in the right or wrong direction, according to Yurevich (2007) we can divide the psychological community into different categories in accordance with their general methodological orientations: methodological indifferentists (who are indifferent to general methodological questions); methodological rigorists (who stick to one particular theory); methodological anarchists (who act in line with the credo ‘everything goes’); and the methodological liberals (who try to fuse various paradigms in their research).

Finally, we consider that human psychological phenomena are systemic, dynamic, social, and a methodology that reflects this fact is needed (Wagoner 2007). The most common contrast between methods in psychology, with relative strengths and weaknesses, is whether they provide quantitative or qualitative results: different methods may embody different conceptions of the nature of the object we study and what counts as a valid analysis. As suggested by Snyder (1995), the successful combination of different methods depends on different factors, on research being underpinned by a theoretical framework that is sensitive and flexible for understanding the complexity of the object. This will be discussed in the next paper.

### **Mixed methods research: Some general aspects**

Current psychology is characterised by mismatch between questions asked and methods to answer the questions. In particular, there are several important discussions about the focus on quantitative or qualitative data analyses, and many

claims of incompatible differences between qualitative and quantitative methods are founded on the ambiguous use of language (Gürtler & Huber 2006). We do not neglect or even ignore the differences between the two paradigms in epistemology, theoretical background, research strategy, sample selection, and so on. Qualitative and quantitative purists view the two approaches as being based upon incompatible premises and techniques, and argue that mixing methods is neither meaningful more valuable to pursue (Guba 1990). At the same time, there are some commonalities between quantitative and qualitative methods (Johnson & Onwuegbuzie 2004), and, for these reasons, mixed methods research can narrow the divide between quantitative and qualitative researchers, enhancing the quality of a study.

New directions in the field support the mixed methods approach to research. During the last 50 years, the approach has been variously labelled. Names such as 'multitrait' or 'multi-method research' (Campbell & Fiske 1959) have been used to describe research that recognises several quantitative methods in a single investigation; the terms 'integrated or combined' have been used to describe research in which two forms of data are blended together (Steckler, McLeroy, Goodman, Bird & McCormick 1992). Research that acknowledges a combination of methods has been variously labelled 'quantitative and qualitative methods' (Fielding & Fielding 1986) or 'hybrids' research (Ragin, Nagel, White & 2004). The convergency of quantitative and qualitative data is also described as 'combined research' (Morse 1991; Creswell 1994); or as 'mixed methodology', which acknowledges that it is both a method and a philosophical worldview (Johnson, Onwuegbuzie & Turner 2007).

As suggested by Ivankova, Creswell and Stick (2006: 3) '*Mixed methods is a procedure for collecting, analysing, and "mixing" or integrating both quantitative and qualitative data at some stage of the research process within a single study for the purpose of gaining a better understanding of the research problem*'. When used in combination,

qualitative and quantitative methods complement each other and allow for a more robust analysis, taking advantage of the strengths of each (Miles & Huberman 1994). We can affirm that the primary goal of mixed research is not to replace either quantitative and qualitative research: the goal of this *third* type of research is to utilise the strengths of two or more approaches by combining them in one study, and by attempting to minimise the weaknesses of approaches in mixed designs. As suggested by Tashakkori and Teddlie (2003) '*Mixed methods designs incorporate techniques from both the quantitative and qualitative research traditions yet combine them in unique ways to answer research questions that could not be answered in any other way*' (p. 10, preface).

In basic concurrent mixed designs, the following three conditions hold: both the quantitative and qualitative data are collected separately at approximately the same point in time; neither the quantitative nor qualitative data analysis builds on the other during the data analysis stage; the results from each type of analysis are not consolidated at the data interpretation stage, until both sets of data have been collected and analysed separately. After collection and interpretation of data from the quantitative and qualitative components, a meta-inference is drawn which integrates the inferences made from the separate quantitative and qualitative data and findings.

Anyway, although quantitative and qualitative approaches are combined, there is sometime a problem of integration, above all concerning the complexity of the validity (Onwuegbuzie & Johnson 2006). We know that there are different threats to validity (eg internal, external) and we can recognise that, in quantitative research, discussion of validity has been common and the importance of validity has been long accepted. In qualitative research, part of the solution to the validity issue has been to reconceptualise traditional quantitative validity concepts and to use labels that are more acceptable to qualitative researchers (Lincoln & Guba 1990). The prob-

lem of validity also concerns mixed research that involves the mixing of quantitative and qualitative methods or paradigm characteristics into research studies. According to the fundamental principle of mixed research, it often should involve a combination of quantitative and qualitative methods, approaches, and concepts that have complementary strengths and no overlapping weakness. This principle is not limited to triangulation or corroboration: the words 'complementary strengths' are meant to include all of the strengths of qualitative and quantitative research.

Despite its popularity and straightforwardness, mixed method designs are not easy to implement: researchers have to consider the priority or weight given to the quantitative or qualitative data collection and analysis in the study, the sequence of data collection and analysis, and the stage in the research process at which the quantitative and qualitative phases are connected and the results are integrated (Morgan 1998).

Mixed research still is plagued by three types of problems: the problem of representation refers to the difficulty in capturing lived experiences using text in general and words and number in particular. The problem of legitimating refers to the difficulty in obtaining findings and/or making inferences that are credible, trustworthy, dependable, transferable, and/or confirmable. Indeed, in many instances, these problems are exacerbated in mixed research because both the quantitative and qualitative components of studies bring into the setting their own problems of representation and legitimating, likely yielding either an additive or a multiplicative threat, hence the problem of integration. Due to the complexity involved in combining qualitative and quantitative studies either in a concurrent, sequential, conversion, parallel, or fully mixed manner, mixed research gives rise to this problem of integration. Surrounding this problem is the extent to which combining quantitative and qualitative approaches can address each of Greene, Caracelli and Graham (1989) five empirically derived, gen-

eral purposes of mixed-method studies: triangulation, in order to test the consistency of findings obtained through different instruments (triangulation will increase chances to control, or at least assess, some of the threats or multiple causes influencing results); complementarity, to clarify and illustrate results from one method with the use of another method (for example, in natural observation at school it will add information about the learning process and will qualify the scores and statistics); development of results from one method that shapes subsequent methods or steps in the research process; stimulation of new research questions or challenge results obtained through one method; expansion, in order to provide richness and detail to the study exploring specific features of each method.

If we consider the elements outlined above, it is possible to recognise the need for the following questions: Is it misleading to triangulate, consolidate, or compare quantitative findings and inferences stemming from a large random sample on equal grounds with qualitative data arising from a small purposive sample? When findings conflict, what is one to conclude?

As in any mixed method design, we had to deal with the issues of priority, implementation, and integration of the quantitative and qualitative approaches. Priority refers to which approach (quantitative, qualitative or both) a researcher gives more weight or attention throughout the data collection and analysis in the study; implementation refers to whether the quantitative and qualitative data collection and analysis come in sequence, one following another, or concurrently; integration refers to the stage in the research process where the mixing or integrating of the quantitative and qualitative methods occurs. In order to comprehend the multistage format of the mixed method research, there are also various possibilities of different graphical representations of the mixed method procedures used in the study: the value of providing a visual model of the procedures has long been expressed in the mixed method literature (Morse 1991).

## Combining methods: Examples from research in psychology

Studies in different fields of psychology have underlined the question of the choice between quantitative and qualitative methods of analysis. Quantitative analysis usually includes methods that use coding schemes or computer-based analysis, in order to efficiently manage a lot of data, and to enable comparison. As a major weakness of this type of analysis, there is the fact that pre-determined categories could limit the analysts' sensitivity to what happens during the research. In the case of qualitative analysis the categories could emerge as generated by the data and not by *a priori* assumption of the researcher. However, it is difficult to use these methods to handle a large set of data, and to generalise the outcomes. But, considering strengths and weaknesses, it seems logical to use in a complementary way the different methods. This is the case of much research in developmental psychology, above all in the case of the analysis of joint activities in educational settings.

There are studies that fit the definition of mixed methods, that have collected and analysed both quantitative and qualitative data, mixed the data, and reported the studies as a single mixed methods study. For example, one study collected data using quantitative instruments and from qualitative focus groups to see if the two types of data showed similar results from different perspectives (Black, Ricardo, Stanton 1997; Flanagan, McGrath, Meyer, Garcia Coll 1995). Another study referred to data collected using a quantitative survey instrument and follow up interviews with a few individuals who participated in the survey to learn more detail about their survey responses (Way, Stauber, Nakkula & London 1994).

Another set of studies is placed in a 'grey' zone, because those types of mixed methods studies might conform to part of the actually-shared definition, but not all of it. In this area we can refer to studies employing minimum qualitative research, by which the researcher analyses the qualitative responses to validate the quantitative

findings (Morse & Richards 2002), or the content analysis studies, in which the researcher collects only qualitative data and transforms it into quantitative data by counting the number of codes or themes, or multi-method research, in which the researcher collects, analyses, and mixes multiple forms of either qualitative or quantitative data (Morse 1997).

More recently, Mercer, Littleton and Wegerif (2004) offered an example of this possibility in a study of collaborative interactions at school in computer-based educational activities. In particular both qualitative and quantitative methods have served on using computer-based activities to improve the quality of children's talk at school. The methodological aim of their study was *'to ease the tension between wanting to analyse talk as contextualized activity [...] and to provide generalizable results based on a large sample of case, as is made possible by experimental methods and quantitative analysis'* (Mercer, Littleton & Wegerif 2004: 12–13). The authors refer that their analyses provided insights into how the joint construction of knowledge might succeed or fail during computer-based learning events designed to elicit talk. By combining quantitative and qualitative analysis, they made possible a cumulative gathering of evidence to test the hypotheses about the effects of the intervention design they explored. The study we are referring to is an example of how the issue of the contextualised nature of interactions figures in debates about methods for analysing activities in educational settings: there is a need for the researchers to understand the nature of talk and collaborative activity when making methodological choices.

It is useful to consider also the use of research methods in management and organisational researches that exhibit a rich diversity of qualitative and quantitative methodological approaches: eg Gersick, Bartunek and Dutton (2000) employed both qualitative and quantitative methods in examining the relevance of social networks for individuals' careers within academia. As suggested by Langley (1999), the use of both meth-

ods is present when the researcher needs a synthetic strategy in order to gain information on the organisational process involved and to construct measures from the data to describe the process. An integration of these methods could maximise the 'knowledge yield' of research (McCall & Bobko 1990), also combining *etic* and *emic* methodological tradition, as suggested by Currall and Towler (2003). Other fields in which the use of mixed methods is growing exponentially are the area of health sciences (Forthofer 2003), the nursing (Burr 1998), and the adult education (Cervero, Rottet, Dimmock 1986). More recently, considering the advances in computer technology that are changing educational strategies, new possibilities are implemented by blended learning, which is known as a well-balanced combination of traditional face-to-face and online learning methods (Barbian 2002; Osguthorpe & Graham 2003). This is a new and interesting line to be followed in the mixed methods field, moving by the fact that blended research does not occur by merely adding a few online methods to traditional method, but, as explained by Zenger and Uehlein (2001), *It's only when the pieces fit together logically... that you create a real blended solution*' (Zenger & Uehlein 2001: 58).

### **The future of mixed methods research: Is there a space of growing?**

In the light of the previous discussion we presented in this paper, an important issue concerns how to position mixed methods in the arena of research methodology. Some might argue for mixed methods as an additional method paradigm to the existing qualitative or quantitative paradigm; others might claim that mixed methods is a new method paradigm that is superior to the qualitative or quantitative paradigm and perhaps can be used to replace those approaches. Chen (2006) proposes another view on this issue: the author advocates mixed methods as a 'method use' paradigm rather than a 'method' paradigm at its current stage of development.

As suggested by Teddlie and Tashakkori (2006), researchers have to select the best design for their projects: researchers must first determine if their research questions require a mixed methods design; they should be aware that there are a number of typologies of mixed methods research designs and should know how to access details regarding them; they want to select the best mixed methods research design for a particular study, considering different typologies and criteria; in some case, researchers may have to develop a new mixed methods design, because no one best design exists for their research project. As suggested by Shank (2006) *'How can we simultaneously resolve issues of meaning so as to test hypotheses on one hand, and at the same time try to keep issues of meaning open and indeterminate in order to allow a qualitative inquiry process to unfold?'* (Shank 2006: 347).

Despite different components, we can recognise some reasons for using mixed methods: enhancement of basic quantitative findings; grounding qualitative findings more scientifically; discovery-moving more smoothly into testing phases.

In conclusion, we have to consider that mixed methods researchers should keep in mind that legitimating represents a process that is analytical, social, emic, ethic, and which must involve the community of quantitative and qualitative scholars alike who are committed to addressing the multiple problems that can occur in mixed research. This is a way that the promise of mixed research can be realised in research practice.

In order to complete this discussion on mixed methods research, we can underline the presence of new directions in methodological design, starting from the fact that, actually, many authors recognise a possibility to develop *mixed research synthesis studies*. This new direction concerns a type of systematic review aimed at the integration of results from both qualitative and quantitative studies in a shared domain of empirical research (Sandelowski, Voils & Barroso 2006). In contrast to mixed methods research in which the data set

subject to analysis and interpretation is composed of the qualitative and quantitative data obtained directly from research participants within a single study or program of research, the data in mixed research synthesis studies are the findings of primary qualitative and quantitative studies in a designated body of empirical research. The focus of mixed research synthesis studies is on researchers' integration of their data, or the results they report. The new interest in mixed research synthesis is the result of the convergence of two 'growth industries' (Estabrooks 1999): the evidence-based practice (defined as the conscientious, explicit, and judicious use of information to serve as the foundation for practice) and the qualitative research (promoted to effect desired changes in health, education, and social welfare). Researchers' views of the nature and impact of the differences between qualitative and quantitative research will influence how they design mixed research synthesis studies.

Creswell, Plano Clark, Gutmann and Hanson (2003) underline that there are three basic designs for conducting mixed research synthesis studies: segregated design (in order to maintain the conventional binary distinction between qualitative and quantitative research), integrated design (the methodological differences between qualitative and quantitative studies are minimised as both kinds of studies are viewed as producing findings that can readily be transformed into each other), and contingent design (the results of synthesising findings in a designated group of studies to answer one research question determine the next group of studies that will be retrieved and analysed to answer a second research question the results of which, in turn, may lead to the analysis of a third group of studies retrieved to answer yet another research question). Finally, we recognise that the methodology of social research has undergone several changes over the past 30 years; we think that it is through an intensive examination of these changes that the third methodological possibility we discussed here will be established alongside the other traditional two.

In conclusion, we emphasise that examination of these aspects helps us to see that a research strategy integrating different methods is likely to produce better results in terms of quality and scope. In addition, it encourages us to probe the underlying issues assumed by mixed methods. Starting from mixed methods is a way to come up with creative alternatives to traditional or more monolithic ways to conceive and implement research. These alternatives are an important effort to be reflexive and more critical of the research practice and, ideally, more useful and accountable to broader audiences.

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