

Mixed Methodology in Psychological Research

Philipp Mayring, Günter L. Huber, Leo Gürtler
and Mechthild Kiegelmann (Eds.)



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1. INTRODUCTION: ARGUMENTS FOR MIXED METHODOLOGY

Mixed Methodology is a new star in the social science sky. More and more researchers are discontent with mono-method concepts for their research projects. They are trying new ways in combining or integrating different methods and methodological approaches. For a long time the incompatibility of paradigms (cf. Kuhn, 1965) standing behind methods was an argument against mixing methods. This thesis had been mitigated afterwards by Kuhn himself, others are speaking about the necessity of a “De-Kuhnifying” (Shadish, 1995) of the debate. This book is an attempt to give some reasons and some examples for overcoming mono-method research in psychology.

There are two debates in this field: the qualitative – quantitative controversy and the one-method – multi-method discourse. In both debates the pure mono-method approach is taken into question. So we will first try to collect some of those arguments.

SHORTCOMINGS OF MONO-METHOD RESEARCH

There are several shortcomings of working in a research project only with a single research method.

- Research questions are becoming more and more complex. After the 20th century has prepared the field in social sciences by systematic empirical research and evidence of basic relationships between central variables, further research is needed for refinement and complex interactions. This asks for more complex methodological approaches.
- Every new research project has to tie up to the state of the art, up to previous research results in respect to the research question. We cannot afford to consider only results from studies that were conducted with our preferred research methods. So in this first phase of the research process there is just a pronounced need to mixed methodology.
- The growing complexity of research questions has led to the deeper insight that nowadays not a single study can answer a scientific question but only a set of studies. We have to work in teams, we have to formulate research programs with different steps – and different methods.
- The demand for interdisciplinarity is overarching. Science ministries, university profiles, research funds are asking for interdisciplinary approaches. But this is nearly impossible with a mono-method approach.

- Especially within psychology, the development of the discipline was characterized in the first half of 20th century by the emergence of schools (behaviourism, psychoanalysis, humanistic psychology ...). Every scholar in the discipline had to decide for a specific school. Today the problems of exclusiveness and a lack of communication between different schools are apparent and therefore we prefer speaking about approaches instead of schools (which can be combined).
- In respect to the debate between qualitative and quantitative approaches it had been impossible until now to give a clear definition or differentiation. Qualitative oriented projects work with quantitative steps of analysis and vice versa.
- Methods are always influencing or changing their object. Test items, interview questions, observation categories predetermine the results. In that respect an objective measurement is not possible. Even for natural science this had been postulated (Heisenberg's uncertainty principle). For social science this can only mean that a single approach, with only one research method is remaining insufficient.

So there are many arguments against a simple mono-method approach in a research project. Let us look at some contributions for a mixing of methods.

CONTRIBUTIONS TO MIXED METHODOLOGY

The following are some of the most important contributions to mixed methodology in psychology and related disciplines. Later chapters will rely upon those studies and thoughts, but here we want to give an overview.

- Perhaps Campbell & Fiske (1959) were the first to use the metaphor of triangulation, arguing for the use of complementing methods in testing hypotheses (multitrait-multimethod approach).
- Denzin (1970) systematized the concept of triangulation and suggested a triangulation of data (from times, spaces and persons), of investigator, of theory and of methodology (within methods and between methods).
- Fielding & Fielding (1986) took the concept of triangulation from Denzin and applied it for linking qualitative and quantitative data.
- Bryman (1988) tried to integrate quantitative and qualitative research by analyzing the research process and looked for possibilities of combinations in this process.
- Brewer & Hunter (1989) developed, in their book a strategy of synthesizing multimethod research with the aim "to attack a research problem with an arsenal of methods that have nonoverlapping weaknesses in addition to their complementary strengths" (p. 17).
- Julia Brannen (1992) discussed possibilities and approaches of mixing qualitative and quantitative analysis in a reader, containing interesting

contributions like the deconstruction of the qualitative-quantitative device by Hammersley.

- Greene & Caracelli (1997) discuss theoretical and practical possibilities of mixed methods in the field of evaluation. They try a "balanced, reciprocal relationship between philosophy and methodology, between paradigms and practise" (p. 12).
- Newman & Benz (1998) are conceptualizing qualitative and quantitative analysis as a continuum and not a dichotomy. "All behavioural research is made up of a combination of qualitative and quantitative constructs" (p. 9), "science is both positivistic and naturalistic in its assumptions" (p. 16).
- Tashakkory & Teddlie (1998) wrote the first textbook on "mixed methodology". They differentiate between qualitative and quantitative approaches on the levels of design, data collection and data analysis and come to different combinations. Tashakkori and Teddlie edited the first handbook of mixed methodology (2003) with many contributions from different fields.

In 2001 the online journal "Forum: Qualitative Social Research" published an issue on the compatibility of qualitative and quantitative research methods with 16 different contributions (cf. Fielding & Schreier, 2001).

Johnson & Christensen (2000) discuss in their textbook of educational research three paradigms: the qualitative, the quantitative, and the mixed paradigm. They differentiate between mixed methods research and mixed model research.

There are first textbooks of research methods in social sciences which try to present the whole picture of qualitative and quantitative approaches without preferences (e.g. Creswell, 1995; Mertens, 1998; Langdrige, 2004).

So we see a lot of arguments and approaches for a combination and integration of different methods in social sciences. There is a webpage on Mixed Methods from the Florida International University Miami (www.fiu.edu/~bridges), a Special Interest Group (SIG) for mixed-methods research in the American Educational Research Association (AERA) and a SIG for qualitative and quantitative approaches in the European Association for Learning and Instruction (EARLI). For the year 2007 a Journal for Mixed Methods Research (Sage; editors Creswell and Tashakkori) is planned.

There are also some critical voices in regards to mixed methodology. Smith & Heshusius (1986) argue that compatibility of qualitative and quantitative analysis is based on confusion over two different definitions of methods and the necessary methodological debate is hindered by integration models. Smaling (2000) said that the paradigm dialog is important for self-clarification and mutual understanding, but the aim of integration is an illusion. But those opinions are singular and are not denying the possibilities of combination and integration of different approaches.

This volume tries to compile some mixed-methods approaches and studies in the field of psychology and education. We think the discussion of methodological topics should not be divided from specific research projects. Only in the context of a concrete research question it makes sense to consider adequate research methods. So the volume presents examples of mixed methodologies from different fields.

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2. COMBINING QUALITATIVE METHODS

As we have shown above the first concepts of mixed methods came from qualitative research itself, namely the approach of triangulation. If a common criticism of qualitative research is small samples and weak generalization, than mixing different qualitative studies would be a good strategy.

The classical concept of triangulation (Norman Denzin) discusses mixing of data, investigators, theories and methods. *Gary Shank* tries another approach. He describes six viable alternatives to mixed methods that qualitative researchers can use to collect, organize, and analyze their findings. The first two alternatives follow the aim of enhancement (“to put flesh on the bones”). Juxtaposing means to try different procedures to expand the understanding (e.g. metaphor analysis). Appropriating means to add procedures from other fields (e.g. choreography charts for empirical inquiry). The next two alternatives have the aim of grounding the results, overcoming pure descriptions, validating and seeking coherent data. Prospection sifts through the own data to find things that open the eyes in a new way. Data grading reviews and evaluates the data in respect to their contribution to an understanding of the phenomenon. A third approach in mixing methods tries to lead to discovery. Searching for ingredient theories tries to look at the own data for ‘recipes’ of a complex phenomenon. Presence theory looks for generalizations not by reducing or abstracting but in the ‘here and now’. *Shank* gives examples from his own work for those interesting new possibilities of mixing methods.

The paper of *Gillian Boulton-Lewis & Lynn Wilss* argues that a full interpretation of data like interview transcripts is only possible by using different approaches, by mixed qualitative methods. The authors start with a phenomenographic analysis, identifying the ways in which people experience, conceptualize, perceive or understand a phenomenon (Marton). But as with every method there are limitations and warnings of such an approach: Results are relative to participants’ and researchers’ interpretations, the experiences need to be contextualized, different researchers can arrive at different categories for the same data. So the combination with an interpretive-descriptive analysis in the sense of Glaser & Strauss or Lincoln & Guba, an inductive iterative process of category development with constant comparisons enriches the analysis. An example of Australian aboriginal student’s conceptions of learning demonstrates the mixed qualitative methods.

2.1 HOW TO TAP THE FULL POTENTIAL OF QUALITATIVE RESEARCH BY APPLYING QUALITATIVE METHODS

Let me say at the outset that it is a privilege to address this conference. Due to a series of circumstances beyond my control, I am not able to be there with you in person. However, I have been most graciously allowed to address you in this virtual manner. I will try my best to write this presentation as if I were speaking to you, in as clear and collegial manner as possible. I will be talking about some ideas that I find very exciting, and I hope that I can communicate not only the content of this paper, but my excitement for the potential of its ideas as well.

Let me start by saying that there are a number of reasons that the notion of mixing qualitative and quantitative methods might be quite appealing to researchers in our field. It seems quite reasonable to say this – if I look at something from one perspective, then would it not be more valuable to look at the same thing from two perspectives?

But this claim is only true when the two perspectives are complementary. What if they are not? There is not enough time today to build an extended argument, so allow me to sketch out a very basic and simple framework. Quantitative research, as we know, strives to test truth claims, to see how likely they are. Under the best of circumstances, these truth claims can be stated as hypotheses. When we have hypotheses, or are striving to get toward hypotheses, there are several conditions that have to be met. The most important condition, for our purposes, is that of meaning. That is, if we have a hypothesis and it describes a relation among several terms and entities, then we must know what all of those terms and entities mean. Otherwise, we might find ourselves in the unhappy situation of not knowing how to interpret our findings. So, anytime we are doing quantitative research we need to determine our conditions and parameters of meaning before we make our tests.

But here is the tricky part – in qualitative research, we must avoid pre-determining meaning at all costs. This is one of the reasons that ethnographers, for example, were often dropped into a setting with no prior research or study of the culture in question. Qualitative research enhances our understandings and insights into a situation or phenomenon, and these conditions are grounded in meaning. Therefore, if we try to mix qualitative and quantitative methods, we are essentially combining oil and water, so to speak. 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? This is what I mean when I say that qualitative and quantitative methods, at the most fundamental level, are at cross-purposes to each other.

I feel that qualitative researchers are best served, at least for now, by foregoing the temptation to pursue mixed-methods approaches. Instead, I would like to argue that we concentrate instead on the basic reasons why we might want to explore a mixed-methods approach in the first place, and see if there are alternatives within the domain of qualitative research proper to address those reasons. I will illustrate these alternatives with informal examples from some of my own areas of research.

The first reason that someone doing qualitative research might embrace a mixed-method design is what I call the enhancement reason. In an enhancement situation, the research is already primarily quantitative. Enhancement occurs when qualitative methods are used to “put flesh on the bones” of the findings.

Here is a very simple example of such an enhancement strategy in action. Suppose you were interested in, say, whether or not children remember spelling words if they are printed in bright colors instead of ordinary black ink. You hypothesize that the bright inks will be more appealing to these children, and that the novelty of the changing colors will help them pay more attention. Once you test your hypothesis, and find that it is supported, then you ask the children if these colors were more appealing, and if they liked the changes and appreciated the fact that the changes kept things more interesting. The children then oblige with their stories, and your basic findings have been enhanced by anecdotal support and elaboration by the children.

The main drawback to enhancement is that it is not qualitative research. Instead, it is descriptive elaboration that is added to a piece of quantitative research, and using it does not make something a “mixed” study. We know that by the simple fact that everything in this study revolves around the test of the hypothesis. Had our test of the hypothesis been non-significant, none of the anecdotal material would have mattered at all.

Let us consider two genuine alternatives to these sorts of enhancements via elaboration. Because of their natures, these alternatives cannot and should not be used to try to enhance or elaborate existing quantitative work. They need to stand on their own, serving to transform our understanding in new ways, rather than just elaborating upon it.

The first transformative strategy can be called the process of juxtaposing. Juxtapositional research is a genuinely transformative and qualitative way to get at some of the issues that enhancement might purport to address. Instead of trying to expand current understanding as enhancement does, juxtaposing allows us to contrast two areas of understanding to see how one might inform the other. The simplest form of juxtaposing is the venerable notion of the metaphor. Juxtapositional analysis involves the use of metaphorical procedures to expand and enhance our understanding of complex phenomena in natural settings.

The key to juxtaposition is the notion that, while the comparisons are arbitrary, there is nonetheless a powerful compulsion within the human mind to reconcile juxtaposed modes of understanding within some common framework. Why would we even want to pursue such a strategy in the first place? The answer is simple – if we are comparing two areas arbitrarily, then it is highly unlikely that they will be reconciled along any existing frameworks of understanding. Instead, we are more likely to be pursuing potential frameworks that are far from our current modes of

understanding, and therefore our likelihood of finding transformative insights is greatly enhanced.

My work with bestiaries is one example of this sort of juxtapositional research. I was interested in looking for new modes of thinking about educational research. I decided to compare a standard education research article with an entry in a medieval bestiary. As you may know, bestiaries were common accounts of the nature and meaning of plants and animals throughout the thousand-year history of the Middle Ages proper. By comparing bestiaries and research articles, I was able to determine that bestiaries used cooperative modes of epistemology, from visual to scientific to moral to practical and spiritual, within the closed interpretive framework of Christendom. Scientific articles, on the other hand, worked within the open interpretive framework of empirical science, but looked upon various modes of epistemology as competitive. As a result, I was able to suggest that qualitative research might wish to incorporate an open sort of interpretive framework while also advocating more cooperative notions of epistemology. I might never have reached these insights unless I had first made the apparently arbitrary link between bestiaries and research articles.

Another method of transformation involves the new and creative use of other systems of examining and handling data. That is, researchers are free to appropriate existing analytical and explanatory techniques and strategies in ways that have not been used before. Just because, say, economic models or choreography charts were not designed for empirical inquiry does not mean that either their forms or their methods, or both, cannot be put into service to allow us to manipulate data in ways not available prior to such acts of appropriation.

One example of appropriation strategies in my own work revolves around my use of rhetorical tropes to examine and understand the ways museum visitors seek to appreciate and understand various exhibits. Visitors use language to paint rich and nuanced pictures of what they have experienced. More often than not, we focus solely on the content of such messages, in order to draw patterns of how visitors are seeking to convey information. What if we look at their communication not only as the transfer of information, but also as a rhetorical act? If we employ such an analysis, picking and choosing among the literally thousands of different rhetorical tropes available to us, then we can begin to draw a picture of how these visitors integrate their experiences with their natural attempts to convey these experiences to others. This work is still in its most preliminary stages, but even now we see that these visitors weave very complex and sophisticated patterns of trope use in what appears on the surface to be very simple and straightforward statements.

The second reason for using mixed designs might be called the grounding reason. With the grounding reason, there is some realization that qualitative approaches might be used to think about things in a descriptive manner, but that “real” research needs to be grounded in objective technique to be valid. At best, the qualitative aspect serves as a pilot study, and mixed designs combine piloting and grounding into a single process.

This simplistic notion of grounding can be expanded by incorporating the idea of coherence. What can we find in the situation itself, and in its data, to give credence to our research?

One way of seeking coherent data is via the technique of prospecting. When we do prospecting, the idea is to come up with data that need no further methodological justification to prove their worth. That is, prospecting involves sifting through data to find those one or two things that serve to open our eyes to things in a whole new way.

One such example comes from an experience I had at the National Zoo in Washington, DC. I was part of a research team that was trying to gain new insights into how visitors to the zoo framed their experiences. We had talked to many visitors and the answers we were getting seemed fairly standard. As luck would have it, we came upon an invaluable nugget of data purely by accident. My friend hailed a cab at the entrance of the zoo to take him back to his office downtown. My friend was surprised to find a cab out by the zoo at noontime. The cabbie told my friend that he, the cabbie, came to the zoo often during slow times, since admission to the zoo was free. When pressed as to why he came, the cabbie admitted that he mainly went to visit the tiger. The cab driver would stare at the tiger, and wonder if he could take the animal if he, too, were a tiger. From this tiny but precious piece of data, we began to explore the role of “identity” and identity manipulation in zoo settings. The results were far more pervasive and sophisticated than we might have expected. In essence, we were able to build an entire pattern of illumination around this one chance discovery in the data.

Coherence can also be found within the data themselves. Data can be graded according to their value and contributions toward understanding. Data grading builds on the notion that not all data are as valuable as other data, and that it is a good research strategy is to take that fact into account.

The best way to describe data grading is to talk about the system that serves as my model for the discovery and understanding of this process. I was thinking about sports cards. In the USA, we have cards for players in a variety of sports. These cards have been around, in one form or another, for over a century. As you might imagine, the value of any two sports cards might differ widely. These differences, however, exist within a systematic framework for determining value. Some key criteria include – How old is the card? What kind of condition is it in? How good was the player? How many copies of the card were made, or how many still exist? Similar criteria can be used to help us ground our data in qualitative research, such that we can make a clear and systematic and open case for the inclusion and use of our data.

Data grading was an invaluable tool in my research into informal learning at the Fermilab National Research Laboratory site. For several years, I observed groups of middle school children as they toured the facility. At the end of the tour, they convened into an auditorium, where they were allowed to ask questions to a physicist in residence. How best to select and organize the most valuable questions and answers from the hundreds, if not thousands, of questions and responses I heard? Data grading was my most important grounding. First, I sought to determine if a given question had been prepared in advance, or had been asked spontaneously. I found that spontaneous questions were far more valuable. Did the questions address theory or the day to day practice of science? Theory questions were far scarcer, but day to day spontaneous questions were also often quite interesting. Did some questions get answered and then the process moved on,

or did some of the questions trigger an interchange? Interchange questions were also fairly rare, but were almost always interesting. By grading the data in this fashion, I was able to discern and communicate patterns of understanding and coherence that might have eluded me, had I chosen to use more conventional coding systems based on such criteria as frequency of use and content.

A final rationale for mixed methods is the notion of discovery. Qualitative research is used first to discover, and then quantitative research is used to "nail down" the results. On the surface, the discovery reason seems to be the most on target. In the final analysis, this version of discovery is about uncovering evidence based on current modes of understanding. We need to take things a step further, and talk about new modes of theorizing that allow us to talk about new forms of intelligibility itself. This can be done by looking at various flaws within discovery patterns as currently practiced.

One key flaw with current models of discovery is the notion that events are always the sum of their procedures, and entities are always the sum of their components. This mechanical view of things works well with mechanical systems, but it is woefully inadequate in describing other sorts of intelligible systems. Ingredient theory is a way to look at data not as components to systems, but as ingredients to holistic "recipes" of complex phenomena.

Ingredient theory can be illustrated by examining some of the data in my emerging study where I am helping at-risk learners create little museums of their own. This study is an attempt to address a long standing issue in museum research - - why do some people feel excluded from museums even though museums often take great pains to try to attract these same people?

After years of thinking about, and exploring answers to, this question, we decided to concentrate on the notion of connection. People who like to go to museums feel "connected" to the experience, and the rest of us do not. Furthermore, that connection was not "built" by putting together the right components to get a "museum visitor." Connection has to be concocted. We need to find the right sorts of recipes, so that we can bring the proper ingredients together for the proper people. Then we need to "cook" the pot so that we end up with an enduring and sustaining sense of connection.

Currently, we are in the exploration phase of such research. Our targets are at-risk children. Almost to the person, these children lack any sense of connection to the great museums in their regions that serve as the repositories of culture and history. We have decided to start building that sense of connection by giving classrooms a small amount of money and a small number of initial artifacts, and allowing these students to build their own museums. We have deliberately chosen artifacts that are similar to that one might find in a "real" museum, rather than artifacts from the children's' everyday lives. Many of these artifacts can be obtained quite inexpensively. They range from such natural phenomena as meteorites and geodes to such cultural phenomena as ancient coins and old stamps. Our initial findings are quite impressive. Many of these children respond to these artifacts with a genuine sense of awe, and this awe is compounded by the fact that they are in charge of stewarding these materials. As these museums are going up in classrooms around the region, we are encouraged that the complex phenomenon of connection seems to be emerging among these students.