

Basic Considerations
on
Educational Research

A Handbook for First Time Researchers

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PREFACE

This small handbook is about the very basics of educational research. It is aimed at students and/or teachers, with very little or no experience in researching, who are involved in small –scale research projects at university or at work. *Basic Considerations on Educational Research* offers:

- a critical overview of the theoretical foundations of the scientific and interpretive research methodologies in social sciences;
- a presentation of the various data collection methods ;
- a discussion of issues concerning research quality;
- a critical analysis of two articles from the field of educational psychology where researchers investigate similar topics using different methodologies.

This book will offer food for thought as well as basic knowledge for those who have just started or are about to start their exciting journey to the world of research.

INTRODUCTION

This book is divided in two parts. In the first part I discuss the difference between the scientific and interpretive research methodologies under the light of the different views of reality and knowledge that underpin them. Moreover, I investigate the different ways both quantitative and qualitative data collecting methods are utilised in the above approaches in the field of educational research in particular and I discuss the ways the resultant research is judged to be on good quality.

In the second part, I critically analyse two research studies from the field of educational psychology with respect to whether they meet principles of good practice relevant to the methods they represent.

PART I

Research in Social Sciences & Education

From Theory to Practice

1. The nature of enquiry

Long before the appearance of humans on earth, there were only physical facts. However, as humans evolved, a new kind of reality, *the social reality*, was generated by their practices and attitudes.

Man's perpetual concern has been, and continues to be, the ultimate understanding of both the natural and social world through the investigation of natural and social phenomena respectively. Cohen and Manion (2000) distinguish three broader categories for this quest of knowledge according to the means used in order for this to be achieved: *experience, reasoning and research*.

a) Experience

Knowledge may be gathered from our own experience or that of others, but there is a significant difference between this kind of knowledge, which is largely based on common sense, and that of a scientist, which also derives from problem-solving. These two approaches affect the methods used in knowledge acquisition. Layman's knowledge is intuitive and is treated in an uncritical manner with no attempt to control non-essential resources or influences in explaining an occurrence. Scientific theories are based on hypotheses tested empirically. The explanations they produce may be considered to have a solid basis and to embrace the multiplicity of causes for any given occurrences. Scientists use certain techniques and procedures to isolate and test probable causes. Their attitude is characterised by a serious professional concern.

b) Reasoning

The second category, *reasoning*, consists of three types:

- *deductive reasoning*, the route from the general to the particular;
- *inductive reasoning*, which follows the opposite route;
- *inductive-deductive approach*, where there is a back and forth movement in which the investigator first operates inductively from observations to hypotheses and then deductively from hypotheses to their implications.

c) Research

Many definitions have been given for the third category, *research* (Carr and Kemmins, 1986: 71; Ernst, 1994: 8; Hitschock and Hughes, 1989: 15; Punch 1998: 28), each depicting the various views on its nature. Despite their differences, most of the definitions agree that research is a form of *enquiry* conducted in a *systematic way*, aiming to *produce* and/or to *facilitate knowledge* as well as to *promote criticism* and *reflection*.

2. Research in social sciences

When we investigate the social world, things seem simpler since human beings are the subject of study and the natural world is the object. We investigate natural phenomena to discover natural laws which existed long before us, still exist and, hopefully, will exist in the future. However, in social sciences things seem to be much more complicated as human beings are both the subject and the object of study.

Through the years particular models of social research, which provide the theoretical framework into which researchers operate, have emerged.

They are known as *research paradigms* and are based on assumptions about knowledge, the world and the ways through which knowledge is obtained (Ernst, 1994). Although there are multiple research paradigms, sometimes varying slightly in their assumptions, the two dominant competing paradigms reflect the two strikingly different conceptions of the social world, the ways of interpreting it and consequently the ways of investigating it: the *scientific* paradigm and the *interpretive* paradigm. Below, I discuss these two research paradigms in terms of the ontological and epistemological assumptions that underpin them as well as the methodological implications for the choice of the particular method following Guba and Lincoln's argument that 'ontological assumptions give rise to epistemological assumptions which have methodological implications for the choice of particular techniques and data collection' (Guba and Lincoln, 1995: 21).

2.1 Ontological assumptions

'What is the nature of reality?' The answer to the above ontological question is the foundation of every researcher's stance. Two contrasting assumptions about the nature of social reality underpin the two paradigms.

On the one hand, adherents of the scientific paradigm stress the externality and independence of reality, physical and social, from the actions of individuals. Following the French sociologist Emile Durkheim, they argue that societies possess social realities on their own account and cannot be reduced to the aggregate effect of individuals' actions. Social phenomena have an objective existence outside individual members of society and exert a force which shapes individual behaviour; they have a coherence and are independent from the knower's existence

and are subject to empirical reality which can be measured, directly or indirectly. Therefore, social reality is capable of being 'studied, captured and understood' (Denzin and Lincoln, 1998: 9).

On the other hand, adherents of the interpretive paradigm advocate that individuals participate fully in the construction of their own reality. According to them, social reality is constructed and reconstructed by individual actors. Researchers working from this perspective argue that social phenomena do not have a simple, unproblematic, objective existence but they have to be interpreted and given meanings by those who encounter them. Consequently, they accept that many social realities may exist, none of which is controlled by any natural laws, either causal or non-causal.

2.2 Epistemological assumptions

Epistemology is the theory of learning, the 'relationship between the knower and the known' (Guba and Lincoln, 1991: 159) and, as mentioned above, the way it is dealt with is determined by the way the ontological question has been answered.

For the researchers operating in the scientific paradigm, the notion that reality depends on forces outside the individual leads to an objective kind of knowledge that is 'beyond criticism' (May, 1997: 9). The above view is rooted in the *positivist* belief that social science can be 'scientific' in the same way as natural sciences. This means that human behaviour can be explained in the same way as the behaviour of matter is explained in the natural sciences. For example, just as systems of measurement can be applied to temperature or weight so too can objective systems be devised to measure human behaviour. The measurement of human behaviour is

thus considered to require explanation and is subject to objective measurement. This makes it possible to produce statements about the cause and effect of human behaviour resulting in the generation of theories to explain social phenomena. When a natural scientist conducts an experiment, his purpose is not to enquire into its meaning; his/her purpose is to observe, measure and explain the outcomes. Operating at the same wavelength are social researchers within the scientific paradigm, who regard reality as a definite, tangible thing which may be studied independently and measured, allowing them to maintain the impartial role of observers, adopting an objective position and leaving out their own values during the research. If the correct method is followed, if the information is gathered in a scientific way, they cannot be accused of being subjective or biased, or of working from a different and disconnected set of values. 'Inquiry can [thus] be both objective and value free' (Guba and Lincoln, 1991: 163).

Conversely, the ontological assumption adopted by researchers who operate into the interpretive paradigm leads to a view of knowledge of the social world as a human construction rather than as a mirror of some independent reality. Thus, the 'objective' measurement of social phenomena does not really exist. What exists is actually an individual construction grounded on the subjective meanings given to a situation by those doing the measurement. Knowledge is of a more 'subjective', 'spiritual' and 'transcendental' kind (Cohen and Manion, 1985: 7) that arises out of a perception and illumination that can only come from personal experience. Therefore, it is impossible for the social world to be maintained in its 'natural state' undisturbed by the researcher. The enquirer cannot be separated from the enquired information which makes enquiry value-laden.

Central to the interpretive research paradigm literature (Radnor, 2001; Flick, 1998: 26; Wragg, 1994: 58) is the epistemological principle of *verstehen* – meaningful understanding – which refers to the procedure by which individuals in society, as researchers, interpret and are able to appreciate the meanings of others. In research, this means the procedure through which the researcher can have access to the meanings of a situation of the individuals they study. It involves placing oneself in the position of the objects of study in order to appreciate the meaning they give to their action, what their purposes are and the ends they believe will be served by their action.

2.3 Methodology

The above ontological and epistemological assumptions directly affect every researcher's methodological concerns. According to Burrell and Morgan (in Cohen and Manion, 1985: 9), for researchers into the scientific paradigm the methodological issues of importance are 'the concepts themselves, their measurement and the identification of the underlying themes'. In order to achieve that, they follow a *quantitative* approach that seeks to establish general laws by investigating causal relationships following the model of investigation derived from the natural sciences. They rely on empirical materials using methods such as observation, which demand a remote approach by the researcher. Their representation is based on the use of 'mathematical models, statistical tables and graphs, and [they] often write about research in impersonal, third-person prose' (Denzin and Lincoln, 1998: 11).

For researchers into the interpretive paradigm, investigation is concerned more with the individual or unique experience than with generalities. They adopt a *qualitative* approach which directs their attention to the

specifics of particular cases. They use softer, interpretive methods such as 'ethnographic prose, historical narratives, first person accounts, still photographs, life histories, fictionalised facts and biographical and autobiographical materials' (Denzin and Lincoln, 1998: 11) that describe routine and problematic moments and meanings in individuals' lives.

2.4 Social structure vs. human agency

For researchers who adopt a qualitative approach, two main determinants of social phenomena are recognised: *social structure* and *human agency*. Social structure refers to those larger and relatively stable features of society, which generate the background against which social life is carried out, for example class structure. It stresses the fact that human societies have certain regularities in the social relationships in which people engage. Human agency, on the other hand, refers to the volitional and conscious nature of human behaviour and actions. Social structure is believed to have a constraining effect on human activity whereas human agency refers to the ability to act independently of this.

On the one side lie the *structuralist* models of social reality which assume that social life is largely determined by social structures and that individual actions and behaviours can be explained mostly as outcomes of these structures. On the other side we find *interpretivism* (phenomenological sociology, ethnomethodology and symbolic interactionism) which, despite their own differences, highlight the ability of individuals to construct and reconstruct and give meaning to the world in which they live. Researchers who seek explanations for social phenomena through the views of the individuals they study often use a *hermeneutic* methodology, attempting to reveal the constructions of various concerned parties, each of whom are open to criticism in terms of

other constructions and offering an opportunity for completely new constructions.

2.5 Methods

At the level of method, there is a basic distinction between *quantitative* and *qualitative* methods, which reflects the different traditions, philosophies and practices in social science and influences the ways of data analysis. This distinction is often reported as being between 'numbers' and 'words' (Blaxter et al, 2001) or between 'hard [quantitative] data' and 'rich[qualitative] data' (Bryman, 1990).

However, this distinction is not as simple as might appear in the first sight. Qualitative data may be quantified and vice versa. Qualitative researchers have frequently been pointed out to assign sometimes numerical values to qualitative data as, for example, 'successful' <1>, 'not successful' <2> (Blaxter et al., 2001: 199). Moreover, as Hammersley (1996) argues, qualitative claims can be expressed in terms such as 'generally', 'frequently', 'typically' or 'not typically' which even though verbal, they have a quantitative character. Conversely, quantitative researchers cannot avoid the introduction of quality factors in the analysis of their data even in those cases where their study is entirely based on numerical data.

Another issue involved in the distinction between quantitative and qualitative methods is the one of the *precision* of description. Both methods offer representations of social reality and even though qualitative data appear to provide a more precise and 'in depth' description this is not always the case (Hammersley, 1991, Hammersley, 1996). Both kinds of data offer only partial description (Blaxter et al.,

2001) and, I believe, that is the main reason that in a large proportion of studies researchers combine qualitative and quantitative methods as they can act complementary.

It is understandable for the researchers to have their ideological preferences. Yet, it seems to me far more sensible the purpose of the research as well as the specific context to over-ride such preferences, as far as the use of methods is concerned, on a basis of principles of *utility* and *relevance* (Patton, 1986).

3. Research in education

‘Education is concerned with the personal pursuit of knowledge and understanding. It is about the development of personal capacities and skills to enable individuals to realise their potential so that they can play an active role in creating satisfactory lives for themselves in an increasingly complex and pluralistic society’ (Ernst, 1994: introduction)

The above definition of education accurately depicts its nature and purpose and raises the issue of the necessity for educational objectives to modify according to the changes and requirement of every era; this indicates that the whole area of education from educational policies to classroom practices is, and should be, under constant investigation. The object of investigation for educational research is the social world. Therefore, research in education and research in social sciences are strongly linked. This means that educational researchers operate within the social research paradigms analysed above. For a researcher in education, any of the paradigms will have implications in:

- choice of the issue under investigation;
- formulation of the research questions;

- identification of the objects (teachers, pupils, stakeholders etc.);
- methodological concerns;
- kind of data sought;
- their mode of treatment (adapted from Cohen and Manion, 1995).

Education is a very complicated area. First, in every educational context there are many layers of participants (teachers, students, stakeholders) operating in different ways in institutions and organisations with their own norms, structures and rules, explicit or implicit. These participants come from a variety of backgrounds and possess their own beliefs and values about education and about the world in general. Obviously, their relationships are far from simple; they are extremely 'complex' and 'multifaceted' (Hitschcock and Hughes, 1995; 25). Moreover, research in education can be conducted by various agents and for various reasons. We come across a huge amount of studies, from large-scale studies conducted on behalf of governmental organisations, to small-scale case studies or action research projects conducted by the teachers themselves. Nevertheless, regardless the purpose, the context and the participants of every research study there are certain criteria for every type of research that determine whether it is of good quality or not and which I discuss in the following section.

4. Issues of research quality

In a recent article critical of educational research, Boyd argues that 'on both sides of the Atlantic the quality of educational research is under attack' (Boyd, 200: 347) attributing his argument to, among others, 'the weak and unsystematic way educational research is conducted' (Boyd *ibid.* 347).

Undeniably, both research approaches seek good quality and one way to achieve this is the research projects to be as valid and reliable as possible. *Validity* and *reliability* are two 'central concepts' (Silverman, 1993: 145) in research, developed within the scientific tradition, which have to do with a number of issues about whether or not a study is accurate, error free and of as high a quality as possible.

Validity of an instrument is an indication if in fact it measures what it is supposed to measure. The concept is not as simple as it seems but it reveals different aspects in the scientific paradigm such as face validity, content validity, criterion validity, construct validity internal and external validity.

Unlike the more concrete and easily measured instruments researchers in the scientific paradigm use (e.g. questionnaires, tests), instruments for interpretive studies like interviews, surveys etc are less precise but researchers still need to know if they are measuring what is supposed to measure. Commonly accepted methods of tracing validity in qualitative research are reported to be divergence from initial expectations, convergence with other sources of data (triangulation), extensive quotations, member checking, multiple researchers and independent checking.

Reliability shows whether an instrument measures what is intended to be measured. In fact, reliability measures the consistency (or repeatability) in measuring the same phenomenon over time. For example, if I design a test as part of a research, in order to check how reliable it is I will distribute it to the same participants on two different occasions, trying to create almost identical conditions of administration and scoring. If the test results in the two occasions are very similar to each other, then the

test is said to be reliable. The most similar the scores are the most reliable the test is said to be.

Although in interpretive methodologies ways to find reliability are reported to be the multiple viewings of videotapes, multiple listenings of an audiotape or multiple transcriptions of an audiotape by one or more persons, it is impossible the process of interpretation to be exactly repeated. What Ratcliff (2000) stresses here, is that high reliability in such cases may suggest a systematic bias at work in data, a bias shared by multiple researchers or across observations by the same researcher.

It is important here to consider the possibility of *low reliability* to be consistent with *high validity* in interpretive research cases where people see different aspects or different levels of reality or have different perspectives on the whole, which is far more complex than a single perspective. However, this is not necessarily a drawback. Putting these accounts together might result to a better understanding than relying on one and only account although the consistency between these accounts might be rather low. In this case, low reliability and high validity can lead to a more close and multileveled approximation to reality.

In the scientific paradigm a number of statistical tests exist in order to measure validity and reliability (Preece, 1994). There has been much of a debate, though, to whether criteria such as validity and reliability should be used at all in qualitative research, 'the whole issue of whether we ought to be trying to generate criteria for judging the quality of research has become controversial. *Maybe we should be letting a thousand flowers bloom, people say*' (Seale, 1999: 465). Instead many suggestions have been made for criteria that substitute the two ideas: truth value, applicability, consistency, neutrality (Le Compte and Goetz, 1982),

credibility, transferability, dependability, trustworthiness (Guba and Lincoln, 1985), authenticity (Guba and Lincoln, 1989), structural corroboration, consensual validation, referential adequacy (Eisner, 1991). In addition, some extraordinary positions on validity such as successor validity, interrogated validity, ironic validity, transgressive validity and so on (Atltheide and Johnson, 1994) or reliability, such as quixotic, diachronic and synchronic (Kirk and Miller, 1986) have been introduced in qualitative research literature.

The first step of good quality research study is that it should involve research questions which must be carefully 'conceptualised', 'designed' and 'reported' (Lester, 1996). Subsequently, research methods that correspond to the nature of the research question/s and give 'appropriate, credible, useful, illuminate and economical' (Weir, 1999) data should be employed. For Patton (1987:80 the appropriate strategy for data collection can be formulated by the five following questions:

1. Who is the information for?
2. What kind of information is needed?
3. How is the information to be used?
4. When is the information needed?
5. What resources are available?

I believe that any researcher's, whose subjects are living creatures, major consideration should be *ethics*. Cohen and Manion (1994:381) stress the importance for the researcher to have an ethical code practice as 'it makes researchers aware of their obligations to their subjects and also to those problem areas where there is a general consensus about what is acceptable and what is not.' For Lester (1996) there are two major concerns in ethics: a) the manner in which the study has been conducted

in relation to the subjects and b) the acknowledgement of the contribution of the others.

The first concern involves matters such as *voluntary participation* and *informed consent* as well as the application of standards in order to protect the participants' *anonymity* and *confidentiality*. Moreover, ethical standards also require researchers not place participants where they might be at risk of *physical* or *psychological* harm.

The second concern involves the acknowledgement of all persons who contributed to the research study in order it to be carried out as well as the open recognition of the individuals whose previous research has influenced the present research study.

PART II

Similar Topics – Different Approaches

A Comparative Analysis

1. The studies

Students' beliefs about foreign language learning have been reported to incorporate a wide range of components related to FL including beliefs about the nature of language itself, opinions about teachers and classroom activities and approaches and reflect the influence of the social milieu as well the learners' individual differences. Additionally, they have been linked to the level of learners' outcomes (linguistic and non-linguistic) as well as to their perceived level of success and reported to have important pedagogical and programmatic implications.

The two studies I have chosen for the second part of this paper investigate learner perceptions and beliefs respectively which, even different notions (Benson and Lor1999: 464), reflect the metacognitive aspect of language learning. The studies, which use contrasting methodologies, are the following:

1. Tse, L. (2000). Student Perceptions of Foreign Language study: A Qualitative Analysis of Foreign Language Autobiographies. *The Modern Language Journal*, 84(i), pp70- 83.¹
2. Horwitz, E. (1988). The beliefs about Language Learning of Beginning University Foreign Language Students. *The Modern Language Journal*, 72 (iii), pp. 283- 294.

¹ The article is also available for downloading the following link: <http://www.finchpark.com/courses/grad-dissert/articles/beliefs/student-perceptions-EFL-study.pdf>

A. Tse's study

The aim of this study is to examine the effects of language courses and teaching methods on student perceptions of their classroom language study as well as on their abilities to acquire a FL and is expressed through the following *research questions*:

- What are the students' perceptions of the instructional methods used in FL theory?
- In the students', own view, how successful they are in acquiring the languages they study?
- To what or to whom do students attribute their level of achievement in learning a FL?

The sample consists of fifty-one (M=14, F=37) undergraduate and graduate students of the Arizona State University. Their ages ranged from twenty-one to sixty, with the majority of them being in their early twenties at the time of the study and all of them had studied one or more than one languages at some point of their lives by that time. It appears that the only criterion for the selection of the particular sample has been the participants' non-attendance to language theory and/or methodology courses.

The researcher ha used student autobiographies and has collected her data by asking the participants to reply to ten open-ended questions offering five double-sided pages for the replies. The participants have been instructed to respond to all the questions, giving particular emphasis to those they felt more relevant to their FL language learning experience. The analysis has been performed by the grounded theory methods of *axial coding* and *open coding* where first concepts are

classified into broader categories and then the data are put in new ways by making connections between categories (Strauss and Corbin, 1990).

Overall, it is an interesting, comprehensible and well-organised study where the researcher adopts a purely qualitative approach concerned with individual experience. Moreover, it is *original* in the sense that the researcher attempts to investigate aspects of teachers' beliefs and the ways they are linked to each other by gathering analysing and synthesising data in her own unique way. The research questions offer the researcher the flexibility to investigate the participants' perceptions in depth as far as the certain population is concerned. The choice of method which demands a reconstruction of past events from the participants' past experiences, as well as the expression of their feelings and interpretations seems to be an appropriate one. Likewise, the open-ended questions seem to be an appropriate choice of method of data collection as, without being unconstrained, 'can catch authenticity, richness, depth of response, honesty and candour the marks of qualitative data' (Cohen and Manion, 2000: 166). Finally, it is positive that the researcher acknowledges the limitations of her data, which can be caused by the participants 'selective retrospective memory' (page 74) and refers to the possible ways of expanding the study.

However, there are certain weaknesses in the study and/or its presentation by the researcher. First, she does not include figures in her study only but twice but the first reference is not correct while the second seems redundant. While talking about her sample (page 74), the researcher presents in numbers and in percentages the number of participants who have taken, for example, courses a few years before the study. The number of participants (39 out of 51) does not fit with the percentage (64%). Furthermore, in reporting her results, the researcher performs an unnecessary quantification as she gives the percentages of

the participants who feel that they are successful in learning a FL and the percentages of the participants who feel the opposite in the category *participants' level of success* (page 77). Either she should have given percentages to all of her categories or to none. The fact that the percentages of participants appear in only one category makes the reader question the frequency of item occurrence in the categories.

Secondly, the researcher does not mention the metres she has taken to ensure the quality of her data. As I argue in the previous part of this paper (page 11), the application of criteria such as validity and reliability are difficult to apply in qualitative studies as the present one. Still, every researcher should ensure the best possible quality of his/her data as the more qualitative and 'revealing' the question, the more complex the coding frame will need to be, therefore the greater the risks of inconsistency and bias in the researcher's coding (Oppenheim, 1992). The quality of the data in this particular study could have possibly been affected by previous interactions between the participants or by the restricted ability of some of the participants to communicate their thoughts accurately through written language. Moreover, there is always the possibility for the participants to have taken certain things for granted and therefore not to have revealed them. A piloting stage would have been essential as it would have offered the researcher the opportunity to check the appropriateness of the research questions, to check the clarity of the open-ended questions, gain feedback on their validity as well as check their appropriateness and finally, to generate categories and try out the coding system of the data analysis (adapted from Cohen and Manion, 2000: 260). However, the researcher does not mention piloting anywhere and this is, according to my opinion, a main deficiency.

The researcher's method is appropriate in investigating perceptions as it offers the researcher the tool to capture the depth and multidimensionality of human experience. However, if I conducted this study I would use follow-up interviews in order to deepen into participants' motivations and reasons for responding as they have (Kerlinger, 1970) and to clarify vague answers. For example, one of the participants writes that the classroom courses were 'monotonous' and 'uninteresting' (page 78). The subjective meaning attributed by the participant to these characterisations could have been further elucidated during a follow-up interview where the participants would have been asked to explain further, what he/she wrote, in a non-guided manner. The question could have been as follows: 'Could you please say a little more about what you have written here?' or 'Can you give me some examples of monotonous and uninteresting courses?'

Despite her apparent ability to uncover conceptions grounded in the data, analyse and synthesise I have the feeling that the researcher could have demonstrated a little more creativity, taking into consideration factors like the age of the participants and the reasons each of them have started learning the language. The latter in particular is very important as the reasons that lead individuals to start learning a language, determine their goals, objectives, expectations and consequently their perceptions of success. Although question four (page 74) addresses this issue, the researcher does not seem to consider it when she refers to the participants' perceptions of success and failure as well as to their attributions of achievement.

B. Horwitz's study

The second article reports a study where the researcher assesses learner beliefs on language learning using an instrument called BALLI (Beliefs about Language Learning Directory) which was developed to assess student opinions on various issues related to language learning. This version of BALLI contains thirty- four items and attempts to assess learner beliefs on the following five major areas:

- difficulty of language learning;
- foreign language aptitude;
- the nature of language learning;
- learning and communication strategies;
- motivation and expectations.

The researcher does not formulate her research questions in the ordinary direct way, which shortly leads the reader to assume that the above study aims form her questions as well. Moreover, she does not include an abstract at the beginning of her study, which I personally found rather frustrating.

A five point Likert scale have been used for each item and participants have been asked to read each item and then to indicate a response ranging from strongly agree to strongly disagree. A single composite score has not been derived from BALLI; rather, individual items yield descriptions of discrete student conceptions of language learning. The BALLI was administered to intact classes of first semester students at the University of Texas. The sample consists of 241 language students. Eighty German students (66% male and 32% female), ninety-eight Spanish students (56% male and 44% female) and sixty three French

students (35% male and 65% female). The participants ranged from seventeen to thirty-four years of age at the time of the study and the majority of them enrolled in the language class because of the University requirement.

Apparently, the researcher has taken precautions to ensure the validity of the study. The study is reported to have been piloted twice; according to Oppenheim (1992) piloting is a prerequisite for such a type of data collection as it helps for categories to be devised and refined asking them exhausted and discrete. There is also no evidence that the interpretation of data suits the researcher's purpose. On the contrary, she acknowledges the limitations of her data referring to the restrictions of her method (page 291) and the ambiguities in her results (page 291).

However, the reliability of such an instrument is difficult to be tested for it is impossible for the same statements to be distributed in a different form for the simple reason that there will no longer be the same statements. Generally, in attitude measurement the above restriction is overcome if the researcher uses more than one statement for the same attitude. Horwitz's object of investigation (beliefs) does not permit her to do that; therefore, she relies on single statements in order to measure the participants' beliefs which have as a result the reliability of the study to be reduced.

My personal view of using this kind of instrument in investigating beliefs in-depth is depicted to the following metaphor made by Oppenheim, 'when we describe a rainbow in terms of a spectrum of light wave frequencies, or mother love in terms of a score on an attitude scale, we become acutely aware that something is lost' (Oppenheim, 1992: 155). Such an instrument, imposes on participants statements that

otherwise may not have considered and gives them no alternative but to express an opinion choosing one of the given options. Furthermore, as Cohen and Manion (2000) argue, there is no assumption of equal intervals between the categories; none can infer the intensity of beliefs in the scale between the 'strongly agree' and 'strongly disagree'. In addition to the above argument, Oppenheim (1992) points out that even a participant's score in the middle region it can be an indifferent response due to the lack of knowledge or lack of attitude towards the specific belief expresses.

Nevertheless, as I argue in the first part of this paper (page 9), research in education can be conducted by various agents and for various reasons and the choice of methodology depends on its purpose as well as on the specific context, factors that can override the researcher's ideological preferences. Therefore, if I had to investigate the beliefs of 241 individuals obviously I would not be able to use either interviews or autobiographies for practical reasons. If I had to measure beliefs of such a large sample, the use of such an instrument would be one of my considerations but I would modify it, adding the category '*other*' (*please state*). It seems a straightforward way to investigate participants' beliefs which may be far more important for them than the statements in the rating scale and which cannot be revealed otherwise.

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