INTROSPECTIVE METHODS: THE SOCIAL CONSTRUCTION OF MENTAL PROCESSES[1]

Sarah J. Mann
University of Lancaster

INTRODUCTION

Introspective methods have recently been used by a number of researchers in the fields of second language learning, reading research, research into writing, problem-solving, etc. They have been adopted partly in reaction to the poverty of information which has been obtained so far in these fields from experimental methods and as an affirmation of a view of human beings as purposeful and strategic in the actions which they undertake.

Experimental methods —broadly— define and measure inputs to people and the subsequent effect of these inputs on people's measurable and observable outputs. The aim is either to correlate particular inputs with particular outputs and/or to test hypotheses about likely intervening processes taking place in people which turn the particular inputs into particular outputs.

Introspective methods, although still concerned with looking at inputs and outputs, focus particularly on the accounts people give of what they think, do and feel as they work on the particular inputs and outputs. The aim here is to gain an understanding of the relationships between inputs and outputs as these are informed by people's own accounts of these.

There is currently much controversy as to the appropriacy and validity of these different methods for the purposes of research into mental processes. Furthermore, the use to which introspective data can be put has not been fully explored. For example, if someone reports that they act in a particular way whenever they encounter a particular language problem, and that we label this action strategy **x**, can we then say that there is such a *thing* as strategy **x** and that this *thing* is then a good *thing* to give to other people with a similar language problem? The question we need to explore here concerns the nature and status of the data we obtain from introspective methods. Does it tell us about things which we can all see, experience and share or does it tell us about the meanings we make in order to explain what we do?

This paper offers an attempt to examine the nature of the data we obtain from introspective methods and suggests ways in which we might use such data. Furthermore, in the light of the controversy between the appropriacy of experimental

[1]See Berger and Luckman (1966) for the detailed argument for the view that reality, including psychological and social facts, is socially constructed.

and introspective methods, it seeks to re-examine the data obtained from experimental methods in the same light.

This paper will therefore examine three questions.

1.   What is the nature of the data we obtain from introspective methods?
2.   What can we use the data to inform?
3.   How does the discussion of introspective methods offered here relate to experimental methods?

Since we are concerned with understanding the validity of introspective methods —that is, whether the data we obtain is appropriate for the questions we ask— then it seems important to examine the nature of the data we can obtain using introspection. We then need to reconsider the kinds of question we can ask of the data, in the light of this examination.

I have included the third question: How does the discussion of introspective methods offered here relate to experimental methods? in order to present a re-examination of the validity of experimental methods in the light of the discussion of the validity of introspective methods offered in the main body of this paper.

Whatever method we use as researchers, it is incumbent on us to know —as far as possible— what we are doing when we use a particular method, what information we can obtain by using the method, and thus what we can legitimately use the data to inform.

The paper is divided into five parts. In the first section I offer a brief overview of what I would include under introspection. In the second and third sections I address the question concerning the nature of the data we can obtain through using introspective methods. I shall argue that introspective data concerning mental processes is socially constructed. In the second section I outline those factors which can be said to potentially influence any communicative event and/or process —and thus any communicative situation involving introspection. In the third section I identify those stages in the research process —using introspective methods— where these factors might come into play. In the fourth section I consider what we can use the data to inform —given the previous discussion of the nature of the data. In the fifth section I discuss experimental methods in the light of the earlier analysis of introspective methods.

SECTION 1. DEFINING INTROSPECTIVE METHODS

The term 'introspective' is often used to include three methods: thinking aloud, introspection —or immediate retrospection—, and retrospection.

Thinking aloud involves informants in reporting —without reflection— the thoughts which they are currently aware of as they engage in a particular activity. This data can be collected by instructing an informant to think aloud during a particular task, turning on a tape recorder and leaving him/her to it. The hope is that the data obtained will be the articulated —and therefore now observable— thought content and process of someone whilst they are engaging in a particular task. This method has been used mainly in work on problem-solving (see Dunckerner, 1945, Newell and Simon, 1972).

Introspection on the other hand involves informants in attempting to observe the workings of their minds and in trying to infer the particular processes and strategies currently being used by them, and then reporting these as they occur. They are trying to answer the question, "How am I doing x and why?" rather than "What am I thinking while ...". Introspection may involve informants in both recalling and anticipating, and in interpreting immediate mental states and actions. This method was used extensively by early psychologists such as William James (1890) in their attempts to observe and understand the psychology of the human mind.

Retrospection involves informants in recalling an event, activity or task that they have engaged in —either recently or at some time in the past— and in reporting what they can recall of the particular mental states and actions which they experienced and undertook at the time. This method has been used particularly in social psychology, second language acquisition studies and in reading research (see Glahn, 1980, Hosenfeld, 1976, for example).

It can be argued that introspection as it is described above is better named immediate retrospection since it cannot help but take place immediately after the event being focused on[2].

With each of these methods, informants are asked to report —and thus to reveal— aspects of their current or past inner mental world. This involves them in expressing through language a range of mental experiences, actions, meanings, attitudes and feelings. In most cases, apart from diary studies or solo thinking aloud into a tape recorder, the data will be collected during a research interview. Thus most data which is collected from introspective methods will have been obtained within a particular communicative situation —the research interview.

The nature of introspective data

The focus of this paper will be to discuss the validity of introspective methods from within a social and a social psychological framework. That is, I shall examine introspective methods as they are realised by actors within the context of the research process, and I shall identify and discuss those factors related to the communicative context of research which may affect the nature of the data we obtain from introspective methods.

It is obviously the case, however, that psychological factors such as memory —short-term memory capacity and recall—, attentional capacity, etc., are also relevant factors. These have been dealt with in detail elsewhere (see Ericsson & Simon, 1984, 1980, Cohen & Hosenfeld, 1981, Mann, 1982). In particular, Ericsson & Simon (1984, 1980) discuss the validity of introspective methods from a cognitive point of view. They argue that data obtained from verbal reports can be analysed according to an information processing model of cognitive processes in order to make explicit —and thus objectively observable— the informant's encoding processes. Thus they argue that their theory of verbalization allows them to identify under what conditions a verbal report can be taken to be valid for the mechanisms and internal structures of the mind

[2]Cohen and Hosenfeld, 1981, Cavalcanti, 1982 and Mann, 1982 all discuss this feature of introspection.

which are under investigation. They are therefore concerned with how cognitive structures and processes such as recognition, long-term memory, short-term memory, control of attention, fixation and automation affect verbal reports from introspective methods.

The discussion which follows takes the influence of cognitive factors as given, and makes problematic the effect of social and social psychological factors on the data obtained.

SECTION 2. FACTORS POTENTIALLY AVAILABLE TO INFLUENCE THE NATURE OF THE DATA

In any communicative situation involving face-to-face interaction or written communication, the following can be said to be mutually constitutive of the particular situation:

— the participants and their roles and relationships
— the topic(s) to be focused on
— any tasks to be done[3]
— the physical locality
— the time, both time when and time available
— the communicative medium, whether written or spoken
— the language used.

Although we can define a particular situation according to who is involved and why, where they are and when, etc., it is the definitions which the individual participants give to the situation and its relevant constitutive features which make it meaningful to them and may influence their actions within it.

Meanings will be subjectively and intersubjectively interpreted and defined by each participant over time. At any one moment, meanings may be arrived at from the interaction of the current systems of relevance[4] each participant brings with him/her, with the particular item "focused-on" to be made meaningful by them. Since we live and act in time, each participant's systems of relevance may change according to the 'new' meanings arrived at, with consequences for the next.

Thus, when looking at a communicative situation we are dealing with a dynamic process of meaning-making wherein the meanings arrived at derive from a continual interrelationship between the subjective systems of relevance of each participant and their modification through the intersubjective communication of participants and their interaction with the context.

In order to examine the influence of the communicative situation on the nature of introspective data, we need to look further at participants' meaning-making by identifying those features of the individual participant which may influence their systems of relevance and consequently the meanings they attribute within any particular interaction.

[3]See Breen (1985) for a thorough discussion of learners' reinterpretation of tasks.
[4]See McHugh (1968) and Rometveit (1981) for discussion of the concept of participants' definitions of situation.
See Filmer et al. (1972) for discussion of the notion of *Systems of relevance* as used by participants to define situations.

The individual participant's systems of relevance will be shaped by the following features of the individual participant:

a. the purposes, assumptions and expectations the individual brings with him/her to the situation and develops throughout it
b. the particular attitudes, values and beliefs the participant holds
c. the participant's factual, conceptual, socio-cultural, specialist and experiential knowledge systems
d. the communicative competence of the individual, for example his/her linguistic, paralinguistic, kinesic, pragmatic knowledge, etc.
e. the personality, age and sex of the participant
f. affective factors such as anxiety, needs, likes and dislikes of the individual.

All of these features —as they are uniquely present in each individual— provide the context, or systems of relevance, through which the individual will make sense of the world.

The particular purposes, interests, needs, fears, etc. of the individual are likely to make salient and relevant particular points internal and external to himself/herself which will focus what is to be made meaningful and influence the meanings arrived at. Emerging definitions of the situation will thus be arrived at by each participant through the interaction between their current systems of relevance and the particular situational factors made relevant to be focused on at any one time.

The meanings arrived at in a communicative situation are likely to relate to:

— the roles and relationships of participants
— the distribution of rights and obligations, of power and control, and of responsibility between participants
— the purposes and needs of other participants
— the participant's own purposes
— the degree of face-saving necessary
— any tasks to be undertaken.
— any texts to be read
— allowable and appropriate topics, tasks, and texts that can be introduced
— the appropriacy of *time* available for each 'topic', task, text
— the appropriacy of particular linguistic varieties and forms, and turn-taking behaviour
— allowable and appropriate behaviour
— willingness or not to participate in good faith and to play according to the rules of the game.

Each participant in a communicative situation will therefore interpret meanings within it and act according to his/her current definitions of the particular situation. These definitions will be continually evolving according to the interaction at any one time between the participant's particular systems of relevance and the focused-on situational factors.

Thus if we take the example of a research interview using introspective methods where the researcher's purpose may be to collect data about the way a language learner

deals with irregular verb forms, we could make the following points about the interview. Before embarking on the interview, the researcher may make certain assumptions concerning his/her informant's willingness to participate in the interview, the time s/he has available to do so, the particular linguistic ability s/he has, etc. The interrelationship between the purpose of the researcher and these assumptions in interaction with the researcher's definitions of the informant in the interview itself are all liable to influence the particular questions the researcher might ask, the time the researcher gives to the informant to do any task, the explanation the researcher gives to the informant about the purpose of the interview, etc.

The informant meanwhile will be interpreting the researcher's questions according to:

— his/her own definitions of the situation, which may include his/her assumptions about the researcher's purposes
— his/her willingness to take part in the interview
— his/her ability to conceptualise the notion of observing and reporting his/her own thoughts, etc.

The definitions they arrive at will then influence among other things the kinds of replies they give and the way they undertake any task. And since each participant —i.e. the researcher and the interviewee— will be interacting and communicating one with the other, the meanings expressed and the interpretations given will be continually constructed by this interplay of definitions communicated through language.

SECTION 3. STAGES IN THE PROCESS OF DATA COLLECTION

In this next section I wish to identify those stages in the process of data collection and presentation where the role of individual participant's definitions of situation —in its broadest sense— and the factors involved in this (as discussed above) may throw light on the nature of the data we are dealing with.

We can divide the process of data collection and presentation into 4 main stages: 1) preparation leading up to the research interview; 2) the research interview; 3) the analysis and interpretation of the data, and 4) the communication of the findings to the outside world.

1.   Preparation leading to the research interview

The researcher is engaged at this stage in choosing a research question, adopting appropriate research methods, and developing any necessary 'props' for data collection, for example, tasks to be done, questions to ask, etc.

In doing this the researcher is making explicit the particular purposes, assumptions and expectations s/he has in relation to the data and is thus beginning to shape the nature of the data to be obtained. That is, in order to select an 'appropriate' interview question it will be judged by the researcher to be potentially revealing of a particular kind of data —which it is anticipated it will reveal. When the researcher comes to

analyse the data obtained from this question, his/her anticipation of it will form part of the background knowledge s/he brings to its interpretation.

At this stage then, the researcher has already begun to construct the data —to give it meaning— before s/he gets to it.

2. The research interview

In order to examine this stage of the research process, I have necessarily had to break it down into components and to present these as if they were discrete entities arranged in some kind of sequence in relation each to the other. However, I want to stress that they are in reality interwoven and, as discussed in Section 2, in a mutual relation one to the other.

It is possible to view the introspective research interview as having four basic components.

The first constitutes the information we want to find out about, i.e. those mental actions and states which are continually being done and experienced, for example, by language learners. Depending on the focus of our research, the data we want to find out about may either have occurred sometime before the interview or may actually take place during the interview prompted, for example, by some kind of language learning task. If the latter, then the mental states and actions to be researched may be influenced by the informant's particular definitions of the task and the research situation. In broad terms, we are interested in this data in order to answer the following three questions: "What do language learners do?" "How do they do what they do?" and "Why?".

The second component we need to consider is the work informants have to do in order to attempt to observe and/or recall and interpret the particular mental states and actions being researched. This will involve informants in their own process of data collection and analysis. This process is likely to be influenced by:

1. their particular interpretation of the researcher's questions based on their current definitions of the situation
2. their current framework for understanding and talking about their own mental life
3. their memory, attentional and metacognitive capacities.

The third component to consider is what we do as researchers in order to find out about language learners' inner mental states and actions, i.e. what interventions we make in the form of questions and tasks in order to get our informants to reveal to us what, how and why they do what they do. These are likely to be both prepared before the interview and to arise out of the interview in relation to the researcher's interpretation of the informant's contributions, and the researcher's definition of the situation.

The fourth component to consider is the informant's reporting of the data to the researcher. This is likely to relate to the questions the researcher asks —the third component identified above. The interaction between the questioning and the reporting will involve both participants in a process of joint construction of meanings in order to establish a shared understanding of the reality of the mental world of the informant. That is, the participants will be attempting to find *a common language for*

talking about mental processes in order to share the existence of them as they are experienced by the informant. This interaction will be influenced by the current and evolving definitions of the situation of each participant. The recording and transcription of this talk will form the raw data for the researcher.

There are thus four main components which can be identified for the research interview: the mental actions and states to be reported, the informant's observation, recall and interpretation of the to-be reported mental actions and states, the researcher's interventions to reveal these and the informant's reporting of these. The data collected from such an interview will thus be the product of the continual interaction between these four components as it is defined and redefined and expressed by each participant.

3. The analysis and interpretation of the data

This stage involves the researcher in trying to make sense of the data collected. The researcher may do this in two ways. S/he may code the data according to a pre-developed analytical framework, or s/he may develop an analytical framework which is grounded in the data. In both cases, the researcher is engaged in a process of interpretation of the data in terms of the meanings s/he can give to it in relation to her/his current frameworks for making sense of mental phenomena. These frameworks for interpretation may be both explicit, for example, defined and articulated theoretical concepts, and/or implicit, for example, assumptions which are based on the researcher's own beliefs and experience concerning the mental world of human beings.

Although at this stage, the researcher is not engaged in face-to-face interaction, s/he will be engaged in a constructive process in interaction with the text-to-be interpreted: the transcript of the research interview. It is here that the researcher's systems of relevance, i.e. his/her implicit purposes, assumptions and expectations concerning his/her past experience of the particular text-type (data transcript) and of the task of data analysis, in relation to his/her explicit purpose as expressed in the research question and in the analytical procedure adopted, will serve to influence the particular current and evolving definition the researcher gives to the "analysis" situation and will thus influence the interpretation or sense s/he makes of the data.

4. The presentation of the findings

This last stage involves the researcher in writing up or presenting the research in order to communicate it to the outside academic world. The data —which is now presented as findings— undergoes yet further transformations as it is expressed by the researcher and as its meaning is further negotiated and interpreted by the audience or readers of the paper.

Summary of Section 3

The brief examination of the introspective research process reveals the socially constructed nature of the data once it has first been lived and experienced by the informant. This subjective and intersubjective construction of the data takes place at the following points:

1. the informant's recall and interpretation of the focused-on mental states and actions
2. the informant's and the researcher's sharing of this interpretation: its expression by the informant, its interpretation by the researcher and their joint construction of its meaning
3. the researcher's subsequent interpretation of the transcript of the informant's and the researcher's joint construction of the data during the research interview
4. the researcher's communication of her/his interpretation of the data in the form of research findings
5. the interpretation of these findings by any readers or audience of them.

The data forms and is reconstructed into texts for interpretation by the informant, the researcher and the research audience. All are engaged in subjective and inter-subjective constructions of the particular representation of the now past mental states and actions being researched and reported on.

Each of these constructions will have been influenced by the particular definitions each sense-maker has —at any given time— of the communicative situation they are in and within which the data forms a 'text' to be made sense of.

Section 4. What we can use the data to inform

The discussion in the last two sections suggests that the introspective data we are dealing with at each stage in its existence has been arrived at through a process of subjective and inter-subjective negotiation of meaning and of making sense of the world. It constitutes the interpretations individuals have made in order to make sense of the data:

—   as *remembered* mental states and actions
—   as *reported* mental states and actions
—   as *transcripts* of socially constructed and inter-subjectively negotiated mental states and actions
—   as *analytical categories* of mental states and actions
—   as *research findings* concerning mental states and actions.

The processes of communication by which the data is created and shared characterises the data as intersubjectively and socially constructed. The data is not the original mental states and actions being researched. Neither does the data represent these. The data represents individuals' (the informant's and the researcher's) constructions of mental states and actions, arrived at from an interpretation of the experience of these mental states and actions informed by the individual's particular and current frameworks for making sense of and understanding mental states and actions. The data is further used to inform —and thus to confirm or disconfirm— such frameworks for making sense of mental processes[5].

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[5]Ericcson & Simon (1980, 1984) examine verbal reports from *a cognitive psychological* point of view. They do not consider verbal reports from a social and communicative point of view. This paper constitutes a first attempt to do this.

If the data we obtain, as researchers, from introspective methods essentially involves the sharing of meanings and is about meaning-making then it seems important to honour this and to use the data in order to understand *how we make sense of* mental phenomena.

We might use the data to illuminate the following:

— to more fully understand *our own experience and conceptions of learning* and of language learning
— to enrich *our shared understanding of language learning* with different learner's views and experience of such learning
— to attempt to understand the actions (or strategies) used by language learners to achieve certain goals in terms of the *rationalisations* they give for these actions
— to understand the problems language learners have in terms of their systems of relevance and of their conceptions of language learning[6]
— to understand the relationships between the outward 'inputs' of learning: teachers' words, tasks to be done, texts to be read, etc., and the outward outcomes of learning, in terms of language learners' systems of relevance and of their sense-making procedures[7].

From this perspective, we cannot use the data we obtain from introspection in order to make statements of objective truth concerning observable and verifiable facts about mental processes. We can however use the data to inform intersubjectively agreed statements about our constructions of our subjective mental worlds and in particular of our understanding of our experience and activities of language learning.

SECTION 5. HOW DOES THE DISCUSSION OF INTROSPECTIVE METHODS OFFERED HERE RELATE TO EXPERIMENTAL METHODS?[8]

In the last part of this paper I wish to briefly examine the claim that experimental methods provide us with the objective data that introspective methods cannot provide[9]. It has been argued (see for example Seliger, 1983) that introspective methods cannot be used by researchers in order to test hypotheses and theories. Other empirical methods such as observation and experimentation are more appropriate for this purpose since they do not depend on the subjective accounts of informants but on observable behaviour and on measurable outcomes arising out of the controlled manipulation of particular relevant variables.

In this discussion, I shall assume experimental methods to involve the

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[6]See Saljo (1983) for a study of learners' conceptions of learning in relation to the quality of their learning outcomes.

[7]For example, Breen (1985) calls for research to take account of and seek to understand the significance of classroom reality and the likely effect that that social reality may have on the learning process.

[8]The points which follow have been argued and discussed in detail by many concerned with methodological issues in the social sciences. Some examples are: Brenner et al. (1978), Hamilton et al. (1977), Joynson (1974), Cicourel (1964).

[9]Introspective methods and experimental methods need not be exclusive. Baker (1979) used both these methods in order that the *accounts* given by her informants of their actions during an experiment, could inform the results of the experiment.

identification, operationalisation, control and testing of the effects of one or more variables on another for a specified sample of the population. Cohen and Manion describe this in the following way:

> The essential feature of experimental research is that the investigator deliberately controls and manipulates the conditions which determine the events in which he is interested. At its simplest, an experiment involves making a change in the value of one variable —called the independent variable— and observing the effect of that change on another variable —called the dependent variable (Cohen & Manion, 1980: 187).

Experimental methods can be described as having or seeking to attain the following characteristics[10]:
— they are empirical: the data is collected through controlled observation
— they are reductionist: the phenomena under investigation are reduced to operational definitions
— they are deterministic: phenomena are assumed to have causes which can be controlled and manipulated by the experimenter
— they are certitudinal: experimentation seeks to establish immutable and predictable facts
— the researcher seeks repeatability: the same results from an experiment should be obtainable if the same conditions are repeated
— they are observer-independent: experimental results will occur and exist independent of observers or experimenters.

It follows that when a researcher uses experimental methods s/he has to assume the following in order to be sure of the validity of the method:

— the variables that have been identified and selected for research are relevant to the particular field of study (e.g. the order of acquisition of certain morphemes in foreign language learning)
— that the variables to be researched are connected by linear relations of cause and effect (i.e. that they do not interact in a mutually influential way)
— that all the variables to be researched can be isolated and controlled
— that any possible intervening variables, such as the informant's systems of relevance and definitions of the experiment, can either be controlled or cancelled out by the subsequent analysis of the data
— that operational definitions of the variables to be researched actually represent and capture the variable under investigation (e.g. the time it takes to identify 'x' in an experiment can be taken as evidence for the use of a particular hypothesised mental process).

These assumptions —by no means exhaustive— suggest that human action can be reduced, by the researcher, to a mechanistic model for the purposes of his/her research.

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[10]The following is based on Giorgi (1971) who offers a detailed discussion of these and other characteristics in relation to the use of experimental methods in psychology and phenomenology.

In order to use experimental methods, the researcher has had to make certain assumptions about the psychological world and processes of human beings. And these assumptions are not neutral, for they characterise a particular conception of human beings and they arise out of the researcher's own particular systems of relevance.

If then the researcher cannot help but look for answers to and make sense of mental phenomena within and according to his/her own particular and current framework, paradigms or metaphors for understanding the world and the way human beings operate within it, what then of experimental methods and objective truth?

I would argue that experimental methods, along with introspective methods, involve intersubjective constructions on the part of researchers and researched of the phenomena under investigation. The difference between the two methods being that the experimental method denies informants the right to include *their realities*.

Summary

In this paper I have first argued that introspective methods involve the researcher and the informant in a subjective and intersubjective construction of the reality of mental processes. This construction is created through a process of meaning-making and meaning-sharing, through language, within particular communicative situations.

Second, I have argued that the nature of the data we are dealing with compels us to use it to understand *how we* —as researchers, learners and communicators— *make sense of and share* our mental worlds.

Lastly, I have questioned the assumption —implicit in many criticisms of introspection— that experimental methods do not have problems of validity whereas introspection does. On the contrary, the use of experimental methods itself embodies a particular view of human beings and their mental world which is neither neutral nor uncomplicated by the subjective and inter-subjective processes of meaning-making.

I would therefore argue that data from both introspective and experimental methods offers us a rich source of information for understanding how we experience and make sense of our mental worlds.

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