The Case Study as Research Method

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STAGE 2

ENSURING ACCURACY OF RESULTS
The accuracy of the results must be a paramount concern for the researcher from the beginning to the end of the study. Therefore, the steps that will be taken in the course of the project to ensure accuracy should be considered at the very outset, as soon as the appropriateness of the case method has been established. The purpose of this vital stage, which should inform all the others, is to demonstrate not only that the results were obtained through a rigorous process, but also that they correspond to reality.

The value of a scientific study depends in large part on the investigator’s ability to demonstrate the accuracy of the results. This is particularly true for qualitative research methods such as case studies: since these methods are more flexible, they can attract sloppy researchers who hope to avoid the direct evaluation to which the results produced by quantitative and experimental methods are automatically subjected (Hlady Rispal 2002a, b; Kvale 1987).

The concept of accuracy embraces two components: reliability and validity. Reliability relates to the consistency of the observations, meaning the replicability of the results: if the same phenomenon were investigated by other researchers using the same methodology, they should arrive at roughly the same conclusions (Kvale 1987). Validity relates to the connection between the results and reality. A study is valid if the constructs developed by the researcher are good representations or measures of the categories of human experience under observation. Reliability is a necessary condition for validity but does not guarantee it (Bachelor 1992; Light, Singer and Willett 1990).

When we conduct a case study for research purposes, we are examining the interactions among a number of variables in a natural setting, often without any preconceptions. The researcher
The Case Study as Research Method

plays a decisive role at every stage of the process: data collection, analysis and interpretation. Therefore, the researcher’s actions and personal characteristics can have a significant direct impact on the accuracy of the results. There are three classic types of bias that investigators are liable to introduce: the holistic illusion, which consists in ascribing greater connectedness and consistency to events than they actually possess (for example, by ignoring facts that do not fit); the elite bias, which consists in attaching greater weight to information from informants who express themselves clearly than to reports from less articulate informants; and over-assimilation, whereby the researcher accepts the facts and perceptions conveyed by local informants whole cloth, surrendering his or her own vision and critical faculties.

Personal characteristics that can introduce bias into the analysis and interpretation of the evidence include individual differences, gender, age, theoretical orientation, the investigator’s history with the object of study, and level of experience (Hill, O’Grady and Price 1988; Landry and Farr 1980). Psychological variables such as self-confidence, level of anxiety and cognitive complexity can also come into play (Landry and Farr 1980). The researcher’s history and expectations can therefore introduce idiosyncratic elements (Bachelor 1992; Beutler and Hamblin 1986).

To ensure the accuracy of the results, the researcher’s first task is therefore to detect potential sources of bias or contamination and address them. To do so, the researcher may have to apply measures that can appear contradictory at first glance. It is illusory to think that we can obtain results that are entirely reliable and valid. For one thing, in qualitative research it is difficult if not impossible to demonstrate reliability and validity in a precise, numerical manner, as one can in quantitative research. For another, techniques for enhancing reliability and validity operate, more often than not, by reducing the impact of the researcher’s subjectivity as far as possible, or by providing information to enable others to check the process through which the results were obtained (Guba 1981). This chapter, which is largely based on Lecompte and Goetz (1982), covers the factors that must be borne in mind and the steps to be taken in order to increase reliability and validity.

**Reliability** can be divided into two components: internal reliability and external reliability. Internal reliability means that other investigators would arrive at essentially the same findings if they were to analyze and interpret the data produced by the study. In other words, the conclusions drawn from the evidence by multiple
Ensuring Accuracy of Results

independent observers and coders would be sufficiently consistent to describe the phenomenon in a similar way and come to the same conclusions about each case. External reliability means that an independent researcher using the same methodology would obtain essentially the same data if he or she were to observe the same environment or a similar environment.

INTERNAL RELIABILITY

To enhance internal reliability, it is recommended that the researcher take the following five steps, inasmuch as it is possible to do so.

**STEP 2.1 Use concrete and precise descriptors**

Using the most concrete and precise descriptors possible means reporting what people said word for word and describing their behaviours or activities in narrative form. Inferences based on sources other than direct observation should be kept to a minimum. For every inference drawn, one must ask whether it is appropriate and whether all alternative explanations can legitimately be dismissed (Yin 2003).

**STEP 2.2 Safeguard the raw data**

The raw data must always be kept accessible so that other researchers can check and confirm the accuracy of the interpretations. Whenever possible, it is preferable to use electronic recording devices: the tape recorder, camcorder and camera should be regarded as standard data collection tools.

Unfortunately, this was impossible to do in my study of business executives, as I was researching a situation in which several actors were intervening simultaneously, and in any event I was prevented from doing so by confidentiality agreements with the informants. However, I did keep copies of written documents or transcribed excerpts when I could. Observations were written down immediately and all the evidence was promptly labelled and entered in a file for each observation site.
Involving several researchers in the study

Time and budget permitting, it is always preferable for several researchers to be involved in a study. This is one of the most effective ways to ensure internal reliability. To be sure, a single investigator can perform an excellent analysis, provided he or she controls for potential bias, but having a number of researchers involved can make it much easier to ensure the accuracy of the results. If independent analysts agree among themselves, it can be assumed that the results will not be skewed by their individual characteristics (Andrew 1985; Bachelor 1992; Cone and Foster 1982). This also increases the potential for creativity in the analysis and interpretation of the evidence (Bachelor 1992; Eisenhardt 1989; Miles and Huberman 1994; Taylor and Bogdan 1984).

When there are several researchers working on a project, they evaluate the evidence individually and then compare notes. Areas of disagreement are identified and discussed in order to deepen the analysis and interpretation of the data and confront divergences; the tension of intersubjectivity can help guarantee a measure of objectivity (Halling and Leifer 1991). In this case, we can speak of interjudge agreement, which does not however necessarily guarantee that the results correspond to reality, i.e., that they are valid (Berk 1979; Carmines and Zeller 1979). The evaluators may be very reliable and still be detached from the constructs of interest; in other words, the judges may all err in the same way.

In their study of the politics of strategic decision-making in high-velocity environments, Eisenhardt and Bourgeois (1988) reported that after collecting qualitative and quantitative information, each of them independently analyzed one type of evidence. They developed their own preliminary hypotheses, traded the results of their analyses, and worked to find patterns in the data by consensus.

Confirm the collected data

At some point, we need to go back to the key informants to confirm what the observer saw and recorded, in order to make sure that those observations correspond to reality and have not been unduly affected by the investigator’s bias. This can be done during the data collection
stage or during data analysis and interpretation. The informants’ points of view can also be most useful for arbitrating differing perceptions on the part of the researchers.

In my research on the behaviour of business executives, this confirmation process was conducted mainly with the developers. We met frequently to discuss my observations, which sometimes led me to check and clarify other evidence with other sources.

**STEP 2.5 Have the interpretation of the data reviewed by peers**

It is always preferable to have the researcher’s interpretation of the evidence reviewed by peers to see whether they arrive at similar conclusions. This is usually done at the reporting stage. It can also be a good idea to ask colleagues to review the research report. The point here is not to expunge the investigator’s subjective experience from the report; on the contrary, the document should be informative regarding the researcher’s expectations, influences and possible biases. The report should be framed in the most concrete and precise terms possible. One simple way to do so is to directly quote the informants and/or documents from which the information in the report was obtained.

In my study of business executives, I quoted subjects’ comments and the documents I had consulted verbatim wherever possible. This technique was used to produce the case descriptions in both the appendix and the summary included in the body of the report. As a doctoral candidate, I was also able to hold frequent discussions throughout the research process with a committee of three experienced researchers with different fields of interest (unfortunately, after completing a Ph.D. thesis, a researcher seldom has the opportunity to benefit from this type of advice in subsequent work), and I discussed my analysis and interpretation of the evidence with fellow doctoral candidates who were doing similar research on companies with comparable characteristics.

**EXTERNAL RELIABILITY**

**External reliability** is established by demonstrating that independent researchers would discover the same phenomenon or develop the same constructs if they applied the same methodology in a similar or...
identical setting. To be sure, this is no easy matter, particularly for a case study, which by its nature is unique and often idiosyncratic. However, external reliability can be significantly enhanced if five major threats are addressed through the steps described below.

**STEP 2.6 Establish the researcher's position**

Researchers must always establish to what extent they are part of the phenomenon they are studying and define their precise position. They must consider how their position may be influencing their organization of the reality they are observing. The investigator’s role and position in the phenomenon he or she is studying must always be stated when publishing the research results, so the reader is aware of the standpoint from which the reported observations were collected.

A case study depends, to some extent, on the type of social relationship the researcher establishes with informants. Some investigators confine themselves to a professional relationship, while others have been known to form friendships with subjects. The latter course can yield privileged or private information but may also affect the researcher’s critical sense. The researcher must be aware of this risk and take care to describe the nature and development of his or her relationship with study participants and informants.

In my study of the behaviour of business executives, I noted on several occasions, in the research report and the articles based on the results, that the evidence was collected by non-participant observation, and the relationship with participants and informants was one of trust and not purely professional, though neither was it a prelude to friendship.

**STEP 2.7 Describe the informant selection process**

External reliability requires a careful choice of informants and a full description of the process by which they were selected. One must be able to provide a list of types informants and their characteristics, for in a case study the quality of the collected information largely depends on the informants from whom it was obtained. The characteristics in question include the relevant personal traits of the researcher, the informants and the other participants in the phenomenon. This
description of the study population and the informants must appear in all documents in which the research results are reported. It is imperative that the researcher indicate the groups and sources from which his or her information and observations were drawn.

My report on the study of business executives’ behaviour included this type of information. Furthermore, an appendix detailing the standard structure of the files on the 11 observed technology adoption processes provided the full data and the sources (name of informant, title of document consulted, etc.).

**STEP 2.8 Describe the characteristics of each research setting**

The situations and social conditions in which the data was collected should be described. For example, in his study of education in an ethnic neighbourhood in a major city, Ogbu (1974) showed that the information provided by parents in a school environment was not the same as that provided in a home setting. This can often be the case with the evidence obtained from a study participant: for example, the information may differ depending on whether the participant is being interviewed alone or in a group. Therefore, the specific environment at each study site – i.e. the physical, social and interpersonal context in which the data was collected – must be described as clearly as possible. This enhances our understanding of the interpretation of the data and also provides points of reference for anyone who might wish to replicate the study.

In my study of business executives, I included an appendix to the research report providing a detailed description of the environment at each business and the specific characteristics of each observed technology adoption process. The characteristics of each research site were also summarized in a data coding diagram in another section of the report.

**STEP 2.9 Clearly define the study’s concepts, constructs and units of analysis**

The investigator’s premises must be clearly stated, since it is virtually impossible to replicate a study if the concepts, constructs or units of analysis are idiosyncratic, poorly delineated or simply unknown. If we fail to carefully define our categories and their theoretical underpinnings,
there is a risk that our findings will be idiosyncratic or difficult to compare. When the hypotheses and constructs are unclear, the results may also be difficult to understand.

It is therefore vitally important to explicitly state the hypotheses and metatheories underlying the choice of terminology and of data analysis and interpretation techniques. For example, the concept of culture is variously defined by different researchers, schools of thought and disciplines. The constructs used must also be defined in order to enable any other investigator who wants to conduct a similar study to proceed from the same starting point. To be useful, the definitions of the constructs and concepts must be clearly and precisely stated; i.e. we must clarify the specificity of the variable as well as what distinguishes it from other variables, and explain how it can be measured. The definitions should not be the researcher's individual or personal concepts.

This is not to say that researchers cannot develop their own conceptual schema, and choose to dismiss or ignore those used by other investigators. On the contrary: it would be absurd to use a previously established classification only because it is known and easy to apply, if we know that doing so is liable to result in a premature categorization that is ill-suited to the evidence, or in mechanical or reductive standardizations that will render the results trivial. However, researchers who choose to develop their own conceptual scheme must then produce a theoretical analysis of its implicit structure. The analytic units must be clearly defined, which is to say we must know where they begin and end. Finally, the variables on which the data collection and analysis operations were based must be described.

In my study of business executives, the concepts used – technology, technology adoption, company size (small, medium, large), nature and complexity of the technology – were all explicitly defined. The definitions corresponded to those generally used in the literature and therefore were not idiosyncratic.

**STEP 2.10**

**Describe the data collection strategy**

Researchers should explain their methods so that others can easily use their publications as a manual to replicate the study, which cannot be done unless the data collection strategy is stated and described in detail.
External reliability is demonstrated by various elements of research publications. The investigator must always provide a description of the study population and of the instruments used for data collection, analysis and interpretation. Once again, the purpose is to make it possible for other researchers to replicate the study.

In my study of business executives, one section of the research report was devoted to a precise description of each of the steps I had followed. Among other things, I explained how the evidence was collected and then analyzed, and finally the process by which it was interpreted.

Table 2 below summarizes the actions that should be taken to establish reliability, and specifies the stage and step to which each action belongs.

Table 2

<table>
<thead>
<tr>
<th>Dimension</th>
<th>What it means</th>
<th>What to do</th>
<th>Stage (Step #)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Internal reliability</strong></td>
<td>Data is stable</td>
<td>Use concrete descriptors</td>
<td>Collecting data (3)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Safeguard raw data</td>
<td>Collecting data (3, 6)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Use multiple researchers</td>
<td>Analyzing data (3)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Ask key respondents to confirm observations and evidence</td>
<td>Collecting data (2, 5) Analyzing data (3)</td>
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<tr>
<td></td>
<td></td>
<td>Have the analysis reviewed by peers</td>
<td>Analyzing data (3) Reporting data (4)</td>
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<tr>
<td><strong>External reliability</strong></td>
<td>Results are replicable</td>
<td>Establish the researcher’s position</td>
<td>Preparation (3) Collecting data (3, 4) Analyzing data (3, 4) Reporting data (4)</td>
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<tr>
<td></td>
<td></td>
<td>Select informants judiciously</td>
<td>Collecting data (4)</td>
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<td></td>
<td></td>
<td>Describe data collection situations and social conditions</td>
<td>Collecting data (3, 6) Analyzing data (4)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Clearly define the study’s premises</td>
<td>Preparation (1)</td>
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<tr>
<td></td>
<td></td>
<td>Describe the data collection strategy</td>
<td>Reporting data (3, 4)</td>
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We shall now turn to **validity**. Validity is established by producing a reasonably well-documented and consistent interpretation of the evidence so that other researchers can reach a general consensus (Kvale 1987). Validity also has two sides: internal and external. Internal validity means that the investigator has in fact observed and measured the things he or she set out to observe and measure, and that the descriptions and explanations of the phenomenon of interest are true representations of the observed reality. External validity refers to the extent to which the identification and description of the phenomenon under study are legitimate and comparable; in other words, the degree to which the premises and constructs generated, refined and tested in the course of the study are applicable to other cases, i.e., generalizable. Construct validity is therefore part of external validity, since it refers to the consistency and comparability of the constructs.

**INTERNAL VALIDITY**

*Internal validity* is probably the main strength of the case study. Observing informants in their natural environment and collecting data over a long period of time makes it possible to continuously analyze and compare the evidence in order to refine the constructs and make sure they correspond to reality. The following four steps can strengthen internal validity.

**STEP 2.11 Control for the effects of the observer’s presence**

It is entirely possible and indeed probable that the observer’s presence will have an impact on the evidence that is collected (Schwartz and Schwartz 1955). What the observer sees and reports depends on his or her position within the environment under study. It is therefore important for observers to guard against their own ethnocentrism and perceptual biases. To do so, the researcher must submit an explicit retrospective analysis of his or her own position as an observer in the research setting and the relationships he or she established with the informants, which should be as neutral as possible. The researcher must collect evidence from several sources so that measures of agreement can be calculated (Benbasat et al. 1983; Denzin 1978; McMillan and Schumacher 1984), and also make sure his or her constructs are
supported by and consistent with the evidence. The same applies to the categories used, which must be meaningful for the participants and reflect their experience of reality.

In my study of business executives, my status was clearly stated several times in the research report. I also used several sources, which made it possible to corroborate the data in many cases. To make sure I had correctly understood the meaning and import of informants’ comments, I used semantic tests to specify and clarify the meanings of the terms and concepts used by informants. I also used the rephrasing technique as often as possible.

**STEP 2.12 Select a representative sample**

When there are too many potential participants or informants, or when the social setting under observation is so complex that continuous observation of all the events, activities or sites is not possible, we need to select a sample from which to collect data. In this case, it is important to prevent any distortions in the raw data or in data analysis or interpretation due to sampling. If we are unable to compile a sample that is representative of the sub-groups, factions, events and social settings that fall within the scope of our study, the results may describe only a segment of the phenomenon, participants or circumstances.

It is very important to establish the characteristics and specific features of the informants, participants and social settings, and to collect evidence from each category. The researcher must strive to establish contacts and relationships with the largest and most diverse selection of informants possible, and to observe a wide range of social settings. Even though it is a theoretical sample, the investigator must make sure that it is representative of the population of informants and participants, as well as of the activities, events and sites associated with the phenomenon.

This should be demonstrated in all reports on the study findings in order to make the results comparable with those of other case studies of the same phenomenon and verifiable using other samples of the same population.

In the case of my study of business executives, the sample and its relationship to the target population were meticulously described in the research report. Each relevant variable was described
and the choices made with respect to each variable were explained and supported. Finally, a detailed description of the sample selection process was also provided.

**STEP 2.13** Develop a chain of meaning and a data definition table

The researcher must be able to deal with any changes that occur during the study. Clearly, the addition, departure or death of participants can affect the evidence. The researcher must ensure that the data collection process is unaffected by changes of this type. This is where the chain of meaning and the data definition table become important, enabling the investigator to compare activities and events even if they occurred at different times and with different participants.

A major change occurred in one case in my study of business executives and new technology. My standard notes, written immediately after each data collection, served as a data definition table and to maintain the chain of meaning. Therefore, the departure of one of the informants did not prevent comparison of the data.

**STEP 2.14** Identify and exclude alternative explanations

The researcher must make sure the conclusions of the study are accurate. The basic strategy for testing data interpretation consists in identifying and excluding other possible explanations of the evidence and looking for counter-evidence that could invalidate the conclusions (Kvale 1987; Miles and Huberman 1994, Patton 1980). Excluding rival explanations requires an exhaustive review of the literature; searching for counter-evidence demands an effective, efficient data classification system.

In their study of the politics of strategic decision-making in high-velocity environments, Eisenhardt and Bourgeois (1988) report that, after going back and forth between the evidence and the hypotheses, they took pairs of firms and listed the similarities and differences. They then used the literature to refine their intuitions and test other explanatory schemes.
EXTERNAL VALIDITY

As we have noted, external validity, which relates to the generalizability of the results, is probably the main weakness of the case study. However, this should not discourage us. As Cronbach (1975) noted, “all generalizations ‘decay’ like radioactive substances, having half-lives, so that after a time every generalization is more history than science.” However, we do need to exercise vigilance in order to produce results that can at least be compared and contrasted with other cases. To maintain external validity, we therefore have to consider the factors that threaten the comparability and transferability of the results. Increasing the number of cases studied will automatically help improve the external validity of the results. But below we also discuss four other methods for enhancing external validity.

**STEP 2.15 Control for the effects of study site specificities**

Cross-case comparison of constructs is not possible if the construct is specific to a particular group or if the researcher has mistakenly chosen a group to which it does not apply. The constructs developed in a given context may not be comparable because they are specific to the particular case(s). It is therefore important to ascertain that the context selected for the study does not have specific features that will automatically make the results idiosyncratic.

**STEP 2.16 Avoid over-studied sites**

Choosing a site that is saturated with studies can make the results less representative. It may be assumed that frequently studied groups and cultures differ from other groups. The investigator should therefore choose a site that has not been saturated with repeated observation and investigation, regardless of the nature and purpose of the studies. This is particularly true for new, trendy phenomena that draw researchers working in different fields. For example, for a study of dropping out, a school that has introduced a spectacularly successful program to keep kids in school might not be a good choice, since it is likely to have attracted droves of researchers.
Choose cases that are replicable over time

While it is unlikely that the phenomenon of interest will subsequently recur in precisely the same way, the researcher should attempt, as far as possible, to choose for the study a setting in which the observed phenomenon could recur in some form. It is also important to track and record the collected data and its meaning at each point in the study. A variety of data collection strategies should be used to make the results comparable on an ongoing basis. The point is to make sure that the phenomenon studied at the beginning of the process is the same as the one observed subsequently.

In my study of medium-sized business executives, a full report was prepared on the collected data after each site visit, regardless of its nature. Extensive documentation was compiled in this manner, making it possible to determine whether changes had occurred.

CONSTRUCT VALIDITY

Construct validity refers to the extent to which abstract terms and meanings are consistent over time, across sites and populations (Cook and Campbell 1979). As we saw with reliability, the comparability of case studies can be reduced or rendered more difficult by idiosyncratic use of analytic constructs or by generating constructs so specific to a particular case that they cannot be used for cross-case comparison.

Select cases relevant to the research objectives

It is very important that the cases selected for observation match the constructs we want to study (Yin 2003).

Choose or develop appropriate measures

The indicators used in collecting, analyzing and interpreting the evidence must in fact measure the constructs that have been defined for the purposes of the study.
Use as many information sources as possible

One should always use several information sources and triangulate the data in order to formalize the meanings the participants ascribe to a phenomenon.

Explain the research protocol and present the data honestly

The evidence should always be presented in a transparent manner and the investigator should demonstrate that the research protocol was followed scrupulously (Yin 2003).

Other steps, which have already been described, also contribute to increasing construct validity. These include keeping a chain of evidence and checking meanings with key informants, making it possible for an outside observer to determine whether the evidence presented accurately reflects the empirical data on which it is based. Having a research team or submitting the study to peer review helps ensure that interpretations of the facts are well grounded and not simply assumed, even when they seem routine or self-evident (Yin 2003).

Table 3 shows the main actions that should be carried out to increase the validity of the data and indicates the stage and step to which the action relates.

Having reviewed all the key points that must be borne in mind in order to ensure that the results of the case study are accurate, the researcher is now ready to proceed to the next steps, beginning with the preparatory work.
### Table 3
**Ensuring Validity**

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<th>Dimension</th>
<th>What it means</th>
<th>What to do</th>
<th>Stage (Step #)</th>
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<tbody>
<tr>
<td><strong>Internal validity</strong></td>
<td>Results are credible</td>
<td>Control for effects of observer’s presence</td>
<td>Preparation (3, 5)</td>
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<td></td>
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<td>Select representative samples</td>
<td>Selecting cases (2)</td>
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<td></td>
<td>Manage effects of change</td>
<td>Collecting data (3, 4)</td>
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<td>Exclude alternative explanations</td>
<td>Analyzing data (3)</td>
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<td>Interpreting data (2, 3)</td>
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<td>Study several cases</td>
<td>Control for the effects of observation settings</td>
<td>Preparation (4)</td>
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<td></td>
<td>Avoid over-studied sites</td>
<td>Selecting cases (1)</td>
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<td>Control for history effects</td>
<td>Preparation (4)</td>
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<td>Choose cases that are representative of the</td>
<td>Collecting data (5)</td>
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<td>phenomenon to which the constructs relate</td>
<td>Analyzing data (4)</td>
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<td></td>
<td>Make sure construct measures are appropriate</td>
<td>Preparation (4, 6)</td>
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<td>Present research protocol and data in a</td>
<td>Selecting cases (1)</td>
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<tr>
<td><strong>External validity</strong></td>
<td>Results are transferable</td>
<td>Study several cases</td>
<td>Preparation (2)</td>
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<td>and construct validity</td>
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<td>Control for the effects of observation settings</td>
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