CHAPTER 1

Concepts-by-postulation and concepts-by-intuition

The effects of the wording of survey questions on their responses have been studied in depth by Sudman and Bradburn (1983), Schuman and Presser (1981), Andrews (1984), Alwin and Krosnick (1991), Molenaar (1986), Költringer (1993), Scherpenzeel and Saris (1997). In contrast, very little attention has been given to the problem of translating concepts into questions (De Groot and Medendorp 1986, Hox 1997). Blalock (1990) and Northrop (1947), distinguish between concepts-by-intuition and concepts-by-postulation.

1.1 Concepts-by-intuition and concepts-by-postulation

Blalock (1990: 34) asserts the following about differentiating between the concepts of intuition and postulation:

> Concepts-by-postulation receive their meaning from the deductive theory in which they are embedded. Ideally, such concepts would be taken either as primitive or undefined or as defined by postulation strictly in terms of other concepts that were already understood. Thus, having defined mass and distance, a physicist defines density as mass divided by volume (distance cube). The second kind of concepts distinguished by Northrop are concepts-by-intuition, or concepts that are more or less immediately perceived by our sensory organs (or their extensions) without recourse to a deductively formulated theory. The color "blue," as perceived by our eyes, would be an example of a concept-by-intuition, whereas "blue" as a wavelength of light would be the corresponding concept-by-postulation.

The distinction he makes between the two is that concepts-by-intuition are simple concepts whose meaning is immediately obvious while concepts-by-postulation are less obvious concepts that require explicit definitions. Concepts-by-postulation are also called constructs. Examples of concepts-by-intuition include judgments, feelings, evaluations, norms, and behaviors. Most of the time it is very obvious that a text presents a feeling (x likes y) or a norm (people should behave in a certain way) or behavior (x does y). We will return

to their classification later. Examples of concepts-by-postulation might include "ethnocentrism," different forms of "racism," and "attitudes toward different objects." One item in a survey cannot present an attitude or racism. For such concepts more items are necessary and, therefore, these concepts need to be defined. This is usually done using a set of items that represent concepts-by-intuition. For example attitudes were originally defined (Krech et al. 1962) by a combination of a cognitive, affective, and action tendency component. In Figure 1.1 an operationalization of the concept-by-postulation "an attitude toward Clinton" is presented in terms of concepts-by-intuition, questions, and assertions representing the possible responses.

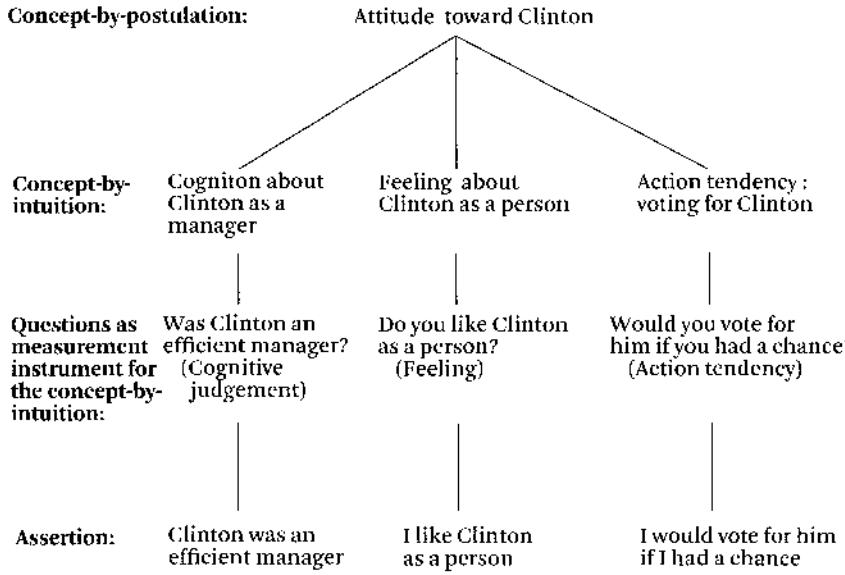

FIGURE 1.1: *Operationalization of an attitude toward Clinton.*

At the bottom of Figure 1.1 three assertions are mentioned. There is no doubt that the assertion "Clinton was an efficient manager" represents a cognitive judgment, that the assertion "I like Clinton as a person" represents a feeling and that the assertion "I would vote for him if I had a chance" represents an action tendency. From this it follows that the questions asking for such assertions represent measurement instruments for "cognitions", "feelings", and "action tendencies," respectively. Given that there is hardly any doubt about the link between these assertions, questions, and the concepts mentioned, these concepts are called concepts-by-intuition. However, the reverse relationship is not necessarily true. There are many different cognitive judgments to formulate about Clinton, including, as leader of his party or as world leader. From this example we can conclude that there are many different possible "cognitions,"

"feelings," and "action tendencies" with respect to Clinton. But normally, after selecting a specific aspect of the topic a question, linked to that concept can be formulated, that reflects the "concept-by-intuition."

In contrast to concepts-by-intuition, concepts-by-postulation are less obvious. In our example in Figure 1.1, the concept-by-postulation "attitude toward Clinton" has been defined according to the attitude concept with the three selected components. However, this choice is debatable. In fact, currently attitudes are often defined on the basis of "evaluations" (Fishbein and Ajzen 1980) and not the components mentioned previously. Although these two operationalizations of attitudes differ, both define attitudes on the basis of concepts-by-intuition.

Blalock as early as in 1968 (Blalock 1968) complained about the gap between the language of theory and research. More than two decades later, when he raised the same issues again, the gap had not been reduced (Blalock 1990). Although he argues that there is always a gap between theory and observations, he also asserts that not enough attention is given to the proper development of the concepts-by-postulation. As an illustration of this we present measurement instruments for different forms of racism.

Several researchers have tried to develop instruments for new constructs related to racism. Typical examples are the following constructs: "symbolic racism" (McConahay and Hough 1976; Kinder and Sears 1981); "aversive racism" (Kovel 1971, Gaertner and Dovidio 1986), "laissez-faire racism" (Bobo et al. 1997), "new racism" (Barker 1981); "everyday racism" (Essed 1984), and "subtle racism" (Pettigrew and Meertens 1995). In all these instruments, similar statements have been employed in different combinations and using different interpretations and terms. Table 1.1 illustrates this point for the operationalizations of symbolic and subtle racism. Table 1.1 shows that five items of the two constructs are the same but each construct is also connected with some specific items. The reason for including these different statements is unclear; nor is there a theoretical reason given for their operationalizations.

The table identifies that "subtle racism" is defined by two norms (items 1 and 2), two feelings (items 5 and 6), four cognitive judgments (items 7a–7d and some other items). It is not at all clear why the presented combination of concepts-by-intuition should lead to the concept-by-postulation "subtle racism." Nor is the overlap in the items and the difference in items between the two concepts-by-postulation, subtle and symbolic racism at all clear. Even the distinction between the items for "blatant racism" and the items of the other two constructs has been criticized (Sniderman and Tetlock, 1986; Sniderman et al. 1991).

One of the major problems in the operationalization process is that the researchers do not, as Blalock suggested, think in terms of concepts-by-intuition but only in terms of questions. They form new constructs without a clear awareness of the basic concepts-by-intuition being represented by the questions. This observation suggests that it would be useful to study the link

Table 1.1: Operationalization of subtle and symbolic racism.

Items		Subtle	Symbolic
1	Os living here should not push themselves where they are not wanted.	+	+
2	Many other groups have come here and overcame prejudice and worked their way up. Os should do the same without demanding special favors.	+	+
3	It is just a matter of some people not trying hard enough. If Os would only try harder, they could be as well off as our people.	+	+
4	Os living here teach their children values and skills different from those required to be successful here.	+	
5	How often have you felt sympathy for Os?	+	+
6	How often have you felt admiration for Os?	+	+
7	How different or similar do you think Os living here are to other people like you		
7a	In the values that they teach their children?	+	
7b	In the religious beliefs and practices?	+	
7c	In their sexual values or practices?	+	
7d	In the language that they speak?	+	
8	Has there been much real change in the position of Os in the past few years?	+	
9	Generations of slavery and discrimination have created conditions that make it difficult for Os to work their way out of the lower class.		+
10	Over the past few years Os have gotten less than they deserve.		+
11	Do Os get much more attention from the government than they deserve?		+
12	Government officials usually pay less attention to a request or complaint from an O person than from "our" people.		+

"O" stands for member(s) of the outgroup, which include "visible minorities" or "immigrants."

between a set of concepts-by-intuition and questions for questionnaires. If such a link could be established, these basic concepts could then be used in a more systematic way to formulate higher-order concepts-by-postulation such as attitudes and others. Therefore, let us shift our attention to the relationship between concepts-by-intuition and the concepts-by-postulation in the following section.

1.2 The distance between concepts-by-intuition and concepts-by-postulation

We *think* that the best way to discuss the issue of the gap between concepts-by-intuition and concepts-by-postulation is to give an example. The example

we use is the measurement of "political interest." In democratic countries it is assumed that people should be sufficiently interested in politics to participate at least in the selection of candidates who represent them in the political institutions. Therefore, "political interest" is a concept that is often at the top of the list of variables to be included in survey research. The measurement of "political interest" at first glance appears deceptively straight forward.

1.2.1 Use of the concept of a direct question

The measurement appears to be simple because a direct question about "political interest" can be formulated.

1.1 *How interested are you in politics?*
   1. *Very interested*
   2. *Somewhat interested*
   3. *Not very interested*
   4. *Not at all interested*

Indeed, in election studies this question is frequently used. This operationalization assumes that political interest can be measured directly by the answers to the direct question and initially it appears that question 1.1 is a measure for the concept-by-intuition "political interest." However a deeper analysis reveals otherwise.

In Figure 1.2 we present this assumption in a path model allowing for random measurement errors (e) due to mistakes in the answer or the recording of the interviewer. This model suggests that people express their political interest directly in their response except for possible random errors. The variable of interest is "political interest." This variable cannot be observed directly because the scores on this variable are in the mind of the respondent. This is called a latent or unobserved variable and is presented in the circle. The responses to question 1.1 can be observed directly. Such variables are usually presented in squares while the random errors, inherent in the registration of any response, are normally denoted by an "e." This model suggests that the verbal report of the question is determined by the unobserved variable "political interest" and random errors. We will use this notation throughout the book.

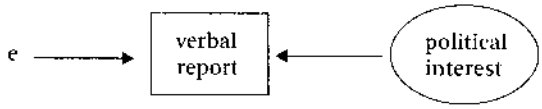

FIGURE 1.2: *A measurement model for a direct measure of political interest.*

Thomassen (2002) suggested question 1.1 for the European Social Survey (ESS), but he comments on this question: "As common as this measurement is, it might have a clear disadvantage. It is not unlikely that people in general will

associate politics with traditional politics and will claim not to be interested in politics, although they are interested in the activities of, for instance, "new social movements." Kriesi (1993) suggested that the "participation in politics" changes from the "classical participation in parties" to "participation in new social movements."

This discussion suggests that the measurement of "political interest" is not so simple. "Political interest" consists of two components: "Interest in activities of party and government organizations" and "interest in activities of nongovernment organizations" (NGOs). Assuming that both components can be measured by a direct question, we get the measurement model presented in Figure 1.3.

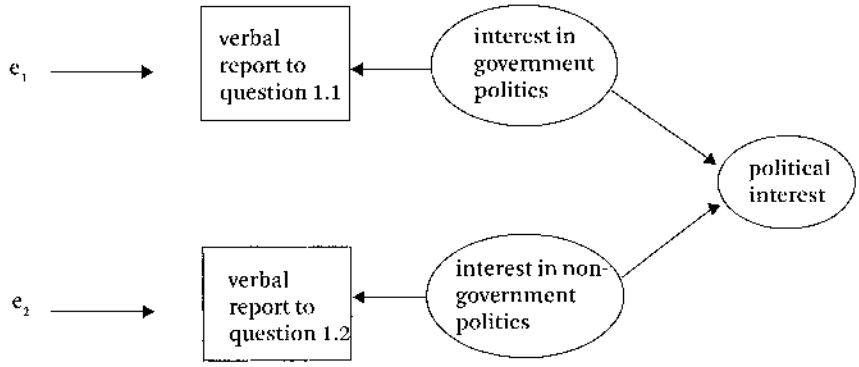

FIGURE 1.3: *A measurement model for a measure of political interest based on two components.*

It is assumed that the second component can be measured by a direct question. However, if this second question could be formulated there still is the issue of how the responses to these two questions can be combined in one index for "political interest." Should the responses get equal weight or is one component more important than the other one? Should they be added or multiplied or should we make an elaborate typology on the basis of the two characteristics? These questions are not simple to solve and will get extra attention in Chapter 14 of this book. In this way the concept "political interest" has become a concept-by-postulation and its operationalization is not immediately apparent anymore. However the two components "interest in party and government politics" and "interest in nongovernment politics" can be seen as concepts-by-intuition, which can be measured by direct questions like question 1.1 and 1.2.

1.2 *There are many organizations that try to influence political decisions in your country and the world, for example, the trade unions, employers organizations, environmental protection organizations.*

> *How interested, would you say, you are in the activities of such organizations; are you very interested, somewhat interested, not much interested, or not at all interested?*

This question was also suggested for use in the ESS. The comment of Thomassen on this ESS proposal was: "A problem with the suggested question is that people probably consider only the specified organizations and do not give a general judgement." This discussion suggests that omitting the direct question 1.2 probably does not cover all the interests people have in politics. On the other hand, adding the direct question 1.2 about politics not connected to party and government politics has the problem that people probably account for the examples mentioned in the question and no other organizations.

However, there are still more issues to consider. When we ask people about their "political interest" in this format, there will be a number of people who want to make a good impression. Therefore, people who are not so interested in politics may have a tendency to exaggerate their interest, called a "social desirable answer" [see, e.g., Schuman and Presser (1981)].

A last problem is that people may not know how to answer such a question. They may ask themselves (and possibly the interviewer) when should I say "somewhat interested" and when "very interested." To simplify, one could also ask a relative judgment by formulating the following:

1.3 *Are you more or less interested in politics than the average citizen?*
1. *Much more*
2. *A bit more*
3. *A bit less*
4. *Much less*

This question is simpler to answer because our judgments are in general relative and not absolute (Poulton 1968). Still, this question requires that one has an impression of the "political interest" of the average citizen. It might be that people have very different impressions of the average citizen and then the responses are incomparable.

This exercise demonstrated that there is sufficient reason not to immediately choose the first direct question that comes to mind, even if in combination with another second direct question. One can also consider if there is a more objective approach to the problem of measuring "political interest."

1.2.2 The use of indirect measures

It is also possible to derive measures for concepts on the assumption that there is a strong relationship between the variable of interest and another variable that can more easily be measured. Again we will illustrate this approach using "political interest" as an example in which we discuss two alternatives: one based on passive behavior and one based on active behavior.

1.2.2.1 The use of passive behavior

A different approach is to use passive behavior as an indicator for political interest. Using this approach people is asked how much they inform themselves about politics through TV, radio, and newspapers. This operationalization assumes that people who are more interested in politics will spend more time on the media to follow what is happening in politics. The latter variable is the variable that is transformed into a direct question. This leads to the measurement model for "political interest" presented in Figure 1.4.

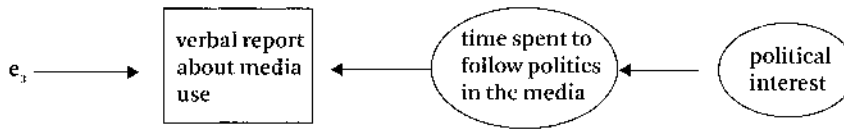

FIGURE 1.4: *Measurement of political interest through media use.*

If the relationship between "political interest" and "the time spent to follow politics in the media" were perfect, then there would be no problem with this approach. However, it is clear that the relationship between "political interest" and "the time spent to follow politics in the media" is not perfect. There are good reasons to argue that other variables will also influence the latter variable. For example, "the amount of leisure time" available to a person may influence the time a person spends on the media. As a consequence, the time spent to follow politics in the media will not be a perfectly valid measure for political interest. Therefore, the validity of this measure is an interesting question for empirical research; it depends on the strength of the relationship between "political interest" and "the time spent to follow politics in the media."

Let us now look at possible measures for this so-called indicator of political interest by examining another ESS question that was proposed for the use of the media. We start with question 1.4. It will be clear that question 1.4 measures the use of the media with certainty, and it is a clear concept-by-intuition. This matrix operationalization is attractive because adding up the answers in a row, the use of the media of a person becomes apparent. The cells in each row also give the relative importance of the different purposes of use of each medium. Adding up the answers in the columns the use of the media for different purposes on individual level becomes apparent. For example, the total in the second column will provide an estimate of the total amount of time spent by respondents on politics and current affairs and a precise measure of the amount of time spent on politics can be derived.

However, this measure also has its problems, even though it is relatively objective and exact. It really is a measure of the use of media and not directly of "political interest." Whether this measure can be used as a valid indicator depends on the strength of the relationship between the concept-by-intuition ("use of the media") and the concept-by-postulation ("political interest").

1.4 Media can be used for different purposes, see the Media Card. Can you estimate for how many minutes you use the TV, radio, and newspaper on a normal day for these different purposes?

Media Card

Different purposes for use of the media:

- Entertainment = quizzes, lotteries, games, shows etc.
- Politics = news, current affairs, political discussions
- Business = financial information, business information
- Sport = reports about sport events or previews
- Hobbies = gardening, home improvement, painting, holidays, etc.
- Education = educational programs, science and technology
- Arts = movies, music, discussions about art

The responses can be registered in the following matrix:

	Entertainment	Politics	Business	Sport	Hobbies	Education	Arts
TV Radio Newspaper							

But there are two more issues: (1) this measure cannot be used to study the relationship between "political interest" and "media use" and (2) it is questionable whether people can give such precise information about their activities. Perhaps this information can be determined by using hours instead of minutes, but then the answers may not be precise enough. A third issue is that the question asks for a "normal day," but the definitional difficulties for a normal day have been discussed in the literature. The alternative of asking for "a normal weekday " is also imprecise because it has been found that people ignore, for example, daytime viewing on TV (Belson 1981). Another alternative could be to ask the media use for yesterday. In that case people probably remember what they have done and can provide the information reliably, but "yesterday" may have been a very unusual day for some people.

A solution for this problem is to ask people to fill in diaries for a number of days to achieve a stable measure where unusual events are canceled out. A problem with this measure is that the task asked from the respondent is labor-intensive. As a consequence, people will reduce the amount of information they are giving day by day, which will create a downward bias in the measure. It has been documented as a common problem of the use of diaries (Kalfs 1993; Kaper 1999).

In order to solve this problem, automatic registration procedures have been developed at least for TV. Now respondents do not have to answer questions but only push a button on a remote control to register when they begin to watch TV and when they stop watching it. This is an efficient method for TV and probably also for radio (although we are not aware of a similar application for radio). However, it is also not a comprehensive solution because not all media are covered and it involves expensive equipment that does not pay off for just one study.

Our small discussion brings us back to the original idea that for the ESS there were too many questions about media in the set. The original proposal would cost 21 questions because the respondent would have to check all cells in the matrix, otherwise, the researcher would not know whether to code the empty cells zero or as skipped questions. However, given that the measurement of "political interest" by direct questions requires only one or two questions, the discussed alternative procedure, asking about media use with 21 questions, must be much better; otherwise, the direct question would have been preferred.

The alternative chosen by the ESS simplifies the operationalization by asking that for each medium only the total amount of time per activity be indicated, as well as, the time spent on "politics and current affaires." This method preserves the idea of the proposal since it is possible to estimate the amount of time spent on politics relative to the total amount of time spent on the media. Hence, the new version requires only 6 questions instead of the original 21questions of the matrix. The questions are as follows:

1.5a *In total, how much time on an average weekday do you generally spend watching television?*
(RECORD in HOURS/MINUTES)
(filter if respondent does not watch television)

1.5b *And how much of this time on an average weekday (again in minutes) do you spend watching politics and/or current affairs on television?*
(RECORD in HOURS/MINUTES)

1.5c *In total, how much time on an average weekday do you generally spend listening to the radio?*
(RECORD in HOURS/MINUTES)
(filter if respondent does not listen to radio)

1.5d *And how much of this time on an average weekday (again in minutes) do you spend listening to politics and/or current affairs on the radio?*
(RECORD in HOURS/MINUTES)

1.5e *In total, how much time on an average weekday do you generally spend reading the newspaper?*
(RECORD in HOURS/MINUTES)
(filter if respondent does not read newspapers)

1.5f And how much of this time on an average weekday (again in minutes) do you spend reading about politics and/or current affairs?
(RECORD in HOURS/MINUTES

This operationalization demonstrated data collection based on passive behavior: "use of the media for political information;" however, it would be equally justified to consider the possibility of active participation in political activities, which will be discussed in the next section.

1.2.2.2 *The use of active participation*

If one is sure that "political interest" is strongly related with "participation in political activities" direct questions about this participation can also be used for measuring political interest. So a third possibility is that people are asked to indicate to what extent they participate in all kinds of political activities. The idea behind this operationalization is presented in Figure 1.5.

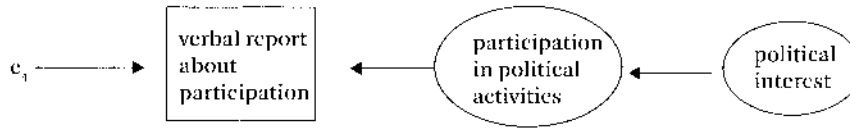

FIGURE 1.5: *Measurement of political interest by participation in political activities.*

The active participation model is similar to the passive participation in the use of the indicator; this is a valid measure only if there is a perfect relationship between "political interest" and "participation in political activities." However, the participation may be completely determined not only by "political interest" but also by "leisure time," "age," and "education." Therefore the indicator may not be perfectly valid for "political interest" and empirical research has to show the validity of the measure for "political interest." Therefore, "participation in political activities" is, since the research of Kaase and Barnes (1979) normally asked using a question battery like 1.6.

In order to get a score for "political participation" the number of times a respondent says "yes" is determined. Although there is no doubt that the items in question 1.6 measure participation in political activities (a concept-by-intuition), it is not so clear that these questions can also be used for measuring the concept-by-postulation "political interest."

This indicator for "political interest" cannot be used to study the relationship between "political interest" and "political participation;" however, there are also other issues with this measure even while employing it as a measure of "political participation." One issue is that the question does not have a comprehensive list of activities. Activities not mentioned are voting, talking about politics with others, and becoming a member of a pressure group. So the question arises as to which actions should be included in the list and which are not and why.

1.6 There are different ways of attempting to bring about improvements or counteract deterioration in society. During the last 12 months, have you done any of the following?

	yes	*no*
a. Contacted a politician		
b. Contacted an association or organization		
c. Contacted a national, regional or local civil servant		
d. Worked/volunteered for a political party		
e. Worked/volunteered for a (political) action group		
f. Worked/volunteered for another organization or association		
g. Worn or displayed a campaign badge/sticker		
h. Signed a petition		
i. Taken part in a public demonstration		
j. Taken part in a strike		
k. Boycotted certain products		

Another unconscious choice that the researcher has made is to ask whether the respondent has performed one or more of the activities in the past 12 months but not how frequently. It is probably just as reasonable to assume that the more frequent activities are done (the more time is spent on these activities), the more interested a person is in politics. Therefore, a valid design question is whether the respondents who are very interested in politics do many of the specified activities only once or one activity frequently. It is also an unresolved research design problem with the abovementioned type of questions as to whether the different actions should be weighed equally or that some are more important than others.

We see here again that the concept-by-intuition ("participation in political activities") is clear but the derived scores for the concept-by-postulation "political participation in general" is not that clear; and that holds even more weight for the concept-by-postulation "political interest" as indicated by "political participation."

1.2.3 A last alternative

In each of these operationalizations the same respondents will get a different score even though they are measuring just one concept ("political interest") and therefore should get one score. It is also not certain that these different measures would correlate strongly with each other even though they are supposedly measuring the same variable.

A solution is to hypothesize that each of these scores measures "political interest" but besides those also other factors will influence these scores. This means that there is one common source of correlation between these different

measures, and so one could suggest that the variable "political interest" is the common cause of the three indicators. This idea is presented in the measurement model of Figure 1.6. This figure indicates that each of the three indicators is influenced by the score people have on the unmeasured variable of "political interest." Besides that, each indicator is also influenced by its own unique components (u_j). Furthermore, it is supposed that for each indicator direct questions can be formulated, where the responses to these questions provide the observed score on each indicator. Finally it is supposed that these scores are not perfect measures of the indicators but that each observed score also contains errors (e_i).

This is a rather complex measurement model, but it provides an answer for the problems that people can have different scores on the different indicators while measuring the same variable. In this approach it is assumed that all people have only one score for "political interest." Chapter 14 in this book will address how such a theory can be tested, how these scores can be obtained, and how to evaluate these scores as measures for "political interest."

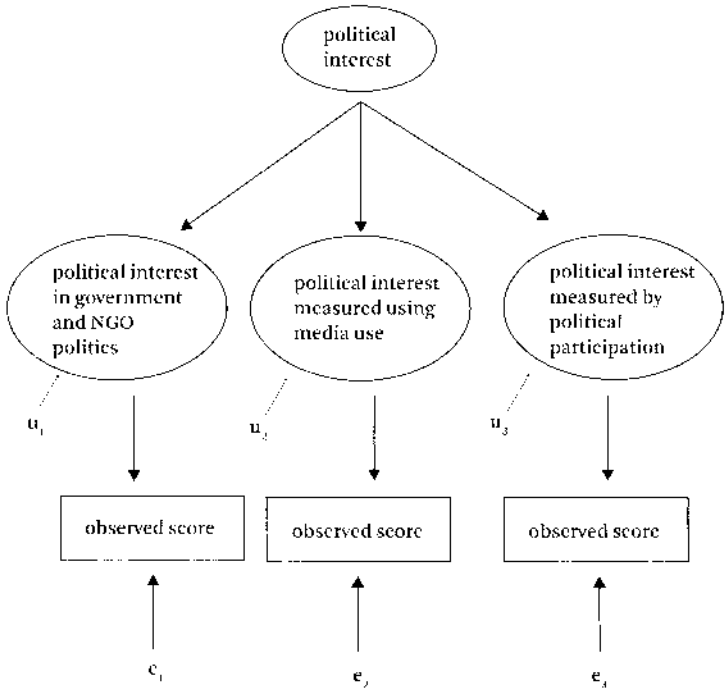

FIGURE 1.6: *Relationships between the latent variable "political interest" and three possible indicators and the observed scores for these indicators.*

1.3 Conclusions

The first issue discussed in this chapter was the distinction between concepts-by-intuition and concepts-by-postulation. We have seen that concepts-by-intuition are easily transformed into questions. Concepts-by-postulation cannot be operationalized directly in survey questions. They are normally defined by some combination of concepts-by-intuition.

We have also seen in the example of "political interest" that the concept changes through the operationalization. First "political interest" was measured by a direct question and it seemed to be a concept-by-intuition. Then it became a concept-by-postulation based on the combination of two concepts-by-intuition: "interest in government politics" and "interest in nongovernment politics." After that, two operationalizations have been developed on the basis of indirect measures. One operationalization was based on the use of a passive indicator "media use"; the other one, on the use of an active indicator "political participation."

We have also suggested that in each of these operationalizations respondents will get a different score even though we thought to be measuring just one concept "political interest" on which people should have just one score. It is not at all certain that these different measures would correlate very strongly with each other even though these measures are supposed to measure the same variable "political interest." The difference can be due to different systematic components in these measures that reduce their validity. The differences can also be due to incidental errors that occur more in one measure than in another, which would lead to differences in reliability. In any case, it is important to have a scientific method for deriving optimal questions.

This book is directed to answer such questions. However, instead of immediately proceeding to analyze the relationships between concepts-by-postulation and responses to questions, we will concentrate first on the link between concepts-by-intuition and their questions. Only once we know this relationship and can say something about the quality of a single question will we discuss the quality of concepts-by-postulation. The idea is that in order to speak on the quality of concepts-by-postulation, the elements on which the concepts-by-postulation are built need to be identified. For example, if we realize that questions about participation in political activities measure "political behavior," we will be more reluctant to use them as an indicator for "political interest." This prudence is necessary to prevent the construction of concepts-by-postulation that are unclear and will produce confusing results in data analysis. Therefore, we will return to the construction and the evaluation of concepts-by-postulation in Chapter 14 of this book.

Exercises

1. Try to formulate questions that represent concepts-by-intuition and concepts by postulation for the following concepts:
   a. Job satisfaction
   b. Happiness
   c. The importance of the value "honesty"
2. In practice it is seldom clear whether the questions suggested measure what they are supposed to measure. Some examples follow below. The following proposal has been made to measure "left-right orientations" in politics. The authors said:
   "The left-right orientation contains two components:
   - Egalitarianism: a policy of equality of incomes
   - Interventionism: a policy of government intervention in the economy by, e.g., Nationalization."

   Items 1–3 in the following list are supposed to measure the egalitarian element; the next two, the interventionism element.
   How strongly do you agree or disagree with the following items?
   Agree completely, agree very much, agree, neither agree nor disagree, disagree, disagree very much, disagree completely
   1. *It is not the government's role to redistribute income from the better off to the worse off.*
   2. *It is the government's responsibility to provide a job for everyone who wants one.*
   3. *Management will always try to get the better of employees if it gets a chance.*
   4. *Private enterprise is the best way to solve Britain's economic problems.*
   5. *Major public services and industries ought to be under state ownership.*

   a. Check whether these assertions represent the concepts they are supposed to represent.
   b. Try to improve the assertions that seem incorrect.
3. Let us now look at the questionnaire you have developed yourself:
   a. Do the questions measure what they are supposed to measure?
   b. Did you use concepts-by-intuition or concepts-by-postulation?
   c. Is it possible that other variables affect the responses than just the variables you would like to measure?
   d. If you think that some of your questions are wrong, try to improve them.