8

Revealing the Conceptual Systems of Places

David Canter
University of Huddersfield, United Kingdom

The conflict between good science and effective influence on policy troubles Gabriel in his current internship with regional government. The people he works with want answers now but he knows good research takes time. So he is always on the look out for efficient procedures that will give him a useful answer that he can defend as scientifically valid. An opportunity to explore this came when a demand emerged to find outdoor recreational space for a new housing development without encroaching on protected wilderness.[1]

In his undergraduate degree Gabriel was very taken with the insights from human geography that places take their significance not only from their physical characteristics but also from the way their users think about them and the sorts of activities that they support. Canter's (1977) The Psychology of Place, *although published before Gabriel was born still seemed to encapsulate the simple, but powerful idea that places have psychological, behavioral, and physical components which all need to be explored if the meanings, use, and design of those places are to be effective. Many publications since then have developed this idea but the central recognition of the importance of how people conceptualize places has become a fundamental idea in environmental psychology.*

Therefore when faced with the need to explore the opportunities for outdoor recreation in a limited area around a proposed major housing development, it seemed natural to Gabriel to start by considering how potential users would make sense of the possibilities for outdoor recreation within reach of their homes.

Gabriel's insight that people have ways of thinking about the world and their interactions with it, and that these concepts can be explored and related together to form a more or less coherent system, has deep roots in psychology. Such conceptual systems are composed of ways of distinguishing between different entities. These distinctions may be called "concepts" or "categories."

The idea of such differentiation being fundamental to thought can be traced back to Aristotle. However, over the years many psychologists have emphasized that the ability to function in the world relates closely to the ability to form

Research Methods for Environmental Psychology, First Edition. Edited by Robert Gifford.

categories and to construct systems of classification by which non-identical stimuli can be treated as equivalent (e.g., Bruner, Goodnow, & Austin, 1956; Miller, 1956; Rosch, 1977). As Smith and Medin (1981) reiterated, if we had to deal with objects, issues, behavior, or feelings on the basis of each unique example, then the effort involved would make intelligent existence virtually impossible. Thus, an understanding of the categories people use and how they assign concepts to those categories is one of the central clues to the understanding of human behavior. As a consequence, an important question for many investigations is the nature and organization of the concepts that people have, specific to the issues being explored.

There are many methods for exploring the categories and systems of classification that people use in any given context. A particularly useful one is the *multiple sorting procedure*. This allows a flexible exploration of conceptual systems either at the individual or the group level. In considering this procedure though, an important distinction must be made between the underlying categorization processes and the "ordinary" explanations that people give for their actions. The methods being considered here work with the words people themselves use in order to reveal the underlying psychological issues.

In Britain, at least, the concern with understanding the personal conceptual systems of individuals was spurred on by the writings of the US psychologist George Kelly (1955) and helped along by the prolific enthusiasm of Fransella and Bannister (e.g., Fransella & Bannister, 1977). Yet, the view that each individual had a unique way of construing the world was not alien to William James many years earlier (1890) and was emphasized in some of Allport's writings (1937). He argued for the value of an idiographic approach, studying each individual in their own terms, rather than using standard responses that were the same for everyone as happens with multiple-choice questionnaires.

Anthropologists and sociologists, especially those with a structuralist orientation, have also emphasized throughout the last century the importance of understanding individuals' systems of meaning (cf. Douglas, 1977). Furthermore, social psychologists, in studying the role of situations in human behavior, have established the importance of the interpretations people make of those situations in which they find themselves (Argyle, Furnham, & Graham, 1981).

Restrictive Explorations

The brief review above reveals that there are two common themes in many disparate writings on psychology. One is the need to explore the view of the world as understood by the respondents in any inquiry. The second is the recognition that their world view is built around the categorization schemes people employ in their daily lives. Yet, unfortunately, psychologists have been influenced by a further consideration, which has tended to dilute the impact of these two themes: the desire for quantitative, preferably computer analyzable, results. Most computing procedures have limitations that are so fundamental that they are taken for granted and rarely challenged, thus influencing the data-collection procedures in ways so subtle that researchers are unaware of them.

A self-structuring cycle is then set in motion. Data are collected in a form that fits known methods of analysis. Standard analytical procedures gain in popularity and are easy to use because they fit the usual data. Data are then commonly collected in the form appropriate to the standard procedures. Thus the existing capabilities of readily available computing procedures help to generate standard forms of data collection, even if those computing procedures are inappropriate for the psychological issues being studied. Without going into a lot of technical detail, a number of restrictions imposed by conventional, widely used, statistical procedures can be summarized:

1. The most commonly used statistics tend to limit data to those having a strong, clear, linear order. Categorical data are seen as being difficult to accommodate. Thus, rating scales (e.g., 7-point) are much preferred to qualitative categories.
2. The procedures limit the structure of the set of variables, so that there is the same number for each respondent. Furthermore, the number of divisions into which each variable is coded is constrained, so that it is the same for all people. Analysis is limited to the manipulation of arithmetic means and correlations over large groups, but this requires that the actual organization of the data for each respondent is identical.
3. Because of their computational efficiency and mathematical elegance, statistical models have tended to be restricted to those that are based on assumptions of underlying linear dimensions and that consequently generate dimensional explanatory models. Qualitative models, although increasing in popularity, are still rare in psychology, although much more prevalent in other social sciences.

These constraints on the analysis of data have become more apparent with the increasing availability of other computing procedures that do not have these limitations and with the strengthening of the idiographic perspective. Indeed, it is being recognized that the popularity of procedures such as the semantic differential, still in use over half a century since it was first proposed (Osgood, Suci, & Tanenbaum, 1957), is due to the ease of data analysis rather than any conviction that they are measuring important aspects of human experience. The semantic differential with its 7-point scales, standard set of items, and factor analysis of results, has been shown to be insensitive to differences between cultures (Osgood, 1962), and, although this may be of interest to cross-cultural psychologists, it does not suggest itself as a technique that will reveal important differences between individuals.

In effect, the semantic differential constrains the concepts people can reveal by providing them with a set of terms to which to respond and by giving precise instructions as to how that response can be structured. Procedures that allow some possibility for the respondent to frame his/her own answers are essential if the essence of any given individual's conceptual system is to be established. Thus, open-ended procedures, especially those built around the interaction possibilities provided by the one-to-one interview, recommend themselves to the students of conceptual systems.

Many researchers (unaware of the range of analyses now available) are fearful of embracing open-ended procedures because they are concerned that their results will be difficult to interpret and the report or the publication they seek will be

difficult to structure. Thus, even when they are interested in their respondents' understanding of the world, they explore it through multiple-choice questions or very constrained rating procedures. Yet, serious researchers will still insist on what is usually termed "good pilot research" or what is often couched in terms of "grounded theory" (Glaser and Strauss, 1967).

This involves talking to people in a relaxed, open-ended way and learning from them about the concepts they use in a particular context. It is often at this stage that the real objectives, and in effect the major findings, of the research emerge. Subsequent research frequently only clarifies a little, or provides numerical support for, the insights gained at this "pilot" stage. This is a curious state of affairs when data comes from one part of the research activity and insights from another. Research would be more effective if procedures allowed the interviewees to express their own view of the issues at hand, in their own way, while still providing information that is structured enough for systematic analysis and reporting.

The Repertory Grid

The interview, with its potential for subtle interactions and its concern with the interviewee's understandings, is a fruitful context in which to explore people's concepts. Over the past 30 years a number of procedures have emerged for generating and examining people's conceptual systems within that context. One of the most popular is George Kelly's Repertory Grid (Kelly, 1955). Kelly emphasized that people have personal **constructs** that relate to each other to form a "construct system."

It is worth repeating that Kelly's ideas are part of a general perspective in cognitive psychology that the human ability to function effectively requires the formation of systems of classification in which non-identical phenomena can be treated as equivalent. Around the time Kelly was writing, influential psychologists such as Miller (1956) and Bruner, Goodnow and Austin(1956) were making similar more general points about cognitive processes. These formed the basis of what became known as cognitive psychology, moving away from the fundamentalist, behaviorist tradition that dominated at the time.

Repertory Grid procedure

Kelly (1955) created a structured interview procedure known as the Repertory Grid that is still used today, often in relation to environmental matters (e.g., Hankinson, 2004). It consists of three components:

- the entities to be conceptualized, known as "**elements**," for example, places, people, activities;
- the ways in which those places (elements) are distinguished from each other, known as "constructs";
- the ratings or ranking of the elements on the constructs. For instance, as in the example illustrated in Figure 8.1, each element is rated from 1 to 5 on each construct. This generates a "grid" with elements as columns and constructs as rows and the ratings or ranking in the cells of the grid.

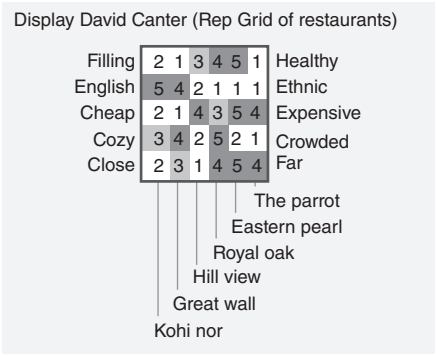

Figure 8.1 An example of a Repertory Grid of restaurants.

The original Kelly Grid was derived by asking respondents who the significant others are in their lives. It was therefore called the "Role Repertory Grid" because it worked from significant roles, such as mother, father, teacher, and so on. However, since the 1970s people studying places have found it interesting to use by substituting places or activities for the elements (see Honikman, 1974 and Stringer, 1974 for early examples). These can be presented as labels, or photographs, or in any other way that can be readily shown to people.

A very simple example of a Repertory Grid is illustrated in Figure 8.1 in which the places (restaurants I was thinking of) are the elements and the descriptions are the constructs. Typically grids contain a dozen or more elements and a similar number of constructs. Much larger grids take a long time to complete and are more difficult to make sense of. This grid is as summarized by WebGrid 5, an excellent Repertory Grid analysis software system freely available at http://gigi.cpsc.ucalgary.ca:2000/.

An important aspect of the Repertory Grid is that the constructs are derived by what is known as the **method of triads**. This consists of presenting the respondent with three of the elements and asking "in what way are any two of these similar to each other and different from the third?" This procedure is continued with different combinations of elements until an exhaustive set of constructs is developed. The process generates bipolar constructs on the assumption that all constructs consist of two opposite poles as shown in Figure 8.1.

The point to keep in mind is that this is produced by one respondent. It is a *personal* construct system being explored. It is possible to create composite grids from a number of people and also to explore aspects of grids across a sample of respondents. But I won't go into those possibilities here because there are so many of them. Over the past 50 and more years since the Repertory Grid was first developed there have been hundreds of developments in its use. Aficionados even refer to the whole approach, drawing on Kelly's ideas, as "Personal Construct Psychology," rather than just a limited theory. In other words, they see it as a whole way of doing psychology, not just a limited theory and method. The mention here is therefore only a taster to hint at the possibilities.

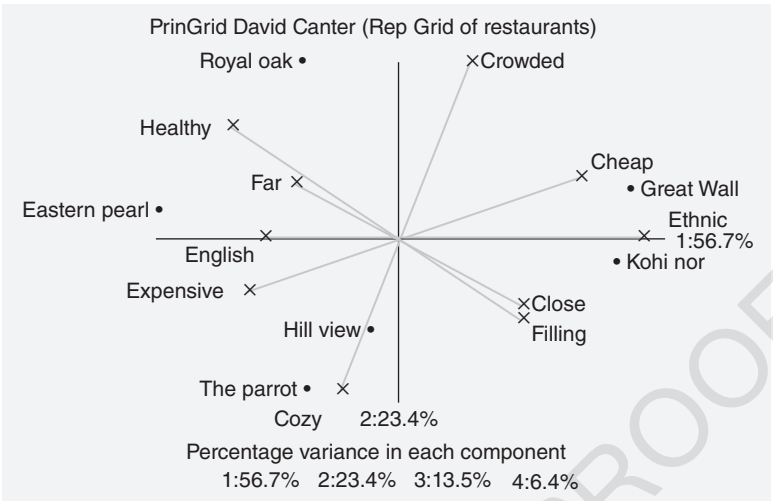

Figure 8.2 Output from WebGrid 5 showing the main dimensions of the grid illustrated in Figure 8.1.

As I have emphasized, the constructs and their poles are the personal decision of the respondent. For example in Figure 8.1 the respondent (me in this case) thinks of the opposite to a restaurant that is cozy not as "uncomfortable" but as "crowded." Also the rather unusual construct of "healthy – filling" may not be one that many other people would apply to a restaurant.

The Repertory Grid can be analyzed in many different ways:

- The nature of the elements can be examined. In this case the range of restaurants I have selected as significant to me could well tell you something about my experience of them. Putting them on a map could also tell you about my activities.
- The actual constructs I use are also of interest because they tell you something about how I conceptualize these places.
- The structure of the grid is also of great psychological interest. What are its underlying components? How complex is it? What dominates it? There is now a lot of software freely available for revealing this. But as I indicated above one particularly powerful approach is to carry out a principal component analysis to reveal the dominant dimensions and how much each contributes to the overall framework. WebGrid 5 gives different ways of doing this, but the one I find clearest and most interesting is given in Figure 8.2.

The six restaurants are represented in a two-dimensional space defined by the constructs. This shows how the constructs relate to each other and how they in turn relate to the elements. There is also an indication of the proportion of the variance accounted for by each of the major dimensions. The more evenly spread the variance across the components (in this case four components have been derived) the more complex the construct system.

Figure 8.2 shows that I am revealing one dominant dimension that accounts for nearly 60 percent of the variance. This is strongly defined by the distinction between "English" and "Ethnic" restaurants (possibly influenced by my university days in Liverpool, where Indian and Chinese restaurants are the haunts of students). But it can also be seen that for me English restaurants are typically "expensive" and "far" and probably regarded as "healthy."

The second component, which accounts for less than a quarter of the variance, is defined by the distinction between "cozy" and "crowded." So we now have a reduction of my five constructs into two dominant dimensions. This can be used to understand the choices I make and for comparing me with other individuals. The distilled components can also be summarized across a number of individuals to give some composite account of how people are conceptualizing places.

The complexity of the conceptual system can be measured in many different ways as well as looking at the proportions of the variance. Personal Construct theory and many other explorations of **cognitive complexity** argue that it is an important aspect of personality. It can indicate how open to change a person's construct system is. Generally the more complex the more readily can new constructs be incorporated. It also can indicate levels of sophistication in dealing with the elements being construed.

One interesting point here is that cognitive complexity is not a general aspect of a person but related to the particular domain you are studying. For example a wine buff may be able to distinguish the taste of "New World" wines from European wines, but someone who is not expert could only distinguish sweet from dry. (Note by the way the polar opposite in wine for "sweet" is not "sour" but "dry," showing that constructs have what Kelly called a "range of convenience." They are relevant for particular contexts but may be inappropriate for others.)

From pilot work some sort of standard grid could be developed so that the same framework can be used by all respondents, making aggregate analysis much easier.

Problems with the Repertory Grid

As many authors have noted (e.g., Adams-Weber, 1979; Bonarius, Holland, & Rosenberg, 1981; Fransella & Bannister, 1977), the Repertory Grid, deriving as it does from a theory of people that puts emphasis on their conceptual systems, does have much to recommend it; yet the Role Repertory Test, which has evolved from Kelly's original proposals, is often used with less sympathy for Kelly's personal construct theory than might be expected. Furthermore, the forms of statistical analysis known to Kelly limited the forms of development in grid analysis procedures, which has had direct consequences for the forms of grid which he and his followers have developed.

Fransella and Bannister (1977) comment on many of these weaknesses of the grid as used; they point out:

1. The grid "has been turned into a technology which generates its own problems and then solves these problems. Such problems do not necessarily relate to any attempt to understand the meaning which the person attaches to his universe" (p. 113).

2. Grid use has been limited by the "requirement that the subject present his judgements in handy grid statistical format before we can analyse pattern" (p. 116).
3. It is a fair guess that it is the mathematical ingenuity of the grid which has attracted psychologists rather than its possibilities as a way of changing the relationship between "psychologist" and "subject" (p. 117).

Developments in computing procedures of the years have weakened some of these criticisms, especially interactive online computing, which allows a much more flexible exploration of construct systems (cf. Shaw, 1982 and WebGrid5 mentioned above), but the main point made by Fransella and Bannister, that the grid technology as such has masked other possibilities for exploring personal constructs, still remains.

The Repertory Grid technique is neither as unique in its contribution nor as definitively special to personal construct theory as its users often claim. Kelly himself traces the origins of the grid to the sorting procedures used by Vygotsky (1934) and others, and thus puts his grid technique firmly in the realm of the exploration of categories and concepts. He writes:

Methodologically the Repertory Test is an application of the familiar concept formation test procedure. It uses as "objects" those persons with whom the subject has had to deal in his daily living. Instead of sorting *Vygotsky blocks*, a procedure in which people are asked to assign blocks of different sizes shapes and colors to different categories of their choice, the subject sorts people. The technique bears some resemblance to the sorting employed in the Horowitz Faces Test. It is also somewhat similar to Hartley's later procedure in which he used pictures in a sorting test. Rotter and Lessor have also experimented tentatively with the formation of "social concepts" in the sorting of paper dolls of the Make-a-Picture-Story (MAPS) Test. (Kelly, 1955, Vol. 1, pp. 219–220).

The Repertory Grid instead of Q-sorts and paired comparisons

The Q-sort technique was, like the Repertory Grid, developed as a way of examining the critical concepts people hold about role figures or events of significance to them (Stephenson, 1953). But, while this method enables people to assign elements to categories, the categories themselves are specified, usually as increments of an adjectival scale. Moreover, the Q-sort is typically used in a form whereby the interviewee is required to assign elements to the categories in a specified (almost always an approximately normal) distribution (Pitt & Zube, 1979).

The use of an enforced distribution is defended, in part, on the grounds that the procedure provides data that are more conveniently processed (Block, 1961), and eliminates the problem, inherent in rating scale procedures, of different individuals calibrating the scale in different ways (Palmer, 1978). These restrictions on the interviewee's sorting behavior thus make the Q-sort more akin to the semantic differential technique and Likert scales in general, than to the intensive one-to-one interview procedure I am advocating.

Other highly restrictive sorting procedures have also been developed as an alternative to paired-comparison judgments of similarity. For example, Ward (1977) and Ward and Russell (1981) have used sorting procedures in which both

the sorting criteria and the number of categories are specified, as a means of generating similarity matrices. Although Ward argues that the process of sorting is probably more "natural" for the interviewee than similarity judgments, the key argument for its use seems to be that it is less time consuming than paired comparisons while at the same time providing equivalent similarity data that is suitable for multidimensional scaling procedures.

Indeed, the development of multidimensional scaling procedures grew out of the analysis of similarity judgments of pairs of stimuli. Schiffman, Reynolds, and Young (1981) see similarity judgments as "the *primary* means for recovering the underlying structure of relationships among a group of stimuli" (p. 19). They go on to state that they think that similarity judgments are to be preferred to verbal descriptors because such descriptors are "highly subjective and often conceptually incomplete" (p. 20). However, while there may be some validity to this contention in the experimental study of perceptual stimuli, to which Schiffman and her colleagues repeatedly make reference, such a view of all human conceptualizations is unnecessarily restrictive and has not been defended with any theoretical strength.

Perceived similarity is a more complex phenomenon than can accurately be described by a single rating. Perceived similarity may, in fact, be defined by a set of multiple categorizations based on a wide variety of criteria. In many cases it is the overall patterns that emerge as a result of the concepts people themselves naturally apply to the objects or elements that are of psychological concern. Even when people are unable to put words on their categorization of elements, it is the structure they impose on the world that should be the starting point for the psychologist, rather than any general mathematical theory.

Although interview-based sorting procedures do have a long history, the full possibilities of this approach are increasingly becoming apparent. These possibilities attempt to avoid the limitations of earlier procedures. The multiple sorting procedure, to be described, does not impose a view of the likely structure and content of an individual's conceptual system on the interviewee. It minimizes the "technique for its own sake" syndrome by allowing the exploration of both the nature and the organization of concepts about any issue, maintaining the freedom and open-ended qualities considered so essential by many researchers, yet still providing for systematic analysis of individuals or groups. The use of the multiple sorting procedure and systematic analysis of data from it is possible, in part because of developments in non-metric multidimensional scaling procedures, the use of which will also be illustrated later in this chapter.

Sorting as a Focus for an Interview

Many of the explorations of which interviews are a part are aimed at coming to grips with the conceptualizations of the interviewee, whether it is a market research study, such as looking at the corporate image of banks (Frost & Canter, 1982), or a more theoretical exploration of architects' use of stylistic terms (Groat, 1982), and how these concepts develop throughout the training to become an architect (Wilson & Canter, 1992) or even research of a more pragmatic nature, looking at why people move house (Brown & Sime, 1980).

A particularly pertinent study is that by Scott and Canter (1997) in which comparisons of people's experiences of places were compared with their reactions to pictures of those places. In all cases it is the particular categories and concepts people use that is at issue, as well as the way in which they use them. The interview is especially suited to these types of exploration, because the interviewer and the interviewee can explore each other's understandings of the questions being asked and because the one-to-one situation can accommodate a more intensive interaction.

Unfortunately though, the potentials of the interview are frequently its pitfall. Asking open-ended questions in the relaxed way thought to increase rapport is the formula for unanalyzable material. What is needed is a way of providing a focus for the interview to guide and structure the material produced without constraining the interviewee unduly. Bruner et al. (1956) were some of the first to show clearly the possibilities for exploring the nature of the concepts people have by studying how they assign elements to categories. Such a procedure provides a focus for the interview, allowing other related material beyond that generated by the sorting to be noted.

Sorting procedures of various types have been used frequently in the environmental psychology field because they enable researchers to use illustrations and other visual material as well as reference to places and activities, which are difficult to accommodate within other procedures. It is helpful to mention the range of applications; from those used to generate similarity matrices (Horayangkura, 1978; Ward, 1977; Ward & Russell, 1981) to those seeking to integrate the sorting process with the verbal descriptions and explanations inherent in a one-to-one interview situation (Garling, 1976; Groat, 1982; Palmer, 1978). In the case of the latter, the researchers have intentionally used the sorting technique precisely because it is free of the limitations discussed earlier.

Clearly then, in using the sorting procedures as an interview focus, the interviewer's task is to identify the interviewee's salient categories and the pattern of assignments used to relate categories to elements. The more freedom the interviewee can be given in performing this task the more likely that the interviewer will learn something of the interviewee's construct system rather than just clarifying his/her own. Such freedom should extend to the range and structure of the categories, of which the constructs are composed, as well as to constructs and elements sorted.

The Multiple Sorting Procedure

The multiple sorting procedure advocated here asks little of the interviewees other than that they assign elements to categories of their own devising; it differs from other response formats in that no limitations are necessarily placed on how the sorting is to be done. In fact, the respondent is encouraged to sort the elements, using different criteria, a number of times. The rationale for this less restrictive version of the sorting process is the belief that the meanings and explanations associated with an individual's use of categories are as important as the actual distribution of elements into the categories.

The actual act of sorting items is a common activity. For example, in choosing a house, people will literally sort through the particulars sent to them by estate agents.

In many other areas of choice, whether it be clothing, books, partners, or political parties, there is an explicit selection on the basis of a personal categorization scheme. But even when a selection is not overtly involved, such as in evaluating how successful a given setting is likely to be for a given activity the judgment is based on an implicit categorization scheme.

To carry out the multiple sorting, a person is presented with a set of elements and an introduction and instructions as follows:

> I am carrying out a study of what people think and feel about *places where children play* [A] so I am asking a number of people *chosen at random* [B] to look at the following *pictures* [C] and sort them into groups in such a way that all the pictures in any group are similar to each other in some important way and different from those in the other groups. You can put the picture into as many groups as you like and put as many pictures into each group as you like. It is your views that count.
>
> When you have carried out a sorting, I would like you to tell me the *reasons* [D] for your sorting and what it is that the pictures in each group have *in common* [E].
>
> When you have sorted the pictures once I will ask you to *do it again* [F], using any different principles you can think of and we will carry on as many times as you feel able to produce different sorts. Please feel free to tell me whatever occurs to you as you are sorting the pictures.

The items in italics and indicated with letters in [ ] are those components of the instructions that change for different procedures in relation to different research questions. It must be emphasized, however, that these instructions are only a general statement of what is possible. The flexibility of the procedure is such that many different variations of the instructions are possible. Pilot work is always essential in order to discover what particular instructions are appropriate for each study, although typically all components [A] to [F] must be explicitly dealt with.

The elements to be sorted ([C] in the instructions), depending on the research question, may be generated by the interviewee or the interviewer; they may be labels, concepts, objects, pictures, or whatever, as will be illustrated. The person is usually asked to look through the elements to familiarize him/herself with them; also, the purposes of the research enterprise are explained (relating to instructions components [A] and [B]). In particular, it is pointed out that the interviewer is interested in the interviewee's ways of thinking about the elements presented. The interviewee is then asked to sort the elements into groups so that all the elements in any given group have something important in common, which distinguishes them from elements in other groups. Thus, a number of groups are produced which may vary in the number of elements in them. The number of groups may also vary from person to person for the same set of elements.

An individual example

To illustrate how this can work with one person consider a multiple sort carried out with a gambler we will call Ace. I was interested in Ace's views of various casinos, as part of a larger project to study what it was that gamblers enjoyed about gambling. The particular purpose of the sorting procedure was to see the basis on which a gambler selects which casino to visit and to get some understanding of his view of the

Table 8.1 Record of Ace's sorts.

First Sort: Class of Casino	
1	Gaming halls: G, H, D, A
2	Middle class: B, C
3	High class: E, F
Second Sort: Type of Frills	
1	Just gambling: A
2	Vaudeville: B, G, H
3	Sedate dining: E, D, C, F
Third Sort: Size of the Stake	
1	Less than £5: A
2	Between £5 and £25: G, H, B
3	Greater than £25: C, D, E, F
Fourth Sort: Most likely place for me to make money at	
1	Most likely: A, G, H
2	Not so much: B
3	Too expensive: C, D, E, F
Fifth Sort: Preference	
1	Most preferred: A, G, H, E
2	Solid casinos: C, D
3	Bit quiet: F
4	Did not like at all: B

Casinos: A = Golden Nugget; B = Playboy; C = Park Lane; D = Palm Beach; E = Hereford; F = Park Tower; G and H = Las Vegas casinos.

casinos available. I wanted to know what sort of world a gambler is part of; what type of choices he sees as being available to him.

Ace was asked to list on cards all the casinos he knew in any detail and to assign names for his own convenience. For the researcher's convenience, each card was given a letter on the back. On his first sort, Ace chose to divide the cards into three groupings. These groupings were recorded as shown in Table 8.1, with the letters indicating the casinos.

At this stage the researcher has an indication of each category scheme for the respondent. Such information can be very valuable, especially when working with groups of people who are not especially articulate. But there are a number of further developments of the procedure possible within the same framework. The verbal concomitants of the category scheme can be read by asking the interviewees to indicate the basis on which they have carried out the sorting, as in the instructions [D] and [E].

This generates two levels of description. The first is a superordinate description of the principle for the sorting, from instructions [D]. With Ace, for example, "whether the casinos have frills or not" or "the amount of money to play the lowest stake." The second is a set of category labels for each of the groups (instructions [E]), for example, for the "frills" sort, Ace's categories were "places with no frills,"

"places with sedate dining," and "vaudeville"; for the "stakes" sort, Ace's categories were "less than £5," "between £5 and £25," and "greater than £25."

A useful way of recording this verbal information is shown by reference to Ace's sorting of casinos in Table 8.1. The categories are summarized with a description of the category scheme for the sort as well as labels for each of the groups within this sort. Other comments and points of clarification made by the respondent can easily be accommodated within this format, as well as any order that might be given to the category groupings. Given the value of the procedure as a focus for exploring a content domain, these comments may generate material of considerable value in their own right. Thus, the researcher need not reduce the responses to bipolar scales, which are often ambiguous when considered at some time after the interview.

Unlike the analyses discussed by Schiffman et al. (1981), and used, for example, by Ward and Russell (1981), the multiple sorting data need not be reduced to association matrixes, typically aggregated across groups. Both the superordinate descriptions and the category labels can be subjected to content analysis. No structure or order to these descriptions is initially assumed or implied. This is particularly important for the category labels.

The bipolar dichotomies of rating scales, and traditional Kelly constructs, are not assumed, nor is the order of items from ranking or scaling. If the interviewee specifies a particular order, as in the "amount of the stake" example, then note can be taken of that, but if any order might be more obscure, as in the "frills" example, then that can be utilized as well. Indeed, category schemes frequently emerge that are not simply bipolar. This raises questions about the extent to which such bipolarity, assumed in much research, is an actual feature of psychological processes or an artifact of the structured measuring instruments used.

A comparison of individuals

Individual sortings, such as Ace's, become especially interesting when comparisons can be made between individuals. As part of the same study, a casino manager also went through a sorting procedure using the casino and parts of casinos of which he had direct experience. The results of the casino manager's sortings are given in Table 8.2. The sortings from Ace and the manager, taken together, serve to illustrate the way in which very specific foci can be developed for analysis, dealing directly with the unique, idiosyncratic conceptualizations of particular importance.

Table 8.3 shows the data matrix derived from the sorts illustrated in Table 8.1. This is created by assigning numerical category values to each of the groups in each sort as indicated in the table.

When individuals carry out detailed sorts on elements that are special to themselves, there is always a possibility that over a variety of sorts they repeat similar categories, simply assigning different labels to each categorization. Thus, an individual who is fluent but not especially cognitively complex, may generate a large number of apparently different sorts, which on closer examination are found to have little in the way of variation between the different sortings.

This is relevant if comparison is to be made between individuals, because it is the key aspects of their conceptual systems that we need to understand, not simply how

Table 8.2 Record of casino manager's sorting.

First Sort: Staff Recruitment
1 Career staff: A, B, C, F
2 Recruit from outside: E, D, G
Second Sort: Staff Training:
1 Little training: A, B, C, F
2 More training: E, D, G
Third Sort: Staff Benefits
1 Mainly for senior staff: A, B, C, F
2 Also for lower staff: E, D, G
Fourth Sort: Sex of Staff
1 Male only: A, B, C, E, D
2 Male and female: F, G
Fifth Sort: Staff Contact with Customers
1 None: A
2 Good with company support: G, E, D
3 Good with no company support: F
4 Unclear: B, C
Sixth Sort: Staff Experience
1 Trainee staff: A, B, C
2 Mixed: E, D
3 Inexperienced staff: F, G
Seventh Sort: Whether Takes Checks or Cash
1 Cash: A, B, C
2 Mixed: E, D
3 Checks: F, G
Eighth Sort: Concern for Customer Quality
1 Quantity only: A, B, C, E
2 Quality and quantity: D
3 Quality: F, G

Casinos: A = Golden Nugget; B = Palm Beach; C = International; D = Hereford; E = Park Lane; F = Curzon House; G = Gladbroke.

many words they can string together. Thus, it is necessary to do an analysis for each individual and to reveal the main conceptual structure within which the individual is working.

In regard to the gambler and the manager a separate Multidimensional Scalogram Analysis MSA (described below) for each were carried out and a schematic representation of the computer results prepared to facilitate a comparison of their two conceptual systems a shown in Figure 8.3.

The partitioning of these figures is derived from an examination of the way in which each individual sort contributes to the spatial configuration. Thus, it is clear that the manager divides casinos up on the basis of how they deal with the

Table 8.3 Data matrix derived from Ace's sortings.

Elements (Casinos)	*First*	*Second*	*Third*	*Fourth*	*Fifth*
A	1	1	1	1	1
B	2	2	2	2	4
C	2	3	3	3	2
D	1	3	3	3	2
E	3	3	3	3	1
F	3	3	3	3	3
G	1	2	2	1	1
H	1	1	2	2	1

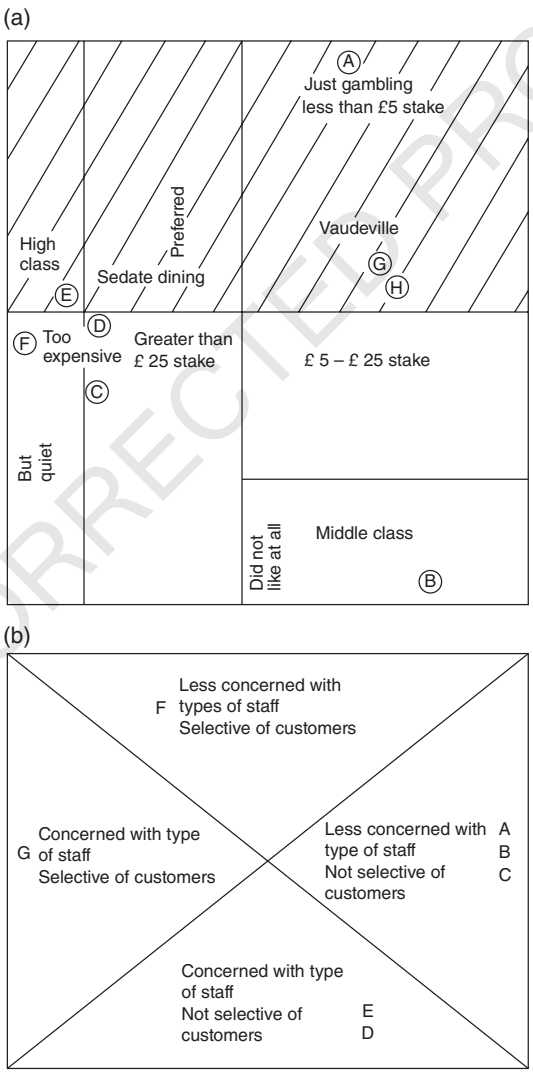

Figure 8.3 Summary MSA of (a) Ace's sortings (see Tables 8.1 and 8.3), and (b) casino manager's sortings (see Table 8.2).

clientele and how the overall casino management deals with its staff. This gives two broad facets. One in terms of those who selecet their staff carefully and those who do not. The second in terms of those who are selective of their clientele and those who are not. This generates afour-way classification of casinos: (i) those that select their staff carefully but are not too selective of their clientele; (ii) those selective about their clientele but not so careful of their staff; (iii) those selective of both staff and clientele; (iv)and those not especially careful about how they chose their staff or their clientele. This reveals the division the manager makes between the staff and the clientele and the way in which his perspective relates to selectivity and overall standards. At first sight, the gambler's MSA reveals a very different sorting.

The analysis here used MSA (available through the software package HUDAP, http://www.ittn.org.il/technology.php?cat=0&Yissum&tech_id=34-2007-1854_Yissum). In this case each of the sortings acted as a separate variable and each individual had a separate matrix. The matrix consisted of the elements as rows and the sortings as columns (as illustrated in Table 8.3). The cells of the matrix are numbers indicating the sorting categories[2] to which the different elements were assigned. Each matrix was put into a separate MSA. The analysis, in this instance, generates a configuration in which each element (in this case, casinos) was a point in the space. The closer together any two casinos are in this spatial representation the more similar they are in terms of the categories that are assigned to them over the number of sorts carried out by each individual.

By looking at the locations in the space of the casinos in the MSA output and checking back with the categories that each place was assigned it is possible to summarize the configuration and produce the schematic representations of the main themes underling the sortings illustrated in Figure 8.3. Essentially, there is a two-way division between those casinos that are very up-market and those casinos that are more general. The gambler makes a more precise distinction within the more general casinos between those that have added frills like the famous Playboy Clubs, or those that are just large gaming halls with little extra, and a group in between. Clearly, the gambler makes much more refined judgments about the nature of the action going on within the casino than does the manager. By contrast the manager considers the quality of the staff, a perspective it would have been difficult to access by any other procedure. However, they both share the superordinate categorization of how selective the casinos are.

This selectivity of casinos throws an interesting light on the whole gambling experience. It shows that an individual, in effect, is playing himself into some sort of exclusive club. These casinos, then, unlike most in the United States, may gain some of their important qualities from the way in which both the management and the gamblers draw lines between who can afford to be in which places. Certainly, further discussion of these conclusions with the respondents here as well as with other management groups would be necessary to test that hypothesis more fully.

It is difficult to see quite how such a result could be derived from a conventional questionnaire procedure. Open-ended interviews could well have revealed the same sort of material, but they might have hidden the underlying structures in people's conceptualizations.

Aggregate of conceptualizations

For Gabriele, the Repertory Grid could be an interesting option to study people's conceptualizations of places for outdoor activity. But it does suffer from being quite a long-winded and demanding procedure for both respondents and researchers. It is also focused on revealing unique aspects of individuals. So although there are many ways of generating aggregate data from groups of people, for Gabriele's purposes a procedure that generates a composite account of the conceptualizations of a sample of respondents is likely to be more useful. The *Multiple Sorting Task* (MST), described above, but first described in detail by Canter, Brown, and Groat (1985) would fit the bill.

The way the MST is used by Gabriele is as follows: Participants are given a set of cards, each showing one of the 33 different places that could be possible areas for outdoor recreation. Each card has a photograph of the location, a map of where it is, and a brief description of the type of location it is and the facilities that it offers. The location is given relative to the area that the proposed housing development would be in, which I will call "Bracknell." The participants are people living near Bracknell who have a similar socio-demographic make-up to those who are likely to live in the proposed development. In the present case I will describe a study that had 31 participants.

Each of the 31 people were independently asked to sort the 33 places into categories using the criteria; "Why do people go to these places/what do people use these different places for?"

It is of course possible to ask people to sort freely on the basis of whatever comes to mind or to give very distinct criteria such as how pleasant the places are, but following the spirit of Kelly's personal construct theory the MST is most interesting when people are given some freedom in how they assign elements to categories. People can also be asked to sort the elements a number of times using different criteria, as illustrated with the study of casinos, which is why it is called a "multiple" sorting task. But for simplicity here I will just deal with one sorting instruction.

Respondents are told that they can use as many different categories as they think necessary but that each location can only feature in one category in each of the sorts.

They are instructed to note the different categories that they use to sort the locations, giving each a clear description. They then list on a sheet which of the locations featured in each of the categories.

Analysis There are a number of different ways of analyzing this material. For instance a matrix can be derived that shows how often each element is put in the same category as each other element. However, this loses the details of each individual's response. In the present case responses to the sorting tasks were pooled across all participants and subjected to the multidimensional analysis technique, the MSA. This is how it's done. Firstly, each category used by each of the participants is given a number. For example, if a person used three categories – Good for Day Out, Local and Convenient, Good for Adult Walk – then any location assigned to the first category (Good for Day Out) would be given a value of 1, any assigned to the second category (Local and Convenient) would be given a value of 2, and any assigned to the third category (Good for Adult Walk) would be given a value of 3. As already indicated the numbers are arbitrary because MSA treats them simply as categories.

Once all locations had been assigned numerical values for each individual's sort, an overall profile was then created for each location. The profile was determined by the 31 scores assigned by the individuals. So, for example, the place called "The Lookout" had the following profile:

5 1 1 2 4 1 2 2 3 2 1 1 2
1 2 2 3 2 5 4 4 1 1 1 3 1
1 1 1 2 1

Each of these numbers has a different meaning because they relate to a different category as described by each person. Therefore no conventional arithmetic can be applied to these numbers. However, the rather unusual MSA statistical program does allow a very interesting and useful analysis of all the responses in the study.

The MSA software compares the profiles across all respondents of each location with every other location. It produces a plot in which the positioning of the different points (in this instance the 33 locations) is such that the closer they are to one another the more similar the profiles for those points (locations) are, and the further apart they are the less similar the profiles for those points (locations) are. So, for example, if two locations tended to be categorized similarly across most respondents then they would be close together on the plot. If they tended to be categorized very differently, then they would be at opposite ends of the plot. MSA just deals with the numerical categories in the profiles. It takes no account of the words the respondents used. In this sense it is non-verbal and consequently allows comparisons of how people categorized the places without being influenced by the actual words they used. It works with each individual's personal categorizations, but generates a composite picture as shown in Figure 8.4.

The labels in Figure 8.4 are actual locations in the South of England if you wanted to look them up on the Internet. You could then make your own decisions about the basis for people's judgments. That is one of the advantages of this procedure. It allows researchers to consider what underlies respondents' judgments in an objective way even though those judgments are based on the personal views of the respondents

Figure 8.4 can thus be examined to consider groupings of the variables (locations) in the MSA plots in terms of:

1. 1 the types of locations comprising the different groupings;
2. the attributes or characteristics that they possess;
3. participants' knowledge and actual usage of the locations; and
4. participants' conceptualizations of the locations, as revealed in discussions conducted as part of the sorting task interview.

Classification categories used in sort Four regions can be distinguished in Figure 8.4 which I have indicated by drawing lines to show the boundaries between those regions. It is rather unusual to have such clear regions, but this does indicate that people do have quite distinct ideas about what sorts of places these are. Generally people sorted places according to what types of activities they thought those places would be used for.

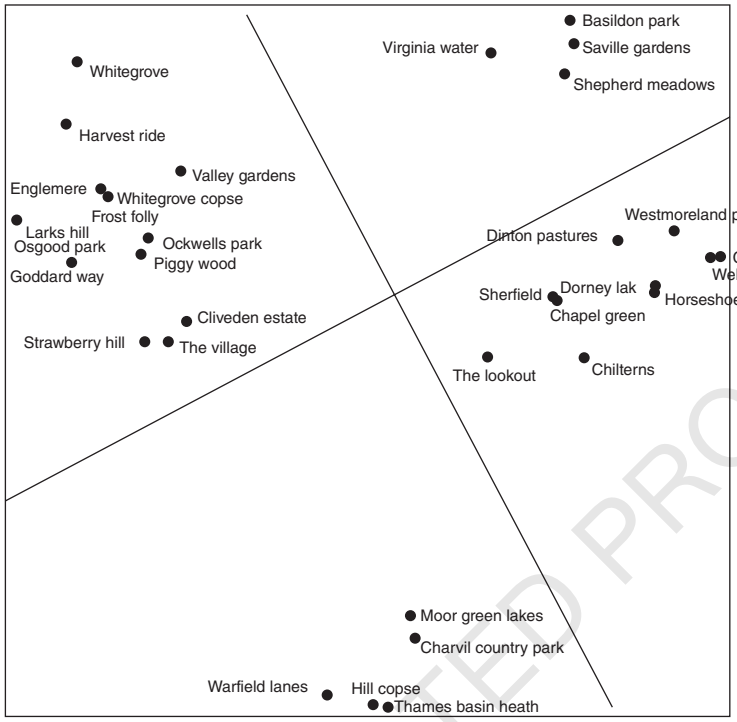

Figure 8.4 MSA results derived from sorting of 33 locations by 31 individuals.

For example, the grouping to the bottom of Figure 8.4 typically have lanes or routes for jogging or hiking, and are seen as being good for bike riding, typically being local and easy to get to with a bicycle, or facilities for water sports with lakes designated for such activities. They include Hill Copse, Warfield Lanes, Thames Basin Heath, Moor Green Lakes, and Charvil Country Park.

The comments that describe these locations give a very clear indication of conceptions of the places, even though each respondent used slightly different words. For example: good for sports/biking, more active time out, local for jogging, weight-loss – exercise (safety in numbers), for hobbies , outdoor activities, sporting day out, fishing, and watching wildlife.

The group to the top left of Figure 8.4 are the local/convenient places. They include places with such charming names as Strawberry Hill, Larks Hill, Whitegrove Copse, Harvest Ride, Goddard Way, Whitegrove, Piggy Wood, and Frost Folly. These tend to be locations on or around the outskirts of towns or urban areas, with few or no facilities, that are seen as being useful and convenient for short walks, possibly with children, and/or dogs.

The group to the top right of Figure 8.4, which included Virginia Water, Saville Gardens, Basildon Park, and Shepherd Meadows, are seen as places with few facilities/amenities, which are viewed as being more tranquil and picturesque. They are

consequently regarded as green parks for rambling/walkers, adult hiking, long walks at the weekend, but not for children.

The group to the middle right of Figure 8.4 including The Lookout, Wellington Country Park, California Country Park, Dinton Pastures, Horseshoe Lake, Westmoreland Park, and Dorney Lake were revealed through the descriptions given and the group discussions that were held by presenting subsets of respondents with these results and asking them to discuss. They were revealed as being typically locations for days out with the children and adults to go walking, that are local and convenient for short walks and good for dog walking and sporting activities .

Gabriel therefore has four distinct types of activities to cater for and by looking at the physical characteristics of these places can put forward proposals as to which places are likely to be used in what ways by future residents of the proposed housing development. He can also indicate what changes to the available outdoor places would make them more or less attractive to users for different activities, for example, more facilities for children in certain areas. There is even a hint of possible conflicts between users that may need to be managed, such as those between people fishing and people cycling.

Summary and Conclusions

This chapter has presented a detailed account of multiple sorting procedures, with respect to both their theoretical origins and their numerous applications to open-ended interview situations. As the first section of the chapter has demonstrated, the multiple sorting procedure has roots in both the early clinical object sorting techniques and the paired comparison procedures advocated by multidimensional scaling enthusiasts. But, more importantly, the multiple sorting procedure derives from two parallel concerns in psychology: the significance of the respondents' own view of the world, most clearly articulated by George Kelly; and the recognition that this world view is built around a pattern of categorizations. In this respect, the multiple sorting procedure reveals theoretical links to work in the development of the Repertory Grid and to other research in social and clinical psychology. With respect to the interview process, the second portion of this chapter has provided examples of its adaptability, and ease of administration. However, one of its primary virtues may also be a burden to the researcher. It probably makes even greater demands than the Repertory Grid on the intellectual stamina of the investigator, forcing her or him to clarify exactly what it is that he/she is looking for and why. In this respect it serves as an appropriate complement to other forms of the interview procedure. The multiple sorting task thus takes its place among the family of interviewing procedures.

Glossary

Cognitive complexity The degree of sophistication of any person's set of conceptualizations in a particular domain. This can be related to the number of terms that the person can apply in the domain as well as the richness of the underlying structure (cf. Bieri, 1971).

Constructs Ways of conceptualizing or categorizing entities. Used most distinctly in personal construct theory to describe the way in which any two entities are regarded as similar to each other and different from a third. In this context they have two ends or "poles," one derived from the similarities, the other from the differences.

Elements The term used in personal construct theory to describe the entities that are being construed, for example, people, places, activities.

Method of triads A procedure for developing bipolar constructs. Three elements are presented to the respondent, who is asked how two are similar and different from the third.

Multi-dimensional Scaling (MDS) A statistical procedure that represents entities in a notional space such that the closer together any two entities are the more similar they are on some measure of association or correlation. There are a great many MDS procedures.

Multidimensional Scalogram Analysis (MSA) A unique MDS procedure (see above) that compares the profiles of categories to represent distances between points in space rather than direct measures of association. This was developed by Lingoes (1973). Described in Zvulun(1978).

Notes

1 This example is based on an actual consultancy project carried out by the author. The project details have been simplified here because the legal and planning consent issues are very complex drawing on UK planning regulations and European Union requirements.
2 The numbers are dealt with as categories by the MSA algorithm not as ordinal values.

References

Adams-Weber, I. R. (1979). *Personal construct theory: Concepts and applications.* Chichester, UK: Wiley.

Allport, G. W. (1937), *Personality: A psychological interpretation*. New York, NY: Holt Saunders.

Argyle, M., Furnham, A., & Graham, I. A. (1981). *Social situations.* Cambridge, UK: Cambridge University Press.

Bieri, I. (1971)., *Cognitive structures in personality.* In H. M. Schroder and P. Suedfeld (Eds.), *Personality theory and information processing.* New York, NY: Ronald Press.

Block, J. (1961). *The Q-sort method in personality assessment and psychiatric research.* Springfield, IL: Charles C. Thomas.

Bonarius, H., Holland, R., & Rosenberg, S. (Eds.). (1981). *Personal construct psychology: Recent advances in theory and practice*. New York, NY: St. Martin's Press.

Brown, I., & Sime, J. (1980). A methodology for accounts. In M. Brenner (Ed.), *Social methods and social life* (pp. 157–188). London, UK: Academic Press.

Bruner, J., Goodnow, I., & Austin, G. (1956). *A study of thinking.* New York, NY: Wiley.

Canter, D. (1977). *The psychology of place*. London, UK: Architectural Press.

Canter, D., Brown, J., & Groat, L. (1996). A multiple sorting procedure for studying conceptual systems. In D. Canter (Ed.), *Psychology in action* (pp. 40–71). Dartmouth, UK: Aldershot.

Douglas, M. (Ed.) (1977). *Rules and meanings*. Harmondsworth, UK: Penguin.
Fransella, F., & Bannister, D. (1977). *A manual for Repertory Grid Technique*. London, UK: Academic Press.
Frost, A., & Canter, D. (1982). Consumer psychology. In S. Canter and D. Canter (Eds.), *Psychology in practice: Perspectives on professional psychology*. Chichester, UK: Wiley.
Garling, T. (1976). The structural analysis of environmental perception and cognition. *Environment and Behavior, 8*, 385–415.
Glaser, B., & Strauss, A. (1967). *The discovery of grounded theory*. Chicago, IL: Aldine.
Groat, L. (1982). Meaning in post-modern architecture: An examination using the multiple sorting task. *Journal of Environmental Psychology, 2*, 3–22.
Hankinson, G. (2004). Repertory Grid analysis: An application to the measurement of destination images. *International Journal of Nonprofit and Voluntary Sector Marketing, 9*.
Honikman, B. (1974) Architectural uses of the Rep Test. In P. Slater (Ed.), *The intrapersonal space* (pp. 96–110). Chichester, UK: Wiley.
Horayangkura, V. (1978). Semantic differential structures. *Environment and Behavior, 10*, 555–584.
James, W. (1890). *Principles of psychology*. New York, NY: Holt Saunders.
Kelly, G. (1955). *The psychology of personal constructs*. New York, NY: Norton.
Lingoes, J. (1973). *The Guttman–Lingoes Nonmetric Program Series*, Ann Arbor, MI: Mathesis Press.
Miller, G. A. (1956). The magical number seven, plus or minus two. *Psychological Review, 43*, 81–114.
Morrison, P., & Lehane, M. (1995). Exploring qualitative data. *Journal of Forensic Psychiatry and Psychology, 6*, 552–563. doi:1080/09585189508410783.
Osgood, G. E. (1962). Studies in the generality of affective meaning systems. *American Psychologist, 17*, 10–28.
Osgood, G. E., Suci, G. I., & Tanenbaum, P. M. (1957). *The measurement of meaning*. Urbana, IL: University of Illinois Press.
Palmer, I. (1978) Citizen assessment of the coastal visual resource, *Coastal Zone 78. II*. San Francisco, CA: American Society of Civil Engineers.
Pitt, D. G., & Zube, E. H. (1979). The Q-sort method: Use in landscape assessment research and landscape planning. In G. H. Eisner (Ed.), *Our national landscape*. Pacific Southwest Forest and Range Experiment Station, Berkeley, CA.
Rosch, E. (1977). Human categorization. In N. Warren (Ed.), *Advances in cross-cultural psychology (Vol. 1)*. London, UK: Academic Press.
Schiffman, S. S., Reynolds, L. M., & Young, F. W. (1981). *Introduction to multidimensional scaling*. London, UK: Academic Press.
Scott, M. J., & Canter, D. V. (1997). Picture or place? A multiple sorting study of landscape. *Journal of Environmental Psychology, 17*, 263–281.
Shaw, M. L. G. (1982). The extraction of personal meaning from a Repertory Grid. In E. Shepherd and I. E. Watson (Eds.), *Personal meanings*. Chichester, UK: Wiley.
Smith, A. E., & Medin, D. L. (1981). *Categories and concepts*. London, UK: Harvard University Press.
Stephenson, W. (1953), *The study of behavior: Q-technique and its methodology*. Chicago, IL: University of Chicago Press.
Stringer, P. (1974). Individual differences in Repertory Grid measures for a cross-section of the female population. In D. Canter & T. Lee (Eds.), *Psychology and the built environment* (pp. 96–104). London, UK: Architectural Press.
Vygotsky, L. (1934). *Thought and language*. Boston, MA: MIT Press.
Ward, L. M. (1977). Multidimensional scaling of the molar physical environment. *Multivariate Behavioral Research, 12*, 23–42.

Ward, L. M., & Russell, J. A. (1981). Cognitive set and the perception of place. *Environment and Behavior, 13*, 610–632.

Wilson, M., & Canter, D. (1992). The development of central concepts during professional education. *Applied Psychology: An International Review, 39*, 431–455.

Zvulun, E. (1978). Multidimensional scalogram analysis: The method and its application. In S. Shye (Ed.), *Theory construction and data analysis in the behavioral sciences (*pp. 237–264). San Francisco, CA: Jossey-Bass.

Suggested Sources

A video in which I demonstrate the use of the multiple sorting procedure in an application to new product development for chocolates (!) as a market research project (which has the background music I composed …) is available on YouTube at https://www.youtube.com/watch?v=KKlD6JS8Npk. Or you can get to it via the YouTube channel ProfDVC "Mapping People's Conceptualizations."

For a recent account of MSA with qualitative data see Morrison and Lehane (1995).

A wide-ranging resource on Personal Construct Psychology is www.idiogrid.com.