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Testing the Repertory Grid for Personal Decision Making and Problem
Solving

by

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ABSTRACT

The repertory grid (Kelly, 1955) has been proposed as a decision-making and problem solving aid for over 20 years. The present study replicates this grid method as demonstrated by Shaw and McKnight (1981/1992) and also records, for the first time, the user's experiences with the method. Eight case studies are presented (5 women, 3 men; age range 27 to 60; mean age 43) featuring individuals who are facing real-life decisions and problems. Data gathered includes case write-ups, participant responses to questions and rating scales, and researcher-as-counsellor observations. Results suggest that most participants felt some benefit from the method. Findings support past proposals of the grid as a valid decision and problem aid.

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DEDICATION

To a lot of people I know, and some I don't, most of whom I like, and some I don't, but acquaintances or strangers, friends or scoundrels, I must confess I am indebted to them all.

– George Kelly, 1955

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Introduction

Preface and Overview

Most people will agree that in their personal and working lives they are confronted with many decisions and problems. Indeed, it is hard to imagine what a day would be like without any. Our ability to make decisions and solve problems lies at the heart of our identity as self-determining individuals responsible for our own destinies.

Granted, most decisions and problems are of little consequence. These are ones like "what to have for lunch", "what route to take to the store", and "how to remove this stain from my shirt". There are however decisions and problems that are of serious consequence. Ones concerning career direction, commitment to lifestyle goals, and whether to marry are important to us and, as Mitchell and Krumboltz (1984) aptly describe, "have the power to keep us up at night". Quite often, the difficulty with such decisions and problems is that they are highly complicated and information-laden. The average person does not have the cognitive capacity to recall and simultaneously process the enormous amount of information involved. But even if information-overload were not a problem, most people would encounter difficulty because they lack the know-how to make decisions or solve problems effectively and with efficiency. Decision-making and problem solving researchers commonly make a distinction between *descriptive* efforts (the way people usually go about making decisions and solving problems), and *prescriptive* efforts (the optimal ways people should go about making decisions and solving problems).

People seeking help may find decision and problem aids to be of great use. Decision and problem aids can be defined as any method of support or facilitation by which an individual can structure and analyze relevant decision or problem information. Decision and problem aids are effective and efficient methods that serve to increase the probability of finding the optimal solution. When individuals seek to undertake a prescriptive decision or problem effort, it almost always involves some kind of aid.

Early aids were simple and straightforward, such as Polya's (1945) model based on mathematical problems. It included four steps: (i) understand the problem, (ii) find a connection between the data and the unknown and then develop a plan of solution, (iii) carry out the plan, and (iv) examine the solution obtained. Later aids have become more complex, but are also more powerful. The Subjective Expected Utility (SEU) model not only structures multiple options, but includes ratings of the expected utility of each option as well (Brown, 1990).

The present study focuses on the repertory grid as a decision and problem aid. Originally created by Kelly (1955) as an application for his theory of personal constructs, the grid is an instrument designed to represent an individual's psychological space. For over 20 years it has been proposed in a number of studies as a decision making and problem solving aid.

The introduction to this study begins with two sections, "What is a Repertory Grid" and "How is a Repertory Grid Used to Solve Problems and Make Decisions?" These are designed to acquaint readers with the basics of grid method and its use as a decision and problem aid. The literature review

follows. It is broken down into five main parts, each covering an important area of grid research. The review covers key studies in simple elicitation and representation, graphical representation, and career decision grids. The major focus of the review is placed on the critical work of Shaw and McKnight (1981/1992). The last part of the review covers some isolated studies that bear similarity to the repertory grid method for decisions and problems. The introduction concludes with sections describing the study's rationale and design.

What is a Repertory Grid?

Essentially, a repertory grid is a geometrical way of representing psychological space (Shaw & Gaines, 1993; Gaines & Shaw, 1993). George Kelly, the grid's creator, designed the instrument because he wanted a method of measuring the way an individual views the world (Stewart, 1997). The grid was Kelly's answer to how this individual's view of the world could be graphically represented for objectification and analysis.

The repertory grid began as an outgrowth of Kelly's (1955) personal construct psychology. Personal construct psychology, as the name would suggest, is a constructivist theory. Before Kelly, philosophers such as Kant, and early psychologists such as Piaget and Bartlett introduced and elaborated constructivist ideas (Neimeyer, 1995). The philosophy rejects the notion of an objective, known reality, and instead places great emphasis on the individual's efforts at deriving (or constructing) a personally meaningful representation of his or her world. Kelly saw it's potential for psychotherapy, and thus proposed and developed his theory. If you wanted to understand

what was wrong with someone, you had to understand the way that person saw, or constructed the world.

Kelly proposed that individuals constructed the world in terms of two dimensions: elements, and constructs. Elements are particular groups of items or figures known to an individual (e.g., personal relations, types of car, different emotions, geographical places, etc.). Constructs are bipolar dimensions of meaning through which one construes or judges elements. Individuals use constructs to organize their experience. Kelly (1955) believed that people acted as scientists, observing their experience, organizing that experience into constructs, and using those constructs to predict outcomes of future, similar experiences. Some examples of the constructs one might use for the purpose of organizing and predicting personal relations (elements) would be happy-v-sad, pleasant-v-unpleasant, or strong-v-weak. A triumph of Kelly's (1955) work was the development of a way of representing one's constructs and elements, and the relations between them. As opposed to assessments that sought to identify generalizable traits of an individual, Kelly's (1955) repertory grid identified the personal, inner world of the individual.

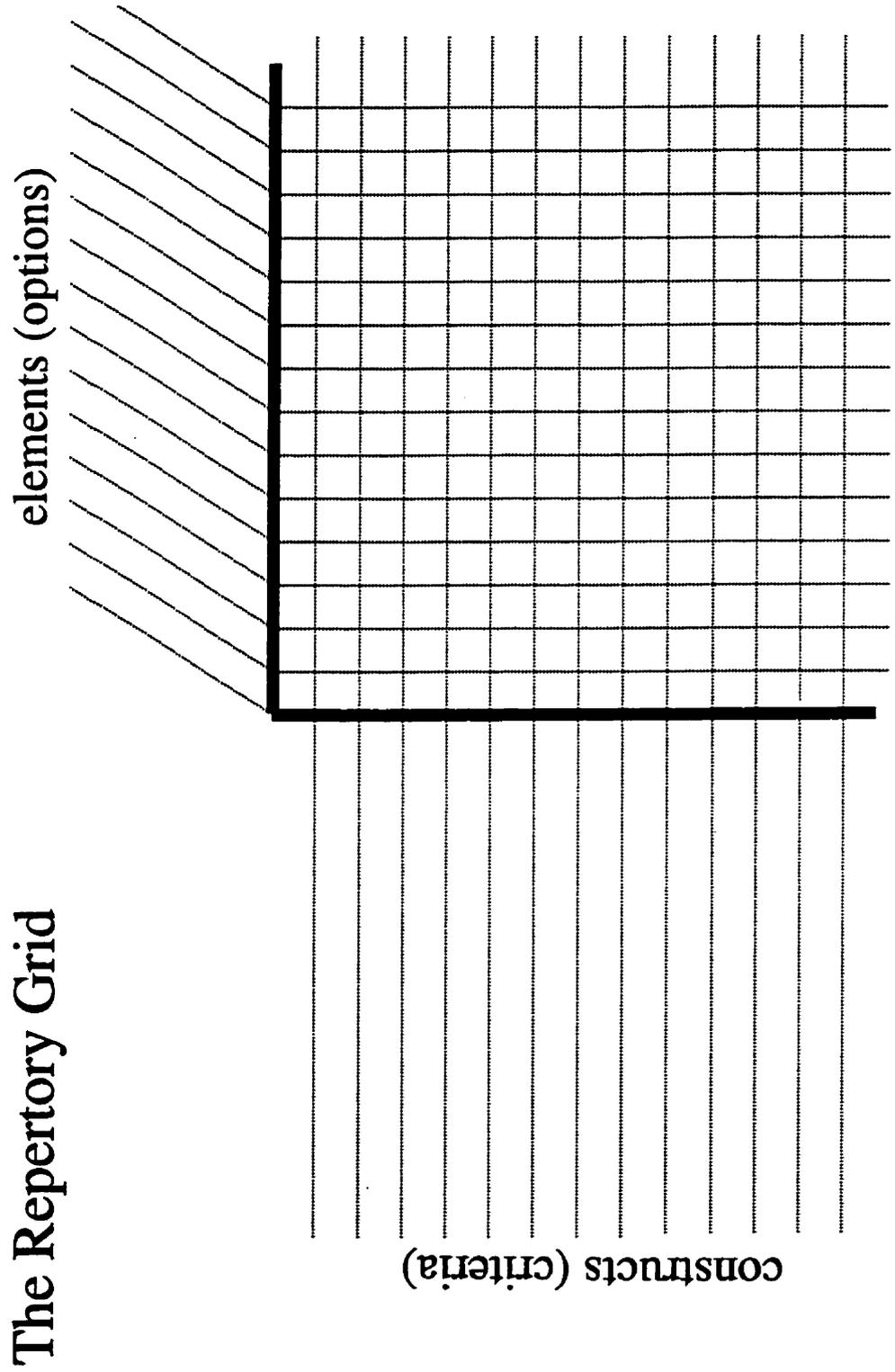
How does the grid help to represent one's elements and constructs? Basically, the grid is a complex sorting task (Neimeyer, 1989), "which allows for the assessment of relationships between constructs [and between elements] and which yields these primary data in matrix form" (Bannister & Mair, 1968). The grid facilitates constructs-by-elements comparisons, such that all elements are judged in terms of all constructs (for examples of various

grids, refer to Figures 2 through 9). Usually, some kind of rating is used to represent the judgements made. For example, with the bipolar construct pleasant versus unpleasant, very pleasant elements may be rated with a score of 10, whereas very unpleasant elements may be rated with a score of one. All degrees of pleasantness lying in between will be rated between those scores of 10 and 1. If 10 elements are rated on 10 constructs, the resulting grid will be a 10-by-10 matrix containing 100 ratings between one and 10.

The grid is a highly flexible instrument, providing structure for the representation of an individual's psychological space, but with few demands or constraints placed on the individual's content. An example of a blank grid (Figure 1) shows that it merely provides a structure for information; the grid content itself is determined by the user.

The content of a grid can vary greatly depending on the needs of the user. Kelly (1955) first proposed the grid as a clinical tool, for the purpose of representing various key roles in the client's life (e.g., mother, father, ideal self, etc.). Even today, the grid's primary use is likely to be in psychotherapy and counselling situations. However, researchers soon transferred the grid's utility to represent almost anything as construed by an individual. Since then, it has been used to represent such varied phenomena as silicon chips, occult phenomena, activities while unemployed, metaphors, topics in accountancy, alternative futures, wild flowers, blends of whiskey, and much more (see Thomas & Harri-Augstein, 1985 for an expanded listing).

Figure 1. Example Blank Grid



As a repertory device, the grid holds great potential utility. By representing the psychological space of an individual, the grid serves to free that individual from simultaneously having to recall as well as consider his or her constructions. The grid allows cognitive resources to be freed, thus allowing more effort for the analysis of the decision or problem space. Often, during this analysis, relations and patterns become apparent that were not obvious before (Shaw & McKnight, 1992). An added advantage of this graphical rendering of psychological space is that it can be used as an extremely successful forum for dialogue between client and practitioner (Eden, Jones, & Sims, 1983).

How is a Repertory Grid Used to Make Decisions and Solve Problems?

Before exploring how a repertory grid is used as an aid for both decision-making and problem solving, an important similarity between decisions and problems must be brought to light. Although decision-making and problem solving are often considered to be different undertakings, both generally follow the same procedure. Indeed, the way some writers (e.g., Ackoff, 1978; von Winterfeldt & Edwards, 1986; Shaw & McKnight, 1992; Morcol & Asche, 1993) present the two undertakings suggests there is a tacit understanding that they are closely related. The reason for this is that in problem solving, ideally, the goal is to come to a point where a decision can be made from a set of potential solutions. Thus, problem solving is really an effort toward making a decision.

In a review of both decision-making and problem solving models, Horan (1979) concluded that both procedures generally follow the same steps,

although problem solving procedures may place more emphasis on the initial definition stage. Additionally, it may also be that problem solving models place more emphasis on the discovery of potential options. This finding prompted Mole (1999) to propose that most decision-making and problem solving models can be thought of as derived from the same generic model, as follows:

- 1 Define the problem or decision
- 2 Determine criteria
- 3 Canvas for options
- 4 Choose best option in terms of definition of problem or decision
- 5 Evaluate the outcome

Thus, the reason a single instrument like the grid can be used to facilitate both decision-making and problem solving is that, essentially, decisions and problems require the same knowledge to be elicited and involve the same procedure. But a more important question now looms. How did it occur to researchers that the grid, originally proposed as a clinical instrument, could be helpful for decision-making and problem solving situations in a more ordinary setting?

Representing Decisions and Problems for Analysis

The answer is that as a repertory instrument, the grid provides a structure in which all the pertinent information of a decision or problem space can be scrutinized at once. This pertinent information can be analyzed in detail for the purpose of making a decision or arriving at a problem solution. Thinking about one's thinking (i.e., metacognition) is not an easy

task (Shaw & McKnight, 1992). The grid provides an opportunity for individuals to contemplate their decisions and problems without having to conjure them at the same time. When grids are used, all pertinent information has been elicited and represented on paper, leaving one's cognitive resources available strictly for analysis.

In some ways, it is as if the repertory grid as a metacognitive instrument, and the metacognitive endeavours of decision-making and problem solving were meant for each other. The similarities between the generic decision-making and problem solving procedure, and the repertory grid methodology run deep.

On a theoretical level, two similarities are found. First, writers in problem solving often speak of the "problem space" (Newell & Simon, 1972). That is, the space in which problem solving activities take place. The problem space includes such information as defining goals and concepts used by individuals to describe the problem situation to themselves. This notion could be transferred to decisions as well. A decision space would be all the knowledge or information one possesses about a certain decision.

Similarly, the repertory grid was designed by Kelly to represent an individual's "psychological space" (Shaw & Gaines, 1993). In Kelly's terminology, this space is referred to as a construct system. A construct system represents all constructs (thoughts, beliefs, ideas, etc.) pertinent to a certain set of elements. An individual's decision or problem space is analogous to a construct system, and thus, is a body of knowledge that can be represented on the grid.

A second theoretical similarity can be drawn out of the notion of "space". Newell and Simon (1972) describe the problem space as an "internal representation [of the problem solver]", and an "abstraction from [the] environment" as opposed to an "objective" representation of the environment. This view is echoed by others in the field, such as Ackoff (1978), who wrote that the "decision-maker attempts to solve the problem as he conceives it". Ackoff also places great importance on the individuality of the objectives of a problem situation.

An emphasis on the individual's internal subjective reality, as opposed to an objective reality, is the hallmark of Kelly's personal construct psychology. As a constructivist theory, the focus is on how the individual construes his or her world. This is summed up succinctly with Kelly's Individuality Corollary: "persons differ from each other in their construction of events". Resting on personal construct theory, the repertory grid methodology is designed to elicit and display an individual's internal subjective reality, and thus is well suited for the purpose of representing subjective decision and problem efforts.

Two key methodological similarities also tie both decision and problem procedures to repertory grid methodology. First, in decision-making and problem solving, two dimensions are of prime importance. They are the options one has at hand, and the criteria by which one judges those options. In repertory grid methodology, two dimensions are also of prime importance. They are the elements of a given construct system, and the constructs by which the elements are construed, or judged. As an instrument

designed to represent the two-dimensional constructs-by-elements space, the grid lends itself well to representing the two-dimensional criteria-by-options space.

The second methodological similarity is the fairly isomorphic steps of both decision and problem models, and the repertory grid. Placing the generic five-step procedural decision-making and problem solving model and the necessary five steps of eliciting a grid (based on Shaw and McKnight, 1992, pp. 82-83) in columns side by side each reveals distinct similarities between both:

- | | |
|---|---|
| 1. Define the decision or problem | 1. Define the purpose for grid use |
| 2. Determine the criteria | 2. Nominate elements involved
in domain |
| 3. Canvas for options | 3. Elicit constructs based on elements |
| 4. Choose the best option in terms
of definition of problem or
decision | 4. Fill in the grid and rate it to
determine scores for elements |
| 5. Evaluate the outcome | 5. Evaluate the grid outcome |

The main difference between both is found in steps two and three. If it is noted that elements and options are analogous, and constructs and criteria are also analogous, then the main difference between both procedures is simply the order in which they appear.

The similarity between both holds a two-way advantage. Decision-making and problem solving can be carried out with only a slight deviation

from the generic form and without the inclusion of extra steps. The repertory grid elicitation steps can be adapted for the purpose of decision-making and problem solving without changing or compromising the validity of its procedure in any way.

Grid Properties That Facilitate Decision Making and Problem Solving

So far, it has been shown that the grid method, and decision making and problem solving share a lot of common ground. Thus, it is plausible that the grid could be a useful application for decisions and problems. However, a question still remains: Exactly what grid properties serve to facilitate decision making and problem solving? A simplified example, that of deciding on a new car purchase (illustrated also in Boxer, 1979; and Shaw & McKnight, 1992), will demonstrate the basics of the grid method. The demonstration will follow the five steps of the grid procedure simultaneously with the five steps of the generic decision-making and problem solving model.

1. Define the purpose for grid use/1. Define the problem or decision.

The purpose for grid use is to represent what is known about new cars for the purposes of making a decision. The decision at hand is what new car to buy.

2. Nominate elements involved in the purpose/3. Canvass for options.

(Note here that to align the generic decision/problem model with the grid procedure, steps 2 and 3 have been transposed). The elements or options will be the set of new cars that may possibly purchased. This list will include the options: Mercury Mystique, Chevy Cavalier, Plymouth Breeze, Toyota Camry, Honda Accord (refer to Figure 2 to see these entered into the grid).

3. Elicit constructs based on the elements/2. Determine the criteria.

By definition, constructs are important ways of distinguishing elements. In a decision or problem situation these will be the criteria one would use to determine the best option. The constructs or criteria elicited here are: size of engine, standard options, total price, fuel efficiency, style, and trunk space.

4. Rate the grid to determine scores for elements / 4. Choose the best option. By rating the elements on all constructs, element columns can be summed to determine the highest rated element or option, thus revealing the best option (see Figure 2 for rated grid)

5. Evaluate the grid outcome / 5. Evaluate the outcome. This final step is used to verify if the outcome "feels" satisfactory. Traditionally in decision and problem applications, if the outcome did not feel right, recycling through the steps was the answer. With the repertory grid methodology, evaluating the outcome involves a more objective analysis of the ratings at hand. As with decision/problem applications though, this analysis is quite often checked with how the user "feels" about the outcome. Grid researchers often suggest a kind of recycling, where one adds new elements and/or constructs to the grid to see if a more satisfactory outcome results.

Literature Review

All repertory grid applications serve to elicit and represent an individual's internal psychological space. Consequently, all grid applications for decisions and problems serve to elicit and represent decision or problem spaces. Since the early work of Oppenheimer (1966) and Wilcox (1972), there have been well over 40 grid studies of this kind.

The best way to distinguish the many grid studies is to look at how the represented space is analyzed. How is the grid data used? What is done with the grid data? In order to paint a picture of the context in which the present study lies, five areas of grid application for decisions and problems are reviewed here. The first area covers some key examples of grids used for their most basic purpose, as simple elicitation and representation tools. The second area takes the elicitation and representation a step further with studies in which some kind of graphical representation of the decision or problem space has been derived from the grid data. The third area of grid application concerns the strong line of research done for the purpose of representing career decision-making constructs. The fourth area reviewed is of the most importance to the present study. This area concerns the critical research of Shaw and McKnight (1992). The present study aims to replicate this work. The fifth area concerns isolated grid-type applications that have been designed for decision making and problem solving, but that are not derived from Kelly's (1955) repertory grid methodology.

Grids For Simple Elicitation and Representation

Early studies. In what may be the first published grid decision-making application beyond the career decision grid literature, Wilcox (1972) proposes a grid for the purpose of measuring decision-maker assumptions about buying and selling stocks. In this application, elements consist of various kinds of stocks, such as "the stock you first made a considerable gain in", "a stock you sold too soon", and "a very popular stock". Wilcox does not provide any specific examples of constructs, but defines them as the

"attributes along which subjects perceive stocks". As a tool for eliciting and representing an individual's decision-making regarding the buying and selling of stocks, Wilcox suggests the grid is more efficient than the methods of the semantic differential or multidimensional scaling.

An early study by Boxer (1979) describes six collective computer programs called Reflective Analysis. Reflective Analysis incorporates Kelly's grid methodology to "enable managers to explore the value of their past experience in relation to a particular problem context". Boxer presents a simplified example of a car purchase, where the "past experience" consists of awareness of types of cars (the elements), and one's criteria for cars (i.e., constructs such as "well designed" and "costly to run"). Following closely from Boxer's example, Eshragh (1980) describes another computer program called CODEM2 (*CO*nversational *DE*cision *M*aking). CODEM2 uses grid methodology to represent "personal judgement and individual values in the subjective work of decision-making." Eshragh provides an example of a job selection problem, where elements are job options, and constructs are job criteria such as salary.

Another early application is that of McKnight (1981), who used grids to represent and compare nine U.K. magistrates' views on the rehabilitative nature of a range of sentences. Elements were the sentences, including various fines and/or incarceration. Constructs were the various properties of the sentences such as "rehabilitative -v- not rehabilitative". Each magistrate rated a grid for each of three crime scenarios. The grids were then analyzed to determine agreement in sentencing between the magistrates for each crime

scenario. Although there was no data to support this, McKnight contended that this grid application was successful for the magistrates, and held promise for other applications.

Shaw (1988). Shaw presents a grid application in which the elicitation and representation of grid information is done primarily to share that information with others in a computer network. Focusing on the area of business management, Shaw describes a distributed system that facilitates group problem solving by enabling managers to share their views (constructs) and develop mutual understanding for a given problem domain.

Shaw provides an example using various managers as elements, and various qualities of managers (such as "poor communicator -v- good communicator") as constructs. Grids are exchanged and compared simultaneously over a network. System users analyze one another's grids in order to broaden and deepen their own understanding of the problem situation. When all points of view have been shared via the grids, the managers can work together on the problem using shared objectives.

Fox and Smith (1996). Fox and Smith present an exploratory case study using the grid method to elicit and represent the "critical success factors" (CSFs) of an executive manager. A CSF is defined as:

[F]or any business, the limited number of areas in which results, if they are satisfactory, will ensure successful competitive performance for the organization. They are the few key areas where "things must go right" for the business to flourish. (Rockhart, 1979, from Fox & Smith, 1996, p. 218)

Fox and Smith propose the grid method because difficulties with the elicitation of CSFs had been found in the past.

To elicit the manager's CSFs, Fox and Smith's application progresses through four stages of grids. All four grids have similar supplied constructs (e.g., high priority -v- low priority, high amount of time spent achieving -v- low amount of time spent achieving), but each grid uses different elements. The first grid elements are management situations such as "A planning situation where you need information", the second grid elements are the manager's objectives "To increase members' satisfaction regarding administrative services", the third grid elements are the manager's goals, such as "Don't allow an escalation of complaints this year", and the fourth grid elements, the CSFs, such as "Attend to complaints immediately". The four stages of grids run in a progression, such that the elements of the first stage spawn elements of the second, and so on. Fox and Smith implemented this progression using a technique related to repertory grid methodology called "laddering". For example, given the objective "To increase members' satisfaction regarding administrative services", the next element down the ladder would be "how to increase members' satisfaction..." which is "Don't allow an escalation of complaints this year".

Using the combination of grid method and laddering technique, Fox and Smith were able to elicit and "capture much information in a succinct form." This efficient elicitation and capture had eluded researchers who were trying to isolate CSFs for a number of years.

The focus of Fox and Smith was to use the grid method to elicit CSFs from the case manager. However, Fox and Smith also made use of the grid data to perform a cluster analysis from which a tree diagram was constructed. This leads into another kind of grid use, that of eliciting grid information for the purpose of creating graphical decision/problem representations.

Grids for Special Graphical Decision/Problem Representations

Grudnitski (1984). This study incorporates the essential repertory grid aspects of elicitation and representation of psychological space, but carries the analysis further. Grudnitski factor analyzed the grid matrix ratings to create 2 and 3 dimensional maps showing intersections of key decision-making constructs.

Grudnitski (1984) studied a sample of managers, area managers, and directors of a U.S. tax enforcement and taxpayer services agency who were faced with decisions about what sources of information to rely on for the task of policy creation. Information was elicited from the managers and directors via a questionnaire. From this questionnaire, elements were derived. These elements included such information sources as: probing questions, activity reports, area manager interviews, and performance and planning appraisals. Constructs were derived from triadic comparisons of elements. These concerned the various qualities of information that was consumed, such as: "production related -v- not production related", "timely -v- untimely", "intangible -v- hard data", and "accurate -v- inaccurate".

Rating of all elements by constructs yielded the grid matrices on which Grudnitski could perform factor analyses. From these factor analyses, two

graphical representations of key decision-making constructs were derived. In the first representation, all elements were plotted in terms of two dimensions: level of summarization by everyday usefulness. In the second representation, all elements were plotted in terms of three dimensions: level of summarization by everyday usefulness by level of detail.

Grudnitski's work does not concern a decision aid for the purpose of making specific decisions. The purpose of the study was "to present the repertory test—a methodology for eliciting the information used or desired to be used by decision makers". Thus, Grudnitski's application of the grid seems to be for the purpose of assisting other managers and directors to see clearly, via graphical representation, what criteria the sample believed to be important in their decisions regarding information sources.

Russell and Salmela (1992). Russell and Salmela present a study in which a grid is elicited from an expert athlete in order to "identify and quantify" his knowledge of problems in the sport of cycling. Using the grid method, 19 "sport task situations" (elements) were elicited, including "changing in direction of the race" and "major setback during the race". Five strategies (constructs) for dealing with the sport task situations were elicited, including, "Working to a plan", "Need to react instinctively and immediately" (opposing poles to these constructs were not mentioned by Russell and Salmela).

Based on the 19 X 5 grid data, Russell and Salmela performed a multidimensional scaling procedure in order to further examine the relationship between different kinds of sport task situations and the athlete's

strategies. This MDS took the form of a graphic two-dimensional plane on to which five vectors representing the athlete's constructs were plotted. All of the sport task situations were then plotted on to the graphic in accordance to their rated relevance to each of the athlete's strategies. Clusters of sport task situations revealed their shared relevance to a particular strategy.

Morcol and Asche (1993). This procedure follows the basic grid elicitation method for decisions and problems, but includes an extra problem structuring analysis at the end. Morcol and Asche address a situation that involves mutually inclusive options. That is, all options identified can be pursued simultaneously. The main question with this kind of problem is: What options should take precedence over others? Morcol and Asche (1993) present an application of the repertory grid for group problem solving that analyzes the grid matrix in order to yield a hierarchical model of the options.

The problem "What should be the primary goals and directions this division should pursue over the next five years?" is one faced by a strategic planning group (six graduate students) in a university's division of vocational education and technology. Possible directions or options are nominated by group members to make up the list of elements. These include; Adequate facilities, Change of degree to Ph.D., Faculty development, Globalization, Emphasis on Excellence, etc. Constructs are then elicited that can be used to judge the elements. Morcol and Asche give examples of constructs of two group members, including: Changes within area -v- External issue, Knowledge within area -v- Broader knowledge, Internationally recognized -v- Nationally recognized, and Image related -v- Student related.

Group members rated their grids, and then cluster analyses were performed on the grids to determine which elements could be categorized together. With this information yield, models, comprising of both elements and constructs were constructed to reveal their hierarchical relation to each other. The final step of the procedure consisted of taking all the group members' models and amalgamating them into a single model, thus representing the strategic planning group's primary goals and directions for the next five years.

Morcol and Asche (1993) did not intend this to be an empirical study. Their purpose was to demonstrate the use of Kelly's theory and grid technique for group problem structuring. The study does present a worthwhile, valid, and creative application. There is high potential utility for what is shown here to business and industry, where various officers and managers must be aware of and agree on the same directives and objectives for a single organization.

Career Decision Grids

Researchers interested in decision and problem grid applications will encounter a strong line of work devoted to career decision grids. Beginning with applications by Oppenheimer (1966) and Dolliver (1967), work in career decision grids unfolded with the research of Bodden through the 1970's (e.g., Bodden, 1970; Bodden & Klein, 1972, 1973). This work was extended by other researchers such as Winer (e.g., Cesari, Winer, & Piper, 1984), Cochran (e.g., Cochran 1983a; Cochran, 1983b), and Neimeyer (e.g., Neimeyer, Nevill,

Probert, & Fukuyama, 1985; Neimeyer, 1988; Neimeyer, 1989; Neimeyer, 1992, Parr & Neimeyer 1994, Russ-Eisenschenk & Neimeyer, 1996).

Career decision grids offer excellent examples of grid application for the purpose of representing a decision space. As such, these grids all focus on career options as elements, and career criteria as constructs. There is, however, one crucial difference that separates this work from the research on grids used as decision and problem aids.

The career decision grid has been little researched in its capacity as a decision-making aid. Only two articles (Cochran, 1983b; Neimeyer, 1989) describe analyses that can be used to reveal what the most favorable options are. Instead, research on the career decision grid has focused on measures that can be derived from the grid matrix and used to inform on the state of an individual's decision making style. For example, a majority of the research has focused on the measure differentiation. Differentiation is an index of how many distinct constructs an individual is able to use to describe a set of occupations. Individuals who are able judge occupations using a greater number of constructs are thought to be better able to make a career decision that will be consistent with their values and criteria.

An important distinction in grid use must be highlighted here. The focus of the present study is on grids as decision-making and problem solving aids (for the purpose of resolving a problem or decision by identifying the most favorable course of action). The career decision grid literature has focused almost exclusively on the grid as an instrument used to derive measures of an individual's decision-making style. So, although the

career decision grid literature provides many examples of grids used to represent decision spaces, it does not concern the grid as a decision-making aid. The focus instead concerns the grid as an assessment of decision-making style.

The Salient Work of Shaw and McKnight (1981/1992)

Of all the work done on the grid as a decision and problem aid, none is more critical than Shaw and McKnight's (1981/1992) book, Think Again. Originally published in 1981 and revised in 1992, Think Again demonstrates via a number of case studies how the grid method can be used to "solve everyday problems and make shrewd decisions". No other work before or since has presented the method with such detail or clarity. Think Again is not an empirical work, but rather, reads like a manual. Shaw and McKnight correctly lay the foundations of the work in Kelly's personal construct psychology. However, the method is made clear and simple, and thus an understanding of Kelly's theory is not required in order to take advantage and make full use of the technique. Their intended audience includes both practitioners and laypersons.

Shaw and McKnight wanted to illustrate the great flexibility of the grid, and so demonstrated its applicability with a dozen varied case examples. All of the cases start with the basic grid method, but most cases include some adaptation or modification, dependent on the purpose behind the grid. Some of these examples include use of the grid for the purpose of: (a) comparing the differing views a quarreling married couple have over shared relations, (b) determining the most suitable candidate for an

organization's position opening, (c) finding out about the qualities of those who get promoted in one's workplace, and (d) eliciting and amalgamating several manager's views of effectiveness in the workplace. The present study limits itself to a tight focus of grid application, best exemplified by three of Shaw and McKnight's cases, "Carol", "Jim" and "Julie". Reviews of these four cases now follow.

Carol's problem is that she is going through a life transition, often referred to as empty nest syndrome, and is pressed with a need to decide what she should do with her life now that she is home alone most of the time. Carol decides that she would like to explore possible courses of action for her life as elements. These include choices like "Take a full-time job", "Take an evening class", "Foster a child", and "Leave husband". Her constructs consist of important (to her) ways of seeing these elements. Some of these include "make more money -v- cost more money", "humdrum -v- exciting", "physical strain -v- emotional strain".

Carol's case reveals an important quality of grids. Sometimes, simply eliciting constructs and elements (the criteria and options of a decision or problem) provides enough clarity to achieve some resolution. Seeing her constructs and elements written out prompts Carol to reconsider them. As she looks through them she realizes she can discard all her elements except for three, and all her constructs except for one. With her problem narrowed down considerably, she becomes enthusiastic about considering her remaining options and discussing the possibility of pursuing one of them with her husband.

Jim would like to buy a car, and needs a way of “holding [his] many different thoughts about cars together”. He decides to represent these thoughts on a grid. He chooses several cars he has been considering, including a Ford Festiva, a Honda Civic, and a Volkswagen Golf. Before using any construct elicitation methods, Jim can already nominate some constructs or criteria he knows about cars. He is aware that fuel economy, engine reliability, and brake reliability are common ways of judging cars. Jim also has some personal opinions about cars. In order to elicit those, the method of triads is used. Jim considers three cars together to determine how “two of these are alike, and yet different from a third”. Using this method, he is able to nominate such constructs as “dull and boring –v- stylish”, and “noisy –v- quiet”. Using both methods of construct elicitation, Jim is able to nominate eight.

He is ready to rate his grid, except two problems remain. First, Jim must make sure that he rates all of his elements in terms of a uniform preference score. That is, if he prefers quiet over noisy, quiet will score a 5 and noisy a 1. And if he prefers high engine reliability over low engine reliability, the former would rate a 5 and the latter a 1. Thus, by convention, low preferences are rated with low scores, high preferences are rated with high scores.

The second problem is that Jim may believe some constructs to be more important than others. For example, engine reliability is more important to Jim than how much noise a car makes. Jim decides to weight, on a scale of 1 to 10, his constructs in terms of importance. Thus, engine

reliability is weighted with a 10, where as noise rates a 5, because it is still important, but not as important relative to engine reliability. Once the weights are determined they can be multiplied by all ratings in the grid. This yields rating scores adjusted for weight. Now Jim is ready to sum the ratings for each car option. The highest score, in Jim's case, the Subaru Justy, is the optimal choice.

Julie, the third case chosen from Shaw and McKnight, is a teacher who believes her students can achieve at a higher level. To work on this, Julie decides to look at her students' attitudes toward learning. She starts with one pupil, named Bill. To get at Bill's attitudes, Julie decides to choose "important learning events" as elements. Bill nominates a few, such as "learning history", "reading Orwell's 1984", and "being in Julie's class". Already, some insight is gained, as Bill finds he has never actually considered such a group of important events together.

Bill and Julie then work to elicit some constructs by way of the method of triads. Bill nominates "trivial -v- heavily emotional", "wanted to do it -v- ought to do it", and "individual -v- social", among several others. Once Bill has completed his grid, both he and Julie take a close look at it. Important patterns emerge from the grid. One of these, and a crucial one to Bill is the similarities between any of the important and meaningful learning events Bill has had. Seeing these, he is able to describe specifically to Julie what important characteristics (i.e., constructs) must be present for a learning event to be meaningful. Julie is able now to understand how to modify her lessons so that Bill will respond better, and achieve at a higher level.

Shaw and McKnight (1992) note that grid usefulness is limited only by the inventiveness of the user. Their many examples attest not only to the grid's wide applicability, but also to their own inventiveness. The present study concentrates less on inventiveness, and more on testing Shaw and McKnight's examples. Thus, the method described later on will draw mostly from a combination of that outlined in the cases of Carol, Jim, and Julie.

Think Again may have empowered many individuals to take advantage of the grid method for decision-making and problem solving in applied settings. Unfortunately, little if any research has followed from this notable piece of work.

Other Grid Type Instruments.

Other researchers outside Kelly's personal construct psychology have identified grid matrices as useful means for the representation of decision spaces. This, perhaps, further supports the notion of a grid as high in utility for decision-making and problem solving. Three examples are described here.

Jacob (1987) proposed a grid for the purpose of organizing information in choosing an internship site. In this application, the options (elements) are a set of various internship sites, and the aspects (constructs) are a set of site qualities the prospective intern counts as important (e. g., quality supervision, general impression). Jacob suggested that the prospective intern read a number of articles on internships to help in the generation of the aspects. Jacob also provided instruction on how to weight the constructs.

In a comparison and extension of Jacob's application, Stewart and Stewart (1996) presented a grid matrix for the same purpose. Again, the options (elements) were a set of various internship sites, and the aspects (constructs) were professional and personal requirements, either nominated by the prospective intern, or taken from lists compiled by the authors. The aspects were weighted. Stewart and Stewart argued for a paired comparison binary rating method that ensures there will be no ties between options.

A third example is described by Wolfe (1994). This application utilized grids as part of a decision support system for the purpose of strategic planning of large-scale system development projects. In this application, elements include various products (e. g., "our product", "competitor A's product"), and constructs include various indices of performance and supportability. Wolfe's model includes weighted constructs, as well as other attachments to the grid matrix, making it a very thorough and powerful, if somewhat complex instrument.

Doubtless, there are other examples of grid-type instruments proposed for decision-making and problem solving. It is reasonable to suggest that researchers have, independent of repertory grid methodology, found grids to be high in utility for the representation of decision and problem spaces. However, despite the probable utility of these instruments, they do not enjoy the theoretical foundation of those repertory grid studies following from Kelly's personal construct theory.

Rationale

There are four goals behind the rationale of this study. The most central of these goals is the demonstration of effective grid method as laid out by Shaw and McKnight (1992) in their earlier cases of Carol, Jim, and Julie. Shaw and McKnight's work represented an advance over other period studies by describing case studies based on real clients, instead of describing a fictional example (as in Wilcox, 1972; Boxer, 1979; Eshragh, 1980; Eden, Jones, & Sims, 1983). This replication seeks to improve on that advance by presenting real case studies of individuals who sought help for real-life decisions and problems. Thus, this study presents a highly valid case study sample of individuals who realistically might seek assistance with their decision making or problem solving.

Although there are over 40 studies proposing or demonstrating the grid as a useful decision and problem aid, none make reference to the experience of the user or attempt to describe the outcome of grid use. It has been demonstrated many times that the method works, but to what effect? The second goal of this study is to log this qualitative data for the first time. The case study design allows the extraction of rich, in-depth data, and direct quotations, capturing people's experience with the grid. The qualitative extraction takes three forms: (i) write-ups of each case participant's progression through the stages of grid method, (ii) observations by the researcher as counsellor, and (iii) responses of case participants to short-answer questions about their experience with the method.

Similar to the lack of qualitative data identified above, a lack of quantitative data on the user's grid experience appears across all past grid studies. The third goal of this study is to propose and test possible variables indicative of satisfaction with decision or problem outcome in a counselling setting. This has been achieved by identifying six decision/problem variables and creating a Likert scale rating measure for these.

The fourth goal of this study is to simplify and make more accessible the grid method for decision-making and problem solving. Three initiatives toward this goal were taken. The first was to demonstrate in the literature review the alignment of the grid method with the well-known decision making and problem solving model. At first glance, the grid methodology and the grid graphic itself may appear complicated and difficult to learn. As well, personal construct theory has been criticized as being inaccessible by virtue of its specialized terminology (jargon such as "constructs", "elements", and "differentiation" has unique meaning within personal construct psychology). Effort is made in this study to relate grid method to the other known methods of decision/problem models, and personal construct psychology terminology (such as construct and element) to common language terms (such as criteria and options, respectively). With this effort, it is believed that the grid method will be easier to understand and thus more accessible to a greater number of users.

A second initiative toward the goal of accessibility is to relate the grid to decision and problem models so that it can be seen as an alternate method of decision/problem representation to decision trees and balance sheets. If

practitioners and other potential users understand the grid's utility in this light, the method may become better understood and more widely used.

A third initiative toward both simplification and accessibility is to present the grid method in the form of the Seven-step procedure. This procedure is designed to be easy enough to follow that it can be used by almost anyone without first having to understand the personal construct theory behind it.

This study was conducted with two audiences in mind. The first audience, current grid practitioners, might find this research useful because it may reaffirm some beliefs they have held about the benefits of grid use. Current practitioners with some grid experience have also likely tested the grid on themselves at various times and have a personal understanding of grid utility. However, this research offers the advantage of providing the insight of an alternate sample of first-time users to the method. Additionally, this research may shed light on aspects of the grid that current practitioners are not aware of. It is widely accepted in counselling research that practitioners are not always aware of the aspects of their service that benefit clients the most (e. g., see the research of Cummings, et al. 1992, 1993). The best way to determine this is to ask clients directly.

The second intended audience for this research consists of those not yet familiar with the grid method, both new practitioners and laypersons. The grid method is described simply, and with enough repetition that newcomers should be able to learn the method with ease. As well, the case descriptions are designed to frankly convey the challenges one might

encounter with the method. The data collected from each case is designed to provide newcomers with the knowledge of what reactions they might find should they use this on themselves or with their clients. Armed with this knowledge, newcomers may feel confident about investing time and energy into learning and applying the grid method.

Design

This study assumes an exploratory case study design. The reasons for adopting this design are twofold. First, a goal of this study is to replicate Shaw and McKnight's (1992) work, which was designed around case studies. And second, detailed, in-depth data can be extracted from case studies. This data can in turn be used to identify possible variables and themes that factor heavily in grid use. Four kinds of information will be drawn from the case studies: (i) accounts of each case participant's progress through the stages of the grid method, (ii) observations of each case by the researcher as counsellor, (iii) responses of the case participants to short-answer questions about the method, and (iv) initial and follow-up Likert scale ratings of each case participant's satisfaction with the state of their decision or problem.

Method

Participants

Participating cases made up a mixed-gender sample of eight adults (5 women, 3 men) ranging in age from 27 to 60 (mean: 43.00). All participants lived in Calgary, Alberta. There was only one criterion for participation in the study: Each individual must have been facing what they deemed to be an "important life decision or problem". In order to keep the sample representative of a population that would likely be using the grid, no payment was offered. Thus, the prime value of the study for the individual participant was the opportunity to work on a relevant decision or problem.

Contact was made with each case participant through the professional networks of the researcher. These included the following organizations and associations: (i) a human resources consulting organization, (ii) a career practitioner's network, (iii) a community employment action meeting, and (iv) a government employment services office. The researcher would make contact with these organizations and associations, leaving a handbill that briefly described the study (see Appendix A for copy of handbill). Individuals who were interested in the study could then contact the researcher for more information as to the suitability of their participation.

During initial contact, any questions of the potential case participants were answered. As well, each potential case participant was informed of four key points. One, participation was not recommended if the participant did not have an important decision or problem pending. Two, participation in the study would not guarantee an optimal outcome for one's problem or

decision. Three, participation in the study (i. e., use of the grid procedure) would, however, likely help the individual participant achieve some clarity with his or her problem or decision. And four, the repertory grid has proven useful in many other applications during the past 45 years, and has been proposed as a decision making and problem solving aid for the last 20 years. All cases were tested between June 22 and October 18, 1999.

Setting and Apparatus

The settings for each case took place in quiet, private rooms where the researcher and case participant could work uninterrupted. The exact location for each case is described in the case summaries in the Results section.

For each case, a fine marking pen, scrap paper, a calculator and a micro-cassette recorder were used. The main apparatus, the repertory grid procedure, is described in the introduction; only the procedural details of the grid method will be described here.

Independent Variables

The chief independent variable in this study is the repertory grid procedure for personal decisions and problems. The effect of this apparatus is focus of this study. However, another crucial independent variable figures into this study: The researcher's role as counsellor.

One goal of this study is to determine whether case participants would feel confident to do this on their own. However, most grid applications are introduced via the assistance of some kind of trained practitioner. For all seven case participants, the researcher assumed the role of a counsellor whose job it was to assist them through the grid method, as would normally be done

in counselling settings. The researcher was a male graduate student in his late 20's with one year's counselling experience. The researcher had administered and interpreted repertory grids to over 50 individuals in experimental and practical settings prior to this study.

Measures

Likert scales (initial and follow-up). A major difficulty of studies in decision making and problem solving has been the measurement of the success or failure of the decision making or problem solving aid (see Janis & Mann, 1977; Edwards et al. 1984; Mitchell & Krumboltz, 1984; for discussions on this). The prime reason for this is that success cannot be measured by the outcome of a decision making or problem-solving endeavour. Too many chance factors are at play in a decision or problem outcome. Furthermore, there arises the question of *when* a measure of the outcome should be taken. For example, with the purchase of a car, does one measure for the success of the decision immediately after purchase, one month after purchase, or several years after purchase when trading the car in? At each point, the decision-maker may rate the outcome differently, depending on the ownership history with the car.

A solution adopted by some researchers is to measure impressions of the decision-maker or problem-solver immediately after working through the process of decision-making or problem solving (e.g., Davey & Olson, 1998; Connolly, Ordonez, & Coughlan, 1997; Zeelenberg, van Dijk, & Manstead, 1998). These have usually taken the form of Likert scales measuring dimensions such as "confidence of" or "happiness with" the outcome.

Indeed, the utility of Likert scales to measure subjective views has been noted for counselling outcomes at large (Hiebert, 1996).

Various examples of measures of decision outcomes exist. For example, Kline (1994) has proposed an instrument called the Decision Making Questionnaire (DMQ). Despite its generic name, this measure is intended primarily for measurement of business decision-making, and is not directly transferable to application for personal decision-making and problem-solving as one would find in counselling. Toda (in Edwards, Kiss, Majone, & Toda, 1984) notes that the quality of decision making depends on the specific "time, place, and objective". Thus, measures of the quality of decision or problem outcome specific to the "time, place, and objective" of counselling have been proposed for this study. Rationales for the six Likert scale measures used in this study now follow.

The first measure, "ease of use", poses the question to participants "Was this procedure easy or difficult to use?" A rating of "very easy" is at the high end of the scale (7), and a rating of "very difficult" is at the low end of the scale (1; all Likert scales in this study are rated 1 to 7).

"Ease/difficulty" is a measure that has been used for a group decision making aid (Davey & Olson, 1998), a multi-attribute decision making aid (Timmermans & Vlek, 1994), as well as a knowledge-based expert system used to aid in business decision making (Vinze, 1992).

An important theoretical construct lies behind the "ease of use" measure. Simon (1976) notes that "no one in his right mind would satisfice when he can just as well optimize". This means that if the opportunity to

optimize (find and take advantage of the best option) is just as convenient as the opportunity to satisfice (settle for the easiest available option), then an individual can be expected to optimize. Thus, if an aid can facilitate decision and problem optimization and is easy enough to the point where it is just as convenient as the effort required in satisficing, individuals will be more likely to optimize by making use of that decision-making aid.

The second Likert measure, "consistency" refers to the congruency of the outcome with the participant's values. Consistency has not been widely used as a measure of decision making or problem solving, although it was identified as a key measure by Majone (from Edwards et al., 1984).

Consistency can be seen as an important measure in personal counselling for decision-making and problem-solving where a prime focus is often on the articulation and elaboration of the client's values. An aid that maintains consistency between the outcome and the values that led to that outcome can be thought of as highly valid in a personal counselling setting.

"Confidence", the third Likert measure has a long history as a decision making measure. Many studies (e. g., Davey & Olson, 1998; Kline, 1994; Sieck & Yates, 1997; Timmermans & Vlek, 1994; and Vinze, 1992) have made use of the construct confidence to measure decision outcome. The logic of this transfers well to the personal counselling setting. The client who emerges confident in the decision or problem will be more likely to follow through and take action on that outcome. On the other hand, if the client emerges with little confidence in a decision or problem outcome, then it doesn't matter how well the rest of the counselling went, it is doubtful the client will possess

the will to take any action. This in turn could greatly compromise any gain that could have been made from the counselling situation.

“Completeness” is the fourth Likert measure. Identified by von Winterfeldt and Edwards (1986), it is also mentioned by Shaw and McKnight (1992), but appears not to enjoy wide-spread use in decision-making aid studies. There is a strong theoretical rationale behind completeness, however. Writers in the decision-making aid literature often point to the limits in capacity of human cognition, necessitating the need for aids. However, if a decision-making aid fails to elicit all relative decision or problem information (the decision making space), then it is not really a valid improvement on the so-called limited human cognition. Thus, if an aid is going to be used, one of its basic characteristics should be that it can enable the individual to make a complete account of all the information that could not be processed by means of independent, unaided human cognition. Therefore, “completeness” is nominated as an important measure of the grid procedure in this study.

The last two measures “happy” and “regret”, are related. Happiness (or satisfaction) and regret were identified by Janis and Mann (1977) as possible measures of a decision making venture. Other studies have since gone on to use these measures (e. g., Connolly, Ordonez, & Coughlan, 1997; Zeelenberg, van Dijk, & Manstead, 1998). In terms of counselling, happiness and regret are important for reasons similar to “confidence”. If a client feels happy about the outcome of a decision, chances are high that he or she will possess the energy and will to take action on it. Similarly, if a client feels

some regret over the decision outcome, this may signal the need for recycling, instead of taking action. "Happy" and "regret" may seem like two sides of the same coin, and thus, a redundant measure. Contrary to this, Zeelenberg, van Dijk, and Manstead (1998) showed that these two are not always rated in correlation to each other. Thus, both are included in the present study.

Six measures are proposed here to assess the decision-making and problem solving outcomes in a counselling setting. These are "ease/difficulty", "consistency", "confidence", "completeness", "happiness", and "regret".

Short-answer questions. The short-answer questions were devised *ad hoc*, that is, designed to answer specific questions important to this study. As such, six of the eight questions are not standardized, and have not been tested elsewhere. All questions were chosen because they draw certain information of importance to the exploratory rationale of the study.

Question one, "What part of today's work stood out for you the most?" is adapted from the Important Events Questionnaire (Cummings, Martin, Hallberg, & Slemon, 1992; Cummings, Hallberg, & Slemon, 1994). This question is designed to give case respondents the latitude to mention anything that happened during the session. Thus case clients are free to nominate events or work outside of the method proper that they saw as significant. Even though the grid methodology is the focus of the study, other factors, such as rapport between client and counsellor, safety, or counsellor support may actually stand pre-eminent in the work done using the grid.

Question two, "What part of the procedure was most helpful for you?" seeks to narrow in on the most important aspect of the grid method proper. Case clients are told that the answer to this question may be the same as in the first question, if they happened to nominate an aspect of the grid method as standing out for them the most. The rationale behind this question is simply to find out if there is any one "best" part of the grid method.

Question three, "What part of the procedure was the least helpful for you?" seeks to uncover any unnecessary parts of the procedure. Essentially, if there is a part of the procedure that case clients are finding to be of little use, it may be best to eliminate it for the purposes of streamlining the grid method.

Question four, "Was the procedure easy enough for you to learn that you could do it by yourself from now on?" is included to find out whether case clients believe they could empower themselves to use this procedure independently. Even though the procedure is born of psychotherapy and counselling where a professional assists a client through, one of its qualities is that it is simple enough for individuals to undertake on their own. To get a sense of this, the question is posed directly to case participants.

Question five, "If I were to give you copies of the procedure, would you consider using it for some other problem or decision you may face in the future?", is an extension of question four. Although some case clients may believe the procedure is easy, they may feel they have little use for it, and may answer "no" to this question. Other clients may answer that the procedure is too difficult to do on one's own, but would seek a trained

professional to help them with it in the future. In both cases, such responses may provide a clearer picture as to how and why the grid might be used by a client.

Question six, "Can you suggest any other decisions or problems for which this procedure might be useful?" seeks to elicit from case clients other likely uses for the methodology. Workers in grid research could be so accustomed to the methodology they may be biased as to the extent of the grid's use. Those recently introduced to the method, with little investment in the methodology other than an interest in what it can do for them at that point in time, may provide a more candid picture of the instrument's applicability.

Question seven, "Can you suggest any other decisions or problems for which this procedure might not be useful?" is the opposite of question six. The rationale behind this question is to determine whether there are certain decisions or problems with which the case clients would be unwilling or uncomfortable to use the procedure.

Question eight, "Would you recommend this procedure to a friend who faced a difficult decision or problem? Why or why not?", is taken from a counselling centre's (Mount Royal College, 1998) client satisfaction questionnaire. This question is typical of many client satisfaction and quality assurance measures. The rationale behind it is to get a sense of whether case clients thought the grid method effective enough to stand behind it and recommend it to others. A secondary rationale has to do with the word-of-mouth phenomenon that drives a significant portion of the counselling

business. If clients respond to this instrument so favorably that they tell others about how good it was, this will create a demand. Counsellors who must attract their own clientele would do well to use instruments and methods that are looked on so favorably that clients encourage others to take advantage.

Procedure

Spanning roughly two hours, the procedure consisted of three components, in sequence. The components were: (1) opening assessment and rapport-building, (2) the repertory grid procedure, and (3) closing assessment and debriefing.

Opening assessment and rapport building. All sessions began with some time allotted for rapport building—the foundation of the counselling working alliance (see Cormier & Cormier, 1998). The rapport building took the form of “small-talk” (about current events, finding the session site, recent events in the participant or the researcher’s lives), information-giving about the study (taking care not to “feed” the participant any expectations that would later be measured). Information giving also included a form letter (Appendix B). Rapport building also included background information on the researcher, and most importantly, background information on the participant. Before the participant was ready to begin, a consent form (Appendix C) was provided.

The opening assessment began with an information form (see Appendix D) that asked the participant’s age and gender. The information sheet then asked: “In the space below, please describe the problem or decision

you face". The purpose behind this question is to elicit a description of the problem or decision in terms of how the individual has seen it up until that point. The opening assessment then asks: "Please describe your effort so far at resolving this problem or decision." The purpose behind this question is to find out what the individual's efforts or methods toward problem or decision resolution have been so far. It is presumed that this effort has been somewhat unsatisfactory—which is what has prompted all cases to seek assistance via the grid procedure offered in this study. The opening assessment concludes with the completion of the Initial Likert Scale (see Appendix E). It was anticipated for this part of the procedure that some participants may be hesitant to rate an outcome for a decision or problem that, to them, is still far away from resolution. Care was taken to inform case participants that they were to rate the scales hypothetically, as if they had had to settle on a decision or problem solution at that immediate point in time.

The Seven-step repertory grid method. The repertory grid method for personal problem solving and decision making, as it stands alone, is presented as an eight-page booklet, entitled "Working Through Multi-Criteria Decisions and Problems: A Seven-step Method" (see Appendix F for a copy of the booklet). For the sake of standardization, the method in the booklet does not utilize the full flexibility of the grid as presented in Shaw and McKnight (1992). As stated before, one of the goals of this study was to package the grid method in a convenient form that participants might feel comfortable using on their own after the study. Thus, the grid method presented in the

booklet is designed to be simplistic and user-friendly. Following is a step-by-step description of the procedure.

Defining Your Problem or Decision (Step 1.) begins the procedure with what may be the most crucial task. Defining the problem or decision is very important because no matter what follows, the outcome of the procedure will be meaningless if the wrong problem or decision is tackled.

The instructions are as follows:

Please stop and think over the decision or problem you face. In doing so, think carefully of the present state of your problem or decision (how things stand right now). Then think of your goal state (how would you like to your problem or decision to turn out).

Space is provided for the participant to write in descriptions of both present and goal states.

The present and goal states of this step are based on Newell and Simon's (1972) definition of a problem: a "discrepancy" between one's "goal state" and one's "present state". Basing the first step of a method for both problems and decisions on a problem definition may appear theoretically unsound. However, the theory supports that most (if not all) problems incorporate a decision. Therefore, starting the method off with a problem definition is valid for both problem solving and decision-making efforts.

It may seem redundant to include this step when participants have already defined their problems or decisions in the opening assessment. There are, however, three important reasons for including this step as is. First, it is important for all participants to see a definition step at the beginning of their

method, because it is always a first step of a decision or problem venture. Second, defining it in terms of present and goal states makes clear the direction the problem solving and decision-making effort needs to go—toward the goal, and away from the present state of affairs. This makes Step 2 more clear, where the individual must nominate options (or ways) that will get them from the present to goal states. And third, the goal state is singular, constraining the individual to narrow the outcome of the problem or decision. Too often, problems and decisions are difficult to tackle because they are actually bundles or confounds of several problems or decisions.

Nominating Your Options (Step 2.) opens with the following instructions:

Think carefully about your decision or problem as you have defined it in **Step 1**. Now make a list of all the options you have toward resolving this decision or problem. (hint: options are the “ways” we can reach our goal state)

Example: Think of an example of a new-car buyer, whose goal is to purchase a mid-sized car. The options that car-buyer might be the following: Mercury Mystique, Chevrolet Cavalier, Plymouth Breeze, Toyota Camry, etc.

This is one of the more important steps in the method, and requires some effort. The goal at this stage is to elicit as many options as possible. This will lead to the most elaborate problem or decision space. The greater the number of options elicited, the more articulate and elaborate will be the resulting representation of the decision or problem space.

Determining Your Problem or Decision Criteria (Step 3.) begins with the following instructions:

The decision or problem you face can be described as "*multi-criteria*". This means that the resolution you come to must satisfy a number of important criteria (or values) you hold. You may already be aware of some of your criteria.

Example: Consider the car-buyer, who may have some of the following criteria: (a) reasonable price, (b) 6-cylinder engine, (c) good fuel economy, (d) good stereo system, etc.

Many problem solvers and decision makers can think of several criteria off-hand. They may be ones that have been heavy on their mind, others that friends have suggested, or criteria used by other experts in the domain of the problem or decision. Shaw and McKnight (1992) suggest that some decision-makers and problem solvers will be prepared to nominate some criteria from various external sources in their awareness.

Typically, several criteria will come to mind for the individual. In order to ensure that a complete representation of the decision or problem space is rendered, case clients were encouraged to "exhaust constructs". That is, case clients are assisted to access any further constructs that could be valuable criteria for the decision or problem at hand. This process continues until the same criteria are elicited in repetition. Shaw and McKnight (1992) describe eight methods of eliciting constructs from individuals. All methods are derived from established grid methodology, and involve finding some kind of difference between element options.

The grid method used in this study is based directly on Shaw and McKnight's (1992) cases of Carol, Jim, and Julie. The only exception to this is the way in which the criteria (constructs) are elicited in Step 3. This exception has been made based on evidence from pilot cases done for this study. These pilot cases have illustrated a problem for which this study proposes two alternate methods.

Standard grid methodology seeks to elicit bipolar constructs for which there is a *difference* between poles. The methodology of Shaw and McKnight follows this same standard methodology in eliciting the criteria for the case problems or decisions. The problem or decision criteria takes the form of the standard bipolar construct of Kelly's (1955) original method, where the poles are set apart by some kind of *difference*.

The rationale for proposing the alternate methods rests on evidence that simply finding a difference between element options will not always lead to a construct criteria that can be rated based on a range of value. When one embarks on the use of the grid for problem solving and decision making, an important (though perhaps subtle) shift in the purpose of the grid has taken place. Whereas grids originally have been used as "meaning-representation devices", grids used for decision making and problem solving are more accurately thought of as "value-representation devices". Two problems arise when the standard bipolar constructs (set apart by a semantic difference) are used for the construing of value-laden elements (or options, as in the present study). An example taken from the pilot studies illustrates the problem.

This example involves the construct "works indoors -v- works outdoors", a construct that is in standard use in many career development studies (see, for example Bodden & Klein, 1973; or Parr & Neimeyer, 1994). While the poles of this construct are indeed different semantically, and therefore valid opposing poles by standard grid methodology, they sometimes do not differ in value. One encounters a problem when an individual prefers an occupation because it offers a delightful mix of work indoors and out. Both poles are valued.

If rating was based solely on meaning and the value of poles was not an issue, then there would be no problem. But when rating is done with value in mind, then poles must differ in value, one pole being of more value than the other to the individual.

This study presents two method alterations designed to alleviate the above problem. The first will be called the "concepts as criteria" alteration, and the second will be called the "opposite values" alteration. Cases one to four were run using "concepts-as-criteria", and cases five to eight were run using "opposite values". The two method alterations are explained below.

In the concepts-as-criteria method, the individuals' criteria remain as they were first proposed via free elicitation by the individual: That is, monopolar. Support for the validity of monopolar constructs comes from within the personal construct literature, where Reimann (1990) found that bipolarity is an "important, but not essential aspect of personal constructs". In other words, not everything need be construed by way of bipolar constructs.

Bannister and Mair (1968) note that the main difference between personal constructs and the notion of the concept is that the former is bipolar, and the latter is monopolar. Thus, in order to differentiate these criteria from the bipolar construct form, they are labeled concepts here. Monopolar criteria, or concepts, offer the advantage of great simplicity. Once elicited, there is no need to return and nominate opposing poles. The monopolar concepts are rated on the grid by way of the following instructions:

Each option is to be rated on each concept criteria in terms of how well that option fulfills the criteria. A rating of 10 (on a scale of 1 to 10) indicates that the option fulfills that criteria as much as it ever could be fulfilled. Whereas a rating of one indicates that the option fulfills the criteria by only the lowest measurable amount, or perhaps even the absence of any amount of fulfillment.

In a sense, the concepts-as-criteria are rated in a bipolar fashion, except that the individual is given a uniform polar opposite of the criteria: The lowest measurable amount, or perhaps the absence of that criteria being fulfilled at all.

For the process of exhausting the constructs, the standard method of triads is still useful, as it appears in the instructions:

It is important to come up with as many criteria as you can. If you want to think of more, but can't, the following exercise (called the method of triads) might help.

- 1 Select three of your options from **Step 2**. You may want to write them down on a piece of paper.

2. Ask yourself the following question about the three options you selected:

“How are two of these options alike, and yet different from the third?”

However, the method of triads will yield bipolar constructs set apart by a *difference*. At this point the participant is asked which pole is valued. For the sake of uniformity, the one pole that is valued is added to the list of criteria, and rated the same as the previous monopolar criteria. If both poles are valued, then both are added to the list of criteria.

The other method alteration, the “opposite-values method” is perhaps closer to personal construct methodology in that it yields criteria which are truly bipolar constructs. With this alteration, the only departure from standard personal construct methodology is the wording of the method of triads, which altered, reads “In what way are two of these alike in value, yet opposite in value to a third?” There are two method changes here. First, a study by Epting, Suchman, and Nickeson (1971) found that constructs elicited in terms of “opposing” distinctions were found to rated “with significantly less overlap” than constructs rated in terms of “differences”. Thus, the method of triads in this case distinguishes by opposites, instead of differences. And second, the “value” is inserted so as to remind users that the objective is to differentiate in terms of value, not meaning.

Weighting Your Criteria (Step 4.) was probably the most simple of all steps. Here, participants were asked to consider each criterium in terms of how important it was to meeting their goal state, as written. It included the following instructions:

Look at your list of criteria from **Step 3**. On a scale of one to ten (one being 'of little importance' and 10 being 'of great importance'), rate each criteria with respect to how important it is to you when resolving this decision or problem. Simply write the weighting (out of 10) beside the option.

In order to encourage participants to exhaust their constructs, a further instruction encouraged: "Feel free at this time to add any new criteria to the list that may come to mind".

Filling out the Repertory Grid (Step 5.) includes the following instructions:

The time has come to organize your criteria (from **Step 3.**) and your options (from **Step 2.**) in such a way as to be able to compare them against each other.

This is done using the Repertory Grid (attached).

You can create your own grid simply by filling in your criteria (goals and values) in the lines below where it says "criteria", and your options in the lines below where it says "options".

Once you have done this, you are ready to rate your grid and see how your options compare against each other in terms of your stated criteria.

When rating the grid, simply consider how well the option meets the particular criteria. Using the example of the car buyer, if she really liked

the stereo system in the Plymouth Breeze, she might rate it a "10" (out of ten). If she was not so impressed with the Chevrolet Cavalier's stereo, she may only rate it as a "4" or a "3".

When rating the grid, do not worry about the weightings of the criteria. That will come into play later. Simply rate according to how well the option meets the criteria you are considering at the time.

Determining the Ranking of Your Options (Step 6.) is the step where all grid ratings are adjusted for their weights and summed to yield the totals for each option. To familiarize the participants with this process, the researcher would have them read the instructions:

Now that you have filled in all the possible ratings in your grid, you should now make the weighting adjustments. Simply multiply your weightings in Step 4 by each of your ratings in the grid. For example, if your first criteria has a weighting of 5, multiply all ratings for that criteria by 5. If your next criteria has a weighting of 2, multiply all of the ratings for that criteria by 2. Once all the grid ratings have been adjusted by weight, the ratings for the options can be summed. To do this, add each rating (as adjusted for weight) by column. The sums for all options reveal the ranking of your options in terms of how well each one addresses the criteria you identified.

Although it was important for participants to understand this step, the researcher was also aware that by Step 6, many participants would have been

working at the procedure for about 90 minutes. In order to give each participant some time for a break, the researcher calculated the ratings adjustments and the sums. This process was done using a calculator and a fine tip orange pen. As the adjusted ratings were calculated, they were written on top of the rating in each cell, the orange ink showing over the original blue-ink rating. When all ratings had been adjusted for weight, these numbers were summed to yield each weighted option total.

Step 7. Evaluating Your Outcome is the final step where the participant has the opportunity to consider the outcome, and cycle through the procedure again if the outcome seems unfavorable. This step includes the following instructions: "Look over the ranking of each option. Consider how this ranking makes you feel." Essentially, this is the culmination of the procedure. While evaluating the grid results, the researcher would ask the following questions, designed to illuminate some of the important information a grid can offer: "Do the totals feel right?", "Are there any totals that seem surprising?", "Are there some totals that you could have predicted?", "Are there any patterns/ similarities in the ratings?" (Often it is useful to note either criteria or options that are rated similarly). Other results that are worthy of note are options that are not mutually exclusive, and thus could be attempted at the same time. The purpose behind the discussion of the grid results between researcher and participant is to crystallize the information provided by the grid into some clear conclusions.

In some cases, the conclusions one arrives at via the grid totals leave them feeling unsure. If this is the case, it is important that individual has the

opportunity to cycle through the procedure again. Thus, the final instructions of the procedure are: "If you are not confident of the rankings obtained, you may elect to run through the seven steps again. If you do this, consider carefully any criteria you may not have considered the first time around. Some individuals like to run through this Seven-step process a number of times before they feel fully confident about the decision or problem resolution they come to. This is a normal part of solving problems and making decisions."

Closing assessment and debriefing. Closing assessment began with the follow-up Likert Scale (see Appendix G). Here, participants were reminded that this measure was for the purpose of capturing their impression of the just-completed grid procedure. Once the follow-up Likert scale was completed the short-answer questions were tape-recorded. Each question (see Appendix H for a copy of the questions) was printed out on a separate piece of paper that was set out in front of the participant. The researcher would read the question out loud, and leave the printed question in front of the participant. All eight questions were recorded in this manner.

When the questions were done, time was left for debriefing. The researcher would usually initiate this by asking the participant if he or she had any questions about the work that had been done that day. To prompt further closing discussion, the researcher would ask participants what they might do following the outcome of the grid procedure. Although they were made aware of this at the outset of the study, participants were reminded that their cases would be included in a final write-up of the study. These cases

would in turn be publicly presented, and possibly published at a later date. For their protection, they were given the opportunity to check the write-ups for their individual cases, before inclusion with the rest of the study. As another precaution, participants were asked to provide a pseudonym for their case. Finally, all participants were invited to have a copy of the final write-up, if they wished.

Results

There are three parts to the Results section. The first part, the bulk of the section, presents written summaries of each of the eight cases. The second part presents both initial and follow-up Likert scale scores summarized across all cases. The third part presents a thematic analysis of the responses of all case participants for the open-ended questions.

The summaries of each case include descriptions of the individual, their presenting problem, what attracted them to the study, and some of the more important details of their work at each step. The summaries each conclude with discussion pieces in the form of the researcher's observations as counsellor. There is no particular order to the cases as they are presented, except that the first four cases use the "criteria as concepts" alteration for Step 3, and the last four cases use the "opposite values construct" alteration for Step 3.

Case Summaries

Case 1. Leonor

Leonor is a 48 year-old woman who had been working as senior administrator in health care for many years. Her last position as a team leader/facilitation trainer was eliminated by the local health authority after a wave of budget cuts. Leonor had experienced considerable success with her career. None-the-less, the loss of this position led her to a period of deep self-reflection and assessment. She fully recognized herself to be in a transition period—a time to reassess her values and direction. After the termination, she was offered a similar position, but found herself wondering if she wanted

something a little different. Leonor began considering options she may not have had before.

Leonor contacted the researcher by email after seeing one of the handbills on a bulletin board at the outplacement program where she was a client. In her past health care positions she had worked with problem-solving models and was very open to using them for her current situation. The researcher and Leonor met in a closed office at the site of the career management organization where she was a client.

Preliminary information. Building rapport was easy with Leonor. She was talkative and curious to know about the grid methodology, its history, and other applications. Leonor defined her problem as "To find a position that matches who I am, as well as matches my skills and abilities". Her effort at resolving this problem so far was defined as "To go back to my 'gut' sometimes reluctantly". Leonor rated this decision-making effort on the initial Likert scales, commenting that she felt the scales addressed what was important to an individual faced with a crucial decision. Her initial ratings (on the scale of 1 to 7) were: Easy/Difficult (1), Thorough (3), Consistent (4), Confident (6), Happy (7), Regret (1). The average initial Likert rating, with the Regret rating reversed, was 4.66.

Step 1. Leonor defined her Present State as "same as preliminary" referring to her previous problem definition: "To find a position that matches who I am, as well as matches my skills and abilities". She then defined her Goal State as "To find intrinsically rewarding work that matches/complements who I am and what I am capable of doing".

Step 2. Leonor took care to “think out loud” as she nominated her options. She identified herself as an extrovert, saying this was an important process for her. Leonor decided it would be useful to include not only specific positions (e. g., Health care practice consultant), but also some general areas she was interested in as well (e. g., People effectiveness). Both of these were seen as acceptable options because they were valid “ways” she could reach her goal state of finding a position that “matches/complements who I am and what I am capable of doing”. Leonor took about 25 minutes to nominate eleven options (see options in Leonor’s grid, Figure 1).

Step 3. Leonor appeared to have no difficulty conjuring her decision criteria. As with Step 2, Leonor thought out loud, soliciting the input of the counsellor from time to time. Although the method of triads was offered to her at one point, Leonor declined saying she preferred to “talk it out”, as a way of determining her criteria. She spent the greatest amount of time on this step—well over an hour. The method of triads would likely have been a more expedient method for eliciting criteria. However, it appeared that she valued the process of talking it out, and valued the opportunity to do so. At various points, Leonor was encouraged to add further criteria if she felt there may be some. This prompting led her to a total list of 16 criteria, a list Leonor assured the counsellor was exhaustive.

Step 4. Leonor’s weighting followed standard procedure. She spent about 6 or 7 minutes on this step.

Step 5. While filling out her grid, Leonor decided that the criteria “Sense of belonging/collegial” was similar enough to “Respected” to be

subsumed under the latter. Thus, her final grid included 15 criteria. Because the "criteria as concepts" method was used for Leonor, her criteria as she wrote them out in step three were directly transposed to the grid.

While rating her grid, Leonor came to the conclusion that her options "Teacher" and "Facilitator" were going to be rated the same as the option "People Effectiveness". As a result, Leonor rated the option "People effectiveness" and then drew arrows across all the rating cells for "Teacher" and "Facilitator" to indicate that they were rated the same. Later on, Leonor decided that the options "Sales", "Marketing", and "Network/Linker", were not realistic positions, and were largely incorporated into work she did already. She crossed these options out, and did not rate them. This culling of options is a valid process for narrowing a decision field, and is described in Shaw and McKnight (1992, p. 43) with the case of Carol. Leonor took about 25 minutes to complete her grid.

Step 6. Calculation of the grid weights and sums followed the standard procedure.

Step 7. When Leonor began to rate her grid (see Figure 3) and see the patterns that were emerging, she remarked "this is wild". This enthusiasm continued as patterns and totals were analyzed on completion of the grid. The higher rated options (Health care practitioner consultant, Project manager, and Consulting) were ones Leonor had believed were her best options all along. She seemed pleased that the grid bore this out. The time for analysis of the grid took about 15 minutes.

Figure 3. Case 1, Leonor

The Repertory Grid

elements (options)

constructs (criteria)	People Effectiveness	Teacher	Facilitator	Health Care Practitioner/Consultant	Health Care Administrator	Project Manager	Sales	Marketing	Consulting	Leader	Network Linker	Human Resource Consultant
Health and Well-being 10/10	80	↑	90	70	90	90	90	90	70	90	90	90
Opportunities for Success 10/10	80	↑	80	90	80	80	80	80	90	90	90	90
Risk Taking 8/10	64	↑	80	64	80	80	80	80	64	72	72	72
Good fit 10/10	40	↑	90	60	90	90	90	90	60	90	90	90
Acceptance 10/10	70	↑	90	70	90	90	90	90	70	70	70	70
Trust, Honesty, Integrity 10/10	70	↑	80	20	80	80	80	80	50	50	50	50
Acknowledgement 10/10	70	↑	90	70	90	90	90	90	80	70	70	70
Time away from work 10/10	90	↑	90	20	90	90	90	90	80	40	40	40
Respected 10/10	90	↑	90	80	90	90	90	90	90	70	70	70
Meaningful 10/10	100	↑	90	80	90	90	90	90	90	90	90	90
Rewarding 10/10	90	↑	90	70	90	90	90	90	80	90	90	90
Challenging 8/10	72	↑	80	72	80	80	80	80	80	72	72	72
Accountable 10/10	90	↑	100	90	100	100	100	100	100	90	90	90
Responsible 10/10	90	↑	100	90	100	100	100	100	100	90	90	90
Pay 7/10	35	↑	70	35	70	70	70	70	70	42	42	42
	754	754	754	873	654	873	873	782	873	744	744	744

Follow up data. After analyzing the grid for some time, Leonor completed the follow-up Likert scales and answered the open-ended questions. Follow-up ratings were as follows: Easy/Difficult (7), Thorough (7), Consistent (6), Confident (6), Happy (7), Regret (1). The average follow-up rating, (with the Regret rating reversed) was 6.66, up by 2.00 from the initial rating average of 4.66. Total time for Leonor was five hours and 40 minutes (the longest of all cases presented in this study). A summary of her answers to the short-answer follow-up questions (edited from the tape-recorded sessions) now follows.

(Q1) What part of today's work, and that could be anything we did today—any interaction, anything that happened in this room – what stood out for you the most?

(A1) The very most was the fact that you gave me so much time – to talk about, to talk it through, rather than just writing the answers. You gave me lots of—you're very patient—you've done some interviewing before, it's obvious.

(Q2) What part of today's procedure was the most helpful for you?

(A2) Step 3. It was helpful in that if I'd stopped at point 7 [the criteria "Acknowledgement] for my values —everything from "etc." down, [to 16], so 9 more items came up. So that ability to keep revealing, you know, "delaying", where you start with the superficial, but then gradually got into the root—that exercise was really helpful.

(Q3) What part of the procedure was the least helpful for you?

(A3) I don't see that any of it is not helpful, I mean, as we moved from one step to the other, I started thinking more as a process. You need a step 1, and you need a step 2, just to get some ideas down of the kind of work I'd like, so I think if you leave those out, that's why you don't end up with a good result.

(Q4) Was the procedure easy enough to learn that you could do it by yourself at a later point in time?

(A4) I think so. The only piece that would be missing is, because I am so verbal in my communication, I need being able to talk it through—that's how I problem-solve—I have to think out loud. So if I were doing this on paper [by myself], I may have missed something pretty important here, if hadn't been able to talk it out. But on the other hand I could work through this on my own. But I think we would have to recognize that I would have to go back to it a few times. And people fail to do that often. They do it once, and say "I got that", and it's over. I think it's very straightforward, and it could be a tool they could use if they were looking at "how am I going to find out what my next kind of work is". I certainly could do this, and the grid makes it very helpful because it is so visual.

(Q5) If were to give you copies of this procedure, would you consider using it for some other problem or decision you might face in the future?

(A5) [emphatically] Absolutely! Oh it's just so clear, it's just so easy to—I mean it really is easy to do, once you get the methodology, it's not rocket science—it's common sense, but its common sense made simple. In counselling, a lot is trying to figure out where you should be, and in order to

get there it takes having the [right] tools to do that. So yeah, I would use it again. Definitely.

(Q 6) Can you suggest any other decisions or problems for which this procedure might be useful?

(A 6) Anything in life. Anything! It could be as simple as... a move. Or you could certainly use it in the workplace. I think this is just a great tool for any kind of problem-solving—if you're trying to figure out what courses to do in university. If you are 16 trying to figure out what you want to be when you grow up—well when you're 48, and still trying to figure out the same thing, its something you can use. It's a great way to take a look at things, and everybody's situation is so different. Looking at an organization, it would be based on the mission statement, [the] values of the organization. Maybe for strategic planning. Why, it could be used for anything.

(Q 7) Can you suggest any other decisions or problems for which this procedure would NOT be useful?

(A 7) I think if somebody was psychotic. I think there are times when people's reality has been altered. ...and that would be quite a danger to the individual. So I don't know how well that would work for someone with a mental condition. Or, I guess it would depend on the age group too. I probably wouldn't take it much lower than maybe a grade -six level because I don't know that... I think younger people should learn how to problem-solve in a different way. I don't know how well it would work with a six-year-old, but I would think certainly by age 10, I would think they would be able to do something like that.

(Q 8) Would you recommend this procedure to a friend who faced a difficult decision or problem?

(A 8) I would. And why would I do it? Some people aren't perhaps as open as I am about discussing things. Some people figure things out really well on paper, and don't need as much discussion, they just want to be very private about it. But it's not confrontational, you give only what you're willing to give. So I think lots and lots of people could use this. And I will definitely—I will share this with other people.

Observations. Leonor responded well to the grid method. She appeared to be enthusiastic about working through each step, and responded positively when she began to notice patterns in the ratings of her grid. Leonor is a good example of someone who could benefit from grid use. She had a lot of options and many criteria, both of which, by her report, became clearer as she worked through the method. Leonor's case is similar to that of Carol in Shaw and McKnight (1992). She exemplifies how it is sometimes necessary only to articulate certain options, before it is apparent that they should not remain as part of the decision space.

Case 2. David

David is a 52 year-old man, with a long career background as a faculty member at an agricultural college. Several years ago, he accepted a severance package from the college. During the later years of his time at the college David found he was required to teach material that was in conflict with his values. This became a source of stress for him. Since ending his faculty position, David had worked at a number of jobs, none of them fully

satisfying. This again added to his stress. The continuous high stress during the last several years took both a heavy personal and financial toll. He described himself as in the process of “picking myself up, dusting myself off, and starting over”.

David said he recognized this as an important transition period in his life. In honour of this, he had done considerable soul-searching and work in the areas of self-exploration and values clarification. As well, David had been attending a community employment action meeting. It was through this program that contact was made with David. He inquired about the study via e-mail, and received the standard information (described in the Subjects section). David said he decided to participate when he read about the repertory grid’s clarifying properties. He met with the researcher in a quiet boardroom near the researcher’s office.

Preliminary information. David described his present situation as: “I face choosing a second career”. His effort so far was described as: “I have been collecting and researching quite a bit of information from past career/work searches, extensive writing of vision, mission, goal stuff, and spending time on the internet looking at areas of interest of where I really want to be and do.” He rated his effort so far on the Initial Likert scales as follows: Easy/Difficult (2), Thorough (6), Consistent (3), Confident (5), Happy (2), Regret (7). The mean of these ratings (with Regret reversed) was 3.16.

Step 1. David described his present state as “a conflict between earning dollars to survive and pursuing what I really want to do and be, especially with regard to the people I want to be with and where I want to

live." David's goal state was then written as: "To choose a career I am naturally good at and get employment with the kind of organization I enjoy working with."

Step 2. David took a long time to nominate his options. He appeared to be thinking carefully over these, and said during this process "here is the part where you make me squirm", referring to the effort he was putting into the nomination. Overall, it took David over 20 minutes of reflection to nominate 11 options. The options were not specific jobs, but rather areas that he would prefer to take his career (e.g., "back to university", "finding work in an area with others of similar values", etc. See the options in David's grid, Figure 4).

Step 3. David was able to nominate six criteria without any prompting or use of triads. He indicated that he had been thinking over his criteria for some time, and was pretty sure this was a complete list. In order to exhaust his list of constructs David was presented with one triad. However the construct he generated from the triad was one that had already been nominated for his initial list. None-the-less, while considering the triad, David suddenly remembered another criterion (Means to acquire landbase), and nominated it as his seventh. At this point, another triad was suggested, with the explanation that it would help insure that David's list of seven criteria was indeed exhaustive. David appeared hesitant about doing this, and instead "assured" me that the list of seven included all that was important to him, and was all that he wanted to consider in terms of judging his career options.

The Repertory Grid

elements (options)

	Back to university	Full time employ \$\$\$	Move to where its done	Network here	Network here	Move to where some done	Find work doing it (here)	Find work doing it (here)	Determine match of MBTI and career	Do internships in alternative design	Determine match of MBTI etc. w/ program
With people sharing values 10/10	10	3	9	9	7	8	5	7	9	9	9
Modeling sustainable living 10/10	9	3	9	7	2	7	4	8	6	9	7
Get a salary again 10/10	7	10	5	5	5	4	5	4	5	8	5
Upgrading etc. 10/10	10	3	5	6	1	3	1	4	8	8	10
Appropriate spiritual expression 10/10	7	1	7	3	3	6	2	7	6	8	6
Direct contact growing plants 10/10	3	1	8	1	1	8	2	8	1	8	1
Means to acquire landbase 10/10	4	9	6	5	4	5	1	5	1	7	1
	50	30	49	36	23	42	19	44	39	54	42

constructs (criteria)

Figure 4. Case 2, David

Step 4. Although David gave the weighting due consideration (he spent several minutes looking over his list of criteria before judging the weights for each), he eventually came up with equal weights (all 10/10) for all criteria.

Step 5. David's rating of the grid took him about 10 minutes. During this time he stopped and remarked that he had to make 77 (7 X 11) ratings, and that some of them wouldn't be easy to judge. He was told that this was a normal experience for grid users.

Step 6. The researcher summed the ratings following standard procedure. Because David's weights were all equal, no weighting calculation had to be made.

Step 7. On analyzing the grid ratings and totals, David remarked that the grid had clarified his situation. "[This] put the distracters in place and allowed me to focus on what's really important, and committing to something I really wanted to do, [whereas] before, the distracters were preventing me from making a decision". He also noticed a pattern where the options that contained a "self-discovery" element were rated lower than others. He found this to be somewhat surprising. David described the grid results as "bang on" with respect to how pictured himself. On discussing the grid results, it was noted that some of David's options were not mutually exclusive, but instead could be done simultaneously. David then enthusiastically described a job opportunity in another city that actually did combine two of his options.

Follow-up data. After analyzing the grid for some time, David filled out the follow-up Likert scales. His ratings were: Easy/Difficult (5), Thorough (7), Consistent (7), Confident (6), Happy (6), Regret (1). The mean of David's ratings (with Regret reversed) was 6.33, an increase of 3.17 over the initial mean of 3.16. The total time for David's session came to 2 hours and 40 minutes. David's responses to the short-answer questions were as follows:

(Q1) What part of today's work stood out for you the most?

(A1) Well naturally the end point where we finished the grid and looked at the results. ...Yeah, that's what stood out for me, is how [in] the end result, I could incorporate my values in regard to selecting the options and prioritizing my options.

(Q2) What part of today's procedure was most helpful for you?

(A2) The procedure, first of all, committed me to a number of options that were rolling around in my head, and confusing me. But once I started to write them down, they were not rattling around in my head. That freed my head to generate more options. And I guess the next thing that was important was the criteria, writing down the outcomes, values, and conditions that are at work in [my decision]...

(Q3) What part of the procedure was the least helpful for you today?

(A3) There is a lot of silence on your tape here because I am having difficulty finding something that was least helpful with the process. ...I don't have too much to say as far as least helpful. It did help.

(Q4) Was the procedure easy enough to learn that you could do it by yourself from now on?

(A4) ...Yes, it is easy to use.

(Q5) If I were to give you copies of this procedure, would you consider using it for some other problem or decision you face in the future?

(A5) Yes. I would even recommend it to others.

(Q6) Can you suggest any other problems or decisions for which this procedure might be useful?

(A6) I have been engaged in life management training, and there's many areas where this might be applied. Because [in] life management, values must be integrated with making decisions with various options.

(Q7) Can you suggest any other decisions or problems for which this procedure would NOT be useful?

(A7) [Long pause] That depends on what the individual options are... It requires thinking. You have to generate the elements or the options. You have to generate the criteria. You have to have done your homework. It is not a magical type of box—it requires work. And if you are prepared to do the work, you will get out of it what you put into it.

(Q8) Would you recommend this procedure to a friend who faced a difficult decision or problem?

(A8) I would recommend it, with the explanation that it would require homework, and in some cases that may even take some facilitation. But I would recommend this procedure...

Observations. David's apparent enthusiasm and interest in working through his transition was an important part of his session. David seemed to put in a lot of effort, especially for Steps 2 and 7. He was aware of this, and did remark later that he realized that this was clearly a "you get out of it what you put into it" kind of method. It is likely that this attitude was responsible for what turned out to be a highly successful and productive use of the grid methodology.

Case 3. Bianca

Bianca is a 37 year-old woman who had been working as a freelance human resources consultant. Her work was based on a number of subcontracts she had won. Contact was made with Bianca at a professional meeting, where she expressed interest in the study after seeing the handbill, saying she had a career related concern she had been mulling over for some time. Bianca called the researcher shortly after to arrange a time to participate. A date was set and Bianca's session took place in a quiet boardroom, at her current place of work.

Preliminary information. After some discussion, Bianca decided that an accurate representation of the problem or decision she faced was: "To have [my] own business or not." She went on to describe her effort at resolving her decision as "Nothing concrete, just being guided by the work." Bianca's Likert scale ratings of this effort were: Easy/Difficult (4), Thorough (2), Consistent (3), Confident (5), Happy (4), Regret (3). The mean of Bianca's ratings (with Regret reversed) for her efforts so far was 3.83.

Step 1. Bianca described her present state as: “[I] haven’t committed resources to supporting [a] business; lack of decisiveness holds me back and makes me vulnerable.” She went on to describe her goal state as: “My own company with hi-tech resource clients, own space, lots of toys, and lots of people!”

Step 2. Bianca liked to discuss her thinking out loud at each step. It was determined after some discussion that the options Bianca had been considering that would help her toward her goal of owning a business included such actions as buying a cell phone, getting office space, and hiring an assistant (refer to Figure 5 for various grid components).

Step 3. Because Bianca appeared to think out loud well, she was encouraged to do this as she nominated her criteria. She was asked to consider the reasons why her options would help her achieve her goal of owning her own business. She immediately suggested “spending money” explaining that in order to have her own business, she was going to have to invest in it, which was one aspect her options represented for her. Bianca came up with nine criteria this way. After nine, she appeared stuck, and so was offered the following triad “buying a cell phone—assistant—buying a monitor”. From this, Bianca nominated the construct “use of technology vs. use of people”. At this point, counsellor intervention was necessary. Although Bianca’s construct did include opposing poles (people as opposed to technology), it was possible that they could both have positive values. So Bianca was asked which one of the poles would help her achieve her goal. Her reply was “both”. Thus, for the sake of elaborating Bianca’s construct

system to its maximum potential, it was suggested that she split her construct in two (see Stewart, 1997 for an example of this procedure). This yielded two new criteria for Bianca, "using people", and "using technology" (to help her make her business run). Coincidentally, a second triad was presented to Bianca, whereupon she again came up with a construct that, on questioning her, appeared to be of more use when split in two. Thus, both of the criteria "office management" and "financial management" were added to the list. Bianca was offered a third triad, but declined, saying she was sure that she had completed her list. However, shortly after saying that, discussion spurred Bianca on to suggest "Enrolling" and "State of the art" as her last two constructs, yielding a list of 15.

Step 4. Weighting occurred following the standard procedure. Bianca took only a few minutes for this step.

Step 5. Rating took place following standard procedure, with two exceptions. Bianca decided that two of her options "Marketing calls" and "starting to do work" would be too difficult to rate, and requested to delete them. On the criteria side, Bianca made the realization that "Increase energy" and "Maximum performance" were essentially the same, and dissolved the former into the latter. She also realized that "Infrastructure" and "Impression" were also essentially the same, again dissolving the former into the latter. Thus, Bianca made a total of 96 ratings from an 8 X 12 grid.

Step 6. The calculation of ratings took place following standard procedure.

Figure 5. Case 3, Bianca

The Repertory Grid

elements (options)

constructs (criteria)	Cell phone	Web page	Bus, Card and Litchhead	Office space	Assistant	Monitor	Financial - Charge card	Accountant
Spending Money 10/10	80	80	90	90	80	80	90	
Committed to owning a business 9/10	90	81	90	90	81	63	72	
I am important/I am worth it 9/10	90	90	81	81	81	72	72	
Free up time 9/10	81	72	9	45	81	45	72	81
Maximize performance and increase energy 7/10	56	56	42	70	70	56	56	63
Impression and Infrastructure 6/10	54	60	60	60	60	48	42	36
Technology 10/10	100	100	60	60	80	100	70	70
People 10/10	90	90	70	90	90	80	70	100
Office management 8/10	80	80	80	80	64	56	56	
Financial management 7/10	14	14	14	14	70	35	70	70
Enrolling 10/10	100	100	100	100	100	70	70	
State of the art 10/10	100	100	80	80	100	100	90	
	935	923	777	860	972	877	835	884

Step 7. Analysis of the grid revealed there to be little debate between which actions to follow out of Bianca's list of options. Because none of them were mutually exclusive, Bianca could pursue all options. After some discussion Bianca suggested that she would follow-up on some of the higher rated options in the near future.

Follow-up data. After analyzing her grid, Bianca rated the grid method on the follow-up Likert scale: Easy/Difficult (4), Thorough (6), Consistent (6), Confident (7), Happy (7), Regret (1). The mean of her ratings was 6.17, an increase of 2.34 over her initial rating mean of 3.83. Bianca's follow-up ratings suggest she may have found the procedure to be more helpful than her previous efforts at coming to a decision. Bianca finished by answering the short-answer follow-up questions, presented below (edited from the tape recorded sessions). Total time for Bianca's session totaled two hours and 10 minutes.

(Q 1) What part of today's work—and that could be anything we did in this room (any interaction, anything going on)—what stood out for you the most?

(A 1) How close I was to making the decision. That I was just on the edge of making it, and I just needed a nudge, some attention to it.

(Q 1b) Why does that stand out for you?

(A 1b) Because, I think that was my purpose in coming [here] into the meeting. So I achieved my goal.

(Q 2) What part of the procedure was the most helpful for you today?

(A 2) Stating the problem—at the beginning. That was probably—I mean I had my breakthrough just defining the problem clearly. And then seeing the grid at the end, just kind of affirming or organizing the different issues, the items—of my big decision. Breaking it down.

(Q 3) What part of the procedure was the least helpful for you?

(A 3) The difference between the constructs (the criteria) and the elements was confusing. And I don't know if that was my own confusion—whatever —just it was confusing.

(Q 4) Was the procedure easy enough to learn that you could do it by yourself from now on?

(A 4) No.

(Q 5) Now if I were to give you copies of this procedure, would you consider using it for some other decision or problem you might face in the future? ...Say I gave you a blank—

(A 5) Yeah. Yeah—and I think the interaction was important. I think the structure was one part, the interaction was the other, and me setting aside time in my life to do this.

(Q 6) Can you suggest any other decisions or problems for which you might think this procedure to be useful?

(A 6) Oh yeah, I could do it on the [decision to begin a] Ph.D.

(Q 7) Can you suggest any other decisions or problems for which this procedure would NOT be useful?

(A 7) I think it would be useful for everything. Because we got... down to the real core—for me of it being about work, and commitment. ...So it could be applied to personal, work...

(Q 8) Would you recommend this procedure to a friend, who faced a similar difficult decision or problem?

(A 8) Yes. I would. Because I got such an insight. I got a real clearing in my life by doing this. It's really clear what I am going to do now. I was waffling [before]...

Observations. It was unfortunate that there was some confusion for Bianca between her constructs and elements. This seemed to draw away from the utility of the session. Even more unfortunate was the fact that this confusion may have been the fault of the researcher, who began second-guessing some of Bianca's proposed elements early on.

Another confusion that did not help matters was the fact that Bianca's option elements were not mutually exclusive. Thus, no real decision was needed. The researcher reframed the session as one with a goal to determine the relative priority of Bianca's options, which did partly work. Still, it is possible that Bianca may not have needed that grid at all, given that the instrument's best use is to compare closely matched, but mutually exclusive options.

Bianca's case represents an important innovation. Splitting constructs that have two positively valued poles can be one method of ensuring that grid ratings do represent values instead of meanings. This innovation appears only to have been addressed by Stewart (1997).

Case 4. William

William is a 40-year-old man who had been working as a career development practitioner for over 10 years. Contact was made with William through a professional association. He approached the researcher describing an important decision that he had been working over for some time. He had not been making very much headway, and was hoping to come to some resolution.

Following first contact, William emailed the researcher, and was given the standard information (as described in the Subjects section). William was eager to take part, so a date was set. The researcher and William met for an afternoon in a quiet boardroom near the researcher's office.

Preliminary information. A self-described extrovert, William made a point of discussing what was on his mind at each step of the study. The session opened with about 15 minutes of rapport-building, on topics including work, getting to the session site, and the history of the repertory grid. After 10 minutes of discussion on his present situation, William wrote the following: "I have been offered a job in the same field as I am in now, and have a personal, life decision related specifically to this offer."

His effort so far at resolving this decision was written as: "The offer was made four to five months ago, so I have had a lot of thinking time, and talked to a couple of friends and family about it." William was then given the Initial Scale sheet, and was instructed that he should rate the scales in light of his "thinking" and "talking" about the decision. His ratings were: Easy/Difficult (5), Thorough (5), Consistent (6), Confident (7), Happy (6),

Regret (6). The mean of these Likert ratings (with Regret reversed) was 5.16, indicating he was fairly satisfied with his efforts with the decision so far.

Step 1. After some discussion, William was able to describe his present state: "Because this job was offered four to five months ago and my present work has been so busy, I have not been given enough time to do adequate research. The offer is open-ended, which has led to my complacency. So as a result, I am starting to get frustrated about not having made a decision."

William then discussed for some time (about 10 minutes) what his goal state should be. In this discussion, it was revealed that there could be several goal states coming out of this present situation. William was encouraged to pick the one goal that was most important to him at the time. The resulting goal was written as follows: "My goal is to be satisfied with my decision and to choose the path that is right for my long-term career and personal goals."

Step 2. After reading the instructions, William paused briefly to consider what the options might be for his goal. He queried the researcher, asking if his options should be the various ways he could help himself make the best decision (e.g., gather more information, further talks with the offering employer, etc.). William was told that these options may be helpful, but he may find it more interesting to choose his actual job opportunities as options. This may be a better use of William's time, given his concern over choosing one opportunity over the other. Looking back to the goal, the focus was on choosing between "paths". William was asked if the options that he needed to consider were these "paths". He agreed that these were at the forefront of his thinking. Immediately, he nominated his new job offer and

his current job as options. Because he had only two, William was then encouraged to nominate a few more options “even if they don’t seem as promising in terms of your goal as the first two.” William nominated two more, bringing his list of options up to four (see Figure 6, for William’s options and other grid components).

Step 3. This step took the longest amount of time. Quite a bit of discussion and apparent effort on William’s part led to an elaborate and complete list. William started by reading the instructions at the top (skipping the instructions on the method of triads), and immediately nominated eight criteria. He was then asked to read the instructions for the method of triads, and presented with the triad “take the job – stay present job – return to school”. From this he nominated “stability of employment and money” as a ninth criterion. At this point, it also occurred to William that he should split the option “returning to school” into both “part-time”, and “full-time” options. This rounded out his set of options to five.

William was presented with a second triad “take the job – stay at present job – other job options”. No new constructs came out of this triad. However, the triad did prompt some discussion, which reminded William—a gay man—of an important, though overlooked job criteria: “being out” in the workplace. After nominating this criteria, discussion flowed freely for several minutes more, until William hit on his final construct, “social conscience”—doing work that benefits society. At this point William declared that he was sure there was no further criteria to consider.

Step 4. Weighting proceeded following the standard procedure.

William needed only several minutes for this step.

Step 5. William read the instructions, confirmed them with the researcher, and filled out his grid. He was then instructed to rate the grid according to "how well each option addresses each of your criteria." As a specific example, William was told that if the option does not address the criteria at all, it is rated a 1, if it addresses the criteria very well, it is rated a 9 or 10. William spent about five minutes on his ratings.

Step 6. Calculating the rating totals followed the standard procedure.

Step 7. Some patterns were noted in the completed grid. Of high importance was the narrow margin between William's options of taking the new offer, and keeping his present job. After some discussion, William decided that what was needed was work on generating some further criteria to help set the two apart.

Follow-up data. After analyzing, and discussing his grid data, William filled out the follow-up Likert scales rating his effort with the grid:

Easy/Difficult (6), Thorough (7), Consistent (7), Confident (6), Happy (6), Regret (1). The mean of the follow-up ratings (with Regret reversed) was 6.50, an increase of 1.34 over the initial score of 5.16, possibly indicating that William was more pleased with his grid effort than his previous effort. William then answered the open-ended questions. Total time for the session as about 3 hours. A summary of William's responses to the short-answer questions (edited from the tape recording) now follows:

(Q1) What part of today's work stood out for you the most? That could be anything that took place in this room.

(A1) I guess for me being an extrovert, having the chance to actually talk to you before I'm writing some of this stuff down. And again, doing my thinking as I am talking. Some of that was made clearer, for sure.

(Q2) What part of the procedure was the most helpful for you?

(A2) Yeah, that was very helpful, because it allowed me to flesh out some of the questions that were on the grid, and so on. ...And I guess what that led to [referring to his answer above], that became ultimately the most helpful, was realizing that I need to get more specific criteria. Those will probably be the ones that help me make the decision the most.

(Q3) What part of the procedure was the least helpful for you?

(A3) ...At the beginning, I was a little confused, so I suppose at that moment in time it was the least helpful. But that needed to happen for me to get to the end. So in retrospect, I don't think there was anything irrelevant. I don't think anything was unhelpful.

(Q4) Was the procedure easy enough to learn that you could do it by yourself from now on?

(A4) Yeah, I think it was. It would be [a] very good help.

(Q5) If I were to give you copies of the procedure—like blank forms—would you consider using it for some other problem or decision you might face in the future?

(A5) M-hm. I could see myself doing that. ...Because of my style, I would probably use it toward the end—near the actual decision time itself. It

would probably help me confirm things, and then I would be able to organize. Because at some point when you gather too much information, or information gets to be too much, or talk to too many people and have too many opinions—you need to kind of synthesize that somehow. So I could see myself doing that.

(Q6) Can you suggest any other problems or decisions for which this procedure might be useful? You just kind of answered that, but if you have anything to add...

(A6) Yeah. Well, the example you gave there—to help understand the procedure better of buying a car. ...Probably anything where you have choices—whether there happens to be three alternatives or seven options or whatever. I think it could be applicable right across the board.

(Q7) Can you suggest any other decisions or problems for which this procedure would NOT be useful?

(A7) ... I think it can be a main part of helping make a decision, but hopefully it won't make the decision for me totally. At some point, the things that can't be put down on paper ever, the gut feeling of it, will always come into play for me. To make it the ultimate procedure would be a bit of a danger. So having it as in combination with the feeling, the gut stuff, then I think that would work out well. ... I guess a place it would not work out well is in picking a [romantic] partner, or something...

(Q8) Would you recommend this procedure to a friend with a difficult decision or problem?

(A8) Yeah. With those cautions—not to use it as the sole source or the crutch—so you don't have to be involved and you can have this piece of paper do it for you. So yeah, I think people could use it quite readily. And get out of it quite a bit.

Observations. An important aspect of William's session was his interaction with the researcher. He identified this interaction as important from the outset. He may also have benefited from it during Step 2, where he appeared ready to proceed with only two options. Discussion prompted him to nominate three more, possibly elaborating his decision space in significant ways.

Despite the above elaboration, William suggested in his response to question 7 that the grid may not always serve to elicit everything. His "gut feeling" may not ever make it to paper. This is an unfortunate reality when one is engaged in eliciting decision or problem information. Kelly (1955) describes "emotional" as "that which is not word bound" (p. 803). It is possible that with enough effort, some of William's gut feelings could be translated into words—and then transcribed onto the grid. However, William raises an excellent point in that there may be some gut feelings, which in Kelly's terms, may never become "word bound". It is important to acknowledge these in the work of decision-making or problem solving.

Overall, this seemed to be a very good session. William expressed thanks several times at the end, saying "This actually has been quite useful" and "I have some homework..." describing how he planned to look at this decision more closer detail. He had described himself as

complacent—putting off his decision. Just sitting down and committing structured time and effort may have been a significant change for him. An important outcome of this session was that William understood the grid not as a final assessment.

The first four cases of Leonor, David, Bianca, and William all followed the standard grid method as set out in Shaw and McKnight (1992), with the exception of the “criteria as constructs” alteration in Step 3. The remaining four cases, Emma, Nadia, Edward, and Suzette follow the grid method, but include “opposite values constructs” alteration for criteria derived in Step 3.

Case 5. Emma

Emma is a 60-year-old woman who had maintained a long career as a secretary. She spent several years working overseas, and had recently returned to Canada. Since her return, she had undergone a fairly extensive search for work in her field.

Emma had heard of the study through a community career development group. She contacted the researcher by telephone, describing her situation of returning to Canada and needing to make a decision over what kind of work she would do on her return. The method was undertaken in a quiet boardroom near the researcher’s office.

Preliminary information. After some rapport building and brief discussion over her situation, Emma described her decision as follows: “Having been away from Canada, I am finding it difficult to get employment here, and get established.” Emma went on to describe her effort so far in making her decision: “Talk to a few friends, assistance through a job-finding

club, a job-line, agencies, newspaper, government job bank, internet, contacting some local employers.” Emma then rated her effort so far on the Likert scales, yielding the following: Easy/Difficult (6), Thorough (7), Consistent (7), Confident (4), Happy (5), Regret (1). The mean of these ratings (with the Regret score reversed) was 6.00.

Step 1. Emma referred to her preliminary information sheet in order to write her present state. She then wrote: “I am in a position of being unemployed and I am continuing to seek a job on a daily basis”. She then went on to write her goal state: “To find a permanent job which I will be happy doing.”

Step 2. Emma took little time to nominate her options. It appeared that she had thought of several of them beforehand. She nominated seven, was encouraged to think of more, and came up with two more, for a total of nine options (see Figure 7 for Emma’s options and other grid components).

Step 3. As with her options, Emma had little difficulty nominating her criteria. She immediately came up with the first four criteria. With only minimal encouragement, she nominated a fifth criteria. In order to exhaust her construct system of criteria, Emma was presented with the triad “local university—local college—local technical school” and asked to note how two of them were similar yet different from a third. This triad prompted Emma to nominate the construct “college vs. technical school” (she saw the university and the college as both colleges). As a validity check, Emma was asked how this construct could be useful in terms of her criteria for work. This check was brought up to help Emma remember the context of her criteria elicitation

(for a discussion on context, see Stewart, 1997). After brief discussion, she decided that it was an apparent difference between these workplaces, but not important in terms of job choice. This may represent a departure from standard repertory grid procedure, where it is probably not the counsellor's role to second-guess the validity of an individual's constructs for the matter at hand. However, the counsellor also has a duty to ensure that the method proceeds smoothly. Including constructs that may be irrelevant to the task at hand may only prove to be a source of confusion and a waste time. Had Emma defended the constructs as important decision criteria, they most certainly would have been included. However, one must remain aware of the possibility that a construct will not always be relevant to the focus of the grid, and look for ways to control that.

To ensure that Emma's construct system was exhausted, she was presented with a dyad, "school board—government". Although the triad and dyad did not yield any further criteria, the ensuing discussion did spur Emma on to nominate two more criteria (Enjoy the work I am doing, and Do a very good job). This brought Emma's criteria to a total of seven (see Figure 5 for Emma's list of criteria).

Emma's criteria were to take the form of opposing value constructs. Because she nominated her criteria via free elicitation (and thus without opposing value poles), it was necessary to determine what the opposing value poles were for her constructs. For each of her criteria Emma was asked if it represented a state of affairs that she valued for her work. If she answered yes, she was asked what the opposite of that would be. For

example, with the first criterion, "Good rewards", Emma declared that this was something she valued, and that not having good rewards represented a lesser-valued state of an occupation. This procedure was carried out for the other six criteria.

Step 4. Weighting proceeded following standard procedure. Emma needed only a few minutes to nominate her weights.

Step 5. After brief explanation of the instructions, Emma filled in her grid and began rating it. This followed the standard procedure. Emma spent about seven or eight minutes rating the options on her grid.

Step 6. Determining the ranking followed the standard procedure.

Step 7. Evaluating the outcome of the grid took little time, because Emma's ratings were so similar for each option. It was noted that the extra four options that Emma was encouraged to add were all rated slightly lower than the options of her original list (the first five). All of the ratings were very close, however, and Emma agreed that she didn't see much difference between any of the options, and that she would likely be happy at any one of her options.

Follow-up data. After analyzing and discussing Emma's grid ratings, she filled out the follow-up Likert scales. These ratings were as follows: Easy/Difficult (7), Thorough (7), Consistent (5), Confident (5), Happy (5), Regret (1). The mean follow-up Likert rating (with Regret reversed) was 6.00, no difference from the initial Likert rating mean of 6.00. This appears to indicate that the procedure was neither better nor worse than Emma's other efforts at resolving her decision. The total time for the session was about 2

hours and 15 minutes. Emma answered the short-answer questions, a summary (edited from the tape recorded sessions) of which follows.

(Q 1) What part of today's work—and that could be anything we did in this room today—what stood out for you the most?

(A 1) ...The rating of being "happy", the outcome [referring to grid]... being "happy", "good rewards", "good working conditions", etc. etc., about a job. Because it is very important in getting a job.

(Q 2) What part of the procedure was the most helpful for you?

(A 2) The final, the totals of the last page, the percentages. [Because] it gives my ratings of each different job, the scores, my percentage of each.

(Q 3) What part of the procedure was the least helpful for you?

(A 3) [long pause] ...This one, "follow-up questions". [not actually part of the procedure; Emma did not suggest a part of the actual procedure that was "least helpful"]

(Q 4) Was this procedure easy enough for you to learn that you do it by yourself from now on, if you wanted to?

(A 4) Yes.

(Q 5) If I were to give you copies, would you consider using this for some other problem or decision that you might face in the future?

(A 5) No.

(Q 6) Can you suggest any other decisions or problems for which this procedure might be useful?

(A 6) Not that I can think of.

The Repertory Grid

elements (options)

constructs (criteria)

	Nearby University	Nearby College	Nearby technical school	Oil companies	Learning Difficulties Centre	School Board	Hospital	Newspapers	Government										
Happy -v- not happy 10/10	80	80	80	80	80	60	60	60	60										
Good Rewards -v- No rewards 8/10	64	64	64	64	64	48	48	48	48										
Good working relationship -v- Not a good working... 8/10	64	64	64	64	64	64	64	64	64										
Good working conditions -v- not good working conditions 8/10	64	64	64	64	64	64	64	64	64										
Good computers and equipment -v- No good computers &... 10/10	80	80	80	80	80	80	80	80	80										
Enjoy the work I'm doing -v- Don't enjoy the work I am ... 10/10	100	100	100	100	100	100	100	100	100										
Do a very good job -v- not do a very good job 10/10	100	100	100	100	100	100	100	100	100										
	552	552	552	552	552	516	516	516	516										

Figure 7. Case 5, Emma

(Q 7) Can you suggest any other decisions or problems for which this procedure would NOT be useful?

(A 7) No, I don't think so...

(Q 8) Would you recommend this procedure to a friend who faced a similar difficult decision or problem?

(A 8) Yeah. ...It might be helpful to them too.

Observations. Emma was very thankful and appeared to be pleased with the outcome. However, there is some doubt as to whether the session had gone as well as it could have. Toward the end, it appeared that Emma's decision had less to do with "what job should I pursue?" and more to do with "how can I improve my chances of getting a job?" This didn't become clear until the end of the procedure when the grid ratings were being totaled, and it looked as if Emma wasn't in need of differentiating her job options. All of them were rated highly, with little variance between each. Emma had already put considerable effort into finding job options, rating this effort with a mean of six out of a possible maximum mean of seven. Her mean follow-up score is the only one of the case participants not to increase from the initial mean.

A crucial first-step of any decision-making or problem solving effort is that of solving the right problem or decision (see Edwards & von Winterfeldt, 1986, for a discussion on this). No kind of effort will amount to very much, no matter how elegant or clever, if the wrong problem or decision is tackled from the outset. This is the reason for the recycling phase. If what comes to light during the initial round of a problem solving procedure does not fit the

problem-solver's requirements, a second effort may be more to the point. Emma was offered an opportunity to recycle, but declined. She may not have had the energy or the patience to go through another round, or she may have been content enough with the first one to leave it for the time being. The procedure is designed to be thorough, and could raise a lot of important "food for thought" that may need to be digested before another decision making round is considered.

Case 6: Nadia

Nadia is a 51 year-old woman who had been working in a quality assurance department of a computer software company. Nadia described this work as highly successful for her, and was sorry to see the end of the contract. After this position, Nadia began an extensive effort to find similar work. She took advantage of an outplacement program that was part of her severance package. She also did extra work—researching on the Internet, and taking advantage of local networking opportunities.

Nadia indicated interest in the study at a community employment action meeting where it had been announced by the researcher. After hearing some explanation of the procedure, Nadia asked to take part. The method was run at Nadia's home, where she had her office.

Preliminary information. Nadia described her problem/decision as: "I need a job I will be happy with." She went on to describe her effort so far at resolving this problem or decision as: "Worked with outplacement program—personal counselling, workshops, reading—revisiting material from last adventure in unemployment and outplacement binder.

Networking—contacting friends, employment action meeting, attending community activities”. Nadia’s initial scale ratings for this effort were: Easy/Difficult (6), Thorough (3), Consistent (7), Confident (3), Happy (2), Regret (6). The mean for these ratings (with Regret reversed) was 3.83.

Step 1. Nadia defined her present state as: “I am looking for a job.” Her goal state was defined as: “I’d like to be working in a job that I am happy with.”

Step 2. Nadia was able to nominate two options immediately—both jobs she had applied for recently. After these two Nadia became stuck for further options. With some encouragement, however, she nominated “job like my last one”. At this point, Nadia asked if some of her options could be ones involving further schooling—not strictly paid positions. It was agreed after some discussion that these could be, as long as they were options that she felt might help her meet her goal state of “working in a job that I am happy with”. Nadia then nominated two more options involving taking a course, and self-directed study. Nadia also said that with some careful budgeting, staying unemployed could be something she might be happy with for a time, and this became her sixth option. After some discussion with the researcher, Nadia also decided it would be interesting to include “job from heaven” and “job that I might get through a search agency”. These seventh and eighth options rounded out her list (refer to Figure 8 for options and other components of Nadia’s grid).

Step 3. Determining her criteria was very easy for Nadia. In past career development work, she had created her own list of job criteria. She

was able to pull this list out, and copy her previously established criteria, nominating a list of 11. This established list must have been fairly well thought out and complete as it stood. Several attempts with triads failed to elicit any more constructs. For each of the 11 criteria, Nadia was then asked to nominate its opposite in value (by the opposing-value method). She then proceeded on to Step 4.

Step 4. Weighting proceeded as normal, taking Nadia about 2 minutes.

Step 5. Filling out and rating of the grid followed standard procedure, appearing straightforward for Nadia. Total time was about 15 minutes to fill and rate the grid.

Step 6. Calculating the ranking of the grid followed standard procedure.

Step 7. Looking over her eight by 11 grid, Nadia first remarked with some surprise as to how low her first job option appeared to be (with the lowest adjusted-for-weight total of 726). Although it could be expected that the "job from heaven" ranked highest among the weighted totals at 807, Nadia seemed happy to see other more realistic options with scores approaching the highest. "Job through search agency", and "Company 'b' quality assurance", were both distinct possibilities, and tied for 757 points. Nadia was pleased to see that "self-directed study" scored the highest of all realistic possibilities. This is because she said she had been feeling very positive about this one before, and now was glad to see this rational procedure bear her feeling out.

Figure 8. Case 6, Nadia

The Repertory Grid

elements (options)

- Company "a" Generalist
- Company "b" Quality Assurance
- Job like my last one
- Technical Course
- Self-directed study
- Stay unemployed
- Job from Heaven
- Through search agency

+

-

constructs (criteria)	90	81	81	81	81	81	81	81
Location: Far...v... Location: Close enough to bike 9/10	90	81	81	81	81	81	81	81
Repetition...v... Lots of Variety 9/10	90	90	90	90	90	90	90	90
Stagnant...v... Learning Opportunities 10/10	100	100	100	100	100	100	100	100
Underpaid...v... Paid what I am worth 10/10	70	100	100	100	100	100	100	100
No appreciation...v... Appreciation 10/10	80	90	90	90	100	100	100	90
Never travelling...v... Lots of travel 2/10	2	2	10	2	2	20	20	2
No work balance...v... Appreciate Work Balance 6/10	48	48	48	48	48	60	60	48
No interaction or support...v... Support intelligent interaction 10/10	90	90	80	90	90	100	100	90
Over-supervised...v... Independent 6/10	54	54	54	54	54	60	54	54
Too serious...v... Fun 9/10	72	72	72	45	72	90	72	72
No e-mail access...v... E-mail access 3/10	30	30	30	30	30	30	30	30
	726	757	757	730	767	750	807	757

Follow-up data. Nadia's follow-up Likert scale ratings were as follows: Easy/Difficult (6), Thorough (7), Consistent (7), Confident (7), Happy (6), Regret (1). The mean follow-up rating (with Regret reversed) was 6.66. The difference in mean rating between initial and follow-up ratings was 2.83. The total time for this session was about two hours and 30 minutes. Nadia's answers to the short-answer questions, edited from tape, are as follows:

(Q1) What part of today's work stood out for you the most? And that could be anything we did today.

(A1) In this particular exercise, it was making clear the criteria. With other things that I have done, it was defining the problem, but this time it was stating the criteria. ... And clarifying it and making sure that it was not repeated.

(Q2) Your answer to number two may be similar then. What part of the procedure was the most helpful for you?

(A2) I think the answer is the same, it is the criteria. It was helpful because I can keep those criteria in mind.

(Q3) Good... Number three. What part of the procedure was the least helpful for you today?

(A3) [pause] This particular example, I am not particularly comfortable with my choices—my options. And I think that was unfortunate. Comparing Company 'b' and Company 'a' when I don't know anything about the business. That is not helpful until I know more...

(Q4) Was the procedure easy enough to learn that you could do it by yourself from now on?

(A4) Yes. But again keeping in mind how important being really clear with your criteria is.

(Q5) If I were to give you copies of this procedure would you consider using it for some other problem or decision you face in the future?

(A5) Yes. I have one in mind.

(Q6) Can you suggest any other problems or decisions for which this procedure might be useful?

(A6) Your examples were very specific—like buying a car. Cars have 6-cylinder engines or they don't have 6-cylinder engines. But my example was a decision, a life thing. So I think any... any decisions. Again if you go in with something that is too small, like what color sweater you should have, yellow or blue, no you wouldn't go through the process. But big decisions, sure. Absolutely.

(Q7) Can you suggest any other decisions or problems for which this decision would NOT be useful?

(A7) Just the small ones.

(Q8) Would you recommend this procedure to a friend who faced a difficult decision or problem?

(A8) I think I would. I think I would very definitely recommend it because it highlights each of the criteria, and because of all the work that is involved that gets you to the point where you can complete the grid. Absolutely. No question.

Observations. Nadia's case illustrates how important it is to remind grid users that it is not a terminal assessment, but instead part of a discovery

process. It is possible the researcher did not emphasize this enough for Nadia, who expressed some disappointment over rating options that she was not completely familiar with. It should have been made more clear for Nadia that her unease over rating little-known options is a strong indicator that she would be served well by learning more about those options, before a firm decision can ever be made.

Still, Nadia's was a positive session. It seemed fortunate that she was able to use criteria that she had identified two years earlier. Not only was it convenient to use these criteria, it may also have been affirming to Nadia to see that these two-year values were still relevant.

Case 7: Edward

Edward is a 29-year old man who had recently emigrated to Canada. Before his move, he held a well-paying job in a major city working in sales and marketing for an international company. Having recently arrived in Canada, Edward said he felt that he was facing two challenges. The first was adjusting to his new life in Canada, and the second was his search for appropriate work. Edward described his problematic situation as a double bind. It would be easier to adjust to life in Canada if he had a good job. And it would be easier to find a job if he were already accustomed to life in Canada.

Edward ran across the study at a community employment action meeting, where an announcement was made by the researcher. After preliminary information giving, including the standard information (as described in the method section), Edward asked to be included in the study.

The method was undertaken in a quiet boardroom near the researcher's office.

Preliminary information. Edward described the problem that prompted him to seek help as: "I've invested a lot of time and money in my education, in addition to my work experience. Having moved to Canada, employer recognition was not as good as I thought." Edward then went on to describe his efforts so far at resolving this problem. "Gathering opinions from friends, information interviews. Thinking by oneself under some pressure. Nothing systematic."

Edward's rating of this effort-so-far was as follows: Easy/Difficult (3), Thorough (4), Consistent (1), Confident (2), Happy (1), and Regret (6). The mean of these initial ratings (with Regret reversed) was 2.16 out of a possible range of one to 7.

Step 1. Edward described his present state as "I am overqualified for the work I am doing, financially behind, and of no help to anybody". Edward then moved on to his goal state, nominating three goals: "Right job", "Continue studies", and "Start a project". It was then suggested to Edward that it would be far more efficient and straightforward if he focus on a single goal state only. Immediately he responded by underlining the first goal state "Right job", and then writing in after it "everything depends on that". Even with this goal state, the focus had to be narrowed down further. Edward was asked if his main problem was "To *know* what the right job is" or "To *know how* to find the right job. After pausing briefly to think this over, Edward opted for the first one. He was told he could work on the second one at a

later time, if he desired. This is an example of where counsellor intervention may be important. Solving the correct problem or making the correct decision is paramount, and the counsellor's should make every effort to ensure that this happens with each decision or problem effort.

Step 2. After nominating his first two options, Edward insisted he had no more. After some encouragement, however, Edward was willing to add a few others. In several cases this merely took the form of splitting the first "Continuing studies" option into other places to study (yielding the "Continuing studies..." options for an MBA, a local university and a local technical school). It seemed also to the counsellor that Edward looked back on his old job as a good one. So the option, "A job like my old one" was suggested and accepted. Related to this, the seventh option "A job unlike my old one, but still in business" was agreed on by both Edward and the researcher as a possible option. Finally, Edward proposed a question mark as an eighth option, an option of yet-unknown possibility. Although the counsellor knew this would be difficult for Edward to rate, it seemed an important option for Edward to consider. It rounded out Edward's list of options to a total of eight (refer to Figure 9 for options and other components of Edward's grid).

Step 3. As with the nomination of options, Edward was hesitant at first to nominate more than two decision criteria. However, after some discussion, Edward quickly nominated a list of seven criteria by free elicitation. After seven, Edward insisted there were no more. The method of triads, with the "opposite values" phrasing was used to exhaust Edward's

constructs. Two triads were presented to Edward, but both gave rise to the construct of “challenge –v- no challenge”. Edward had not yet nominated the opposing pole for his last criteria, so this was written beside it. However, it appeared that his decision constructs were exhausted.

In keeping with the opposite values method, Edward was asked to nominate “what the opposite in value would be” to the first six criteria. Nominating these only took Edward a few minutes.

Step 4. The weighting of criteria followed standard procedure. Edward spent about three minutes on this step.

Step 5. Edward had no difficulty filling in his grid. He rated all options on all criteria, except for the “?” option, which he realized would be impossible to rate at the time—even if it was still a valid element on his job search horizon.

Step 6. Calculation of the grid followed standard procedure.

Step 7. Some important patterns were noted on evaluation of Edward’s grid outcome. First, it was clear that Edward’s survival job, though a reality and a likely necessity at the time, was not a desirable outcome to his problem, and therefore should remain only a temporary occupation in his life. Second, a pattern was noted where it appeared that all options including “continue education” were rated highest. All other job options were rated lower. The grid revealed some additive advantage to Edward continuing his education, regardless of where he did that.

The importance of divergent option generation in step 2 is revealed. Edward believed at first that there were only two options for him. While both were centrally important, it turned out that his highest rated option was to continue studies at a local business/technical school. Edward saw this option as more financially rewarding and more conducive to establishing a network than his original first choice "Continuing education – MBA".

Follow-up data. After looking over the grid results, Edward rated his follow-up scales as follows: Easy/Difficult (4), Thorough (6), Consistent (7), Confident (6), Happy (7), Regret (2). The mean of the follow-up scores, with Regret reversed was 6.0, up 3.84 from the initial rating mean of 2.16. The total time of session for Edward was three hours. A summary of his responses to the short-answer questions now follows.

(Q1) What part of today's work stood out for you the most? What was the most important for you today?

(A1) The combination between my values and my options. The grid.

(Q2) What part of the procedure was the most helpful?

(A2) The grid again.

(Q3) What part of the procedure was the least helpful?

(A3) I don't think there was something unhelpful, otherwise the decision would be [incomplete], so how could it be unhelpful? Everything was helpful.

(Q4) Was the procedure easy enough to learn that you could do it by yourself from now on?

(A4) Yeah, it's easy. And I'd like to learn more about it to do it by myself. And I have asked you about some references to learn more about it. But still I'd like there to be one step that ask[s] me questions to prevent that I cheat myself. To prevent that the emotional side speaks more than the [rational] side.

(Q5) If I were to give you copies of this procedure, would you consider using it for some other problem or decision in the future?

(A5) Oh sure. Yeah, definitely I would go like that. Even if you don't give me [a copy] I would try to do something like that.

(Q6) Can you suggest any other decisions or problems for which this procedure might be useful?

(A6) It's not useful for everyday decisions like to buy or not to buy [groceries, for example]... [But] something like to buy a car, yes it is useful. But definitely it is very useful for major life decisions.

(Q7) Any other decisions or problems for which this procedure would not be useful?

(A7) Yeah ...as I have just answered. For day to day problems.

(Q8) Would you recommend this procedure to a friend who faced a difficult decision or problem?

(A8) Yeah, and no. No—people are not the same. Some people, they are of the heart, no matter what you suggest to them they will keep deciding like in the middle ages.

Observations. Based on his responses to the open-ended questions, it is evident that Edward found the grid method to be worthwhile, and of

possible use in future decision-making ventures on his own. Although he doesn't acknowledge it, facilitation may have also played a significant role. Edward's problem embodied several goal states. An important task was to narrow Edward's focus to a single goal state. Even with this narrowed focus on choosing the "Right job", it was important to assist Edward in choosing whether to focus on "knowing what" the right job was, or "know how" to find the right job.

Facilitation also played a role in prompting Edward to look at eight options rather than his original two. This proved to be beneficial for Edward. The other "continuing studies" options he nominated were rated high, suggesting they were worthwhile options to consider. Moreover, several weeks after the session, Edward related to the researcher that continuing studies at the local university had suddenly become a very promising option.

Although important, facilitation wasn't critical for Edward. Counsellor facilitation may have made the session more focused and efficient, however

Edward's apparent enthusiasm for the method suggests he could have completed the method for each goal state identified, each time benefiting from his efforts.

Case 8: Suzette

Suzette is a 27-year old woman who had been working for a large petroleum corporation as an oil and gas engineer. Suzette found herself facing a career transition, attracted to a variety of other options. She was quick to describe a wide variety of other interests she had. She had an

interest in the environment. She was also looking to do some schooling in social work, and had investigated the BSW program at the local university. She also had an interest in working in an orphanage in a developing country. Teaching was another occupation she was drawn to. Along with all of these far-flung interests, Suzette was also thinking of working in the international relations department of the petroleum company she had been working for.

Suzette met the researcher at a community employment action meeting. After hearing a brief presentation, and then asking some questions of her own, Suzette called the researcher back to arrange a time to take part. The method was undertaken in a quiet boardroom near the researcher's office.

Preliminary information. Suzette defined her decision/problem as: "I would like to be clearer on the different career choices that I face and know what I want because I am spending lots of energy on too many different things". In describing her effort so far at resolving her decision, Suzette wrote: "I know myself (I think)". Further questioning on her effort revealed that Suzette had done some work at self-exploration, including seeing a psychologist. Initial Likert scale ratings of this effort so far at resolving her decision were: Easy/Difficult (2), Thorough (5), Consistent (7), Confident (6), Happy (6), Regret (1). The mean of these ratings (with Regret reversed) was 5.50.

Step 1. Suzette defined her present state as: "I would like to be clearer on the choices of career I have and why I would choose to spend energy on

one of those." Her goal state was defined as: "Decide on which career to pursue to be happy and spend less energy in my work search."

Step 2. After reading the instructions, Suzette asked for some brief clarification on nominating her options. She was asked what kind of options would she would want decide from in order "to be happy", as she stated in her goal. After hearing this, Suzette immediately put down a number of options. When she had reached her seventh option, she was told she should put down as many as she wanted. Suzette continued until she had generated a list of 17 (refer to Figure 10 for Suzette's options and other grid components).

Step 3. Similar to her nomination of options, Suzette had many criteria to write down. Using free elicitation, she nominated 19 criteria, at this point she felt she had enough. Suzette was then presented with several triads and asked "In what way are two of these the same in value, yet opposite to a third in value?" However, each triad yielded the same criteria, or criteria too similar to be added. For example, one triad yielded the construct "fun -v- not fun". But Suzette felt this was the same idea as "makes me happy -v- makes me feel depressed". After several triads it was decided that Suzette's criteria were exhausted, and it was time to move on to Step 4.

Step 4. Weighting proceeded as normal, taking Suzette about three or four minutes.

Step 5. Filling out and rating of the grid followed standard procedure, appearing straightforward for Suzette. As she was rating, Suzette requested to leave the criteria "Good relationship with co-workers -v- bad relations"

blank, because she felt she could not predict that well enough until she actually began working at the occupations. Total time was about 35-40 minutes to fill and rate the grid.

Step 6. Calculating the ranking of Suzette's options followed standard procedure.

Step 7. On analyzing the adjusted grid ratings, Suzette's first remark was how low the engineering-related occupations were. All three scored lower than any of the other options (Engineering oil industry, 730; Engineering consulting env., 752; Engineering oil consulting, 862). This was important in light of the fact that Suzette's current work was in engineering. Her feeling that she was in need of a career change was supported by the grid results.

The next significant finding for Suzette was the prominence of occupations related to teaching. Teaching college and university were two of the highest rated occupations with 1168 and 1126 respectively. Other teaching-related occupations scored high as well.

Another surprise for Suzette was the occupation of psychologist rating higher than social worker. Suzette said that she had previously favoured the position of social worker over psychologist, but now wondered if the reverse was true.

Suzette's grid, a massive 17 by 19 piece that ended up with a total of 306 ratings, represents a complex and sizable decision-making space. Suzette remarked that early in the procedure she felt as if we were putting together a grid that would be far too big and unwieldy to manage. However, on

analyzing the final grid output, Suzette realized the importance of a complete and thorough representation of all her thoughts on this matter:

I think this [grid] is too big. ... I thought before I had the calculation that this was too big. But when I see the results and I see that massage therapist is higher than engineering in the oil industry, maybe it was worth it to put it there. Because before I thought, I don't need to put it there, you know—aerobic teacher—I'll never be an aerobic teacher, but it is actually higher than engineering. It would be better for me to be an aerobic teacher...

This seemed to be Suzette's final important realization from the grid. Even "massage therapist", once thought to be so unrealistic, scored far higher than her current line of work, engineering.

Follow-up data. Suzette's follow-up Likert scale ratings were as follows: Easy/Difficult (6), Thorough (7), Consistent (7), Confident (7), Happy (7), Regret (1). The mean of these ratings (with Regret reversed) was 6.83, a difference of 1.33 higher than the initial mean of 5.50. The total time for Suzette was about three hours and 10 minutes. A summary of her answers to the short-answer questions (edited from the taped recording) now follows:

(Q1) What part of today's work—and that could be anything we did today—what part stands out for you the most?

(A1) The results (pointing to the grid). Because I knew pretty much my elements, my criteria. Just to put those together really helped me to see (a) clear answer.

(Q2) This answer may be the same as your last one. What part of the procedure was the most helpful for you?

Figure 10. Case 8, Suzette

The Repertory Grid

elements (options)

- Engineering oil industry
- Engineering consulting env.
- Engineering oil consulting
- Teaching elementary
- Teaching college
- Teaching university
- Social work
- Teaching oil/gas software
- Teaching outdoor
- Management non-profit org.
- School principal
- Psychologist
- Librarian
- Aerobic teacher
- Health teacher
- Hand-writing reading
- Massage therapist

+ -

..... Gives energy --v-- makes me cry. 9/10	18	27	54	54	63	45	72	63	81	45	45	72	54	63	54	72	45
..... Makes me happy --v-- Depresses. 10/10	20	30	60	60	70	50	60	80	80	60	60	70	60	80	60	90	60
..... Flexibility --v-- rigidity 7/10	42	28	49	42	56	56	49	49	42	35	35	63	35	35	35	63	63
Work with people pt. --v-- alone or with people all time. 8/10	24	24	48	40	64	64	56	72	56	48	56	56	56	56	56	56	48
Use university knowledge --v-- not using knowledge. 5/10	50	50	50	25	50	50	5	25	20	30	30	15	5	5	5	5	5
..... Comfortable environment --v-- uncomfortable... 8/10	32	32	32	48	56	48	80	72	56	40	40	72	64	64	64	80	64
..... No stress --v-- stress 9/10	18	18	45	72	72	54	72	72	63	36	45	72	90	81	72	90	81
..... Good vacation --v-- no vacation 7/10	56	42	56	70	70	49	56	28	49	70	70	49	49	49	49	70	42
..... Work done anywhere --v-- only in Calgary. 9/10	9	90	9	90	90	90	45	90	90	90	90	90	90	90	90	90	90
..... Good pay --v-- bad pay 6/10	60	48	54	36	42	60	42	54	36	42	36	48	30	24	30	36	24
Good relationship with co-workers --v-- bad relation. 8/10																	
..... Independent --v-- under order. 9/10	63	81	72	90	90	90	90	81	72	72	63	90	45	63	63	90	81
..... Own pace --v-- time constraints. 8/10	40	24	48	72	72	72	56	64	56	48	48	80	48	72	56	80	64
..... Share knowledge --v-- no sharing. 10/10	60	50	50	100	100	100	90	100	100	60	60	100	50	60	80	80	40
..... Possibilities part-time --v-- No part-time. 6/10	60	6	36	6	48	48	48	36	6	48	48	60	60	60	60	60	60
..... Maternity leave --v-- no maternity. 9/10	90	54	90	90	90	90	90	90	90	90	90	9	90	9	90	9	9
..... Helping people --v-- not helping. 6/10	12	42	36	48	54	54	60	48	42	42	42	60	48	42	42	42	60
..... Make people feel better --v-- no. 6/10	6	36	24	24	30	36	60	36	42	24	18	60	30	48	30	24	60
..... Not repetitive --v-- repetitive. 7/10	70	70	49	49	49	49	56	49	49	42	35	63	7	7	7	14	7
	730	752	862	1016	1168	1126	1065	1092	1009	901	913	1150	911	908	943	1051	1003

constructs (criteria)

(A2) The results.

(Q3) What part of the procedure was the least helpful?

(A3) [pause] None. Sorry, there is none.

(Q4) Was the procedure easy enough to learn that you could do it by yourself from now on?

(A4) Yes, I can do it by myself, on that topic. Although if I have to look at another topic in my life it would take me lots of time, or I would like to have some help.

(Q5) If I were to give you copies of this procedure would you consider using it for some other problem or decision you may face in the future?

(A5) I don't think I would use it alone. Because just to talk with someone about it, it's not—so that to find new ideas. And because you know how to get things out of me too, and I don't know how to do that!

(Q6) Can you suggest any other decisions or problems for which you might want to use this procedure?

(A6) [pause] I'm not sure—but any time you have to make a decision you could use it. Even though right now, I have a grid, 17 by 17, you could use it for a grid three by three, I think.

(Q7) Can you suggest any other decisions or problems for which this procedure would not be useful?

(A7) For example, with two by two. You should be able to figure out the decision by yourself—it's only two by two. ...What about something that involves lots of feeling? I am not sure you could use it.

(Q7b) Would it be hard to get the feelings down into words like this (pointing to criteria on grid)?

(A7b) Probably.

(Q8) Would you recommend this procedure to a friend who faced a difficult decision or problem?

(A8) I would because I had a clear answer.

Observations. The grid appeared to be well suited to Suzette, who “would like to be clearer on [her] different career choices”, and feels she is “spending lots of energy on too many different things”. The fact that Suzette had so many options to compare on such a wide variety of criteria provides a clear example of how massive some individual’s decision spaces can be. The clarity Suzette was after did reveal some important patterns; not the least of which was the fact that her current work in engineering appeared to be the least satisfying for her.

In terms of an information-management tool, the grid appeared to work very well for Suzette in this case. However, like William before, she raises an important point that the grid may not be so useful if some decision-making or problem solving efforts are highly emotional. Once again, the question of how well emotions can be translated into words, and then transcribed onto the grid is raised. If decision or problem criteria cannot be put into words, they will not play much of a role in one’s grid effort.

Suzette nominated the construct “Good relationship with co-workers -v- bad relations” as an important criteria for her work. Even though she could not rate it on the grid, it was still important to identify. Suzette is now

aware that this criteria stands among others important to her, and should not be overlooked as a factor in decisions made in the future.

Likert Scale Rating Comparisons

The Likert scale ratings for each participant are summarized in Table 1. From this table, it is evident that almost all follow-up ratings are higher than initial ratings, suggesting greater satisfaction of participants with the grid method over whatever aids they were using beforehand. There are several scores that remain the same between initial and follow-up, but only two scores (Confidence for participant 4, and Consistent for participant 5) actually decrease from initial to follow-up. The difference between initial and follow-up Likert ratings is further highlighted by the differences calculated between raw score totals and means of initial and follow-up ratings at the bottom of the table. The increase from initial to follow-up ratings is further evident in Figure 11, which illustrates the rise in the means of initial and follow-up ratings for all cases except case 5, which remains horizontal.

Themes of Responses to Short Answer Questions

The responses to the short-answer questions have already been presented with each case. These highlight the individual reactions to the grid method. This final section presents the responses together in order to highlight themes that emerged for each question between all eight case participants. Before presenting the themes, it is important to describe the method of analysis.

Table 1. Likert Scale Ratings of Procedure Satisfaction

Table 1
Likert Scale Ratings of Procedure Satisfaction for Cases 1 to 8

	Cases															
	1	2	3	4	5	6	7	8								
	I	F	I	F	I	F	I	F								
Difficult/Easy	1	7	2	5	4	4	5	6	6	7	6	6	3	4	2	6
Thorough	3	7	6	7	2	6	5	7	7	7	3	7	4	6	5	7
Consistent	4	6	3	7	3	6	6	7	7	5	7	7	1	7	7	7
Confident	6	6	5	6	5	7	7	6	4	5	3	7	2	6	6	7
Happy	7	7	2	6	4	7	6	6	5	5	2	6	1	7	6	7
Regret (R)	7	7	1	7	5	7	2	7	7	7	2	7	2	6	7	7
Rating Totals	28	40	19	38	23	37	31	39	36	36	23	40	13	36	33	41
Rating Difference (F - I)	12		14		19		8		0		17		23		8	
Means	4.7	6.7	3.2	6.3	3.8	6.3	5.2	6.5	6.0	6.0	3.8	6.7	2.2	6.0	5.5	6.8
Mean Difference (F - I)	2.0		3.1		2.5		1.3		0		2.9		3.8		1.3	

Note. I = initial rating, F = follow-up rating, R = reversed score

Figure 11. Mean Initial and Follow-up Likert Scale Ratings

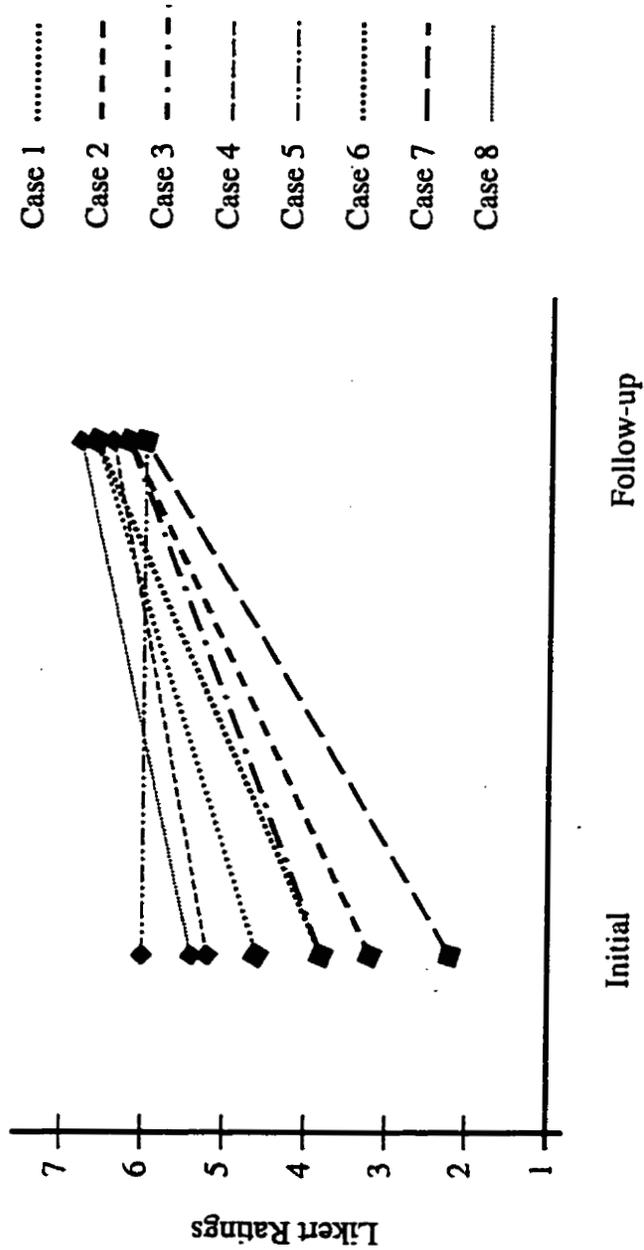


Figure 9. Mean Initial and Follow-up Likert Scale Ratings for Cases 1 to 8.

The method used to derive the themes from the raw short-answer data was a modified thematic analysis based on Boyatzis' (1998) model of a hybrid inductive data-driven code. The first step in this model was the reducing of the raw data into more manageable (analyzable) units, here termed "response clauses". A response clause was any clause or cluster of clauses or sentences that completely answered the question at hand. Reducing the raw answer data into response clauses served two purposes. First, it was a convenient standard by which to cut out extraneous information in the answer (i.e., why include an entire answer when a single clause will suffice?). And second, the definition of a response clause allowed for the possibility of more than one clause per answer. Some clients were really offering more than one answer per question. In all, 69 response clauses were identified from 64 (8 X 8) answers.

Once the response clauses were identified the next step was to identify themes by looking through the clauses of each question in order to uncover possible similarities. If two or more response clauses shared a similarity, they were considered to represent a theme. Response clauses that did not share a similarity with another were left to be classified as "other". From these preliminary themes, a code was proposed. This procedure was undertaken by the researcher three times over a 72-hour period. The researcher would scan the response clauses for similarities. Those that appeared two or more times were coded as themes. At the end, the three codes were found to be all very similar. From these three codes, a master condensed code was designed.

It is at this point where the modification to Boyatzis' (1998) method was made. Boyatzis suggests creating a code from a sub-sample, and then testing reliability by checking the code against the remaining data. This did not seem feasible in the present case, primarily because there were only about 8 or 9 response clauses for each question. Problems arose when this data was split to create the sub-sample. Themes appeared in the first half that did not appear in the second, and vice-versa. Drawing up a code from a sub-sample (of only four) could not fully reflect the variance of responses obtained from the case participants. It was, therefore, decided by the researcher to forego Boyatzis' (1998) between-samples reliability testing for the sake of basing a more (ultimately) accurate, and therefore valid, code on all responses obtained from case participants.

True to Boyatzis' (1998) method, however, reliability was measured between the researcher's rating of code, and a second-rater's. The second rater was a student in his final year of a Ph.D. counselling program. Using the researcher's code, the second rater analyzed the response clauses, reaching agreement on 64 ratings out of 69 with the researcher. This agreement constitutes an inter-rater reliability of 93%. The five remaining clauses were discussed until consensus on their rating was reached. The themes obtained now follow.

Question 1. What part of today's work stood out for you the most?

-- Theme A (4 responses): The grid (the final outcome, the results of the method).

-- Theme B (2 responses): Talking it out with the counsellor.

– Other responses: (i) Making clear the criteria; (ii) How close I was to making the decision. That I was just on the edge of making it, and I just needed a nudge.

Question 2. What part of today's procedure was most helpful for you?

– Theme A (4 responses): The grid (the final outcome, the results of the procedure).

– Theme B (3 responses): Step 3 (stating, or making specific the criteria)

– Other responses (i) Stating the problem—at the beginning; (ii) The procedure committed me to a number of options that were rolling around in my head and confusing me...once I started to write them down, they were not rattling around in my head. That freed my head to generate more options

Question 3. What part of the procedure was the least helpful for you?

– Theme A (5 responses): No part was least helpful.

– Other responses: (i) "Follow-up questions". [not actually part of the procedure]; (ii) I am not particularly comfortable with my choices—my options. And I think that was unfortunate. Comparing Company 'b' and Company 'a' when I don't know anything about the business. That is not helpful until I know more; (iii) The difference between the constructs (the criteria) and the elements was confusing.

Question 4. Was the procedure easy enough to learn that you could do it by yourself from now on?

– Theme A (5 responses) Yes (affirmative answer).

– Theme B (2 responses) Yes, but with help or assistance of another

– Other response (i) No.

Question 5. If were to give you copies of this procedure, would you consider using it for some other problem or decision you might face in the future?

– Theme A (5 responses) Yes (affirmative answer).

– Theme B (2 responses) Yes, with qualification that the assistance of some other person would be helpful.

– Other response (i) No.

Question 6. Can you suggest any other decisions or problems for which this procedure might be useful?

– Theme A (3 responses) Any decision or problem.

– Theme B (2 responses) To buy a car.

– Theme C (2 responses) Big decisions/Major decisions.

– Other responses (i) I could do it on the [decision to begin a] Ph.D.; (ii) Not that I can think of; (iii) I have been engaged in life management training, and there's many areas where this might be applied.

Question 7. Can you suggest any other decisions or problems for which this procedure would NOT be useful?

– Theme A (2 responses) No suggestion given.

– Theme B (3 responses) Small, day-to-day decisions and problems.

– Theme C (2 responses) Decisions where a certain amount of "feeling" is involved.

– Other responses (i) I think if somebody was psychotic. I think there are times when people's reality has been altered...and that would be quite a

danger to the individual; (ii) I guess it would depend on the age group. I probably wouldn't take it much lower than a grade six level; (iii) That depends on what the individual options are... It requires thinking. You have to generate the elements or options. You have to have done your homework. It is not a magical type of box—it requires work. And if you are prepared to do the work, you will get out of it what you put into it.

Question 8. Would you recommend this procedure to a friend who faced a difficult decision or problem? Why or why not?

– Theme A (4 responses) Yes (an affirmative answer).

– Theme B (2 responses) Yes, but not as sole decision aid, still requiring additional assistance or facilitation.

– Theme C (2 responses) Yes, especially for certain people (or, similarly, No not for some people).

Discussion

This research has presented eight case studies that illustrate valid application of the repertory grid as an aid for real-life decisions and problems. The cases are based on grid methods demonstrated by Shaw and McKnight (1992). Similar application of the grid methodology has been proposed and demonstrated in well over 20 years of studies (i.e., Wilcox, 1972; Boxer, 1979; Eshragh, 1980; McKnight, 1981; Shaw & McKnight, 1981/1992; Cochran, 1983b; Eden, Jones, & Sims, 1983; Grudnitski, 1984; Shaw, 1988; Neimeyer, 1989; Russell & Salmela, 1992; Morcol & Asche, 1993; Fox & Smith, 1996; Stewart, 1997).

The main finding with the present study is that the case participants reported a beneficial experience with the grid. This supports what appears to have been a tacit understanding among the researchers listed above. The present study represents an advance over past research with the addition of actual reports (both short-answer responses and Likert scale ratings) of case participants. The reports of the participants serve to identify and clarify important variables that may yield a beneficial grid experience. Further clarification of the grid method is provided by identifying its alignment with the generic decision-making and problem solving model. This alignment leaves open the possibility that the grid may also be an alternative method of decision and problem representation to existing methods, such as the decision tree and the balance sheet.

The short-answer responses and the Likert scale ratings revealed, in some detail, the variables by which the grid was experienced as beneficial.

The Likert scale ratings, used for the first time, appear to have some validity. The scale ratings indicate a general rise in satisfaction as evidenced in Figure 11. This data is consonant with the generally positive responses given to the short-answer questions. The responses to the open-ended questions were coded into themes. These themes provide some insight into the general experience of the case participants with the grid. The themes are as follows.

Generally, participants found the final grid results and talking with the counsellor to be the two most important things that stood out for them in the session. Participants generally found either the final grid results or the stating of the criteria (Step 3) to be the most helpful parts of the grid method. Most participants, however, could not suggest a "least helpful" part of the method. Most participants felt the grid method was easy enough to learn that they could do it on their own, and though some felt it was easy enough, they still would prefer the assistance of a learned practitioner through the method. Most participants stated that they would consider using the grid method for some other decision or problem they faced in the future. They identified these future decisions and problems as: any kinds of decisions or problems, big/major decisions or problems, or buying a car. Two themes were suggested as to when the grid method may not be useful. These were for small day-to-day decisions and problems, and problems where a lot of "feeling" was involved. Some participants did not give a suggestion as to when the grid would not be useful. Most of the participants would recommend the grid to a friend who faced a difficult decision or problem, although some specified that it would have to be with the assistance of a

learned practitioner, and others specified that they would only recommend it to certain friends.

This case study design was not theory driven, and lacks tight controls, thus extensive interpretation of the results is not possible. However, the sample of individuals facing real-life decisions and problems is of high external validity. Thus, a tentative interpretation could simply be that other users may find very similar results with the grid method. The above positive results are especially promising in light of the fact that all of these cases had done some (in several cases extensive) previous work on their decision or problem. Two of the case participants (Leonor and Nadia) had been receiving assistance from management consultants in career transition. Two other participants, (Bianca and William) were career practitioners themselves, and were already familiar with career decision theories and methods.

Possible Implications

There are several implications for practice. Current grid practitioners may find reaffirmation of their beliefs about the benefits of the grid method for decisions and problems. Some current grid practitioners may also find clarification or even revelation of important beneficial variables involved with the grid method as uncovered via the short-answer responses and Likert scale ratings. Based on the demonstration of the grid method as well as the responses and ratings, newcomers to grid methodology (both practitioners and laypersons) may feel confident enough to invest some effort in the grid method themselves. This implication may be transferred not only to most counselling settings, but a variety of settings where complex decisions or

problems require an aid. Support for the wide transferability of the grid method comes from several of the case participants who suggested "any decisions or problems", or "big/major decisions or problems" as appropriate for grid application.

This research may improve the understanding of the grid as a decision-making and problem aid because of its demonstrated similarity to the decision-making and problem solving model. The demonstrated similarity may make the grid a more accessible instrument in the eyes of potential users who are unfamiliar with repertory grid methodology and the theory of personal constructs. The demonstrated similarity may also identify the grid to be an alternate method to current decision and problem representation tools such as the decision tree and the balance sheet.

The six variables of the Likert scale may have some applicability beyond the current work. The variables Confidence, Consistency, Thoroughness, Happiness, and Regret, may especially have wider use as important variables in any counselling or consulting situation where a decision or problem is the focus, regardless of whether the grid methodology is used.

Limitations

Four limitations merit some discussion. The first limitation of this study is the lack of variety of decisions and problems dealt with. The grid, as a flexible instrument, can represent almost any decision or problem space. Past demonstrations have included lifestyle choices (such as Carol from Shaw and McKnight, 1992), human resources decisions (choice of candidate for job

opening), business decisions (e.g., buying and selling stock from Wilcox, 1972), and car purchasing decisions (Boxer, 1979) as well as many others. There are many possible decisions or problems, but this study presents a very narrow section of possible applications, namely decisions or problems encountered at career transition. This was not by choice, but largely a function of the sample of the researcher's network. On the other hand, decisions and problems at career transition do represent a growing sector of counselling and consulting business.

A second limitation concerns the benefit gained from participation. Although the case participants cite the grid more than the researcher-as-counsellor facilitation, it is clear the facilitation played a major role in the benefit of the method. It is hard to know what amount of the variance of the benefit can be accounted for by either facilitation or the method alone.

A third limitation concerns the timing of the follow-up Likert-scale measure. Having just spent two to three hours with the attention of a practitioner on one's decision or problem, it is hard to imagine clients remaining unimpressed with the outcome. A positive bias may be at its highest immediately following the session. At best, this limitation should be acknowledged so that consumers of this research will interpret with caution. An alternative of course is to collect follow-up Likert scale ratings a day or a week later. Unfortunately, this alternative may be just as, if not more flawed. Intervening variables may skew ratings to the degree that they no longer relate to the effect of the session, and instead reflect a number of confounding

variables that may factor into how one views his or her decision/problem outcome over the course of time.

The fourth limitation concerns the short-answer data. Responses were tape recorded so that the participants could be free with their answers, thus providing rich, in depth data. In some cases, however, single-word responses were given for the short-answer questions, compromising the potential rich-data yield of this study. A future study could pose the same or similar short-answer questions, but also inquire from participants "why" or "how" their answer was given, thus encouraging the elicitation of more in-depth data regarding the experience.

Proposed Alterations to Grid Method

This research has uncovered some grid phenomena that may warrant alterations to the grid method as it has been published. The first phenomenon concerns the free eliciting of constructs. This technique was described by Shaw and McKnight (1992) in the case of Jim. However, the general method of construct elicitation usually involves only the method of triads. All participants in this study were allowed time for free elicitation of constructs before the method of triads was attempted. In all cases, participants were able to free elicit at least half of their total construct criteria. The opportunity to free elicit one's constructs should be offered to users in the future because it is easier and more efficient than the method of triads.

Another phenomenon related to the method of triads involved the alterations of "criteria as concepts", and "opposite values". These alterations were described in Step 3 of the Procedure in the Method section. Problems

during pilot tests revealed that constructs derived by the standard method of triads had poles that differed in meaning, but were not always opposite in value. This translated to difficulties in rating for the participants. How were they to rate an option as high in value when both poles of some constructs were similar in value? To remedy this, the two alterations "criteria as concepts" and "opposite values" were proposed and used for four cases each. In the future, grid users should be more attentive to this problem. When grid element-options are being rated in terms of value, low and high ratings must always correspond to low and high values respectively. If low and high ratings simply correspond to differences in meaning, then rating totals will not reflect the value of each option to the grid user.

For the Seven-step instructions, it was noted by some participants that extra encouragement to elicit more options and criteria in steps two and three would be helpful. Having as many options and criteria as possible is important in terms of the thoroughness of the method. Thus, including instructions to highlight this crucial point of the method may be worthwhile.

The instructions may be more helpful if they explain some of the context in which the grid is undertaken. Including a preface in the instructions about how the grid may help elicit and clarify one's thinking about a decision or problem would help remind users of the grid's function when a practitioner is not available. Also, mentioning that the grid should part of a process and not the final word in a decision or problem venture would keep users from bringing false hopes into the method. Some of this study's case participants identified this as a key point. The grid is a good

instrument, but should not be used as the only effort for a decision or problem. Other work with the decision or problem is beneficial. Identifying the grid as only part of one's decision or problem effort may help other users like Nadia, who felt uncomfortable rating some options she knew little about. When this happens, the real function of the grid is to identify that more information is needed before the individual can achieve decision or problem resolution.

A final possible alteration is actually more of an addition. Critics of grid methodology may note that the grid lacks certain properties that other decision aids include. For example, probabilities have never been included as part of grid methodology, but are prominent features of other decision aids such as the decision tree. Yet Kelly (1955) designed the grid to be a flexible instrument. Thus, adding probabilities to the method should not pose a problem. In fact, all the user needs to do to incorporate option probabilities is include the extra step of considering the probability of each option. This could be done, for example, on a scale of one to 10, where one is a very low probability and 10 is a very high probability. Probability coefficients based on the ratings out of 10 could be written beside each option on the grid. To obtain final option scores that not only include the relative value of each option, but also the probability of attaining each of those options (say in the case of job opportunities), one need only multiply the probability coefficients by the final option score totals.

Because the grid is such a flexible instrument, it is likely that many more innovations similar to this one could further increase its utility as a

decision and problem aid. As Shaw and McKnight (1992) pointed out, the utility of the grid is limited only by the imagination and innovation of the user.

Future Directions

Although some 40 studies on the grid method have been published in the last 20 years, the field suffers fragmentation and isolation of its research. Studies have been done with little reference to each other. Most work presents something of a unique perspective on decisions or problems, but is not replicated nor explained in the context of other grid work in the area. As a case in point, Shaw and McKnight's (1981/1992) effort has been available for almost 20 years, yet is rarely cited and has not spawned any direct published replication. A further research effort needs to completely review all research and consolidate and replicate the findings of these studies. Further testing of individuals with a wide variety of real-life decisions and problems would be of great benefit. It would allow the opportunity to test the validity of the Likert scale variables, and also allow the opportunity to determine if the response themes were robust. The fact that new problems (such as the difference of meaning versus value in construct poles) arose in this study suggests that a more comprehensive understanding of the grid method for decisions and problems awaits researchers and users.

Another interesting future direction involves further testing of the Seven-step method to determine how well it works independent of practitioner help. A between-subjects design with two groups (independent, and with practitioner) might shed light on how much benefit the method

alone provides. Another possible study could be a within-groups design where two groups of subjects undertook the grid (independent, and with practitioner) in counterbalanced fashion.

There may be great potential for the grid method. Its flexibility promises wider application and higher utility. Further research could also help to establish the grid's place among other decision and problem aids, as well as develop an understanding of what specific kinds of decisions and problems the grid would be best used for.

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PROBLEMS...

DECISIONS...

WHERE CAN WE TURN WHEN WE NEED HELP WITH THESE?

**...THERE ARE TOOLS DESIGNED TO HELP PEOPLE TACKLE
DIFFICULT DECISIONS AND PROBLEMS...**

A UNIVERSITY OF CALGARY RESEARCHER IS
CONDUCTING A STUDY OF A DECISION-MAKING AND
PROBLEM SOLVING TOOL CALLED THE "REPERTORY GRID".

YOU ARE INVITED TO PARTICIPATE IN THIS STUDY IF:
--YOU FACE A REAL-LIFE PROBLEM OR DECISION
--YOU ARE ABLE TO PARTICIPATE FOR ABOUT 2
HOURS
-- YOU ARE 18 YEARS OF AGE OR OLDER

**FOR MORE INFORMATION ABOUT THIS STUDY, PLEASE CONTACT ROBERT H. MOLE,
DEPARTMENT OF EDUCATIONAL PSYCHOLOGY, AT THE UNIVERSITY OF CALGARY: 228-0279
e-mail: rhmole@ucalgary.ca**

Appendix B: Letter of Information

Using Kelly's Repertory Grid for Multi-Criteria Decisions and Problems

Dear: _____

My name is Robert H. Mole. I am a graduate student in the Department of Educational Psychology at the University of Calgary, conducting a research project under the supervision of Dr. John Mueller, as part of the requirements towards an M.Sc. degree. I am writing to provide information regarding my research project "Using Kelly's Repertory Grid for Multi-Criteria Decisions and Problems" so that you can make an informed decision regarding your participation.

The purpose of this study is to understand better the reactions of individuals who are given the opportunity to use a decision-making or problem-solving aid. As part of this study, you will be asked to follow a step-by-step procedure that will guide you through the process of making a decision, or solving a problem. You are asked to write your thoughts on a form provided in order to supply some information as to what decision you were making, or problem you were solving. You will also be asked to answer some questions concerning your impression of the experience of using the procedure (these will be tape-recorded). The duration of the entire procedure should take about two hours. You should be aware that even if you give your permission, you are free to withdraw at any time for any reason without penalty.

Participation in this study will involve no greater risk than those ordinarily experienced in daily life.

Data will be gathered in such a way as to ensure anonymity. Your procedure results will only be seen by me (the researcher), and a blind judge (who will only code some of the data, and not have any access to participant's names). None of the procedure results will be shared with any other participants or my colleagues. Once collected, your responses will be kept in the strictest confidence. All responses will be kept in a locked file cabinet while under analysis. Your name will only be linked to the data via a coded sheet that will be stored in a separate location. Only myself and my supervisor, Dr. John Mueller will have access to this data. Only group results will be reported in any published studies. In the event of the need to quote any of your responses to the questionnaire, all identifying data will be excluded from the quotation. *Any information written about you will be approved by you before its inclusion in the final write-up.* The raw data will be kept in a locked file cabinet and destroyed two years after completion of the study.

If you have any questions, please feel free to contact me at (403) 220-6279, my supervisor Dr. Mueller at (403) 220-5651, the Office of the Chair, Faculty of Education Joint Ethics Review Committee at 220-5626, or the Office of the Vice-President (Research) at 220-3381. Two copies of the consent form are provided. Please return one signed copy to me and retain the other copy for your records.

Thank you for your cooperation.

Sincerely,

Robert H. Mole, M.Ed.
M.Sc. counselling psychology program (Year II)

Appendix C: Consent Form for Participation

Consent For Research Participation

I, the undersigned, hereby give my consent to participate in a research project entitled "Using Kelly's Repertory Grid for Multi-Criteria Decisions and Problems"

I understand that such consent means that I will take part in a step-by-step decision-making or problem-solving procedure, and follow-up questionnaire, which will take about 2 hours to complete in total.

I understand that participation in this study may be terminated at any time by my request or at the request of the investigator. Participation in this project and/or withdrawal from this project will not adversely affect me in any way.

I understand that this study will not involve any greater risks than those ordinarily occurring in daily life.

I understand that the responses will be obtained anonymously, and kept in strictest confidence.

I understand that only group data will be reported in any published reports. Any data or information about my particular case will be approved by me before being reported in any published work.

I have been given a copy of this consent form for my records. I understand that if I have any questions I can contact the researcher at 220-6279, the researcher's supervisor at 220-5651, the Office of the Chair, Faculty of Education Joint Ethics Review Committee at 220-5626, or the Office of the Vice President (Research) at 220-3381.

Date

Signature

Participant's Printed Name

Appendix D: Preliminary Information Form

Using Kelly's Repertory Grid for Multi-Criteria Decisions and Problems**Preliminary Information**

Age: _____ Sex: M ___ F ___

In the space below, please describe the problem or decision you face.

Please describe your effort so far at resolving this problem or decision.

Appendix F: The Seven-step Method Instructions

**Working Through Multi-Criteria Decisions and Problems: A Seven-
step Method**

Presented by

Robert Mole, M.Ed.

The University of Calgary

Step 1. Defining Your Problem or Decision

Please stop and think over the decision or problem you face. In doing so, think carefully of the present state of your problem or decision (how things stand right now). Then think of your goal state (how would you like to your problem or decision to turn out).

Present State:

Goal State:

Step 2. Nominating Your Options

Think carefully about your decision or problem as you have defined it in Step 1. Now make a list of all the options you have toward resolving this decision or problem. (hint: options are the "ways" we can reach our goal state)

Example: Think of an example of a new-car buyer, whose goal is to purchase a mid-sized car. The options that car-buyer might be the following: Mercury Mystique, Chevrolet Cavalier, Plymouth Breeze, Toyota Camry, etc.

1. _____

2. _____

3. _____

4. _____

5. _____

6. _____

7. _____

etc. _____

Step 3. Determining Your Problem or Decision Criteria

The decision or problem you face can be described as "*multi-criteria*". This means that the resolution you come to must satisfy a number of important criteria (or values) you hold. You may already be aware of some of your criteria.

Example: Consider the car-buyer, who may have some of the following criteria: (a) reasonable price, (b) 6-cylinder engine, (c) good fuel economy, (d) good stereo system, etc.

It is important to come up with as many criteria as you can. If you want to think of more, but can't the following exercise (called the method of triads) might help.

3 Select three of your options from Step 2. You may want to write them down on a piece of paper.

4 Ask yourself the following question about the three options you selected:

"How are two of these options alike, and yet different from the third?"

The answers to this question will be further criteria.

Criteria:

1. _____

2. _____

3. _____

4. _____

5. _____

6. _____

7. _____

etc. _____

Step 4. Weighting Your Criteria

Look at your list of criteria from **Step 3**. On a scale of one to ten (one being "of little importance" and 10 being "of great importance"), rate each criteria with respect to how important it is to you when resolving this decision or problem. Simply write the weighting (out of 10) beside the option.

Feel free at this time to add any new criteria to the list that come to mind.

Step 5. Filling out the Repertory Grid

The time has come to organize your criteria (from Step 3.) and your options (from Step 2.) in such a way as to be able to compare them against each other.

This is done using the Repertory Grid (attached).

You can create your own grid simply by filling in your criteria (goals and values) in the lines below where it says "criteria", and your options in the lines below where it says "options".

Once you have done this, you are ready to rate your grid and see how your options compare against each other in terms of your stated criteria.

When rating the grid, simply consider how well the option meets the particular criteria. Using the example of the car buyer, if she really liked the stereo system in the Plymouth Breeze, she might rate it a "10" (out of ten). If she was not so impressed with the Chevrolet Cavalier's stereo, she may only rate it as a "4" or a "3".

When rating the grid, do not worry about the weightings of the criteria. That will come into play later. Simply rate according to how well the option meets the criteria you are considering at the time.

Step 6. Determining the Ranking of Your Options

Now that you have filled in all the possible ratings in your grid, you should now make the weighting adjustments. Simply multiply your weightings in **Step 4** by each of your ratings in the grid. For example, if your first criteria has a weighting of 5, multiply all ratings for that criteria by 5. If your next criteria has a weighting of 2, multiply all of the ratings for that criteria by 2.

Once all the grid ratings have been adjusted by weight, the ratings for the options can be summed. To do this, add each rating (as adjusted for weight) by column.

The sums for all options reveal the ranking of your options in terms of how well each one addresses the criteria you identified.

Step 7. Evaluating Your Outcome

Look over the ranking of each option. Consider how this ranking makes you feel.

If you are not confident of the rankings obtained, you may elect to run through the seven steps again. If you do this, consider carefully any criteria you may not have considered the first time around.

Some individuals like to run through this seven-step process a number of times before they feel fully confident about the decision or problem resolution they come to. This is a normal part of solving problems, and making decisions.

Appendix G: Follow-up Scale Questions

Follow-up Scale Questions

1. Was this procedure **easy** or **difficult** to follow?

1 2 3 4 5 6 7

very difficult very easy

2. How **thorough** or **complete** do you think this procedure was?

1 2 3 4 5 6 7

not thorough very thorough

3. How **consistent** was the outcome with your values?

1 2 3 4 5 6 7

not consistent very consistent

4. How **confident** are you of the outcome?

1 2 3 4 5 6 7

not confident very confident

5. How **happy** are you with the outcome?

1 2 3 4 5 6 7

not happy very happy

7. How much **regret** do you feel over committing to the outcome?

1 2 3 4 5 6 7

no regret high regret

Appendix H: Short Answer Questions

Short Answer Questions (To be tape-recorded)

1. What part of today's work stood out for you the most?
5. What part of the procedure was the most helpful for you?
6. What part of the procedure was the least helpful for you?
7. Was the procedure easy enough to learn that you could do it by yourself from now on?
8. If I were to give you copies of the procedure, would you consider using it for some other problem or decision you may face in the future?
9. Can you suggest any other decisions or problems for which this procedure might be useful?
10. Can you suggest any other decisions or problems for which this procedure would **not** be useful?
11. Would you recommend this procedure to a friend who faced a difficult decision or problem? Why or why not?