

Part I

Setting the Scene

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Assessment of Personal Constructs: Features and Functions of Constructivist Techniques

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The psychology of personal constructs is not so much a theory about man as it is a theory of man . . . It is part of a psychologist's protracted effort to catch the sense of man going about his business of being human, and what on earth it means to be a person . . . Our theme is the personal adventure of the men we are and live with – the efforts, the enterprises, the ontology of individuals so convinced there is something out there, really and truly, that they will not relent, no matter what befalls them, until they have seized it in their own hands. (Kelly, 1963, p. 183)

These thoughts, first written nearly 60 years ago by George Kelly, have since led to various attempts by clinicians, including Kelly himself, to “catch the sense of man” through distinctive assessment tools for use in psychotherapy settings. This chapter will review several of these personal construct assessments and how they have evolved over the past five decades, with special emphasis on their distinctive advantages and limitations as assessment methods. We will begin with an overview of the fundamental principles of Kelly's theory of personal constructs to provide an explanation of the theoretical framework within which these assessments were created.

Personal Construct Systems: An Overview

The guiding assumption of George Kelly's (1955) personal construct theory (PCT) is that humans literally construct the meaning of their own lives, by

devising, testing, and continuously revising personal theories that help us make sense of the world around us and anticipate our future experiences. These personal theories, called construct systems, are comprised of an indefinite number of personal constructs that help differentiate, integrate, and predict life events. Personal constructs may be highly idiosyncratic or widely shared, and may vary in terms of how central or important they are in construing one's life (Winter, 1992).

According to Kelly's (1955) view of constructive alternativism, there are countless possible constructions of reality. In other words, events are subject to as many alternative ways of construing them as we ourselves can invent. Thus, personal construct theory describes how each of us uniquely construes or interprets our own world. Constructs, and their interrelationships within a hierarchically organized system, form the basis for hypotheses that guide an individual's choices and actions (Winter, 1992).

Kelly (1955) defined a construct as a particular way individuals have of viewing, giving meaning to, or construing the individuals and events in their life and the world around them. According to personal construct theory, all constructs are "bipolar," meaning some sort of contrast (e.g., intelligent/ignorant) is implied. The implied contrast gives constructs their uniqueness. Meanings of certain constructs may vary according to the element being construed, and implied constructs may vary across individuals. For example, the contrasting construct of the word "lenient" might be "harsh" to one person and for someone else it might mean "unbending or fixed," which are rather different meanings. Therefore, even though individuals may draw upon common and publicly shared discriminations in constructing their conceptual templates, they typically develop construct systems that are in some degree idiosyncratic, giving their construct systems a richer personal significance than relying on simple dictionary antonyms.

Kelly (1955) proposed that each person constructs his or her own version of reality using a hierarchical system of personal constructs. "Not only are the constructs personal, but the hierarchical system into which they are arranged is personal too . . . When one construct subsumes another its ordinal relationship may be termed superordinal and the ordinal relationship of the other becomes subordinal" (Kelly, 1955, pp. 56–58). It is common for an individual to revise his/her construct system continuously as the universe constantly changes across time. Hence, constructions that might have seemed reasonable at some point in the past can be invalidated by current events. Kelly viewed individuals

as personal scientists, classifying, categorizing, and theorizing about their world, anticipating on the basis of their own personal theories, and acting on the basis of their anticipation.

One of the most important aspects of personal construct theory is that individuals will differ from each other in their constructions of events. Kelly (1955) suggests that to obtain the best explanation of a person's organization of experience or behavior, one should find ways to inquire of the person who does the organizing because only he or she is expert on this unique process, which leads us to how constructivists actually inquire about an individual's construing process.

Constructivist Assessments

What makes an assessment constructivist? Neimeyer (1999) explained that these assessments tend to identify and explore personal narratives and constructions of the individual's experience, and evaluate his or her unique construct systems and hierarchies. This evaluation can be done by using, for example, ladders, repertory grids, implication grids, resistance to change grids, self-characterizations, and a variety of other measures that have a focus on the assessment of personal meanings (Neimeyer and Bridges, 2003). Thus, personal construct methods are designed to assess how the individual makes sense of the world, yielding a more holistic view of the respondent's meaning system than is afforded by most traditional psychological assessments. Personal construct psychology is essentially an idiographic approach, and its main strength comes from its ability to depict the content and structure of individual internal representations and ultimately to draw inferences about the general human process of meaning construction (Jankowicz, 1987). In applied settings, constructivist assessments essentially allow practitioners to better understand their clients and how they view the world around them.

Overall, personal construct assessments can contribute in clinical settings by guiding case conceptualization and the course of treatment, by revealing the core constructs that drive and contribute to clients' sense of identity and the reality of the world in which they live. In this respect they accord with a contemporary constructivist approach to assessment and therapy, which focuses on how clients order the world, develop a sense of self and relationship, and act in a way that is coherent with these constructions (Mahoney, 2003).

The aim of this chapter is to review five personal construct assessments that have been used to evaluate clients' construct systems. Particular attention will be given to evidence of their validity and reliability, the ways they can be used in various settings, and the unique advantages and disadvantages of each of these techniques. The assessments that were selected for this chapter include some of the more popular and frequently used methods as well as ones that are promising, but less frequently used. These include repertory grids, a structured interview to assess how people view individuals and events in their social world, (Fransella, Bell, and Bannister, 2004; Kelly, 1955); implication grids, used to assess the relationship between constructs (Hinkle, 1965; Winter, 1992); laddering interviews, a technique designed to elicit central core values (Hinkle, 1965; Neimeyer, Anderson, and Stockton, 2001); resistance to change grids, designed to identify core commitments or impasses (Hinkle, 1965; Landfield, Stefan, and Dempsey, 1990; Winter, 1992); and self-characterizations, narrative sketches written by the client to explore self-constructs (Kelly, 1955; Winter, 1992). Rather than performing an exhaustive review of all published studies regarding each method, our focus will be on a subset of publications bearing on the psychometric and practical advantages and limitations of each technique in assessing personal constructs in psychotherapy. We will conclude with a final section that formulates recommendations for future research on the various measures.

Repertory Grid

The repertory grid, which is a variation of Kelly's (1955) Role Construct Repertory Test, is essentially a structured interview procedure that allows the investigator to obtain a glimpse of the world through the "goggles" of the client's construct system. The goal of the repertory grid technique is to allow an investigation of a person's construing process of various aspects of his/her world and of the structural properties of the construct system. In its original form, the repertory grid was designed as a means of assessing the content and structure of an individual's repertory of role constructs, that system of interconnected meanings that define one's relationships to others (Kelly, 1955).

Essentially, the repertory grid consists of eliciting from the respondent a list of *elements*, or aspects of experience, and rating those elements on

various constructs. The elements can include different people, facets of the self, a particular person or relationship at different points in time, situations, types of jobs, or any other items or individuals in his or her world (Fransella *et al.*, 2004; Winter, 1992). Most commonly the respondent is asked to provide the names of individuals who fit certain role titles (e.g., your mother, your partner, a person of your own sex whom you would dislike having as a companion on a trip). The clinician will elicit a number of constructs by asking the client in what important way two of the elements are alike and thereby different from the third. The clinician then will attempt to elicit the contrast pole of this construct. For example, if prompted with the triad my spouse, my father, and myself, a person might respond, "my father and husband tend to be very conventional people, but I'm more rebellious." This basic dimension, conventional vs. rebellious, would then be considered one of the significant themes or constructs that the person uses to organize, interpret, and approach the social world, and to define his or her role in it (Neimeyer, 2002). This procedure is then repeated with another triad of elements until a sufficient number of constructs has been elicited (Winter, 1992). The clinician can design the grid to meet the requirements of his/her particular situation and can choose the preferred grid size, commonly using in the neighborhood of 12 constructs by 12 elements. Next, the respondent is asked to rate or rank each of the elements on the resulting construct dimensions. All of these steps can be completed using computerized programs (e.g., WebGrid III, Omnigrd, Gridcor, etc.) that conduct a variety of analyses on the resulting matrix of ratings (Bringmann, 1992) and also provide clinicians with graphic representations of the client's construct system (Liseth *et al.*, 1993). These can then help answer some of the following questions: what are the major dimensions or structural characteristics of the client's construct system?, how is the self construed?, how are other significant people construed?, and so on (Sewell *et al.*, 1992; Winter, 1992). Fromm (2004), Jankowicz (2003) and Fransella and her colleagues (2004) offer comprehensive guides to repertory grid administration, analysis and interpretation, as well as examples of completed grids on a variety of topics.

Scores yielded and analysis

By presenting the respondent with a large number of elements (e.g., a disliked person, best friend, one's ideal self, etc.), the repertory grid (also

referred to as repgrid) elicits a broad sampling of the personal constructs that represent the person's outlook on life. These constructs can then be interpreted clinically, used as the basis for further interviewing, or coded using any of a number of reliable systems of content analysis. It is often helpful to conduct a comprehensive analysis of the grid to discern larger patterns. This analysis might involve correlating and factor analyzing the matrix of ratings to determine which constructs "go together" for the respondent (for example, *responsibility* is associated with *stability*, whereas *irresponsibility* implies *instability or chaos*), or to learn the people with whom the client most and least identifies. The connections among constructs could reveal the reason that maladaptive patterns are held firmly in place for certain individuals. For example, a client may resist becoming more assertive instead of passive, because for this client assertiveness is associated with being rejected as opposed to being loved by others. Associations among elements (e.g., degree of correlation between actual self and ideal self) in a grid can also be clinically informative by providing the clinician with useful indicators of progress in psychotherapy (Neimeyer, 2002).

Results of repertory grids can be interpreted at two basic levels, focusing on the content and structure of the client's constructions. At the content level, grids can be analyzed in a qualitative fashion by considering the unique constructions of specific figures on the grid and the idiographic meanings of particular constructs. Constructs can be coded using a system devised to analyze constructs into separate categories based on their content (e.g., existential, moral, emotional, relational, and concrete) for both clinical and research purposes (Feixas, Geldschlager, and Neimeyer, 2002). Repertory grids also can be analyzed at a structural level by concentrating on specific relationships between given constructs and between certain elements, the overall degree of differentiation or complexity within the client's construct system, and a multitude of structural features that can be obtained by computerized grid scoring programs (Fransella *et al.*, 2004).

Grid measures

Fransella and Bannister (1977) warned about the proliferation of repertory grid measures and of finding different ways of calculating these measures because they are becoming more complex, rendering comprehensive coverage beyond the scope of this chapter. Thus, we chose only a subset of the most frequently used grid measures for inclusion, as described below.

Construct system differentiation

Intensity (Fransella and Bannister, 1977): Intensity scores reflect the total degree of interrelatedness among constructs on the grid. Higher scores indicate greater integration of constructs into a coherent system, whereas lower scores reflect greater differentiation. Restated, Intensity is a measure of the extent to which the respondent's construct system is highly inter-correlated on the one hand, or multidimensional and complex on the other. Intensity is calculated by summing the absolute values of the Pearson correlations between ratings performed on all possible pairs of constructs and then multiplying by 100. The Intensity of a particular construct is an indicator of how central or important the construct is in that grid. The most intense construct has the strongest correlation with the other constructs, and the least intense construct is the least connected to other constructs and is, therefore, the most peripheral in the overall system.

Percentage of Variance Accounted for by the First Factor (PVAFF) (Bonarius, 1965): Bonarius considered the PVAFF resulting from a factor analysis of grid ratings as an indicator of cognitive complexity or differentiation. It indicates the importance of the main dimension of meaning in the respondent's system, with higher scores indicating greater unidimensionality in the individual's construing. In contrast, if the first factor accounts for only a small percentage of variance then the individual is considered capable of construing in a more multidimensional manner. Thus, like Intensity, greater scores of PVAFF reflect greater conceptual integration, and lower scores reflect differentiation.

Cognitive Complexity (Bieri, 1955): This is a third index of differentiation, computed as the number of perfect matches in ratings of elements on each pair of construct dimensions, divided by the maximum possible score that could be obtained from a grid of that size. Fewer matches represent greater complexity. From this perspective, a cognitively complex person can construe events from different points of view rather than from a good/bad, black/white perspective.

Functionally Independent Construction (FIC) (Landfield, 1971, 1977): FIC is a variant on the cognitive complexity theme, and was devised to measure the degree of dissimilarity in an individual's allocation of grid elements on different constructs, or their application of constructs to different elements. A high FIC indicates that the person is using his or her constructs in a relatively independent fashion.

Within-construct differentiation

Ordination (Landfield and Cannell, 1988) was devised as a measure of hierarchical integration of the system, but some consider it to be a measure of flexibility with which a construct is used, or an index of discrimination in construing a set of figures (Neimeyer, Neimeyer, and Landfield, 1983). It is computed by multiplying the number of different rating values used on a given construct by the difference between the highest and lowest rating; the overall ordination score is simply the mean of the scores for each construct.

Extremity of ratings (Bonarius, 1977): Research by Bonarius suggests that the extremity of ratings is a joint function of the meaningfulness of the constructs and the elements, and could be reflecting psychopathology. The Gridcor program (Feixas and Cornejo-Alvarez, 2004) gives the percentage of extreme ratings provided by the respondent for constructs and elements, as well as a general average or total degree of polarization.

Element placement

Self-Ideal Discrepancy (Feixas and Cornejo-Alvarez, 2004) is a correlation between the self elements and the ideal elements. It is commonly used as a measure of psychological distress or impaired self-esteem, and is calculated as the distance between the self and ideal elements on the grid. This correlation gives a quantitative evaluation of how respondents value themselves in their own terms, as opposed to more traditional self-esteem scales that score the respondent according to items previously selected by the investigator.

Self-Other Discrepancy (Jones, 1961): Initially proposed as a measure of identification with others, the distance between the self and other elements on the grid also has been interpreted conversely as a measure of interpersonal isolation. The differentiation between the self and others is calculated by averaging the distances between the self and all non-self elements. Just as with the discrepancy between the self and ideal, the differentiation between the self and others can be seen in the distances and correlations matrices.

Applications

Kelly's repertory grid technique has played an integral role in the development of personal construct theory. Neimeyer (1985) estimated that more

than 95% of personal construct research published in the first 30 years of the theory was based on some form of repertory grid technique, which makes it by far the most frequently administered and researched technique of all the constructivist assessments yet devised. Indeed, Neimeyer, Baker, and Neimeyer (1990) counted nearly 1000 published studies relying on repertory grid measures, and the number of such studies has continued to burgeon in subsequent years with the widespread availability of computerized grid administration programs. Some of the numerous functions of repertory grids include assessing individuals diagnosed with depression (Landfield and Epting, 1987), anorexia nervosa (Marsh and Stanley, 1995) and learning disabilities (Winer and Vazquez-Abad, 1997), and evaluating construct systems of family members participating in marital (O'Loughlin, 1989) or family therapy (Feixas, 1992).

In clinical settings, data obtained from repertory grids can enhance the process of therapy by supplying information on clients' judgments and feelings about a range of significant individuals in their social world, how they identify with or differ from these individuals, and how their actual self and ideal self differ or relate to one another, which might all be of significant interest to the clinician. Specific goals for therapy can be suggested by a repertory grid given at the outset of treatment, ranging from loosening or tightening certain existing constructs to more fundamental transitions involving altering the meaning of constructs, learning to rely upon other, more useful constructs which are already in the client's repertory, or adding completely new constructs to the client's system (Winter, 1992). Furthermore, progress in revising specific constructs can be assessed by re-administering the repertory grid during the final phase of treatment.

Reliability¹

Table 1.1 indicates the stability of several grid measures over a time period ranging from one week to several months. Sperlinger (1976) has remarked

¹ Due to the nature of the constructivist methods included in this review, we do not discuss indexes of internal consistency because the assessments do not represent multiple items bearing on one construct, but instead we examine systems of constructs in their entirety. In a sense, the various indexes of relationships among constructs evaluated represented by the differentiation measures *are* measures of "internal consistency" computed at the level of the individual's own system. Rather than assessing the degree of attainment of an ideal of absolute reliability, however, they are interpreted as reflections of the system's coherence or multidimensionality. Therefore, we will consider only test-retest reliability in the reviews that follow.

Table 1.1 Test-retest reliability of the measures for the repertory grid.

<i>Structural measures derived from repertory grids</i>	<i>Sample size</i>	<i>Participants</i>	<i>Test-retest reliability</i>	<i>Study</i>
Intensity	<i>n</i> = 81	Spanish and American students	1 hr = 0.95	Feixas <i>et al.</i> (1992)
	<i>n</i> = 78		1 week = 0.95	
	<i>n</i> = 61		1 month = 0.94	Smith (2000)
	<i>n</i> = 20	Teachers	6 months = 0.85	
	<i>n</i> = 17		12 months = 0.87	Bannister (1962a)
PVAF (Percentage of variance accounted for by the first factor)	<i>n</i> = 30	Normals	Immediate retest = 32***	
	<i>n</i> = 81	Spanish and American students	1 hr = 0.61*	Feixas <i>et al.</i> (1992)
	<i>n</i> = 78		1 week = 0.72	
	<i>n</i> = 61		1 month = 0.67	Smith (2000)
	<i>n</i> = 20	Teachers	6 months = 0.82	
	<i>n</i> = 17		12 months = 0.73**	Sperlinger (1976)
	<i>n</i> = 18	Depressed outpatients	Average of 7 months (5–11 months) = 0.28 (<i>p</i> > 0.10) eliciting new constructs; same elements	

FIC (Functionally Independent Construction)	$n = 40$	Students (2/3 were female)	2 weeks = 0.82 (using same constructs and elements)	Danforth (1968)
	$n = 13$	Male Students	16 days = 0.55*** (using different elements)	Baugh (1968) Landfield <i>et al.</i> (1968)
	$n = 24$	Clients	1 month = 0.41*** 2 months = 0.48* 3 months = 0.51** (using different constructs)	
Cognitive complexity	$n = 81$	Spanish and American students	1 hr = 0.87	Feixas <i>et al.</i> (1992)
	$n = 78$		1 week = 0.89	
	$n = 61$		1 month = 0.80	Crockett (1965)
Ordination	$n = 14$	Mixed Adults	4 months = 0.95*	Bieri (1955)
	$n = 34$	Mixed Adults	Immediate retest = 0.80	Bieri and Blacker (1956)
	$n = 19$	Adults	2 weeks = 0.82	Pedersen (1958)
	$n = 38$	Adults	1 week = 0.48	
	$n = 81$	Spanish and American students	1 hr = 0.71	Feixas <i>et al.</i> (1992)
	$n = 78$		1 week = 0.73	
	$n = 61$		1 month = 0.59	
				(continued)

Table 1.1 (Continued)

Structural measures derived from repertory grids				
	Sample size	Participants	Test-retest reliability	Study
Self-Ideal Discrepancy	n = 81	Spanish and American students	1 hr = 0.92	Feixas <i>et al.</i> (1992)
	n = 78		1 week = 0.88	
	n = 61		1 month = 0.78	Sperlinger (1976)
	n = 18	Depressed outpatients	Average of 7 months = 0.87*	
Self-Other Discrepancy (Identification)	n = 81	Spanish and American students	1 hr = 0.94	Feixas <i>et al.</i> (1992)
	n = 78		1 week = 0.89	Sperlinger (1976)
	n = 61		1 month = 0.85	Jones (1954)
	n = 18	Depressed outpatients	Average of 7 months = 0.95	Pedersen (1958)
Figure Similarity	n = n/a	Normals	Retest = 0.86	
	n = 21	Not given	1 week = Ranged from 0.41 to 0.83 (same elements)	
	n = 21	Description not given	1 week = 0.77 (same elements)	Pedersen (1958)
	n = 20	Students	2 weeks = 0.72 (same constructs and elements)	Fjeld and Landfield (1961)

Construct similarity	$n = 9$	Male patients	Immediate retest = 0.69	Hunt (1951)
	$n = 20$	Students	2 weeks = 0.79 (using same elements)	Fjeld and Landfield (1961)
	$n = 20$	Students	2 weeks = 0.80 (using new elements and constructs)	Fjeld and Landfield (1961)
	$n = 20$	Students	2 weeks = 0.79 (asked to use different elements from original list)	Fjeld and Landfield (1961)
Extremity of ratings	$n = 81$	Spanish and American students	1 hr = 0.89	Feixas <i>et al.</i> (1992)
	$n = 78$		1 week = 0.83	
	$n = 61$		1 month = 0.71	

* $p \leq 0.01$.
** $p \leq 0.005$.
*** $p \leq 0.05$.
For all other correlations $p < 0.001$.

that if a grid does elicit significant features of an individual's construing, grids completed by the same individual at different times would show some degree of stability. Work reviewed by Bonarius (1965) indicated considerable consistency in grid measures such as: figure similarity, construct similarity, and the identification of self with other figures; however, the maximum interval between completion of the repeated grids in these studies was only two weeks. Fransella (1981), in a later review, concluded that average reliabilities tend to be quite high, but the range for the individuals making up the sample is often very wide. Other researchers have assessed the degree of stability in the constructs elicited from an individual at different times, and, despite some inconsistent results (Mitsos, 1958), the general finding is of similarity in the constructs elicited on two occasions of testing (ranging from one week to seven months) even when different elements have been employed in the elicitation procedure (Fjeld and Landfield, 1961; Hunt, 1951; Sperlinger, 1976). Specifically, Fjeld and Landfield (1961) retested 20 volunteers and found a strong Pearson correlation on retest when the respondents were given the original list of names and asked to choose different acquaintances from those on the original list. These results indicate that the respondents are consistent in their grid responses and tend to formulate similar constructs even when asked for different elements. Fjeld and Landfield (1961) remarked that this consistency in grid results not only permits the use of the repgrid in determining the validity of Kelly's personal construct theory, but the consistency in itself supports Kelly's argument that people do have a stable set of constructs which they apply to the "objects" in their world, even though the "objects" may change over time.

Additionally, there has been research examining the stability of general structural features of construing. A relatively high test-retest correlation was reported by Bieri (1955) for his measure of cognitive complexity, which has been used to assess an individual's capacity to construe social behavior in a multidimensional way. Others have found reliability scores for cognitive complexity that are almost identical to Bieri's (Bieri and Blacker, 1956; Feixas *et al.*, 1992), though with some exceptions (Pedersen, 1958).

Feixas and his colleagues (1992) carried out the largest experimental study of some of the structural measures derived from repertory grids. Overall, they found the reliability of most of the structural measures examined across one month to be impressive. Of the various measures, Intensity and self-other discrepancy proved the most reliable, and PVAFF and ordination scores the least stable. Intensity, cognitive complexity,

self-ideal discrepancy, and self-other discrepancy all were quite stable at a 1-hr retest and showed considerable reliability 1 week to 1 month later. These results allowed Feixas and colleagues (1992) to conclude that several of the measures were stable enough to be considered as measures of individual difference. More recently Smith (2000) found that grid measures such as Intensity and PVAFF proved to be stable over a 12-month interval. Sperlinger (1976) examined self-construing, finding very high reliability between the distances of the self from other elements on two grid administrations and that those respondents whose self-construing changed the most exhibited greater self-ideal discrepancy, perhaps indicating greater motivation to change, at initial assessment. A low PVAFF and therefore a relatively loosely organized construct system was also predictive of greater change. Self-other discrepancy, also sometimes referred to as the identification score, is reported by several researchers to be highly reliable (Jones, 1954; Pedersen, 1958; Sperlinger, 1976). Identification scores also related closely to other indices of repgrid structure, including the overall degree of similarity between constructs, the average distance between figures, and the explanatory power of the largest factors (Adams-Webber, 1970, 1989). Thus, self-other differentiation is not only consistent and stable as a grid measure, but the evidence also suggests that the extent to which other persons are differentiated from the self is important in the organization of personal constructs (Adams-Webber, 1985).

Results of two specific studies (Baugh, 1968; Danforth, 1968) point to the relative stability of the FIC (Functionally Independent Construction) score over a two week period. However, a study by Landfield, Danforth, and Baugh (1968) showed a weaker correlation (at 1-month retest) than the previous two studies.

Some repgrid measures have been criticized for their low reliability. Bavelas, Chan and Guthrie (1976) retested 76 students after three weeks and only found a weak reliability of cognitive complexity and identification measures across time. A few grid measures (ordination, extremity of ratings) have not received as much attention as others, but appear to be relatively reliable from the results of the Feixas *et al.* (1992) study.

General remarks

Even though there is a need to determine the stability of certain grid measures across time, it is recognized that certain periods in a person's life

might be expected to be associated with greater instability in construing, such as when a person undergoes psychotherapy. Giving a client feedback regarding grid results may also lead to reconstruing as demonstrated by Keen's (1977) finding of significant test-retest reliability for grid scores when clients were given no feedback from their initial grids but not when they were provided with such feedback. Kelly (1955) defined reliability as the measure of a test's insensitivity to change, and Mair (1964) suggested that instead of expecting a measure to be identical across administrations, one should be able to predict whether there should be change or whether the measures should be fairly stable. As shown above, grid studies have shown a high degree of stability of constructs and elements over time, and where movement has occurred it typically has been predictable (Fransella and Crisp, 1970). The evidence presented shows that the repertory grid is an instrument that provides consistent information on several grid measures such as construct and figure similarity, Intensity, cognitive complexity, self-ideal and self-other discrepancy; however, other measures remain relatively unstudied such as extremity of ratings and ordination. Furthermore, two grid measures (PVAFF and FIC) produced conflicting results across studies, raising questions about their reliability.

Validity

Predictive and concurrent validity

Kelly (1955) indicated that results from rep grids may be predictive of social behavior, and some studies have examined this assumption. For example, Bieri (1955, 1966) found that more cognitively complex individuals have available more versatile systems for perceiving the behavior of others and were thereby better able to predict the behaviors of others, however, other researchers have failed to replicate this finding (Adams-Webber, 1969; Cronbach, 1955). Neimeyer, Neimeyer, and Landfield (1983) further explored the relation between predictive accuracy and cognitive structure (conceptual differentiation measured by the FIC score and integration measured by the ordination score) for both rater and target at initial and advanced stages of acquaintance, and found that the conceptual structure of the predictor was not related to accuracy in prediction whereas differentiation and integration of the target's construct system were; more complex acquaintances were more difficult for others to predict. Further evidence suggests that individuals high in complexity distinguish more

clearly between other individuals in the impressions they form of others and assume that other individuals are less similar to themselves (Crockett, 1965), whereas individuals low in complexity were more likely to separate people into two groups on the basis of a good-bad dichotomy (Campbell, 1960). In addition, Berzonsky and Neimeyer (1988) have found high differentiation of construing (FIC) in adolescents to be associated with lack of commitment and low self-esteem.

Winter (1992) reviewed studies that provided evidence that negative self-construing was present in clients diagnosed as depressive, neurotic, anorexic, and delinquent, and that neurotics and depressives tend to construe the self in polarized terms and as very dissimilar to others. Similarly, Intensity has been shown to discriminate between thought disordered schizophrenics and other psychiatric groups and normal groups (Bannister and Fransella, 1965). The lower the Intensity score, the more disordered or loose the individual's thinking.

Fransella and Bannister (1967) assessed the ability of the repgrid in predicting voting behavior of 74 British adults and found that it was possible to make accurate predictions of how a person would vote and how they definitely would not vote by considering the relationship between evaluative (e.g., prejudiced, sincere) and political (e.g., likely to vote Conservative) constructs. Similarly, measures derived from grids have been found to be predictive of preferences for universities (Rowles, 1972) and religious attitudes and affiliations (Cannell, 1985). Some empirical studies reviewed by Winter (1992) suggest that a high degree of polarization assessed by the extremity score is linked to neurotic problems as well as to the severity of depressive symptomatology. Therefore, some researchers use it as an indication of pathology or maladjustment when other factors are held constant.

The evidence discussed above supports the concurrent and predictive validity of several grid measures such as Intensity and cognitive complexity as measures of conceptual differentiation, self-other discrepancy and self-ideal discrepancy as indicators of element discrimination, and extremity ratings as an index of "pathology" when the subjective meaningfulness of constructs and elements is controlled.

Internal and construct validity

If the grid is a valid measure of personal constructs, it would be expected that its elicitation procedure would produce constructs on which elements are more highly differentiated than they are on supplied constructs.

Bannister (1962b) provided support for the hypotheses that grid procedures could demonstrate that constructs within the subsystem concerned with construing of people are related to a degree above that expected by chance; and that individuals within one culture will have similar patterns of construct relationships, although not necessarily agreeing about the construing of individual elements. Slater (1974) has provided a method of assessing the significance of an individual grid by testing the null hypothesis that it is distinguishable from a "quasi grid" composed of an array of random numbers. He found that, provided that the constructs are meaningful to the respondent and the elements are within their range of convenience, experimental grids are very rarely similar to quasi grids, the most striking difference being the relatively large PVAFF score in the experimental grids.

Discriminant validity Adams-Webber (1970) has pointed out that too little attention has been given to the interrelationship of repertory grid indices assumed to measure different variables and has examined the discriminant validity of a few such indices. He found that cognitive simplicity and constellatoriness (the amount of variance accounted for by the largest element factor) were found to be functionally similar and could not be clearly distinguished from a measure of identification (the average match between self-ratings and ratings of other elements in the grid), so that there was equivalence between structural measures based on construct relationships and those based on element relationships. All the measures appeared to be concerned with the individual's tendency to construe people unidimensionally in terms of a stereotype consistent with his or her own self-concept. The high intercorrelation between measures was thought to be consistent with the internal logic of personal construct theory and the development of the grid as an instrument to explore construct-element interaction. High correlations also have been obtained between Bannister's Intensity score, the size of the first component from Slater's principal component analysis (Fransella, 1965); as well as between Intensity scores and low levels of imbalance in construct relationships in clinical populations (Margolius, 1980; Sheehan, 1977; Winter, 1983).

Honess (1976) found that Bieri's cognitive complexity is unrelated to Intensity. On the contrary, Feixas *et al.* (1992) reported correlations among the basic structural repgrid measures, and found Intensity and cognitive complexity were substantially correlated with each other, but

neither was significantly related to PVAFF. Intensity was correlated moderately with the self-ideal discrepancy and self-other discrepancy. These results suggest that less complex individuals in this study might have perceived themselves as more isolated from others and less satisfied with self than the individuals whose construing was more differentiated. Ordination was correlated most strongly with self-other discrepancy and self-ideal discrepancy. Ordination was also correlated with cognitive complexity, indicating that individuals who have more differentiation between constructs also discriminated more among elements within construct dimensions. Extremity of ratings was unrelated to any of the other structural scores, implying that it was measuring a conceptually distinct feature of construing. Botella and Gallifa (1995) found a strong positive correlation between the PVAFF score and the Intensity score, even though Feixas *et al.* (1992) did not find a significant correlation. Table 1.2 reports the intercorrelations between the basic structural grid measures that were found in the Feixas *et al.* (1992) study to give an impression of the discriminant validity for these indices.

General remarks

In summary, the intercorrelations among the measures reviewed generally provide evidence for their distinctiveness. The results support the concurrent validity of some measures (notably Intensity and cognitive complexity as measures of conceptual differentiation, and ordination, self-other discrepancy and self-ideal discrepancy as indexes of element discrimination), while leaving in question the meaning of PVAFF and extremity of ratings, which were unrelated to any of the other structural measures (Feixas *et al.*, 1992). Thus, conceptually related measures generally tend to converge, and conceptually distinct measures show little relationship, as might be expected theoretically.

Advantages

The repertory grid technique is unique in that it combines aspects of both idiographic assessment and nomothetic research by permitting the researcher to uncover unique dimensions of an individual's outlook or alternatively to search for general patterns across individuals. Rather than having the client respond to standardized questions, grid technique essentially guides the respondent in constructing his or her own

Table 1.2 Discriminant validity of repertory grid measures (from Feixas *et al.*, 1992).

<i>Measure</i>	<i>PVAFF^{a,b}</i>	<i>Intensity^b</i>	<i>Cognitive^b Complexity</i>	<i>Self-Other Discrepancy</i>	<i>Self-Ideal Discrepancy</i>	<i>Extremity of Ratings</i>
Intensity	0.25					
Cognitive complexity	-0.02	0.71**				
Self-other discrepancy	-0.25	0.36*	-0.06			
Self-ideal discrepancy	-0.21	0.46**	0.14	0.70**		
Extremity of ratings	0.14	0.05	0.18	-0.01	-0.11	
Ordination	0.03	0.18	-0.34*	0.79**	0.46**	-0.05

^a Percentage of variance accounted for by first factor.
^b Higher scores indicate less differentiated or complex construing.
* $p < 0.01$.
** $p < 0.001$.

questionnaire by eliciting the individual's own constructs and relevant elements to rate, while permitting comparisons across different people or groups. This format yields a personal but systematic glimpse of the client's construction of the world (Neimeyer and Bridges, 2003). This unique blend of projective and objective testing has made repertory grid technique useful to both clinicians and scientists seeking to understand how different individuals and groups organize their views of themselves and the world.

Limitations and cautions

Despite the benefits described above, there are a few constraints of repertory grid technique that should also be acknowledged. It is clear that measures of the structure of personal construct systems are affected by the particular design and procedures of the method. Substantial effects have been linked to the use of specific elements in the grid (Wright and Lam, 2002), the kinds of constructs generated, the measures used to elicit those constructs (Caputi and Reddy, 1999; Hagans, Neimeyer, and Goodholm, 2000), and even the different ways in which repgrid ratings are made (Neimeyer and Hagans, 2002). The very nature of the constructs seems to be influenced by the instructions given, the use of particular kinds of construct examples (Neimeyer and Tolliver, 2002; Reeve, Owens, and Neimeyer, 2002), and even subtle or unintentional procedural variations (Metzler, Gorden, and Neimeyer, 2002). These variations can have a substantial impact on the outcome of the repertory grid, and thus highlights the challenges and responsibilities placed on researchers in this area (Neimeyer *et al.*, 2002). Of course, many of these sources of variance are controlled in a given study when the same method of grid elicitation is used for all respondents, as well as in clinical contexts in which the same grid is repeated on different occasions to assess meaningful changes in construct system organization or structure. Conversely, the greatest care must be taken in comparing results of different studies using rather different procedures.

General remarks

Repertory grid technique has been proven to be fairly reliable and valid with some measures proving to be more stable and valid than others. The repgrid also has an extensive range of functions and applications in both clinical and

research areas, and is easy to administer and analyze with the help of various computerized programs. Thus, it appears that the use of grids could become an increasingly popular tool for psychological assessment, consultation, and research, at least among clinicians and investigators who are drawn to assess systems of personal meaning (Neimeyer, 2001).

Implication Grid

Description of assessment

Hinkle's (1965) implication grid (or impgrid) is an alternative grid method that has been shown to be valuable in the clinical setting. Hinkle set out to discover what meaning each construct has for the individual in terms of its implicative relationships to other constructs, and he developed the implication grid as one method of assessing these implications. Here, the clients are questioned directly concerning the implications of their constructs as opposed to the more indirect assessment of construct interrelationship that can be derived from a conventional repertory grid. Hinkle's (1965, p. 36) instructions for the implication grid are as follows, "Consider this construct for a moment (Construct 1). Now, if you were to be changed back and forth from one side to the other, that is, if you woke up one morning and realized that you were best described by one side of this construct while the day before you had been best described by the opposite side, what other constructs would be likely to be changed by a change in yourself on this one construct alone?" For example, if the client were to imagine shifting from being *happy* to *sad*, she might be asked whether she would also tend to become more *reclusive* as opposed to *social*, more *suspicious* as opposed to *trusting*, and so on. After the client notes the implications from the first construct dimension, each of the other construct dimensions in turn becomes the implying dimension (Fransella *et al.*, 2004; Winter, 1992). Thus, each construct dimension is treated as potentially implying change on other dimensions. See Fransella *et al.* (2004) for a full illustration of implication grid and easy-to-follow instructions on how to administer and analyze them.

Scores yielded

The participant's responses are recorded in a grid matrix, with the dimensions potentially implying change on other dimensions forming the rows

and the same dimensions as potentially implied or influenced by other dimensions forming the columns. Hinkle's (1965) approach involved simply summing the entries for each row and column of the grid, and then rank ordering these row and column totals. Core and peripheral constructs can be differentiated by indexing the number of implications of each, with constructs implying sweeping change considered relatively superordinate or core, and those affected by changes in many other dimensions considered relatively subordinate or peripheral. Theoretically, the former would be more difficult to modify in therapy than the latter. Thus, the implications grid approach directly assesses how constructs are arranged hierarchically (Landfield, Stefan, and Dempsey, 1990).

Applications and variations

There are many possible uses of the implication grid in studying psychological change. Clearly, the method could be used to chart relative stability and change for both superordinate and subordinate implications (Bannister and Mair, 1968). For example, a husband whose wife experienced his fawning and paternalistic behavior as suffocating might be helped to find other ways to express his core construct of being *loving*, in order to allow modification of these peripheral but relationally disruptive behaviors.

Although clinicians have employed some of Hinkle's methods, these methods have received less attention from researchers. However, a few studies have been conducted in which implication grids have been found to be useful for a wide variety of contexts and conditions of administration. Hinkle's original version provides information about implicative relations among constructs as whole units. Although the participants are asked about shifting between construct poles, no specific information is provided that indicates which poles are involved in implicative relations. However, an interest in the implications of individual poles of constructs led to a variation called the bipolar impgrid. Here, the poles of each construct are treated as single units. Respondents are told "imagine that all you know about a person is that he/she is 'sad.' What from all these other characteristics in front of you would you expect to find in a 'sad' person?" Each term is paired with every other term to determine the presence or absence of an implicative relationship. Fransella (1972) found Hinkle's instructions rather complicated when using the original version of the impgrid with a group of people who stuttered and decided to use the bipolar impgrid as a clearer alternative.

Honess (1979) extracted constructs from essays that had been written by 203 children in five different age groups ranging from 8 to 16 years old, and used those constructs in a bipolar impgrid. In this study, the variation of the impgrid required children to assess the interdependence of constructs drawn from their personal set of constructs. In addition to providing an overall measure of differentiation (based on the total number of implications revealed in the grids) the independence of the subsystems of each individual's construct system can also be examined with the implication grid. The proportion of implications recorded for relatively abstract constructs (e.g., those bearing on personality or values) increased with age, supporting the assumption that development involves increasing hierarchic integration of the meaning system. Furthermore, Ravenette (1977) employed impgrids with delinquent boys, using a procedure in which the constructs in the grid are common delinquent activities, and the participant is asked "if a boy commits one particular crime, is he likely to commit the other crime?" Such results provided information of practical use on patterns of high risk activities.

In a third illustration, Baker, Neimeyer, and Barris (1997) used the implication grid to assess presumed cognitive vulnerabilities in two depressive subtypes (anaclitic/sociotropic and introjective/autonomous) with a group of 63 depressed inpatients. Specifically, they examined whether depressed individuals manifesting either dependency or self-critical personality styles would show greater implications of change in their self-perception specific to their proposed area of vulnerability. As predicted, hypothetical shifts on achievement constructs on the impgrid precipitated more cognitive change for autonomous individuals as identified by the Sociotropy-Autonomy Scale (SAS) than did shifts on dependency constructs. In contrast, for sociotropic patients shifts in both the dependency and achievement domains carried similarly substantial implications for their self-construing. This study demonstrates the relevance of the impgrid method in assessing psychopathology in the clinical realm, specifically in regards to cotemporary cognitive theories of depression.

Reliability

Landfield *et al.* (1990) explored the short-term test-retest stability of two forms of implication grids (self grids and multiple grids), and they found these grids to be fairly stable across time. In the single self implications task, participants considered whether a general self change on one personal

construct dimension would influence change on their other dimensions. In the multiple self implications task, participants were asked about self-change and construct implications within situational contexts defined by general life activities (play, work); infrequent and potentially stressful events (a crisis); and familiar individuals (friends, parents). These situation grids were used to measure implicative relationships that can be applied across situational contexts. The researchers compared temporal consistency of single grids with the multiple self grids for a group of 52 college students (21 men and 31 women). In the first study 22 participants completed the single self impgrid (SSIG) twice, with a one-week interval between tests using the same elicited constructs, and they found a test-retest reliability of 0.61. In the second study 30 other participants completed the multiple self impgrid (MSIG) twice, using a one-week interval with the same constructs, and they found a test-retest reliability of 0.59, which was almost identical to that found in the SSIG study. The multiple self implication grid was shown to be a promising method for assessing certain kinds of higher order and contextually persuasive constructions that are useful in the person's day-to-day living and to highlight implicative relationships of which the person is not entirely aware. Furthermore, both the SSIG and MSIG were found to be moderately stable across time.

Honess (1978) designed a study that compared repertory grids and implication grids, and the latter proved more stable and sensitive to participants' changes in construing over a period of four weeks. In this study, a measure of Intensity, an estimate of overall matching strength, was computed for both repgrids and impgrids for comparison. The reliability coefficient for the repgrid Intensity scores was low ($r = 0.35$, n.s.) in contrast to the significant coefficient for the Intensity scores that were yielded by the impgrids ($r = .62$, $p < 0.01$). Fransella (1972) administered both a repertory grid and an adaptation of the implication grid to fifty children, with similar results.

Kelsall and Strongman (1978) demonstrated the validity and reliability of a modified version of the implication grid technique for use in research on emotion with undergraduate students. In this modified form the participant was asked to imagine herself experiencing the first emotion named on the top of the grid. She was then asked to place a check in the column of the remaining emotions she would definitely experience while experiencing the first emotion, to place a cross next to any emotions she definitely would not experience, but to leave a blank next to any emotions that she might or might not experience. The students were asked to return to repeat this

administration after a four week interval, and at that time they were also asked to complete an entirely new grid with different emotional labels. The total numbers of implications on the three administrations all correlated significantly with each other (0.59–0.83) indicating that the emotional impgrid is reliable across time and independent of specific emotional labels. These results suggest that this adaptation could provide interesting comparisons between the emotional experience of different individuals or groups, or be used to track changes in the level of emotional differentiation experienced by clients over treatment.

Convergent validity

Metzler and Neimeyer (1988) administered to a sample of 57 college students a repgrid (rating) whose elements were alternative careers, an implication grid that assessed the relationships among the provided constructs used on the repgrid, and a resistance to change grid (see below) using the same constructs as the other grids. They found no relationship between the number of implications a construct carried and the total variance it accounted for on the repgrid, although each measure converged with other independent measures of hierarchical organization. The researchers suggested that further research needs to look at the differences among these methods and the reliability of the findings concerning their intercorrelation with one another. In response to this need of research on the convergence of these two methods, Dempsey and Neimeyer (1995) conducted the first study of convergence of implication and repertory grids in assessing system structure at three levels: (a) the overall structure or relatedness of constructs in the system (molar level); (b) the average degree of the connectedness of each construct to the system as a whole (molecular level); and (c) the degree of relationship between specific pairs of constructs (atomistic level). They administered a repgrid and an impgrid to 36 college students and found that these two contrasting methodologies showed impressive convergence at all three distinct levels of analysis. At a molar level, impgrids and repgrids pointed to similar degrees of overall structure or differentiation among constructs being sampled. Thus, individuals whose construct systems displayed relatively dense networks of implication on the impgrid also appeared to have more highly integrated systems for construing significant people in their lives, as assessed by correlational or factor analyses of their repgrids. At a more specific, molecular level of analysis, constructs that had more overall implicative ties with other constructs on the impgrid also were

more highly correlated in rating elements on the repgrid. Finally, at the atomistic level, the intensity of the implicative relationships between specific construct pairs on the impgrid was reflected in the correlations revealed by the repgrid. Altogether, these findings provide evidence for the convergence of the two methods as measures of conceptual organization. Furthermore, these results support the further development of impgrid methodology (Caputi, Breiger, and Pattison, 1990), and provide encouragement for the extension of the impgrid in future research and clinical applications (Dempsey and Neimeyer, 1995).

Advantages

Advocates of implications grids argue that they directly assess how constructs are arranged hierarchically, and so are likely to yield better measures of relationships within a system than the more frequently used repertory grid (Landfield *et al.*, 1990). Further, impgrids allow for exploration of higher order constructs related to the client's core sense of self, which could be useful to clinicians who are interested in discovering the implications these superordinate constructs have on the client's entire construct system. However, whether the direct assessment of consciously recognized construct relationships yielded by the impgrid is preferable to the indirect assessment based on the pattern of use of constructs on the repgrid likely depends on the investigator's assumptions and goals, and need for research.

Limitations and general comments

Dempsey and Neimeyer (1995) have commented on the surprising fact that relatively little use has been made of the implication grid, especially due to its ability to allow direct measurements of the relationships between constructs. Caputi *et al.* (1990) suggest that one obstacle may be the lack of a computerized method for analyzing implication grids compared to the abundance of programs designed specifically for administering and analyzing the repertory grids. Although easily remedied by an investigator with programming competencies, this current deficit makes the administration more complicated and the analysis more challenging for clinicians, which may make them less appealing overall. The somewhat abstract instructions can also be confusing for clients to comprehend. As discussed above, although researchers have explored the reliability and validity of implication

grids and applied them in several clinical contexts, more research needs to be done on this particular method.

Laddering

Description of assessment

Hinkle's (1965) laddering technique is designed to elicit and examine the participant's superordinate or core constructs that carry implications for his or her sense of identity (Neimeyer, 1993). In a laddering interview, the participant typically is first asked to compare and contrast three elements (e.g., three people – mother, father and self) using the “difference method” (Neimeyer, Anderson, and Stockton, 2001) to generate the initial construct dimension, which represents the first rung of the ladder. To elicit a personal construct with two contrasting poles, the participant is asked to identify how two of the elements are alike and different from the third. For example, the father and self might be identified as *responsible* and the mother as *irresponsible*; thus the first ladder rung will be *responsible vs. irresponsible*. Then the participant is asked which he or she prefers and *why* he or she prefers that construct pole or what the advantage of that pole is (i.e., I prefer to be *responsible* because it gives me a structure to work within). The reason for the preference is assumed to be a construct superordinate to the first, and by repeating the laddering process further higher order constructs are elicited. Next, the respondent is asked to provide the contrast to that construct, which yields the next ladder rung (e.g., *structure to work within vs. flexibility*). Once again, the investigator would ask the respondent to indicate with which side of this construct he/she prefers to be associated (e.g., *structure*) and why that is the preference. This inquiry ladders up to the next higher order construct (e.g., “because I feel more *stable*”), to which the investigator elicits a further contrast (e.g., feeling *unsteady*). This procedure is continued until the participant cannot elicit a new construct, which usually suggests he or she has approached a core construct within his/her construct system. Essentially, laddering consists of a series of straightforward, recursive questions in which the therapist first identifies an initial bipolar construct and then asks with which of the poles the client prefers to associate him or herself. The therapist continues in this way, inquiring about a preference, a reason, or an advantage and its contrast in a cyclical pattern of questioning until the client begins repeating responses or finds it difficult

to formulate a further construct. The result is usually a multilayered hierarchy of personal meanings, which tends to represent higher order (superordinate) issues or values implied by the more concrete or specific constructs given at the beginning of the exercise. Once completed, the final ladder can be shared with the client to discuss the deeper themes and meanings and what they might imply. See Neimeyer (1993) or Neimeyer *et al.* (2001) for examples of completed ladders and instructions on administration.

The therapist can inquire further into the client's sense of self-congruence or self-contradiction by asking the client where he/she actually would place himself/herself on each of the constructs, revealing points of compatibility or conflict between actual and preferred self-views (Neimeyer and Bridges, 2003). Further processing could be accomplished through the use of a number of facilitative questions (Neimeyer *et al.*, 2001; Neimeyer and Winter, 2006). Examples include: What central values are implied by the ideas you align yourself with at the upper end of your ladder? Were there points at which you hesitated before assigning a pole preference? Who in your life most supports or most resists the preferences you describe? Neimeyer (1993) has found that when using ladders in a clinical context it is helpful to use these various facilitative questions in order to process the meaning of clients' responses with them, which could lead to therapeutic change.

Applications

The laddering technique is an assessment strategy that directly elicits hierarchical features of the individual's personal construct system, linking concrete perceptions, behaviors, or role descriptions with the higher-order issues they imply. Thus, laddering is frequently helpful in the course of therapy for deepening a client's investigation into a specific complaint and revealing subtle ways in which a person's sense of self becomes intertwined with a symptom. Important client values and strengths can be identified that can provide anchoring points for elaborating a "preferred self." Laddering can also be effective in exploring antagonistic feelings, actions, or features of one's personality (Neimeyer and Bridges, 2003). Completion of a laddering interview in a therapy session, followed by written reflections in response to therapeutic questions as between-session "homework," can be a way of extending the impact of the technique and fostering greater self-awareness and behavior change (Neimeyer and Winter, 2006).

The popularity of laddering is apparent from its use in a broad range of research and applied contexts. For example, researchers have used laddering to assess construct change in the treatment of persons who stutter (Fransella, 1972), to identify underlying emotional schemas in cognitive therapy for depression (Neimeyer and Feixas, 1990), and to sample self-relevant constructs related to issues of death and dying (Krieger, Epting, and Leitner, 1974; Neimeyer, 1994). In addition, laddering has been used in organizational consultation in order to elicit cognitive maps of a given domain (Hill, 1995) and in marital therapy to help partners see that they each share the same goals within their relationship. G. Neimeyer (1985) explained how laddering can trace the implications of presenting marital problems to the core role structure in each partner's construct system. He notes that partners usually ladder upward toward shared superordinate constructs such as, "because that would show that she or he listens to me, respects me, or loves me."

Psychometrics

Hinkle's (1965) original study provided the first evidence for the validity of the laddering technique by demonstrating that ladderred constructs (superordinate) produced by 28 students had wider ranges of implication and greater resistance to change than other presumably more subordinate constructs in their systems. Since then, laddering has been widely used in clinical settings, but until recently there was little research validating the technique, and some criticism has been voiced about the assumption that laddering elicits core constructs. Bannister and Mair (1968) noted that asking "why?" is not a guaranteed way to elicit superordinate constructs. Furthermore, Butt (1995) argued that laddering frequently does not produce constructs that qualify as superordinate and in his experience, laddering "frequently produces snakes as well as ladders, going both up and down the system in a looping and circular fashion" (p. 229). In response to Butt's criticisms of laddering, Neimeyer and colleagues (2001) conducted a validation study of the laddering technique as a specific measure of hierarchical structure of core constructs. They conducted laddering interviews with 103 university students in two conditions: a film condition where they were asked to name three recent movies they had seen, in order to assess constructs originating from concrete prompts, and a family condition where they were asked to consider three elements – their mother, father, and self – as a way to assess constructs originating from a more abstract

prompt. The ladderized constructs were coded according to their content into specific categories (Existential, Moral, Emotional, Relational, Personal, Intellectual/Operation, Specific Interests, and Concrete Descriptors) using the Classification System for Personal Constructs (CSPC) devised by Feixas, Geldschlager, and Neimeyer (2002). They examined the structure, process, and content of the construct hierarchies for each of the participants and found support that the laddering technique accesses more superordinate constructs of personal meaning systems. The content analysis of the constructs revealed that superordinate constructs tended to reflect more central existential themes of purpose in life, meaning, morality, and identity, whereas subordinate constructs more commonly reflected more superficial attitudes, interests, activities, and even concrete descriptors. When examining the structural level, they found the concrete prompts (films) required more hierarchical steps to converge on core structures than did more abstract prompts having to do with the self and intimate others. At the process level, the participants required more time to articulate final constructs than to formulate initial constructs and intermediate constructs. Basically, their findings provide the first general evidence for the construct validity of laddering as a measure of the hierarchical structure of personal meaning systems since Hinkle's (1965) original study. Costigan, Closs, and Eustace (2000) also found that laddering was useful and proceeded as expected when psychiatric nurses considered the implications of their changing work roles, which indirectly supported the validity of laddering.

Advantages

The laddering technique is widely used due to its flexibility and its ability to quickly access central constructs that enable clinicians to understand the individual's process of construing and to aid in changing their personal meaning systems, if needed. Laddering does not require much time and can be easily incorporated into ongoing therapy. Leitner (1995) discussed how laddering allows for the exploration of constructs that tend to be related to one another, allowing the therapist to understand specific aspects of the client's construct system in more detail. A unique advantage of the laddering technique is that it can begin with nearly any personal construct or personal contrast that is of interest in the course of therapy. For example, a client could express much frustration and anxiety over a difficult decision to either enter graduate school to pursue a career she

loves or to settle down and start a family. This contrast could then be explored through the laddering procedure, tracing the implications of each alternative.

Limitations or precautions

There are a few concerns that need to be taken into consideration for any clinician intending to administer a ladder. The technique appears to be deceptively simple to administer, which can convince first time users that they might be more proficient at laddering than they actually are. In fact, the recursive questioning that is involved in the laddering technique can be handled skillfully or ineffectually by the interviewer because, like most forms of therapeutic conversation, the elicitation of the constructs is at least as much an art as a science. Thus, the interviewer needs to gain experience with this technique and try to minimize his/her influence over the constructs given. Neimeyer *et al.* (2001) provide a set of guidelines and recommendations to aid new users in the administration and interpretation of laddering. They note that one caution to be aware of when laddering is to not make any assumptions about the interviewee's responses and not to simply apply a dictionary antonym as the contrast to a construct pole. Always ask the interviewee to explicitly state the construct contrast and his or her pole preference even if the answer seems obvious. It would be too easy to make wrong assumptions during the laddering interview, and this mistake could end up restricting the client's disclosure about the precise idiosyncratic patterns of meaning making that are of interest to clinicians.

General remarks

Over the years there have been some criticisms that laddering does not necessarily elicit superordinate constructs; however, recent research is reassuring on this point. On the other hand, the test-retest reliability of laddering has yet to be studied, leaving in question whether the constructs emerging from a particular initial prompt are stable over time. Nonetheless, this technique appears to be very popular due to its flexibility and relatively straightforward administration with the aid of specific guidelines and facilitative questions made available by Neimeyer *et al.* (2001).

Resistance to Change Grids

Description of assessment

Resistance to change grids, also pioneered by Hinkle (1965), are based on the idea that superordinate or core constructs will generally be more resistant to modification than subordinate constructs (Winter, 1992). Because these core beliefs are extremely important to us, it is hard for us to challenge or change these core constructs without some resistance. In Hinkle's original use of this method, a set of constructs was first elicited either by triadic sorts of elements, as in most forms of repertory grid technique, or by laddering. The next step included presenting the client with two of these elicited personal constructs (i.e., *sincere-insincere* and *tolerant-prejudiced* with sincere and tolerant being the preferred construct poles). Then the respondent was told that he/she would wake up the next morning having changed their position on one of these constructs. Essentially, the respondent would have changed from the preferred construct to the nonpreferred construct for either the first or the second construct but would remain the same on the other. Therefore, in this example the participant would become either *insincere* or *prejudiced*, and he or she was asked on which construct he/she would find more difficult or undesirable to change, making a choice whenever possible, except when changing on one construct logically implied changing on the other construct as well (Bannister and Mair, 1968; Hinkle, 1965; Landfield *et al.*, 1990). Each construct was compared with all of the other constructs until there was a complete matrix of paired constructs with one construct in each pair selected as the construct more resistant to change. Fransella *et al.* (2004) provide a full illustration of a resistance to change grid and instructions on administering and scoring the grids.

Scores yielded

Hinkle (1965) estimated the relative resistance to change of the constructs by rank ordering them from high to low resistance to change by counting the number of times the participant chose not to change on that particular construct during the pairing process. It was predicted that superordinate constructs would have more implications and that they would be more resistant to change (Fransella *et al.*, 2004).

Applications

Resistance to change grids have not been used frequently in practice; however, a few research studies have utilized these grids. For instance, Fransella (1972) used resistance to change grids and found that individuals who stutter are resistant to change their patterns of disfluency, despite the distress associated with it. Fransella concluded that a person chooses to stutter because it is in this way that he/she can best predict future events. Thus, in keeping with Kelly's (1955) Choice Corollary, the person will try to move away from confusion towards stability even if the choice he/she make appears to others to be an unlikely one. For those who stutter, "fluency" may be the mysterious and indefinable implied contrast to the construct "stuttering."

Jones (1992) used resistance to change grids along with a biography exercise to compare core values between doctors and managers who worked together in management development programs. She used the change grid to help identify which values were most important to the participants by discovering the values they were unwilling to change and having them prioritize those values. When the assessments were complete, Jones gave both sides an opportunity to explore their differences, which led to mutual respect. Before the study began, managers and doctors had dramatically different sets of values and often had difficulty communicating and resolving conflicts together. Eventually both the doctors and the managers realized the similarities of their core values even though these constructs held a slightly different meaning in their construction systems.

Psychometrics and unanswered questions

Hinkle's (1965) original study provided evidence for the construct validity of the resistance to change grid in that the ladderred constructs (superordinate) had greater resistance to change than more subordinate constructs. Fransella (1972) also found that superordinate constructs were more resistant to change with individuals who stutter. However, stability over time has not yet been explored for resistance to change grids. Thus, more research is needed to support their validity and reliability.

Limitations

One reason for the limited interest in this method again could be the lack of a computer program for administering and analyzing resistance to change

grids comparable to the numerous programs designed for repertory grids. However, there is nothing inherently problematic about designing such a program, a step that could have substantial impact in promoting more research on and application of this method.

Advantages and general remarks

In theory, resistance to change grids could potentially be useful in revealing which constructs the client would have difficulty changing throughout the course of therapy. Resistance to change is very common in psychotherapy, and typical examples of client resistance include: missing therapy sessions, refusing to engage in therapeutic goals that would lead to change and engaging in behaviors that impede therapeutic improvements (Beutler, Moleiro, and Talebi, 2002). Therefore, an assessment that could analyze the resistance of the client and inform the clinician on how to advance the treatment of the presenting complaint could be appealing to practitioners.

Self-Characterization

Description of assessment

Kelly (1955) developed the self-characterization as an idiographic narrative assessment, which involves a qualitative analysis by the clinician to identify self-constructions of the client. It consists of a character sketch written in the third person in which the client is asked to take a broad view of himself or herself, rather than to concentrate on focal interests of the therapist. Kelly's (1955) original instructions for the self-characterization are as follows,

In the space that follows, please write a character sketch of John Smith, just as if he were the major character in a book, movie, or play. Write it as it might be written by a friend who knew him intimately and sympathetically, perhaps better than anyone really could know him. Be sure to write it in the third person. For example, start out by saying, "John Smith . . .".

The omission of a suggested outline for the self-characterization is intentional because imposing such an outline upon the client would result in a considerable loss of spontaneity and a failure to discover the client's own conceptualization about himself/herself (Winter, 1992). As Kelly (1955, p. 324) noted, the overall "object of this kind of inquiry is to see how the

client structures a world in relation to which he must maintain himself in some kind of role.” Therefore, the client’s personal construct system is the primary focus of this assessment, but a secondary focus is where the client places himself/herself with respect to the personal categories and dimensions that make up his/her world (Winter, 1992).

Analysis

After an initial reading of the self-characterization, the clinician should consider the sequences and transitions, topic and opening sentences, common themes, and other hermeneutic guidelines to assist with the analysis (Neimeyer *et al.*, 2003; Winter, 1992). The possible meaning of each statement in the protocol may then be considered both independently and in the context of the total protocol (Winter, 1992).

One of the reasons for not specifying the topical areas that should be covered in the self-characterization is that the clinician is interested in discovering the client’s own selection of context within which the client characteristically identifies herself. The contextual areas chosen by the client indicate where she sees herself as being distinguishable from other people and also where she feels secure enough to be able to elaborate her personal construct system. Some clients write their entire self-characterizations on comparatively safe ground while others take their chances in areas in which they are not so certain about where they stand. It appears that the areas chosen are those in which the client sees enough uncertainty to make exploration interesting and enough structure to make it meaningful. The clinician takes note of the sequence of particular areas as these usually represent a progression either from the well-structured to the more problematical or from the general to the specific. Particular attention is paid to the individuals who are mentioned because they are a sample of the figures who populate the client’s world (Kelly, 1955; Winter, 1992).

Applications and variations

Characterizations are extremely flexible and can even be employed to examine the client’s likely response to psychotherapy. Here, the clinician could ask the client to write a characterization of herself as she would like to be, or as she imagines she would be if she lost her symptoms or if therapy were successful (Winter, 1992). Other approaches to writing a self-characterization include the personal-record approach that starts off with demographic information such as name, age, sex, marital status, residence,

and so on; the outside to inside approach that goes from superficial appearance to inner reality; and the problem approach that begins with a statement of the principal problem that the client sees herself as facing (Winter, 1992). Alternatively, the sketch can be tailored to focus on a particular area of clinical concern, such as the client's adaptation in the wake of an important loss (Neimeyer, 2000). Essentially, the self-characterization is a method of eliciting an individual's constructions, particularly those that are applied to the self (Kelly, 1955). Attention will be paid to the construing of past, present, and future, and it might be beneficial to ask the client to prepare a characterization of the self at different ages for a more extensive autobiography, depending on the presenting problem and the particular therapeutic approach (Mahoney, 2004; Winter, 1992).

The characterization can be a valuable clinical tool in that the analysis of the protocol gives the clinician a sense about the willingness of the client to experiment with new outlooks and new approaches to her problems and a sense of how the client will approach therapeutic change. Additionally, the client's objectives, purposes, and feelings of progress may be explored in the protocol as well as obstacles, handicaps, difficulties, and successful solutions or readjustments to past problems. This assessment also could give the client the opportunity to introduce significant clinical issues that might have been too intimidating to reveal directly to the clinician during the early stages of therapy. Furthermore, self-characterizations can be used to create an enactment sketch that subtly introduces different ways for viewing the self and life, which can then be experimented with in fixed role therapy, in which the therapist and client collaborate in constructing a new role identity for a client to enact for a fixed period of time (Epting and Nazario, 1987; Kelly 1955; Landfield and Epting, 1987; Neimeyer, 1993; Neimeyer *et al.*, 2003; Winter, 1992). Neimeyer *et al.* (2003) and Neimeyer and Winter (2006) provide a full description of how to write and analyze a self-characterization as well as complete examples of characterizations and the fixed roles that were designed for each to enact.

Analysis of a client's self-characterization can serve many functions in a clinical setting. For example, this tool can be valuable during the assessment phase of therapy, when counseling reaches an unexpected impasse, or to direct the treatment of various personality or social difficulties. A major advantage of these characterizations is that they are extremely flexible and may be adapted in various ways to meet the particular diagnostic or therapeutic needs of the clinician. Therefore, the characterization may not even focus solely on the individual client but may, for example, be a characterization of a marriage (Kremsdorf, 1985), a family (Winter, 1992), or a characterization of a child by its parents (Davis, Stroud, and Green, 1989).

Psychometrics and unanswered questions

There are no published studies on the psychometrics of this assessment. As a hermeneutic technique, typical statistical and psychometric criteria that are applicable to other constructivist assessments are of limited relevance to self-characterizations due to the fact that the constructs elicited are difficult to quantify. Instead, criteria applied to qualitative research could be more appropriate. For analyzing the characterization sketch, Yorke (1989) suggests using a technique similar to textual analysis in which an understanding of the respondent would be built up hermeneutically by testing part against part, and part against whole. This process is more time-consuming than having a computer analyze the data as is the case for an assessment like the repertory grid; however, the self-characterization seems to offer a great deal of distinctive information about the client in that it yields a glance into the client's internal world through a written sample in his or her own personal language.

However, quantitative analysis of the self-characterization is nonetheless possible, at least for some features of the text. For example, it would be possible to examine the reliability of this method by coding the constructs in a self-characterization into specific categories using the Classification System for Personal Constructs (CSPC) devised by Feixas *et al.* (2001), and assessing the level of stability in the concentration of constructs in different categories on repeated administrations. Another possibility would be to explore the convergent validity of characterizations by coding the constructs based on their content and determining if the categories from the characterizations correspond to those coded from other types of assessments (repertory grids, ladders, etc.) given to the same client. No such study has been done to date, and these are just possible suggestions for assessing psychometrics of characterizations in future studies. However, it appears that there will be a limit to the utility of this approach to psychometric adequacy, and analysis should focus principally on qualitative criteria. Note: While this chapter was being written a study conducted by Hardison and Neimeyer (2007) assessed the convergent validity of self characterizations with ladders and repertory grids. Additionally the Classification System for Personal Constructs was used as recommended in this chapter.

Limitations

There are constraints to the use of characterizations, as the client may feel uncomfortable revealing certain personal issues, especially early in

treatment. However, given that there is no set format for this method, clients need only reveal what they are comfortable disclosing at that time. Some clients may exaggerate their strengths and positive qualities in order to try to present themselves in the best possible light. Another drawback to this assessment is that clinicians may find it time-consuming to formally analyze the completed characterization because it will require several readings of the entire protocol, which can be 2–3 pages in length. Additional time is needed for examination of each section of the characterization and for exploring each of the 14 guidelines proposed by Neimeyer (1993). However, even an impressionistic reading of the protocol can suggest important issues worthy of therapeutic attention.

Advantages

Clients tend to find the writing of characterizations very beneficial, as expressed in the words of one respondent:

Writing a self-characterization was a unique chance for self-exploration and discovery at a time in my life I considered transitory and uncertain. At first the task seemed slightly threatening, but as soon as I began to write, the words came easily and comfortably. I began by expressing what I considered concrete and obvious traits of my personality, and subsequently delved deeper into more intimate details as I felt more fluent describing myself through words. The writing process was cathartic, a release which I had not anticipated By writing the sketch in the third person, I was allowed to step outside the role of myself and observe those aspects of me that would normally be less apparent than if I were writing from my own perspective (Neimeyer *et al.*, 2003, p. 253).

As can be seen, self-characterizations are fairly easy for the clients to complete and can be quite beneficial for the client. Additionally, they are easy for the clinician to administer, and specific guidelines (Neimeyer *et al.*, 2003) exist to aid clinicians in the analysis of the completed characterizations.

Comparison Among Personal Construct Assessments

Although several of the assessment methods reviewed above have been the subject of research, little attention has been given to how they relate to one

another. For example, this review did not turn up any studies including ladders or self-characterizations in comparison with any of the other assessments. Even implication grids and repertory grids have rarely been investigated in relation to each other. Only a few published studies of impgrid and repgrid techniques were found that examined their convergent validity in assessing the connections among the constructs that comprise a personal construct system. In their common form, in which the elements rated are people in the respondent's life, repertory grids focus more on the social world of the individual and measure systemic or structural properties of construct systems. Thus, Bell (1990) questioned whether repgrids should be used as measures of hierarchical structure because they only yield indirect measures of superordinate and subordinate relationships between constructs. However, existing evidence suggests that they generally converge in their assessment of the overall structure of construct systems, and perhaps even at the level of particular constructs. The encouraging data supporting both methods reinforce Bannister and Mair's (1968) claim that neither technique should replace the other, as the repgrid may uncover possible construct links of which the participant is unaware, while the impgrid reveals relationships consciously recognized by the participant.

Generally, the ideal situation might be to utilize a few of these personal construct assessments in conjunction with each other, if time permits. Each assessment discussed in this chapter seems to have its own strengths and advantages, and each adds a unique perspective of the individual's construct system. Therefore, it would be ideal to blend the information gathered from two or more assessments in order to gain a greater sense of who the client is and how he or she views various aspects of the world.

Each assessment seems to elicit a different type of construct from personal construct systems. For example, the most common focus of repertory grids is to elicit constructs that individuals use to organize their social world, but in fact repgrids are very flexible in investigating different content areas (careers, self-roles, etc.) as anything can be used as an element in a grid. Repertory grids are also anchored in concrete contexts of comparison and do not require a great deal of cognitive awareness; therefore, with suitable adaptation repgrids could be used with any age group. In contrast, impgrids and resistance to change grids are more abstract, focusing on constructs only, and for this reason require a higher degree of conceptual sophistication and capacity for "meta-cognition," making them potentially inappropriate for some populations (e.g., children, those with less capacity for reflection, or mentally challenged individuals).

Self-characterizations, laddering, impgrids, and resistance to change grids tend to focus on self-construing, values and goals, as well as areas of conflict, which are all specific to the individual being assessed. Ladders, impgrids, and resistance to change grids are geared more toward eliciting core identity constructs that individuals value highly and will likely be resistant to change, such as issues of purpose or meaning of life. They are not designed primarily to elicit constructs regarding relationships with other individuals as repertory grids and self-characterizations do. Furthermore, self-characterizations appear primarily to elicit personal constructs that refer to a variety of personality characteristics of the specific individual writing the sketch and often turn up more descriptive or superficial constructs instead of existential core constructs. Implication and resistance to change grids are not as frequently used as the other assessments reviewed in this chapter, which might be due to the fact that these techniques tend to be more complex in their administration and analysis compared to the others. If in the future a more user-friendly method for administering and analyzing implication and resistance to change grids is developed, then these grids might be more appealing to clinicians wanting to uncover the client's values and beliefs.

Mair (1985) emphasized the need to use an assortment of methods instead of relying on a single procedure to attempt to capture the client's view of the world. He also cautioned against reducing the complexity of a client's meaning system to a single theme, ignoring contextual factors that could lead to losing sight of the client's overall intended meaning. We agree with his advice to use a combination of assessments to obtain a fuller picture of the client's construct system, in effect taking multiple snapshots from different angles as opposed to forcing it into a single frame or perspective.

Suggestions for Future Research

Although some systematic research has been conducted to compare each of these distinct assessments with each other, many questions regarding their interrelationships remain unanswered. Researchers could specifically explore the degree of convergence in the areas of complexity and construct differentiation, self-esteem/adjustment, and thematic content of constructs across the various measures, which range from primarily quantitative to primarily qualitative in emphasis.

According to Neimeyer (1999), personal construct theory has generated thousands of publications, with the majority using the repertory grid technique to study individual construing processes. Fewer studies have included ladders and self-characterizations, and only a handful of publications discuss or utilize Hinkle's (1965) implication grids and resistance to change grids. Future studies should specifically address the validity, reliability, and effectiveness of each of these latter assessments. Research also is needed to further define the nature of the differences among these methods and whether they measure somewhat different facets of system structure.

In conclusion, our purpose in this review has been to bring to the attention of clinicians and researchers a range of constructivist assessments that have already been well established and refined, as well as promising techniques that deserve more consideration in future research studies. The main goal of this review was to accentuate the concerns as well as the strengths of each of these assessments to promote future research that can continue to enhance our understanding of personal constructions in a range of applied contexts.

Readers may wish to consult the findings of Hardison & Neimeyer (2007), as these add further detail on the psychometric properties of several of the assessment techniques beyond that provided in the current paper. In general, this study adds to the convergent validity and reliability of several of the methods described in this chapter.

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