

## Qualitative Assessment Within and Across Cultures

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Neuropsychological assessment has traditionally focused on measures of cognition. Although cognition and culture are closely connected, implications of the relationship between the two have often been neglected. The assessment of cognition originally referred primarily to the concept of intelligence, with an emphasis on a traditional, western, quantitative approach, requiring literacy and skills in test taking, (e.g., using writing materials, symbols; being attentive, following instructions, working with speed and accuracy, etc) typically achieved through a formal educational system. Nell (2000) notes that both formal education and urbanization contribute more to test performance variance, than does ethnicity or the traditional variables of age, sex, and socioeconomic status.

Neuropsychological assessments have, however, also come to measure cognitive processes in a more specific manner such as in the information processing approach. In addition to their use in diagnosis, neuropsychological assessments have also come to be used in rehabilitation planning. With the advent of holistic neuropsychological rehabilitation programs (e.g., Ben-Yishay & Larkin, 1989; Christensen & Caetano, 1999; Christensen & Danielsen, 1987; Prigatano et al., 1986), a more holistic view of the individual has been incorporated into neuropsychological assessments. As such, neuropsychological assessments are meant to evaluate the individual more

comprehensively, that is, to include a broader range of psychological variables such as emotional responses, coping strategies, and so forth. Cross-cultural studies have shown, however, that as with cognitive processes, emotion, and experience of self are not necessarily universal concepts. See, for example, Schweder and Bourne (1984) and Cole (1996).

A cross-cultural application of neuropsychological assessments requires an approach to functioning that addresses the interaction of that which is unique and variable with that which is universal (i.e., irrespective of individuality and culture). Although two primary approaches exist for interpretation of data (i.e., quantitative and qualitative), this chapter describes the value of qualitative assessment by postulating that this form of assessment is rooted in an epistemological framework (i.e., phenomenology and systems theory) that differs fundamentally from quantitative assessment. The proposed framework allows for interpretation of data that emphasizes both culturally variable and individually unique aspects of functioning. Prior to discussing the characteristics of qualitative and quantitative methods, the relationship between culture and cognition is discussed briefly.

## CULTURE AND COGNITION

As one of the many definitions of culture, LeVine (1984), states "culture represents a consensus on a wide variety of meanings among members of an interacting community approximating that of the consensus on language among members of a speech-community" (pp. 68), whereas cognition may be viewed as the organization of cognitive skills and abilities, namely, perception, language, actions, memory, and thought (McCarthy & Warrington, 1990). Whereas cross-cultural psychologists make a distinction between the etic (or universal) and the emic (or particular), certain perspectives in neuroscience have made the assumption that commonalities shared by all humans (such as genetic endowment) override environmental and cultural factors, whereas others have argued for the predominance of cultural influence over neurocognitive universals. This debate reflects earlier discussions of rationality contra relativism in exploring the foundations of neuropsychological functioning.

A close relationship exists between culture and cognition. Gardner (1984, 1993) postulates that cultural acquisition occurs by culture exiting as a historical and geographical unity thereby providing valued forms of knowledge through physical, social, and human made objects, which necessitate individuals acquiring this knowledge. Bruner, Olver and Greenfield (1966) viewed three elements as fundamental to cognitive growth and development, namely representation, adaptation, and evolution.

The first element relates to how individuals represent their experience of the world, that is, knowledge based on a constructed model of reality con-

chological variability. Cross-cultural differences, emotion, etc. See, for example, Gardner (1984, 1993) for a discussion of the requirements for a cross-cultural approach to the study of intelligence. This approach requires a recognition of that which is distinctive of individual cultures. Gardner (1984, 1993) describes the process of assessment in terms of multiple intelligences and systems theory. The process emphasizes both qualitative and quantitative methods. Prior to the development of these methods, the field was largely unproductive.

es "culture remembers of an individual's performance on language and cognitive tasks. Specifically, perception and Warrington, the relationship between the activities in neuro-psychology is influenced by all human cultural factors, and the influence over the functions of rational-neuropsychological

tion. Gardner (1984, 1993) describes culture as a complex of valued forms of knowledge, which necessitates the use of Gardner's theory of multiple intelligences and Greenfield's theory of growth and development. Gardner (1984, 1993) describes their experience of reality con-

strained by the human neuromuscular system where representations of the world develop from being enactive (habitual actions), to iconic (imagery free of action), and finally symbolic (translating action and image into language). Gardner (1984, 1993), similarly refers to the individual's genetic inheritance and neurological and psychological proclivities toward learning as sources for competency in various domains. The second element related to cognitive growth pertains to the impact of culture. Models of representation are first adopted from the culture and then adapted to individual use. This process is dependent on the modes of transmission in a culture, the lifestyle of the individual, and the extent to which the individual is encouraged to explore concordance/discordance among the three modes of knowing, (i.e., action, image, and symbol). Gardner (1984, 1993) refers to various symbol systems within the culture, as forms of crystallized knowledge, and that various modes exist for transmission of knowledge, ranging from simple observation to complex forms of schooling. The final element related to cognitive growth that Bruner et al. (1966) describes is evolutionary history, particularly as this pertains to the evolution of brain development in humans and concomitant higher cortical functions. Thus, in explaining the relationship between culture and cognition, acquisition of competence may be attributed to (a) a genetically determined process, (b) learning, as influenced by cultural attributions, or (c) both, that is, an interaction of the two.

Gardner (1984, 1993) believes that developmental psychology and cultural psychology have contributed to models of culture in relationship to personality and affect, but less so to culture as regards cognition. Regarding neuropsychological assessments, a qualitative, holistic neuropsychological approach may, therefore, be helpful in this regard.

### TYPES OF NEUROPSYCHOLOGICAL ASSESSMENT

Vanderploeg (1994) views the clinical assessment of brain-behavior relationships as having advanced from the use of single tests of "organicity" to a complex multifaceted process that consists of integrating test findings with the historical data, life situation and unique aspects of individual performance. Thus, in conducting neuropsychological assessments, a holistic model of human functioning is required to systematize such diverse information, resulting in evaluation techniques that are similarly diverse. These techniques may include the use of interview, case history, behavioral observations, and tests. Data can be interpreted quantitatively or qualitatively. According to Bauer (1994), what distinguishes the two approaches is that the former is concerned with the quantification and measurement of cognitive and mental abilities whereas the latter is more concerned with eliciting characteristic signs or symptoms of brain disease and linking behavioral

syndromes to regional brain function through anatomical-clinical correlation.

Data can be interpreted quantitatively, that is, numerically, by standardized tests, experimental tasks, with standardized scoring and normative scores based on linear statistical models. Neuropsychological tests are comprised of homogeneous items that ideally involve interval-level measurement and meet appropriate standards of reliability and validity. Typically this approach adopts a priori test selection and yields numerical scores that are evaluated by comparing the subject's performance to normative standards. Thus, there is reliance on statistical predictions of brain damage from psychological tests. In contrast, a qualitative approach is based on behavioral observations and by assessments grounded in process analysis (for e.g., what is responsible for failure/success) rather than by providing an outcome score (level of achievement). A selective hypothesis-testing approach is adopted and examination of brain-behavior relationship takes place by for e.g., syndrome analysis, where emphasis is given to the nature or underlying cause of difficulties.

Halstead-Reitan's neuropsychological test battery is an example of a quantitative neuropsychological assessment (Reitan, 1986) ; whereas Luria's Neuropsychological Investigation (LNI; Christensen, 1975) and Kaplan's (1988) process are examples of qualitative neuropsychological assessments. The LNI is a pure example of such (i.e., it is a clinical investigation where qualitative aspects are described not quantified), whereas Kaplan's may be viewed as a compromise between quantitative and qualitative methods by making use of both methodologies: Here, standardized tests are neither scored nor necessarily administered in the standardized manner, whereas qualitative aspects are quantified and subjected to statistical analyses.

Luria's (1977) critique of the quantitative approach is that as psychometric tests measure specific cognitive functions to evaluate successful performance in relation to a normative sample, they, firstly, are based on preconceived classifications of functions related to contemporary psychological ideas, and secondly, they provide results without identifying how process could affect outcome. The cross-cultural applicability of psychometric tests may similarly be hampered by adopting such an approach. Furthermore, as regards brain injury, Goldstein (1952) has earlier argued against the use of quantitative methods in that the "concrete attitude" often displayed by brain injured patients could result in a quantitative approach being invalidated.

In contrast, a qualitative approach, according to Luria, should always (a) give a detailed analysis of how the observed performance comes about and be based on a hypothesis testing, so as to identify contributing factors (i.e., by process analysis), and (b) identify whether a symptom is due to an ele-

mentary level of dysfunction or due to the disorganization of a more complex level of activity. This, therefore, allows for a broad and flexible analysis of subjective variability inherent to the individual, potentially including cultural influences. The LNI has, for example, been used on Zulu (Tollman & Msengana, 1990) and Mexican subjects (Ostrosky-Solis et al., 1985) where cultural influences have been found to greatly impact the manner in which tasks can be completed. Regarding the Tollman study, however, Nell (2000) critiques the expectation that culturally mediated differences will be eliminated by providing, for example, accurate translation or substituting local content for that in the original, as this rests on the unspoken assumption that there are cognitive universals. Nonetheless, in contrast to a standardized quantitative approach, a qualitative approach offers the opportunity for process to be evaluated. Furthermore, flexibility in task administration aids in addressing variability.

Both quantitative and qualitative approaches can distort or misinterpret information, a concern that is of particular relevance to the cross-cultural application of neuropsychological assessments. According to Lezak (1995), quantitative data is limited due to its abstract representation of behavior, multidetermination of single test score responses, and the provision of limited response sets. These are obviously serious limitations in terms of cross-cultural applications. Alternatively, Lezak's critique of qualitative data is primarily viewed as a lack of objectivity, that is, relying on the subjective evaluation of an observer rather than on objective normative parameters. Arguably, in terms of neuropsychological assessment's cross-cultural application, certain subjective evaluations, such as those intended to identify cross-cultural diversity, for example, may be viewed as less misleading than using objective normative data not based on "culturally fair" measures. Furthermore, if qualitative data for neuropsychological assessments is theory driven (as is the LNI), subjectivity can be systematized by brain-behavior syndrome analysis, observation of ecologically valid tasks, and contextualized by a comprehensive interview/narrative analysis of contributing neuropsychological variables. The purpose of the interview is, thus, to constrain subjective interpretation by emphasizing culturally defined meanings.

#### **DIFFICULTIES IN CROSS-CULTURAL QUANTITATIVE ASSESSMENT**

The following examples aim to show how a quantitative approach in neuropsychological assessments has limited applicability when using westernized tests in a cross-cultural context: In western culture, cognitive assessment is historically rooted in the composite measure of intelligence. Current neuropsychology, however, does not support this view of cognitive

assessment as sufficient. Luria (1977) described cognitive functioning in terms of functional systems, where complex cortical functions are viewed as consisting of the coordinated effect of several neural networks working together, but with specialization in functional activity. Luria states, "the material basis of the higher nervous processes is the brain as a whole, but ... the brain is a highly differentiated system, whose parts are responsible for different aspects of the unified whole" (p. 33). Functional systems are hierarchically identified in the LNI (Christensen, 1975). Basic areas of functioning such as simple motor, tactile-kinaesthetic, auditory and visual modalities, are viewed as elements integrated in complex functions such as memory, expressive and receptive language, problem solving, and so forth.

Lezak (1995) in providing a compendium of tests and assessment techniques for neuropsychological assessments states, "there is no general cognitive or intellectual function, but rather many discrete ones that work together so smoothly when the brain is intact, that cognition is experienced as a single, seamless attribute" (p. 23). Cognitive functions may be classified into four major classes, namely receptive functions (i.e., the selection, acquisition, classification, and integration of information), memory and learning (i.e., information storage and retrieval), thinking (i.e., mental organization/reorganization of information), and expressive functions (i.e., the means through which information is communicated or acted on). Modern neuropsychological assessments identify discrete cognitive functions not in isolation but in terms of functional systems where feedback and feedforward mechanisms emphasize their interconnectedness.

Historical difficulties in the cross-cultural applicability of cognitive assessment is provocatively illustrated by Gould's (1982) article, "A nation of morons," an early example of cross-cultural bias in intelligence testing. Gould described how, in America, Binet's scale was used in the early part of the 20th century for army recruiting. Later, in the 1920s, this data influenced the decision to restrict immigration, without recognizing that the tests were biased and that adherents held a purely hereditarian argument, that is, that test results only reflected innate differences in intelligence, nothing more. For purposes of illustration, this example is presented in some depth. Three types of tests were used; (a) literate recruits were given a written examination (entitled the Army Alpha) that was comprised of items such as analogies, filling the next number in a sequence, and so forth; (b) illiterates, that is, men who failed Alpha, were given a pictorial test (the Army Beta), which included tasks such as running a maze, counting the number of cubes, translating numerals into symbols, and so forth. Thus, although an attempt was made at being "culturally fair," and pictures, numbers, and symbols were used, two flaws remained, namely that pencil work was required and, a knowledge of numbers and how to write them was required (on three of the seven subparts of the test). Those who failed Army Beta

were supposed to be recalled for an individual examination at a later date. Unfortunately, not only was the validity of the tests flawed but the procedures for ascribing the test types to the literate and illiterate groups were also inconsistent. In addition, the conditions under which the tests were taken were often inadequate.

Nonetheless, data was produced in the 1920s from 160,000 of these army cases, and a classification system was devised, where individuals with a mental age (MA) of less than 3 were classified as "idiots," individuals with an MA between 3-7 were "imbeciles," and those with an MA between 8-12 were "morons," that is, high-grade "defectives" who could be trained to function in society. Such classifications resulted in European immigrants, for example, being graded by their country of origin. As a result, the average person of many a nation was in the "moron" category, and where southern Europeans and Slavs of eastern Europe were classified as less intelligent than people of western and northern Europe.

These early findings naturally resulted in controversy that, to date unfortunately, has not fully been resolved. Nell (2000), in reviewing the ongoing debate as this pertains to cross-cultural applications of the quantitative approach, notes that the most appealing response, politically and intellectually, to the problems raised by test score variations across countries and cultures is radical environmentalism, which holds that culture makes mind. This is in sharp contrast to the nativist view that holds that intelligence is primarily genetically determined and therefore immutable. Nell (2000) cites the 1994 publication of *The Bell Curve* by Herrnstein and Murray, who countered critique of IQ testing as essentially useless (due to difficulties with cross-cultural applicability, construct validity, etc.) by arguing that IQ and what it measures are "real," that is, that IQ tests demonstrate no external bias (measured against the criteria of school and college success) and dutifully cited data showing that IQ scores vary substantially across ethnic and cultural groups. These findings were, in turn, counterargued as racially and culturally discriminatory due to internal bias. Coupled with these controversies in quantitative assessment is the fundamental distinction of the psychometric contra information-processing approach, where in the former view intelligence is perceived as structure whereas in the latter, process is emphasized. Thus, while not without flaws, psychometric tests are typically used because of their proven diagnostic utility, and because they can be supplemented by information-processing probes and qualitative test interpretation in neuropsychological assessments.

Finally, regarding the issue of whether western-based neuropsychological assessments have been adapted for minority groups within a dominant culture, Pérez-Arce (1999) for example, in describing the use of neuropsychological tests on a minority group (Hispanics) within a dominant culture (USA), argues that North American psychology is steeped in empiricism

(positivism). This has resulted in the search for universals in cognitive operations across individuals by using a normative approach with simple demographic indices such as age, gender, educational level, and on occasion, ethnicity. The influence of social and cultural factors have not, however, been systematically studied. Thus, both culture-free and culture-fair tests have been proposed, where culture-free tests refer to those theoretically ideal tests where some inherent quality of human capacity could be equally well measured in all cultures. As Cole (1996) states, "the simple fact is, we know of no tests that are culture free, only tests for which we have no good theory of how culture variation affect performance" (p. 56). Culture-fair tests, on the other hand, refer to conditions where either a set of items equally unfamiliar to all possible persons in all possible cultures is used, or multiple sets of items are modified for use in each culture to ensure that each version of the test would contain the same amount of familiarity. Gould (1982) views the former condition as virtually impossible to achieve, whereas the latter is possible.

### **CULTURALLY VARIABLE CONCEPTS**

Gould (1982) refers to the aforementioned debate in terms of the distinction that exists in understanding cognition from a hereditarian view, which argues for a universal, culture-free, unchanging, objectively measurable, biologically determined property, "g" (general intelligence) and a cultural psychology perspective that adheres to the view that culture influences (a) behaviors considered to be intelligent, (b) the processes underlying intelligent behavior, and (c) the direction of intellectual development, such that psychological theories of intelligence must offer generalizations that are relative to a particular time and context.

Further support for the cultural psychology view is found in examples of how cognitive concepts are culturally variable—not universal constants. A few examples are given for purposes of illustration: Regarding perception, cross-cultural studies show differences in the effect of the Müller-Lyer and horizontal/vertical illusions for industrialized and nonindustrialized groups (e.g., Segall, Cambell, & Herskovits, 1966). These and other findings were interpreted (and although disputed; see Cole, 1996) as perception being a process of construction, that is, learned, and therefore influenced by culture. Similarly, the concept of intelligence has been found to be culturally variable. Many languages have no word that corresponds to the western-based term. For example, the Baganda of East Africa use a word that refers instead to a combination of mental and social skills that make a person, steady, cautious, and friendly (Wober, 1974). In addition, many specific cognitive functions such as categorization, memory, and problem solving, when evaluated cross culturally, are found to be biased, for example, educational effect are found for sorting tasks (e.g., Evans &



Segall, 1969) and with the supposed maturational aspects of verbal problem-solving tasks (e.g., Luria, 1974/1976). Furthermore, as regards memory, cultures with oral traditions do better at remembering meaningful oral materials than do those from American culture that focus on written communication (e.g., Cole, Gay, Glick & Sharp, 1971). See also Nell (2000) for a more comprehensive discussion of these issues.

Cultural influences are also found, as regards cognitive development. Piaget's theory is used as an example, which suggests that the proposed stages of development occur in the same order in different cultures (Kuhn, 1988). However, cross-cultural findings suggest that there are age variations at which children in different societies typically reach, for example, the third (concrete operations) and fourth (formal operations) Piagetian stages, (e.g., Shayer, Demetriou, & Perez, 1988), and that there is considerable cultural variation to the order in which children acquire specific skills within Piaget's stages (e.g., Dasen, 1975). Furthermore, cross-cultural research has indicated that nonwestern cultures do not necessarily regard scientific reasoning as the ultimate developmental end point, and that in some cultures, very few people are able to complete the fourth-stage (i.e., formal operations) Piagetian tasks (e.g., Shea 1985).

Similarly, definitions of emotion and experience of self vary cross culturally (e.g., Russell, 1991). For example, as regards the self, there appears to be independent (western culture) versus interdependent (nonwestern) construal of self and these self-construals have been found to influence self-perception, perception of others, and have consequences for emotional experience and motivational factors (Markus & Kitayama, 1991; Shweder & Bourne, 1984).

Thus, difficulties in neuropsychological assessments are related to (a) cognition not being a composite measure but consisting of discrete functions that coexist in a functional system; (b) cross-cultural definitions and processes of cognition being variable; (c) holistic neuropsychological assessments which includes cross culturally variable measures of emotions and self and (d) if assessment is quantitative in nature, data reflecting outcome, not process, which unless culturally fair, will misrepresent function. As a result of these difficulties, culturally and individually variable aspects of neuropsychological assessments are often neglected. However, as Cole (1996) points out, even when methodology is altered to take into account cultural variability, other difficulties arise. For example, if cognition is studied as context and activity dependent, then identifying sources of continuity are minimized. Thus, a tension will always exist in choosing one methodology over another, and the solution may lie in combining the strengths of both.

Furthermore, as Bruner (1990), notes "cultural psychology ... is what psychology looks like when it concerns itself centrally with meaning ... it

must venture beyond the conventional aims of positivist science with its ideals of reductionism, casual explanation and prediction." (pp. xii–xiii). This suggests an alternate epistemology that is described in greater detail below.

### **A HOLISTIC, QUALITATIVE APPROACH**

It will be argued that neuropsychological assessments are embedded and influenced by multiple domains. For example, a model of holistic human assessment offered by the World Health Organization (WHO, 2002) is the International Classification of Functioning, Disability, and Health (ICF), which provides a standard language and framework for the description of health and health-related states, based on a biopsychosocial model: Disability and functioning are viewed as outcomes of interactions between health conditions (diseases, disorders, and injuries) and contextual factors. Contextual factors include external environmental factors (for example, architectural characteristics, legal and social structures, etc.) and internal personal factors (e.g., gender, age, coping styles, education, overall behavior pattern, etc.). Three levels of human functioning are identified, namely, (a) level of body or body part, (b) the whole person (individual) and (c) the whole person in a social context (societal perspectives). Both intact and disrupted functioning can be explored at all of these levels. Disability therefore involves dysfunctioning at one or more of these same levels and is described as (i) impairments, (ii) activity limitations, and (iii) participation restrictions. Thus, disruptions to body functions and structures (pathophysiology) result in losses or disorders of cognitive, emotional, or physiological functions (impairments). These impairments affect a person's ability to perform everyday life activities (activity/functional limitations) that in turn defines the nature and extent of a person's involvement in life situations (participation), contextualized by environmental and personal factors.

Another holistic model proposed by Trexler (1999), based on an earlier version of the aforementioned and the National Center for Medical Rehabilitation and Research (NCMRR) as adapted for holistic brain injury assessment and rehabilitation, includes the following: (a) individual factors (e.g., coping skills, family support) and pathophysiology; (b) level of impairment—motor and sensory functions (e.g., dexterity, praxis, speed), language and visuoperceptual functions, executive and cognitive functions (e.g., language, memory, problem solving) and neurobehavioral functions (e.g., awareness, disinhibiting, perseveration); (c) level of functional limitations—mobility, activities of daily living, communication and emotional reactions; (d) level of disability—productivity and quality of life; and finally, (e) level of social limitations. As regards treatment planning and outcome in brain injury rehabilitation, a similar array of variables is proposed by Sohlberg and Mateer (2004).

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Thus, when neuropsychological assessment is viewed as holistic in nature, multiple domains are addressed, and as has been seen, cross-cultural variations are implicit in the expression of these domains. A qualitative method allows cultural variations to be considered by being based on (a) fundamentally different epistemological premises, operationalized by phenomenology and systems theory, and (b) by adopting multiple assessment methods. Thus, traditional psychometric tests are not the primary source of data collection, and if tests are used, their structure and function is fundamentally different in orientation. In addition, qualitative assessment measures may also include participant observation, observation via video, in-depth interviewing (including use of narrative or life histories), and questionnaires (Marshall & Rossman, 1995). Using a combination of measures arguably addresses concern regarding construct and ecological validity.

When considering a holistic approach to neuropsychological functioning, each of the aforementioned measures may be used. For example, at the level of impairment, LNI or other cognitive tasks may be administered, with interpretations based on brain-behavior syndrome and process analysis, whereas at the level of functional limitations, observational methods can be used. Furthermore, impairment, activity, and participation can be assessed using multisource (i.e., patient, significant others, health care professional versions) questionnaire-type measures (adapted as verbal rather than written versions if literacy, type of brain injury is an issue). In order to fully address cross-cultural issues, however, all levels of functioning should be considered from for e.g., a narrative approach that systematizes personal and cultural themes (e.g., McAdams, 1996).

Regardless of techniques used, an understanding of the epistemology of the qualitative approach is essential for the appropriate use, particularly as regards cross-cultural concerns. As such two of these premises is now presented in greater detail.

**Epistemological Foundation 1: Phenomenology**

This regards the fundamental human tendency as identifying experience and ascribing meaning. Spinelli (1989) indicated that historically, Kant argued for not knowing the thing itself, that is, "noumenon," but only the "phenomenon," that is, as it appears to us. Franz Brentano developed the notion of "intentionality," that is, a definition of the first, most basic, interpretative mental act. Edmund Husserl further developed transcendental phenomenology with its emphasis on essence, intentionality, and the distinction between "noema," that is, what is experienced and "noesis," that is, how it is experienced. He also operationalized the phenomenological method, which emphasized (a) defining the process of meaning construction, (b) bracketing, that is, acknowledging and thereby limiting bias in in-

terpreting meaning, (c) description rather than explanation, and (d) treating all experience as having equal value.

Thus, briefly stated, the phenomenological view may be described as follows: As human beings, we attempt to make sense of all our experiences and through mental acts we strive to impose meaning upon the world. Reality is thus viewed as an interpretational process based on the interaction of the internal (our experience of self) with the external (i.e., the world around us) such that phenomena of the world is experienced rather than its reality. Phenomenology is concerned with the difference between the appearance of things (as determined by brain processing) and what those things actually are (external matter- objective reality). Thus, humans do not have access to an ultimate reality, but only hypothesis testing of what reality might be. Although interpretations of reality are relative, similar interpretations may be shared, as determined by biological mechanisms or sociocultural schemata. Meaningless experience is aversive, and, as such, attempts are always made to find meaning in experiences of "reality" and, as such, this is one of the constants of human experience. (Spinelli, 1989; Valle & King, 1978).

From a cultural perspective, Bruner (1990) reiterates the value of meaning as being central to psychology by arguing that the "cognitive revolution" (i.e., the attempt to bring "mind" back into the human sciences, starting in the 1950s) was diverted from this, its original purpose, to computational metaphors. Thus, Bruner (1990) argues for intentional states to be considered once more and that these can only be realized through participation in the symbolic systems of a culture. His view is based on three propositions, namely that (a) humans participate in culture and the develop of cognition through culture; (b) by participation in culture meaning-making, humans and culture are connected, therefore rendering meaning public and shared; and (c) due to the existence of folk psychology, that is, a culture's account of who humans are (providing "theories" of mind, motivation, etc.), culture and intentional states are linked. Thus, for Bruner, analysis of meaning is to recognize culture's intimate relationship to cognition and experience of self.

### **Epistemological Foundation 2: Systems Theory**

Systems theory (see for e.g., Hansen, 1995; Von Bertalanffy, 1968) is centered on nonlinear causality and contextual analysis. It is a theory of patterns, concerning relational wholes and, as such, is an alternative to traditional epistemology that is linear and mechanistic. Systems theory may be viewed as a metatheory useful for purposes of description as it is not assumptive. The point of departure is nonsummativity, where the whole is viewed as greater than the sum of the parts. This is in direct contrast to classic views of linear cause and effect, where models of human behavior have been steeped in logical positivism and nomothetism.

A system can be defined as any two or more parts that are related. Thus, nature is viewed as being ordered as a hierarchically arranged continuum, with its more complex larger units superordinate to the less complex smaller units. Thus, be it cell, organ, person, or family, each indicates a level of complex, integrated, organization and holds a high degree of consensus regarding existing characteristics. Furthermore, the designation "system" indicates the existence of a stable configuration in time and space and each level in the hierarchy represents an organized dynamic whole, its name reflecting many of its distinctive properties and characteristics. Stable configuration is maintained not only by the coordination of component parts in an internal dynamic network, but also by the characteristics of the larger system of which it is a component part. Thus, each level is a system with a particular level of organization, with distinctive properties and characteristics for that level of organization, requiring explanations unique for that level. Each system is, at the same time, a component of higher systems. As such, change in any one part of a system changes all parts. Systems theory is based on the principle of context. In addition, the following principles apply, namely, cybernetics and feedback, as elaborated by equifinality and multifinality is described below.

Cybernetics refers to the study of the self-regulating properties of a system where there is no preconception of what direction the self-regulation will take. In humans, an example of cybernetics is the ability to reflect on self. Cybernetics is studied by analyzing process such as action/inaction of interrelated parts over time where action and inaction are viewed as equally causal in a system. A systemic concept of change is in overall patterns, requiring time and process to determine what the relative patterns of alteration and continuity mean. Thus, process is emphasized rather than outcome.

Feedback refers to the ability of a system to reintroduce output as input. Feedback elaborates patterns of change and nonchange. It provides a language for looking for ongoing processes in systems. Causality is interactive and continuous rather than finite and linear. Systems are served by both positive and negative feedback. Positive feedback results in change, whereas negative feedback does not. Equifinality refers to the same result occurring from a variety of stimuli, whereas multifinality refers to a variety of results from the same stimuli; both, therefore, qualify the basic notion of feedback.

## CONCLUSION

The qualitative approach adopts from phenomenology, (a) meaning construction as its premise for understanding human functioning; (b) the methodology by which meaning can be explored as a variable construct,

that is, a description of process rather than explanations, avoiding a priori theoretical assumptions by treating all experience as equally important; and (c) the influence of culture as implicit to meaning. From systems theory, the qualitative method makes use of (a) a holistic model for understanding human functioning while acknowledging the distinct aspects of a system as integrally related to one another; (b) change as dynamic (i.e., as interrelated by the feedback process); and (c) viewing human functioning in terms of patterns, such that process rather than outcome analysis is possible.

Thus, by definition, the qualitative approach implicitly recognizes cultural variations. It is based on process evaluation of brain-behavior relationships rather than evaluating outcome based on abstract constructs. In addition, use of a holistically based narrative interview provides a contextualized foundation for understanding task completion (while acknowledging that construct validity may remain problematic). Although the universal constants of human functioning should continue to be addressed, and if possible, be evaluated by using culturally fair methods, the qualitative approach remains highly relevant as it recognizes cultural and individual variability in the most fundamental of human activities, namely, construction of meaning.

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