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**ASSESSMENT FOR EARLY INTERVENTION AND
EVALUATION OF CHILD DEVELOPMENT
AND LEARNING: A CHALLENGE TO
AFRICAN PSYCHOLOGISTS**

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ABSTRACT

Assessment is a process in which various strategies are used to evaluate child learning and development. It is generally felt that assessment should also include evaluation of the cultural, social and physical contexts within which learning and development occurs. It would seem self-evident that early intervention for infants with learning difficulties should begin with assessment of the child's developmental status and continue with ongoing evaluation of environmental support and programme effectiveness. This paper suggests that both assessment processes and assessment data should be viewed in context. This context will include such issues as the cultural-political system that may impact on the infant's present status and future life chances. Another contextual aspect of assessment involves the psychologist as one part of the system within which data is collected and interpreted. The developmental, social and educational models that the psychologist works from will be reflected in the way in which the infant is assessed and described and in the intervention strategies that are proposed from the assessment. The implications of such an ecological perspective on assessment are suggested in this paper. The paper identifies the question that assessment might ask and the assumptions and implications of both the questions asked and the strategies used to answer those questions.

Rationale for Assessment

An overriding factor that will help determine both the assessment strategies that are used and the type of outcome data obtained involves the goals that the psychologist has for the assessment. Assessment may be aimed at a description of the infant's behaviour and general development status. Such a description may be the first part of a classification process that will assign the child to a category of disability. This, in turn, may be a step toward accessing an appropriate intervention programme and related resources for the child and his family.

A critical question is, what is the purpose of assessment? The answer is not easily arrived at. The

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goals set by each psychologist will reflect the context within which he works. Therefore, a major part of that context will involve the psychologist's personal perspectives on the limits or plasticity of child development; on the commonalities of experience or the uniqueness of children who have disabilities and of their families; and the psychologist's views on the ways in which the education system and community should meet the special needs of the child and family.

Psychologists are involved in all these issues as they plan and carry out their assessments, yet may not be aware, for example, that certain kinds of assessment data imply a certain model of assessment that will influence their conceptualization of the infant and his needs. Normative data, for instance derives from a statistical model in which points on a continuum are arbitrarily identified as discriminating "normal" from "abnormal" development, with related predictions for future achievements. Another example of possibly hidden assumptions influencing assessment involves the psychologist who works with the concept of "least restrictive environment", Shepard, (1981) in locating early intervention and preschool services for the child. In such a case, the assessment and subsequent placement will differ in significant ways from the data and planning that would be generated by a psychologist who works with the concept of the "nonrestrictive environment" as the basis of community integration for handicapped infants and their families (Starr, 1992). In the former case, the family will make early contact with segregated facilities providing special programmes. In the latter case, resources would be located that would support the child and family in regular preschool and community settings.

The outcome for the child and family in the preceding example could differ radically and the effects of assessment and subsequent intervention strategies may extend across many years. Such possibilities suggest that the psychologist and the assessment strategies that he uses may become influential components of the family system, helping determine their perceptions of their needs and rights and how they manage the disability.

Assessment, therefore, is not simply an issue of measurement and of recommending a next step. The assessment process itself should be seen as potentially reactive with the person undertaking the assessment becoming a part of the many factors impacting on the family, and therefore on the child. In this respect alone, assessment is a complex process that demands a high level of expertise in the areas of evaluation and of understanding the contexts within which child learning and development occur.

It is important, therefore, to evaluate the various processes that may be used in assessment and to attempt to anticipate possible collateral outcomes from these processes.

Collateral outcomes to be considered by the Psychologist

Collateral outcomes are effects that were not intended as part of an action but that may be more significant than the intended outcome itself. Collateral effects may be negative, such as the low expectation for learning that may result from a low score on a developmental scale, or positive, such as the community acceptance and understanding that may result from enrolment of infants who have disabilities in regular childcare or preschool facilities.

Assessment and Testing

Normative testing has traditionally been the dominant assessment model across most areas of assessment and the field of infancy and early childhood has been no exception. The most commonly used standardised techniques for assessment during infancy involve the tests developed by Gessell (1940; Gessell & Amatruda, 1947; Cattell, 1940). Gessell's intention was to assess developmental status in terms of the "totality of an infant's effective functioning... composed of motor, adaptive, personal-social and language behaviours...", all of which derived from a "maturational unfolding process generally unaffected by external influences" (Yang & Bell, 1975, p. 159). Cattell (1940) intended to measure infant intelligence and saw her test as a downward extension of the Stratford-Binet. The Bayley test is presented as a Mental Scale, Motor Scale and the Infant Behaviour Record. The test is intended to establish a child's current developmental status in relation to others of similar age and the author does not recommend predicting a child's later abilities from the scores. Nevertheless, the usual inference from normative testing is that performances that deviate from the norm indicate pathology, while this finding in turn is usually seen as suggesting that future problems may be predicated on current developmental abnormalities. Identification of difference, therefore, is usually taken as a signal for intervention.

Yang & Bell (1975) suggest that all three of these "traditional scales" support a view that infant development and intelligence are "relatively unencumbered by environmental influence" (p. 158) and involve a "maturationally and genotypically controlled conception of development" (p. 175). All three tests "have proved to be systematically poor predictors of later performance". (Yang & Bell, 1975, p. 175).

Assessment could leave aside the issue of prediction and simply evaluate current developmental status, but there are still significant issues demanding extreme caution in interpreting data from normative testing. Bailey (1987) for example, suggests that while developmental scales may appear to be similar in content and purpose, they may not give comparable results. They note that the Bayley Scales and the Griffiths (1970) test have been shown to yield substantially different results in a study with 50 high-risk infants and that a study comparing the Bayley Scales with the Gessell Developmental Schedules using a sample of 21 Down's syndrome infants (Eippert & Azen,

1978) showed that the tests did not yield the same developmental patterns and therefore should not be considered interchangeable.

The normative model presents further problems for interpreting data for individuals when there is evidence that the individual being assessed may not be like the individuals who made up the normative sample. The Bayley Scale, for example, compares each infant to others of his or her age in the standardization sample, a sample that includes only "normal" children living at home and excludes "prematures, institutional infants and those from bilingual homes" (Collard, 1972, p. 728). Given that the experiences and development of infants who have disabilities are unlikely to be "normal", there are obvious difficulties in rationalising the comparison of their performance with that of normal children. Further problems emerge when assessment involves modifying the presentation of the test to the needs of the child's disability. When an examiner changes "the guidelines described for administering a test item, or modifies the stimulus object or the response requirement, the validity of the test has been violated" (DuBose, 1982, p. 2031). Also, there is evidence that, compared with non-disabled peers, preschool children who have disabilities show test scores that are more seriously depressed when they have been tested by an examiner not known to them (Fuchs, Fuchs, Power & Dailey, 1985). Fuchs et. al (1985) showed that tests are not simply a sample of responses to standard stimuli but represent social interactions to which disabled and nondisabled children attribute different meanings. It would seem that, rather than being "objective" tests, these assessments are "subjectivized" by children who have disabilities "in ways that reflect their unique experiential backgrounds" Fuchs et. al. (1985, p. 196).

Given that infant learning and development is an interactive, reciprocal, social process Kendall, Lerner & Craighead, (1984), then a single, normative comparison within limited performance and environmental constraints offers little information of value to early intervention. Nevertheless, such testing is still seen by some practitioners Sailor & Guess, (1983, p. 232) as a first identifying step. Such practitioners need to be aware that when used outside the normative comparison group for that instrument, then, their data is not valid. They need also to be aware that such testing often carries a powerful impression of a "scientific" model of assessment so that test results may be taken much more seriously than the validity and quality of the data warrants. A dangerous collateral outcome of such testing is that it reinforces inappropriate assumptions, practices and concepts such as categorisation and labelling, well illustrated by the "prominent physician" cited by Straford (1985) who claimed he had not seen "one mongoloid that has an educable IQ" (p. 149).

While prediction based on IQ and DQs presents more unsolvable problems than useful information, the general issue of identifying infants at risk remains a major concern for research and practice.

The Assessment of Infant Cognition

Whereas practitioners working from a developmental perspective have attempted a global evaluation of infant development, alternative approaches have devised tests of cognitive skills. Two important contributions are noted, first that of the Piagetian cognitive approach and second Zelazo's information processing model.

The cognitive perspective.

Assessment strategies derived from a cognitive perspective have focused on specific concepts (e.g object permanence, conservation rather than general abilities that reflect age-related maturation and learning. The ordinal scales developed by Uzgiris & Hunt (1975) were designed to assess an infant's current functional level within the sensorimotor period of intellectual development (2 weeks to 2 years of age). These scales are based on Piaget's theories which stress a uniform sequence of development through successive stages (although it should be noted that Piaget claimed ordinality for between stages of development only, and not within-stage items. The interpretation of such scales need not rely on norms (although age norms may be provided, because a concern with age-related levels is secondary to a "qualitative description of the child's characteristic behaviour" (Anastasi, 1976, p. 77).

Anastasi (1976, p. 77) suggests that because ordinal scales "typically provide information on what the child is actually able to do... they share important features with criterion referenced tests". Information from such testing is often seen as more relevant for intervention than the data derived from normative comparisons. From this perspective, it might seem that tests such as Uzgiris & Hunt (1975) scales should indicate what it is that the child should learn next in the theoretical sequence toward intellectual competence. Yet the theoretical notion that sensorimotor intelligence is reflected through gross and fine motor actions in infants and young children has been challenged by Zelazo (1982). It is argued that motor actions need not be a reflection of cognitive attainments or of central nervous system integrity, and that impaired motor skills in infants who have disabilities would make the interpretation of testing on the Uzgiris & Hunt (1975) Scales of questionable validity. Zelazo supports his case from research on infant memory which shows that "knowledge can be acquired without reliance on gross and fine motor performance during the sensorimotor period" (Zelazo, 1982, p. 112). From this perspective, Zelazo (1982) suggests that an information processing approach may be a valuable alternative assessment strategy that could indicate intact or impaired information processing ability at sensorimotor and pre-conceptual period.

An information processing perspective.

Zelazo's (1982) perceptual-cognitive assessment procedures involve establishing infant expectancy by presenting and repeating an event (a toy car rolls down a slope and knocks over an object) and then introducing a "moderately discrepant variation of the standard" (the object does not fall over when the car runs into it Zelazo, (1982, p. 110). Observational and heart rate measures indicate the child's anticipation of the discrepant event. If the child shows such anticipation then it is inferred that "elicited behaviour reflect the matching of an external event to an internal representation of that event" (p. 116).

Zelazo's (1982) research is a creative response to his criticism of infant tests and scales such as those of Bayley, (1969), Uzgiris & Hunt (1975) which emphasise motor items and imitation of motor performances. Zelazo (1982) argues that while intact neuromotor functioning may validly infer intact intellectual ability "the problem is that a poor neuromotor performance need not announce impaired intellectual ability" (p. 108). Zelazo (1982) also suggests that children who have language delays or behaviour difficulties that limit their compliance with testing are at risk of being labelled as having lowered intellectual functioning through an inappropriate comparison with a nonhandicapped normative group. Such labelling may result in lowered parental and teacher expectations and so contribute to the origins of "iatrogenic retardation" (Zelazo, 1982, p. 109).

The above assessment strategies might show that an infant with physical or communication handicaps is, nevertheless, achieving normal cognitive development at the time of assessment. Such a finding may have important implications for the design of an early intervention programme. On the other hand, where a "delay" in central processing ability is indicated by these testing procedures, there may still be a negative outcome in terms of a poor prognosis for future development and related lowered expectations by those responsible for planning an intervention programme.

Behaviour Checklists as an Assessment Strategy

Observation checklists of infant and young children's behaviour have increasingly become a part of "assessment battery" type evaluation and of behavioural assessment. In principle, it would seem that assessing a child against a list of behaviours and skills usually acquired within certain chronological time-frames would indicate both the child's achievements and deficits.

Such an assessment would appear to have direct implications for intervention, identifying skills and understandings that need to be taught to "fill in" or "catch up" with normal developmental achievements. However, many of the problems that apply to standardised testing apply equally to checklist measures with similar resultant difficulties in translating the assessment data into intervention goals and practice.

Sailor & Guess (1983) have noted that checklist assessments like the Adaptive Behaviour Scales have been used extensively as the basis for instructional objectives. They suggest that all such assessment systems available to teachers of children who have severe disabilities "fail, and fail miserably" because they "fail to contain relevant, functional and therefore teachable items; and they fail to provide sequences of items that translate into meaningful long-term goals" (p. 117). The main reasons that these checklists assessments are of such limited value for instructional design is seen by Sailor & Guess (1983) as arising from the fact that such checklists are constructed without a knowledge of how the development of children who have disabilities differs "from patterns of normal development upon which most standardized assessment systems are based" (p. 117). A further problem is that these assessment systems are used "as if skills were able to develop in isolation rather than in relationship to each other and to the requirements of different environments" (Sailor & Guess, 1983, p. 117).

Sailor & Guess (1983) propose that a more appropriate strategy is to generate a curriculum for each student that is relevant, functional and unique to the individual needs of that student. This is achieved by establishing educational goals and short-term objectives with a task analysis for achieving sequential steps toward that goal. Assessment in such a model involves systematic behavioural observations to establish basal levels and to evaluate current performance levels within the teaching programme.

Following the above argument, it appears as though standardised assessment instruments are not seen as a useful source of instructional objectives. However, they are seen as a useful source of assessment ideas. An assessment which suggests that the next item in the checklist sequence should be the teaching goal is not well founded in theory or practical experience. Such an assessment is essentially "out of context". It is out of context in developmental terms because there is insufficient research on the development of children who have disabilities on which to base assessments. More importantly, standardised assessments are out of context in that they fail to address the uniqueness of each child and the uniqueness of their circumstances. By contrast, behavioural observation strategies represent an approach to assessment that focuses on the individual child within the various specific contexts of

home and preschool that the child is involved in.

Behaviour Observations: Linking Assessment to Programming

Behavioural observation involves an emphasis on what infants and children do in natural contexts with parents and other significant persons. In addition to a concern for data that evaluates behaviour in relation to naturally occurring response, antecedents and consequences, behavioural strategies emphasise the need for repeated measures across time and settings. This multiple measures strategy reflects the theoretical premise that behaviour is largely controlled by environmental events and that, given the complexity of behaviour-environment interactions, a single measure will fail to indicate both variable and stable patterns of responding.

Where repeated measures of the same responses show a variable response frequently and/or topography, then this provides an opportunity for evaluating functional relationships between the environmental conditions that pertain when particular responding patterns are evident. From such data, stimuli that are associated with desirable responding (i.e attention, smiling, vocalization, manipulation of objects) and with less desirable responding, for example, resistance to food ingestion, screening, self-stimulation, maybe identified. Intervention may then involve changes to the physical and social features of the infant's environment that may promote adaptive responding.

Where repeated observation measures show stable response patterns that indicate non-adaptive behaviours then this assessment data will form the baseline against which to measure the effectiveness of an intervention designed to teach a new skill. In New Zealand, Ballard & Medland (1986), report such data from their work with a two and a half year old girl who showed developmental delays and autistic-like behaviours. They showed this child's parents and teachers strategies for helping the child interact appropriately with toys. Baseline measures in the home and in the preschool setting were at zero levels whereas following the intervention programme the data showed appropriate child responding in both settings.

Behavioural researchers, teachers and psychologists have consistently worked with, and successfully taught, infants and children who have the severest of physical, cognitive, social and multiple disabilities (Sailor & Guess, 1983). Their theoretical model has emphasized the power of the environment, requiring within the contexts that the child was to learn from and optimism that children will learn if we can only design their environments to meet their special needs: This conceptual position, together with the direct relation of assessment strat-

egies and data to intervention strategies and evaluation data, offers positive features for assessment for early intervention. At the same time, the behavioural model also has some features that are potentially limiting factors for both assessment and intervention.

The major direction taken by the behavioural approach has been to "develop and refine the instructional technology for teaching numerous skills" to children and adults who have severe handicaps (Guess & Noonan, 1982, p. 5). This instructional technology emphasized task analysis, which involves a breakdown of skills into specific and component behaviours. Guess & Noonan (1982) agree with the earlier observations of Liberty & Wilcox (1981, p. 1), that teachers "trained to perform countless acts of reductionism on a variety of tasks" resulting in the "42-step analysis of shoe tying" and related, complex, technical approaches to instruction that are inappropriate, inoperable and unnecessary in many educational settings.

Behavioural instruction has also tended to show greater concern with predetermined goals and task hierarchies than with the characteristics of the individual learner (Moore, 1986). One result of this highly structured approach to instruction has been tight stimulus control resulting in the failure of newly learned responses to generalize to natural settings, a problem that has been particularly salient in behavioural language programmes (Spradlin & Siegel, 1982. As Donnellan & Neal (1986) suggest, the "more specialised the initial learning environment, the more dangerous the assumption that the behaviours will generalize to the complex, integrated environments in which students will ultimately need to function" (p. 118).

The Emerging Influence of Ecological Approaches to Assessment

The behavioural focus on specific responses for assessment and instruction allows for precise, reliable measures and focused teaching goals. At the same time, the behavioural approach has tended to ignore the fact that a single response or behavioural skill is only a part of a child's complex repertoire, and that the assessment and teaching of isolated skills ignores the integrated and interrelated nature of human behaviour (Ballard & Medland 1986). Also, the technology of instruction that the behavioural approach provided did not include a rationale or systematic guidelines on what to teach children who have disabilities. Closely related to the issue of what to teach is, of course, the issue of what to assess. Important developments in planning the curriculum content for persons who have disabilities have come from the concept of the "criterion of ultimate functioning", which represents strategies for determining the skills and understanding that a specific individual will need to learn in order to function as independently as possible in mainstream educational, home and community settings. As Guess & Noonan (1982) note, these strategies identify the important skills

necessary for age-appropriate, functional interactions in the natural settings of home, school and community. They therefore represent as "ecological inventory approach" (Guess & Noonan, 1982, p. 8) that stresses the relationship between the child and the requirements of specific settings.

It would appear that for the infant and pre-school child this "ecological inventory" approach has focused on "the criteria of the next educational environment" providing ecological assessments of what should be taught for successful placement in mainstream pre-school, and subsequently school settings. Emphasis in this model has been given to social and behavioural "survival skills" such as "compliance, attending, social interaction and following directions" (Guess & Noonan, 1982, p. 8). Rietveld (1983), for example, taught the children in her early intervention project how to make choice between alternative pre-school activities, observational studies of children in mainstream pre-school settings having shown this to be a significant skill relevant to effective engagement in these settings.

Assessment as an Ecological Systems Analysis

Ecological model of human development suggests that assessment of the child should include evaluation of the family and consider issues such as the value system of the community (e.g. attitudes to children who have disabilities) and the impact of political-resources (e.g. government support and provision for mainstreaming). Such an ecological systems perspective also represents a transactional model of development (Guralnick, 1982).

In this view, biological impairment is no longer accepted as a static impediment to developmental progress. Rather, development is perceived as proceeding through reciprocal and multiple pathways with environmental events exacerbating, minimizing, and even occasionally overcoming initial biologically based deficiencies. Similarly, there now appears to be a willingness to examine more openly the validity of the concept of the continuity of human development. This concept has significant implications for children with handicaps, including expectations of the caretaking and professional community and the general design of curricula and intervention strategies. An important implication of the transactional or other interactive models is that a radical alteration of the educational environment of a handicapped child may create new interaction patterns that could significantly affect the course of development.

Such a position suggests that assessment strategies will not involve testing that attempts to predict a child's future developmental achievements or evaluations that involve measuring behaviours away from the natural contexts in which those responses would occur. The ecological perspective will involve, instead, assessments of children in the settings in which

they live and with the persons with whom they interact. This assessment will include collecting information on how the participants in the child's family and related systems perceive of their own and the child's world. As Scott (1980) suggests, the term "ecology" "refers to all the surround for behaviour. It includes the physical characteristics such as objects ... but it also includes behaviour-like attributes such as roles and social rules" (p. 281). Roles and social rules are, of course, subjective, culture-bound perspectives, as are parent and teacher expectations, which also form part of the ecology of child development and learning (Wallace & Larsen, 1978). The issue of subjectivity suggests the need for phenomenologically oriented knowledge, a position that derives from the idea that there is no final, objective "truth" reality differs from person to person", from parent to professional, "from administrator to ward attendant..." (Heshusius, 1981, p. 4). Attempting to understand the perspectives of significant others is, suggests Heshusius (1981), "extremely practical" because it increases deliberateness and reflectivity and can lead to clearer communication". Clear communication should be one essential characteristic of assessment of infants and young children, in part because the infant's well being is dependent on a range of others, in particular parents, mediating between the child and her or his social environment, and planning to enhance developmental opportunities through early intervention programmes in which teachers and other professionals will play a role.

The idea that an individual's perceptions and assumptions are important aspects of the infant's environment has implications for the role of the psychologist in the assessment process. Clearly, if the psychologist thinks in terms of the limiting factors on a child's development his/her assessment is likely to be predictive and pessimistic compared to that of a psychologist who avoids a "fortune-telling" perspective and is oriented toward optimism and effective programming in the present.

An ecological perspective requires, therefore, that the psychologist examines his or her assumptions, concepts and cultural perspectives and attempts to evaluate how those ideas will impact on each child that he/she works with. Such critical evaluation acknowledges that the psychologist becomes part of the child's and the family's ecological surround. The influences that the psychologist's ideas might have on the child's development demands professional self-evaluation.

Assessment that is guided by such an ecological model is a complex process that recognizes the need to understand infant development and infant environment as interdependence. Ecological assessment is driven by an intention to change child behaviour and experiences rather than to simply compare a child's performance with a normative model. Ecological

assessment will, therefore, involve more than test responses and objective behaviour observations, and will include the perceptions and interpretations of the psychologist and of significant others in the infant's life. As Haywood (1977) suggests, it is "time to return the intelligent observer to psychology, and to stop trying to reduce the psychologist to a mere recorder of data that can then be referred to a computerised set of comparison norms" (p. 17). The techniques and skills required for such an approach to assessment would include observational strategies similar to those used in ethnography. Wolcott (1982) describes the ethnographer as a "research instrument" with a commitment to an "adequate period of time in the field... a commitment to gathering information through multiple research techniques" and a concern for "description and interpretation rather than for rendering judgements" (p. 83).

Parents' and teachers' views form part of the ecosystem of home and pre-school which includes affect, physical arrangements, daily activities and surrounding social conditions. To access some of this information Voeltz & Evans (1993) recommend simple anecdotal notes in the form of a daily teacher and parent diary or home-school notebook that would monitor behaviours across time and settings. Such notes would include objectives records of behaviour and also include notes on the child's parent's and teacher's overall reactions (such as mood, compliance, enjoyment) to ongoing programmes. From such information the psychologist, parent and teacher together may develop and test hypotheses to explain both positive and negative changes in child responding.

Zigmond & Silverman (1984) refer to such assessment strategies as "informal" processes which are situation-specific and non-standardised. They suggest that they are more likely to contribute to programme planning and evaluation than are tests that are unrelated to the child's experiences or curriculum. For some psychologists the term "informal" is interpreted as meaning less "scientific". Tests, on the other hand, are more likely to be viewed as properly scientific. Such a view ignores the fact that infant tests are largely lacking in construct validity and lack norms for children who have disabilities (Fuchs, et al 1987). The scientific validity of testing, therefore, is essentially spurious and seems to exist only in the views of psychologists who operate from a medical model that tells them that "testing" results in useful diagnostic information. On the other hand, there is an extensive theoretical base and data base in ecological psychology that would allow the psychologist to design and interpret alternative assessment strategies - which will include observation methods, interview data and self-report data from parents, teachers and others. When carefully, systematically and explicitly based on appropriate theory and research, such assessment can have both construct and ecological validity and will therefore be more "scientific" than so-called "formal" testing.

It has been suggested that the psychologist recognizes that he becomes part of the ecology of the infant and the family. In this respect the psychologist resembles the participant observer and should know the theoretical and related research literature that goes with this methodology (Jacob, 1987). Acknowledging such a participant role will help establish the "scientific" basis for the role and its related data collection procedures. Acceptance of both qualitative and objective information as scientifically valid assessment data (which includes an understanding that empiricism is only one model of "science" Astman, (1984) is an important step toward an ecological systems analysis approach to assessment and intervention.

Having reviewed various approaches to assessment for infants who have disabilities, the present paper suggests that ecological theory can guide the development of assessment strategies that acknowledge the transactional nature of infant development and address the complexity of infant learning in social contexts. The final part of this paper will outline procedures that would contribute to such an assessment.

Assessment for Early Intervention: Some Basic Requirements

From the preceding review a number of issues emerge that may be used to guide thinking about the kind of assessment strategies most likely to contribute to an intervention programme. These are presented and discussed below.

Assessment should focus on the behaviour of concern

Assessment that is relevant for programme planning should evaluate actual performance on tasks relevant to an intervention programme. This involves recording data on children as they engage in actual motor, social, communication and language tasks, rather than scoring their performance on psychometric test tasks. Using tests to make inferences about potential performance cannot be justified when a more valid assessment can be achieved by observing actual performance in the area of interest. Assessment, therefore, must move away from diagnostic testing in the psychologist's office to measure of actual infant performance in meaningful social contexts. This would involve a move away from normative comparisons to evaluating the kinds of behaviours actually involved in teaching.

A developmental checklist such as the Portage Guide to Early Education (Bluma, Shearer, Frohman & Hilliard, 1978) can provide a guide to the skill areas that require evaluation through observation, and can be a useful summary device for recording a general overview of skill levels. Never-

theless, such guides are neither precise enough nor conceptually appropriate (Sailor & Guess, 1983) for designing a curriculum for individuals so that detailed observations of each child and of features of their natural settings using various observation strategies are essential. The focus of observational assessment should be guided by current research in each relevant area such as communication or social skills (Barnett, 1987).

Assessment should be based on an adequate sampling of behaviour

If a child fails to respond to a test item it may mean that the concept or action is not part of their response repertoire. However, it may also mean that the child has the information but cannot recall it at that time; or, in the particular circumstances (e.g. the language or communication style used, the setting, the persons involved) the child may fail to use a strategy that in other settings is used effectively (something parents have been telling psychologists for years).

Assessment of performance on a single occasion is generally a poor predictor of behaviour at other times in other settings (Epstein, 1980). Assessment should, therefore, involve repeated measures in order to adequately and reliably sample infant skills. Ballard & Medland (1986), for example, showed that the social interactions of both randomly selected and socially withdrawn children in a pre-school setting varied considerably from day to day, so that assessment on one occasion would not provide accurate data on social behaviours.

Repeated measures assessment can form the baseline against which to evaluate a teaching intervention. Observational assessment as an ongoing, day-by-day activity provides detailed information on the child's response to intervention and can ensure that unsuccessful teaching strategies are promptly identified and changed.

Assessment should be ecologically valid.

An ecological approach stresses the complex interrelationships and interdependencies between children and their environments. Ecological assessment involves "data taken across environments, persons, curricular areas and instructional conditions (Bradley & Howe, 1980, p. 9) so that the infant's responses are evaluated across various stimulus conditions and social circumstances. The concept of ecological assessment is basically concerned with how meaningful particular assessment data are in terms of the child's real life experiences and needs. This must include recognition of the child's cultural background and experience.

Ecological assessment requires that children be assessed where they normally live and with the

people they usually interact with. The emphasis is on evaluating actual learning behaviours, rather than on making inferences and projections from tests, developmental checklists and interviews. This does not preclude the value of novelty - indeed, testing the child's reaction to a change in the environment, materials or persons can be a valuable procedure for developing new experiences for the child. Undertaking such evaluation in natural settings provides data on parent and teacher reaction to such materials and procedures.

Ecological assessment involves a functional approach in which evaluation is made of what the child needs to know in order to "adjust and perform well in a target environment, either the current one or a less restrictive one at some future time" (Zigmond & Miller, 1986, p. 502). Such an approach involves assessment of the features and demands of the environment and then assessment of what the child needs to learn in order to function effectively in that setting. Assessment should, therefore, proceed using direct observations, psychologist and teacher-made criterion or curriculum-referenced tests and permanent product data. Such assessment procedures allow adaptation to the unique characteristics of a particular child and setting, and represent the first steps in the sequence of skills across various instructional domains.

Parents and teachers should be meaningfully involved in assessment.

Research to date suggests that the greatest gains in child development "occur when intervention (which includes both assessment and remediation) is initiated within the first 2 years of the child's life" and where parents "are productively involved from the beginning" (Sailor & Haring, 1978, p. 9). Ecological assessment would include the psychologist developing a collaborative partnership with parents and teachers where the understandings, skills and preferences of each participant are equally valued and openly shared (Bailey, 1987). Involvement with parents and teachers must include sensitivity to cultural, ethnic, and other value differences. Interactions with parents should also recognise that parents will differ in their views on the parental role and that some may resent "professionalization" of their role if they perceive pressures to undertake teaching and advocacy as inappropriate for them and their approach to family interactions (Allen & Hudd, 1987).

Initial interviews should clearly tell parents and teachers that the information and perspectives they have on the child is respected and valued, and that they are viewed as part of the assessment team. Within such a partnership guidelines for identifying and prioritising intervention goals are essential. Sulzer-Azaroff & Mayer (1977, p. 42) present useful procedures which require answers to such questions as the importance of the goal to the child and to

significant others (parents, teachers); whether the goal is likely to be maintained in the client's natural settings; and evaluation of the time and effort required of the child and others to achieve the goal. Using such a device can help the psychologist, parent and teacher make explicit their ethical, value and resource concerns during goal selection for early intervention.

Assessment should address the dynamic nature of infant development.

Kendall, Lerner & Craighead (1984) suggest that assessment for intervention must take into account the features of child developmental processes which include how "children influence those who influence them"; how intervention might correspond to the child's current developmental status; and how the child becomes an "agent, shaper and selector", effectively fitting skills to setting demands or changing the setting to better meet personal attributes. Kendall et. al. (1984) emphasise that socialization is reciprocal and that, for example, children with different biologically determined temperaments will interact differently with adults and be perceived differently by them. The critical issue for assessment is the need to recognise such "circular functions" (p. 72) and to avoid identifying problems or strength within only one part of a reciprocal system.

Viewing the child as a processor involves understanding that at different times specific experiences will have different meanings, depending on the child's current physical, cognitive, social and emotional development. Kendall et. al. (1984) suggest that from this perspective a knowledge of normal development processes would allow intervention that is sensitive to what is known about age-associated cognitions, behaviours and changes.

Assessment should be credible and meaningful to the consumer

Assessment data will contribute to early intervention only to the extent that it is understood and valued by parents, teachers and others who are caring for the child and implementing teaching programmes. If assessment of the infant is undertaken in a clinical setting away from parents and teacher, and if the data differs from their experiences or is presented in technical terms that they cannot understand, then such information is unlikely to be used in programme design or evaluation. Parents and teachers should be encouraged to assist with the assessment of infants and young children and to make their own judgements on how sensible and relevant the strategies are for their child and their needs.

The results of assessment should maximise the chances of effective intervention for each child.

For parents, teachers and others to commit themselves to an intervention programme, it is important that assessment data be communicated in terms that reflect optimism that learning will occur as a result of their efforts. Such optimism is unlikely to be engendered by predictive statements of "potential" based on normative comparisons. Repeated measures data on meaningful behaviours in natural settings can indicate emergent skills and the contexts most likely to lead to repetition and development of functional adaptive behaviours. Showing a parent or teacher how their infant orients to sound or to a novel stimulus will be more meaningful for them than reporting a test score or checklist summary.

African Psychologists are therefore urged toward a more positive (optimistic) and more accurate concept of human potential. As Educational Psychologists, they must be aware that it is the ideas they express, the instruments they fashion, and the assumptions they make that have an enormous effect on schools and on the rationalizations that teachers, administrators and policymakers use. Human potential is very great, typically much greater than that measured by our instruments or fulfilled by our educational methods. Psychologists have a responsibility, therefore, to communicate their belief in the plasticity of development and the potential of teaching, and to recognise that the value they hold influence how they interpret assessment and research data. In terms of advocating early intervention programmes we should note Guralnick's (1982 p.489) view that "values and moral stances (are) the final arbiters of policy and decision making..." .

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