

# Psychological assessment procedures for assessing deaf or hard-of-hearing children

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*This paper provides an overview of deaf or hard-of-hearing development, with particular relevance to emerging cognitive skills. A contextual approach is adopted, emphasising linguistic, cultural and 'non-verbal' factors. Some generic assessment considerations are provided for the optimal, evidence-based assessment of deaf or hard-of-hearing children. Thereafter, a number of potentially useful psychometric tools are described. The limitation of adopting a purely standardised approach to assessment with this population is discussed. Finally, a coherent model of assessment pertinent to this population is depicted, that is, a 'situated cognition' model emphasising fluidity and the importance of the wider context when evaluating performances with this group of children, but suitably adapted to take account of within-child factors.*

**T**HE AIM OF THIS PAPER is to optimise access to performances that are closest to the underlying abilities of deaf or hard-of-hearing children (D/HOH) across a range of hearing difficulties and with particular reference to cognitive skills. This overview will initially focus on a discussion of similarities and differences between typically developing and deaf and hard-of-hearing children's abilities, particularly with regard to their cognitive and linguistic functioning. Acknowledging the huge diversity in deaf development, we proceed to look at several salient factors requiring consideration during assessment. We hope this outline of the developing evidence will help inform an evidence-based approach to the issues of clinical-educational psychometric assessment with D/HOH children. Thereafter, the issue of appropriate test selection and the respective merits of two main theoretical assessment modalities is briefly discussed, namely, dynamic versus static assessment models (see Resing & Figg, 2006, special issue of *Educational and Child Psychology* on intervention-based psychological assessment). Finally, the implications of suggested assessment processes are developed into a tentative theoretical model for the optimal assessment of D/HOH children.

## **On the Search for 'Deaf' cognition;**

The implications of potential cognitive differences between D/HOH and typically developing children hold important ramifications not just for assessment but for the development of subsequent remedial or intervention strategies as well. Whilst it is acknowledged that the research history of deaf children's abilities has been tainted by poorly designed studies suggesting global 'inferiorities', the notion of cognitive *differences* does not necessarily imply deficits or deficiencies (Marschark, 2003, 2007; Vernon, 2005).

Marschark (2007) argues that it may be more detrimental to the child if such differences are denied without good reason. Deafness in itself does not make D/HOH children less cognitively able than their hearing counterparts, but the reduced auditory stimulation may lead to different functional organisation of the brain (Edward & Crocker, 2008). Furthermore, it is likely that cognitive differences may be accentuated owing to differing developmental and social histories (Conrad & Weiskrantz, 1981; Dockrell & Grove, 1999; Kusche et al., 1983; Marschark & Hauser, 2008; Naglieri, Welch & Braden, 1994; Plapinger & Sikora, 1995; Sisco & Anderson, 1980; Wood, 2003; Wood & Dockrell, 2000; Zwiebel, 1991).

Although D/HOH children may follow typical developmental milestones – apart from obvious oral linguistic and literacy difficulties associated with varying degrees of hearing loss – the path to an accurate and representative psychological assessment of their abilities is still not an uncomplicated one (Edward & Crocker, 2008; Metz, Miller & Thomas-Presswood, 2009). Furthermore, a wide heterogeneity within D/HOH samples has been noted consistently through research findings across the decades (Vernon, 2005). This should alert the assessor to considering a variety of potential factors in order to obtain as comprehensive an *individualised* assessment picture as possible. Arguably the most salient factors for consideration are language, context, culture, cognition and possible ‘additional’ neurological considerations.

#### *Language, context and culture*

There are obvious discrepancies between D/HOH and typically developing children’s performances when tasks are laden with verbal language, although these differences may vary according to the extent and nature of the hearing loss, including factors such as aetiology, age of onset and cochlear implants (Edward & Crocker, 2008; Wood, 2003). More than 90 per cent of D/HOH children come from families with hearing backgrounds with varying degrees of impaired access to verbal communication and almost invariably no or limited access to a fluent signing environment (Braden, 2005). This communicative-linguistic difficulty is likely to have significant effects not just on developing literacy skills, but potentially affects attachment, social cognition and skills, identity development and other areas (Austen & Crocker, 2004).

Not surprisingly, evidence consistently confirms that children with restricted access to language do less well on linguistic tasks and it is thus crucial to document not only the details of the hearing difficulties but the linguistic opportunities available (or not) within the child’s environment (Campbell,

1997). D/HOH children born within an environment with at least one deaf parent and early language access such as British Sign Language (BSL) often perform significantly better, but at least at parity with a variety of measures with hearing children (Conrad & Weiskrantz, 1981; Gregory & Hindley, 1996; Marschark, 1994, 2007).

However, this is not necessarily the case with regard to literacy skills, which are assisted by auditory phonetic access (Edward & Crocker, 2008). Although sign bilingual approaches argue for the early foundation of sign to use as a bridge to English literacy skills, the most effective pathway and timing to linking sign and literacy is not yet clearly established, as the languages are not equivalent (Harris, 2000; Watson, 1999; Webster, 2000). As Webster (1986) comments, ‘Unfortunately non-speech codes may be at a disadvantage when used to transduce printed words, since these derive from spoken words in the first place’ (p.178). Consideration should thus be made as to the extent of an early common accessible language within the family (Powers, 1998). Closely linked to this is an awareness of possible cultural factors relevant to development, such as varying degrees of familial identification with ‘Deaf Culture’, where deafness is not perceived as a disability and is embraced or affirmed as a positive core of identity (Freeman, 1989; Lane, 1992; Metz et al., 2009). Optimal language access improves communicative opportunities and can also encourage greater opportunities to enhance attachment and socio-emotional development, the bedrock for learning and expressing skills confidently (Austen & Crocker, 2004).

#### *Non-verbal cognition*

Given lesser linguistic loading, non-verbal tests are potentially useful methods for examining the cognitive processing of D/HOH children, following the maxim of assessing through an intact modality (Blennerhassett, 1990, 2000; Braden, 1992, 2001, 2005; Culbertson & Gyrurke, 1990).

For these reasons, performance scales and non-verbal tests have increasingly been used in the assessment of deaf children, such as the performance scales from the Wechsler Intelligence Scales for Children (WISC) (Braden, 2001, 2005; Miller, 1991). These have some evidence for reasonable reliability, although validity remains to be confirmed with deaf samples. The WISC-IV version has additional administrative guidelines (Flanagan & Kaufman, 2004; Krouse, 2008).

Even here, however, differing developmental histories may impact on performance. Thus, for example, Marschark (2003) suggests that deaf and hearing individuals who have acquired American Sign Language (ASL) as their first language have been found to be faster than non-signing equivalent peers in generating and manipulating complex mental images. Native deaf signers have also been found to have better facial recognition skills when the differing facial features are those associated with carrying grammatical information in ASL (Marschark, 2007). There is also evidence suggesting that supposedly 'non-verbal' tasks, such as visuo-spatial memory tasks, can be successfully 'bootstrapped' by access to language generally, sign or verbal (Bloom & Keil, 2001; Wood, 2003). That is, language can act as a meta-cognitive resource to aid non-verbal task success.

Although non-verbal tests may be useful to exclude global cognitive difficulties, they are hampered by their poor predictive validity with regard to academic success (Braden, 2005; Freeman, 1989). For referrals where academic difficulties are of central concern, they may have limited direct utility with regard to developing intervention hypotheses. Generally, it has been noted that verbal sub-tests provide better predictive validity than performance sub-tests for academic performance. This may stem from the linguistic loading of many educational curricula. Some researchers have consequently made an argument for the use of a language test alongside non-

verbal tests with deaf children (Blennerhassett, 1990; Marschark, 1993; Moores & Sweet, 1990; Sullivan & Montoya, 1997). With regard to academic functioning it is important to consider the possible presence of additional neurological difficulties (Metz et al., 2009).

#### ***Additional neurological difficulties***

Some of the heterogeneity within the deaf population may stem from aetiological factors that have associated neurological concomitants, such as developmental meningitis, which may have an impact not just on auditory processing but even on so-called spatial tasks (Braden, 2005). A part of the assessment process may thus involve evaluating this potential factor carefully, via guided interviewing and psychometric assessment (Edward & Crocker, 2008; Metz et al., 2009). Some generic considerations around the actual assessment process are outlined below.

### **General assessment considerations**

#### ***Background of assessor***

Ideally all psychologists working with D/HOH children should have at least adequate training and knowledge with regard to the language and culture of deaf children (Andrews, Leigh & Weiner, 2003). This is especially important because historically deaf children's abilities have been under-estimated owing to poor methodologies, inappropriate test usage or inadequate rapport between assessor and child (Freeman, 1989). The issue of necessary competence within a specified work area is an ethical and professional obligation (Health Professions Council, 2009b). However, it is likely that current training, perhaps particularly for clinical and educational psychologists, may be relatively sparse. There is a need to train not only more deaf professionals but to increase the general training exposure to disabilities that include deafness (Atherton & Dent, 2003; Dent & Atherton, 2004; The British Psychological Society, 2006).

Given that there is a shortage of specialist psychological services for D/HOH children (Braden, 2005), consideration may be given to experiential learning, provided this is within an appropriately supervised professional development arrangement. Such an arrangement should always be acknowledged and psychologists may need to structure this within required continuing professional development frameworks (Health Professions Council, 2009a).

### *Use of language*

As noted, language is a crucial component in deaf development, and for an adequate assessment to take place there needs to be good rapport, based on the development of mutual understanding. It is obvious that this requires a good enough match between the child and the assessor, with the ideal assessment procedure utilising the child's primary communicative language (Braden, 2005). The use of BSL interpreters may be indicated if necessary, but this should be mutually agreed and it is acknowledged that it may bring its own attendant problems, including interpretative quality and confidentiality issues (Cromwell, 2005; Freeman, 1989, Tribe & Lane, 2009; Tribe & Raval, 2003). Marschark, Peterson and Winston (2005) offer some research-based guidelines for the use of signing interpreters. The issue of language is also of central concern when it comes to test selection and possible adaptations (Cromwell, 2005).

### *Test selection*

#### *Observe first*

It is not necessary to leap into test administration. As an expert in child development, the assessor can pick up much important information from observational material: what play material does a child engage with, what do they do with it, do they attempt to engage others; if so, how? The child's spontaneous elaboration of skills including communication is potentially more informative than pressurising them early on within a formal assessment schedule. A too quick

start with a formal assessment might perhaps inhibit the child's early performance, owing to potential similarities with academic demands, with which they may have negative associations.

A full developmental history from relevant care-givers and significant others such as teachers is crucial to be obtained initially. This should cover factors such as aetiology and severity of hearing loss, medical, familial and developmental details, cultural-linguistic background, siblings, school and behaviour (Edward & Crocker, 2008).

#### *Test variety*

A few earlier studies have argued for a mild global 'lag' in development amongst deaf children (see, for example, Bond, 1987; Bracken & Cato, 1986). These have, however, been limited in terms of the diversity of measures used. Assessment composed of a variety of instruments is more likely to reflect a valid and comprehensive evaluation of the child than one relying on a single instrument (Paul, 1998; Plapinger & Sikora, 1995). Different data sources, if carefully selected, can potentially complement one another and 'converge to bring into focus a single coherent (bigger) picture' (Bornstein, Haynes & Painter, 1998, p.370).

It is apparent that, in terms of the psychometric assessment of D/HOH children, care needs to be exercised in test selection. Given the wide range of factors that impinge on academic performance, for example, it is highly unlikely that one test or score will adequately capture enough performance data to ensure sufficiently detailed pedagogical/remedial prescriptions (Blau, 1991; Bradley-Johnson, 1991; Dockrell & Lindsay, 1998; Kyle, 1980). As Ray (1989) has stated,

*'No one method or instrument is sufficient for the assessment of intellectual or cognitive abilities of hearing impaired children. What is recommended is careful consideration of the instruments chosen, in view of its limitations, the limitations of examiner and child, and the purpose of assessment. The best assessment will come from a combination of instruments and*

*methods, interpreted in the light of the child's age, linguistic competence, and cultural background.*' (p.37)

This should not be done with a 'scatter-gun' approach, however, but should emerge from a provisional formulation arising from referral and collateral data involving the compiling of a suitable and complementary variety of tools. For example, verbal, non-verbal, socio-emotional and academic variables may all be of relevance with academic difficulties (Edward & Crocker, 2008).

#### *Test difficulty and setting*

One of the keys to selecting well is an awareness of appropriate test 'floors' and 'ceilings' – that is, choosing a test which is neither too easy nor too difficult. This will help ensure that the child has enough early successes to encourage motivation and perseverance, given they may be prone to 'giving up' after a history of failures within non-ideal contexts (Wolraich, 1987). Encouragement and support within administrative guidelines are thus important. Furthermore, given many D/HOH children's reliance on visual cues, particularly when it involves possible lip-reading or response to facial and non-verbal cues, it is important to ensure that adequate and correct lighting is available, and to avoid situations such as the assessor sitting in shadow. A position opposite rather than next to the child may also be helpful (Edward & Crocker, 2008).

#### *Test norms*

The issue of using separately obtained norms for D/HOH children is a contentious one. There are some who feel that standardised IQ scores are generally biased against deaf children, as they make no allowances for obvious difficulties with verbal performance (Braden, 1994; Gregory & Hindley, 1996). There have been attempts to develop separate norms for D/HOH children, for example, Tellegen (1993) on the Snijders-Oomen Non-Verbal Test-Revised (SON-R). While this practice seems to be suitable for looking at differences within the D/HOH

population, it obviously raises issues about the limited potential for comparisons with other groups of children (Snidjers, Tellegen & Laros, 1989, p.18). In addition, owing to the well documented heterogeneity in D/HOH samples, the acquisition of broadly accurate norms even within this group is fraught with difficulties (Marschark, 1993; Meadow, 1980).

Deaf norms are perhaps more suitable for verbal tests, given the general equivalence in non-verbal cognitive functioning (Andrews et al., 2003, p.190). However, even considering the significant variability within 'typical' development, the relative selection of 'cut off' points for atypical classification and/or impaired performance remains controversial too (Dockrell & Lindsay, 1998). It may also be that in order to access a test more fully, the child requires a specific 'adaptation' of the test.

#### *Test adaptations*

The procedure of adjusting a test to maximise information is referred to as 'test accommodation' (Braden, 2001, p.24). However, these changes need to be explicitly recorded and a decision made as to whether these are 'accommodations' in order to compensate for a child's additional difficulties, or actual modifications that may impact on the validity of the test and affect the use of norms (Braden, 2001). A supplementary use of sign along with verbal instructions (bilingual administration) may be helpful, for example (Metz et al., 2009).

Signed test adaptations should always be used cautiously – for example, on the receptive language vocabulary measure, the *British Picture Vocabulary Scale-II (BPVS-II)*. There is a potential for over-estimating ability if one embarks on a signed administration, owing to iconic clues within some of the signed items. Thus, some signs present a fairly transparent visual idea of their meaning (for example, a drinking action for drink). Others are a little less obvious ('translucent'), whereas yet others have no clear pictorial link with the designated word

(‘encoded’: Miles, 1988, pp.65–76; Miller, 2008). Whilst it may be an option to try to identify iconic and transparent words (for example, ‘hand’), and to withhold these specific words, this leads to an erratic accommodation of the test presentation and violates norms (Braden, 2001).

Braden (2005) lists six potential features of the assessment task that can perhaps be changed to accommodate the difficulties of D/HOH children, but these should all be carefully documented and their potential impact on test validity evaluated, with suitable caution around norm usage. The six possible changes are: (a) presentation format – for example, sign or print instead of oral administration; (b) response format – for example, signed rather than oral response; (c) timing – testing the limits, especially if the child is slowed by additional motor problems; (d) test setting – for example, home-based rather than clinic; (e) portions of test – see *BPVS-II* example above; (f) substitute/alternative assessments – see example below.

It is acknowledged that there is currently a paucity of suitably standardised tests in alternative formats such as sign language. One example of a web-based test of BSL vocabulary being developed at City University (Haug & Mann, 2008) is found at the online address: [www.dcal.ucl.ac.uk/Research/bsl\\_vocabulary\\_test.html](http://www.dcal.ucl.ac.uk/Research/bsl_vocabulary_test.html). Additional generic tests that may be useful for the assessment of D/HOH children are shown in Table 1.

### **Some potentially useful tests for D/HOH children**

Tests are not necessarily equivalent, even if they claim to assess similar areas of functioning. Thus, with respect to the deaf population, Braden (1992) has shown that the use of the Leiter International Performance Scale (LIPS) resulted in fairly consistent lower scores amongst deaf children than the WISC-R Performance Scale, despite both tests supposedly measuring similar skills (non-verbal, performance related). Braden

states that this finding may derive from the LIPS perhaps being used more on ‘lower functioning’ deaf children, that is, a greater proportion of children with additional difficulties. However, it is also possible that there may be differences in terms of their ‘construct validity’ (McCauley & Swisher, 1984) – the efficiency with which they measure abilities. Simply stated, some tests may be ‘better’ than others with respect to the constructs they purport to measure. The revision of the LIPS is significantly improved, with additional sub-tests for visual memory and attention (LIPS-R: Edward & Crocker, 2008). Table 1 provides a list of some recommended tests for use with D/HOH children. Additional resources may be found in the web-based guidelines for the assessment of D/HOH children provided by Gallaudet University (<http://gri.gallaudet.edu/Assessment/>). For a service-user supportive perspective on dealing with assessment issues, Marschark (2007) is recommended.

### **Static versus dynamic modes of assessment**

Standardised testing, although it may generally provide useful data, has been criticised on the basis that it is largely a ‘snap-shot’ of learned skills (see Resing & Figg, 2006). It has been argued that D/HOH children are prone to a deficit in experiences mediated by significant others, or ‘mediated learning experiences’, particularly if there is a language disjunction between hearing parent and D/HOH child (Blennerhassett, 1990, 2000). Tzuriel and Caspi (1992) have suggested that dynamic tests may be most suitable for D/HOH children because, amongst other reasons, the procedure allows for decreasing the children’s anxiety by familiarisation with the test.

Tzuriel (2001) also postulated that the test-teach-retest format of the assessment process can begin to redress the deficit with regard to mediated learning experiences faced by many D/HOH children. That is, by assessing how much performance improves with guided support (mediation) across the

Table 1: Some recommended tests for the assessment of D/HOH children (see Braden, 2005; Edward & Crocker, 2008; Metz et al., 2009).

Targeted Ability	Recommended Test	Deaf Norms
Non-verbal cognition	Snijders-Oomen Non-Verbal Test (SON-R)	Yes
	(Leiter International Performance Scale) LIPS-R	Yes
	Wechsler Intelligence Scale for Children (WISC-IV) Performance	No (Admin guidance)
	British Ability Scales (BAS-II)	No
Visual motor	Beery-Buktenica Developmental Test of Visual Motor Integration (VMI)	No
Visual motor and memory	Rey-Osterrieth Complex Figure Test (CFT)	No
Receptive vocabulary	British Picture Vocabulary Scale (BPVS-II) (see caveats in text)	No
	BSL Receptive Skills Test (Haug & Mann, 2008)	Yes
Dyslexia	Test of Word Reading Efficiency (TOWRE)	No
	Neale Analysis of Reading Ability (NARA-II)	No
	Wechsler Objective Reading Dimensions (WORD)	No
Dyspraxia	Movement Assessment Battery for Children (Movement ABC)	No
	Wide Range Assessment of Visual Motor Abilities (WRAVMA)	No
Executive functioning	Behaviour Rating Inventory of Executive Function (BRIEF)	No
Speech and language	Clinical Evaluation of Language Fundamentals (CELF-4)	No
	WISC-IV (UK) Verbal Scales	No (Admin Guidance)

retest phase, it is possible to make more specific academic or remedial suggestions than may be the case with standardised assessments. A suggested test of utility is the Cognitive Modifiability Battery (CMB) – which addresses a broad range of cognitive abilities and processes (Elliott, Lauchlan & Stringer, 1996).

The sub-test specifically recommended for use with deaf children by Tzuriel (personal communication) is the Reproduction of Patterns, which has the least language required to assist with mediation, and also applicability across a broad age range. Evidence suggests that D/HOH children improve significantly more than matched

hearing peers on this sub-test, controlling for the higher initial scores of the hearing sample and ceiling effects (Wood, 2003). Dynamic tests, although not group-normed as per standardised tests, may, therefore, have additional efficacy in detecting and developing strategies that may assist in optimising the performances of D/HOH children via enhancing meta-cognitive strategies. It is unlikely that static cognitive performance abstracted from the classroom context is sufficient both to account adequately for and provide sufficient guidance to *improving* academic performance, unless process issues around learning style and potential are also assessed.

Finally, bearing in mind the importance of contextual factors, assessment is incomplete without an appraisal of how the child functions in the classroom (Buck & Youngman, 1996; Haywood, 1997; Keogh, 1993; Ray, 1989). Assessments concerned with academic performance should, therefore, routinely include classroom observations, thereby enhancing the 'ecological validity' of assessments (Bradley-Johnson, 1991). These need to be ongoing and appraise the dynamic 'fit', that is, the interaction between child and classroom context (Galloway, 2001).

### **Towards a model of assessment for D/HOH children**

To integrate the variety of data required for a fully informative and comprehensive assessment requires a diversity of assessment tools (Paul, 1998). The use of standardised assessment measures has useful predictive validity in terms of academic performance and correlates with a range of factors associated with educational performance. However, it is likely that standardised tests alone cannot account for individual (unique) performances, as they are based on normative comparisons from standardised data (Anastasi, 1976; Dockrell, 2001). Furthermore, they provide 'static' samples of performance and may be underestimating the cognitive potential of deaf children. Therefore, although for many it may be standard practice to use a normative test, on its own it may lead to reduced expectations based on a performance that reflects a lack of mediated opportunities (Buck, 1998; Keane and Kretschmer, 1987).

It is important for an assessment model to be able to identify cognitive potential in deaf children's performance, as well as ways of accessing this. Dynamic assessment models have been posited as useful 'alternatives' to standardised tests, given their emphasis on process, and these models have also been supported on the basis that they may uncover 'learning potential' which may help defy negative academic predictions

(Haywood, 1997). This appears to be relevant with children, where change is central, and particularly relevant for deaf children, where negative academic predictions may prevail (Conrad, 1979; Powers, 1998). Thus, for example, Wood (2003) indicates that deaf children may have access to additional cognitive potential, which can be elicited with facilitative adult scaffolding. Contextual information includes informant measures (treated with due caution) and suitable criterion measures such as Webster and Webster's (1990) 'Profiles of the Hearing Impaired'. However, it should also include direct observations assessing the child's interaction with peers and teachers, both within the teaching context and within less structured 'play' and familial contexts (Galloway, 2001; Gregory, Bishop & Sheldon, 1995).

It is apparent that obtaining all this information is expensive and time consuming on limited resources, and thus it is important to tailor the assessment to what is suggested by the assessment rationale for each individual child (Gipps, 1994). Thus, a 'comprehensive' assessment does not imply the unguided over-inclusive accumulation of information. Sometimes 'screening' information alone will be adequate to the assessment question (Lindsay, 1988). However, it does imply that a range of factors needs to be considered, and this may include ostensibly 'non-cognitive' factors such as emotional functioning and strategic approach to tasks.

The assessment model would thus need to be one based on a transactional process between child and context, and part of the assessment would involve evaluating the 'goodness of fit' between child and environment. It is suggested that the 'situated cognition model' (Brown, Collins & Duguid, 1989; Greeno, 1989) may be particularly pertinent as a model of assessment for deaf children, as it emphasises contextual data and the socio-cultural context of learning. However, the limitation of this model is that it argues for the unique particularities of all cognitive activity, rejecting the notion of 'within-child' attributes (Desforges, 1999; Rogoff, 1990;

Saljo, 1996). This would obviously negate to some extent the validity of standardised measures, based as they are on within-child attributions of performance, established with reference to normative data within a normal distribution (Anastasi, 1976). However, appropriately selected standardised measures (such as the SON-R or LIPS-R) can provide useful information to a cognitive assessment (Braden, 2001). It would thus be unwise to dispense with their use. Furthermore, Blennerhassett (2000) has cautioned that 'multiple sources of data are needed to provide a comprehensive picture of clients. The focus of an assessment is the person *not* the test ... The test alone is insufficient' (p.190).

Thus, the 'situated cognition' model does provide some helpful guidelines with regard to developing a model of assessment. Its emphasis on the uniqueness of potential development in varied contexts suggests that additional qualitative and process data are *needed* to supplement standardised test data (Rogoff, 1997). This is especially apt for D/HOH children, who are a heterogeneous group with a multitude of interacting factors, which may contribute to a diversity of potential developments (Marschark, 1993, 2000).

The successful use of the dynamic assessment measure by a deaf teaching assistant raises the possibility that deaf signing adults may potentially assist with assessment as well as educative tasks (Stewart & Kluwin, 2001; Webster & Heinemann-Gosschalk, 2000). They may be especially well placed to 'decentre', that is, to 'think about the pupils' perspectives as well as their subject (test), to learn from pupils' responses, to adjust their teaching (assessment) reciprocally as they interact with children' (Webster, Beveridge & Reid, 1996, p.31). However, as Gipps (1994) maintains, 'Any assessment policy will only be as good as the teachers who use it'. Therefore, 'to embrace educational assessment

with the professional involvement of *well trained* teachers harnesses a powerful tool for learning' (p.175). Thus resources will need to be set aside for training and support.

This does not imply the abdication of psychological skill and expertise by psychologists, who are potential training resources and would retain the use of those tests deemed too specialised for 'release' to other professionals. However, this assessment model also has important professional ramifications for psychologists. Such a model is not easy to implement without sufficient training, especially as the adequate assessment of D/HOH children is fraught with potential difficulties (Braden, 2001). Thus, training procedures to ensure proper (equitable) assessment procedures are followed, with regard to the assessment of deaf children, is essential.

An assessment model that is suitable for D/HOH children should thus embrace a comprehensive appraisal of a variety of factors relevant to the assessment goal, within an ongoing transactional (or systemic) framework (Sameroff, Seifer & Bartko, 1997). That is, it should utilise a multi-factorial transactional model. Components of the model include static, dynamic and observational measures, with qualitative data where necessary that may assist with providing an individualised account of the child and their contextual 'fit'. Such a model will thus focus on assessing not just the child, but their context too, and on practical suggestions to optimise performance by looking at the influence of the child's environment.

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