The British
Psychological Society
Promoting excellence in psychology

Hearing loss, deafness and psychometric testing

Practical advice for test users managing the testing of people who are Deaf or have a hearing loss

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The British
Psychological Society
Psychological Testing Centre

The purpose of these guidelines

These guidelines are to help individuals holding BPS Qualifications in Test Use in occupational, educational or forensic contexts, who have a requirement to carry out psychometric testing with individuals who are deaf or who have a hearing loss. They may also be helpful to clinical, neuropsychologists and counselling psychologists who are required to assess such individuals..

Deafness and hearing loss definitions (in accordance with Action on Hearing Loss, formerly the Royal National Institute for Deaf People – RNID)

In a general sense, deafness refers to people with a range of hearing loss. In some cases, this is permanent and others may be more of a fluctuating nature, dependent upon the nature and reason for the deafness.

A hearing impairment is a hearing loss that prevents people from receiving sounds through the ear. Mild loss, means that the person will have difficulty hearing faint or distant speech. A person with such a degree of hearing loss may use a hearing aid to amplify sounds. Where a hearing loss is severe, the individual may not be able to hear or distinguish sound. There are different causes for such hearing loss / deafness:

- **Conductive hearing loss** – this is usually in the outer or middle ear and can be caused by disease or obstruction. (This might for example be a wax build up for example, causing a more temporary period of deafness.) This kind of hearing loss can often be addressed by a hearing aid or sound amplification assistive technology, (for example inductive loop systems). Therefore, in terms of testing, use of a microphone and loop system might be effective for these individuals.
- **Sensorineural hearing loss** – this is usually inner ear. This may affect certain frequencies. Sound might be distorted using a hearing aid. A loop system may not therefore be a possibility.
- **Central hearing loss** – this is due to damage linked to the central nervous system.
- **Mixed hearing loss** – this can be a mix of inner, central nervous system and outer / middle ear damage.

For the latter three causes, hearing aids and assistive technology may not be appropriate and the individual is likely to communicate using sign language.

The term ‘people with hearing loss’ is a generic term encompassing people who are deaf, deafened and hard of hearing.

People who are ‘hard of hearing’ usually refers to those individuals with a mild to severe hearing loss. This might also refer to people who have lost their hearing gradually, for example age related hearing loss.

Deafened people often refers to those people born hearing, but who have become severely or profoundly deaf having learnt to speak. Again, this may be gradual, for a variety of medical reasons or can also occur very suddenly, for example as a result of accident or trauma, (for example, stroke, brain injury etc.) or due to noise exposure. [There are a number of causes which are beyond the scope of this brief summary.]

Deaf people, (with a capital D) tends to refer to people who are born deaf or, who become deaf prior to the acquisition of spoken language. Their first language is often Sign Language, (for example, British Sign Language – BSL). The use of the term Deaf also refers to their deaf identity and culture. We will discuss the implications of this, later in the leaflet.

The level of deafness relates to the level of sound, in decibels, that an individual can hear for example in terms of reception of speech. Terms such as mild, moderate or profound thus links to extent of hearing loss in terms of decibel range. Mild hearing loss refers to a loss of 25–39 decibels; moderate deafness refers to 40–69 decibels loss; severe deafness is 70–94 decibels and profound deafness is more than 95 decibels loss.

This impacts on functionality in terms of hearing, for example, mild deafness may cause problems in noisy situations, (for example in crowds / group discussion situations); hearing aids tend to be used, by individuals with moderate levels of deafness, whereas severely deaf people, although they may use hearing aids, might rely upon and use lip-reading +/or BSL. Profoundly deaf individuals tend to use sign language (such as British Sign Language – BSL). However, this is just a rule of thumb; there is no exact correspondence between decibels lost and the means of communication; in particular some deaf people who have severe or profound hearing loss, may speak reasonably well. Good speech should therefore not be taken as an indicator that the person is not deaf.

Deafness, dependent upon its extent and nature, as well as at what point hearing is lost, can impact upon educational performance, acquired learning and therefore upon performance on some psychometric tests, in addition to the capacity to communicate effectively in social situations with hearing people. Individuals profoundly deaf from birth are more likely to be heavily impacted upon in terms of educational performance. This is important to bear in mind when considering the use and outcomes of psychometric testing.

Useful definitions

British Sign Language (BSL) is the natural language of the (British) Deaf Community. It has developed over the centuries, much like spoken language. It is not an 'invented' language or system and is not just a visual representation of English. BSL is not a 'limited' or 'concrete' language but is as full and rich as any language, able to express abstract concepts, use metaphor and be studied by linguists (e.g. Sutton-Spence and Woll, 1999). It is the first or preferred language of many deaf people in the UK. In the UK, there is BSL, in France, French Sign Language and so forth. In Northern Ireland BSL tends to be used, in Eire, Irish Sign Language (ISL).

Cochlear implant – A surgically implanted electronic device that provides a sense of sound to a person who is profoundly deaf or severely hard of hearing.

Deafblind – The 'combined sight and hearing impairment cause difficulties with communication, access to information and mobility' (Department of Health). Also, sometimes termed dual sensory impairment, dual sensory loss or multi-sensory

impairment, some deafblind people may not be totally deaf and totally blind, there are differing degrees of both, dependent upon nature, extent and severity of visual and hearing loss. As with hearing loss, it can be congenital or acquired, (later in life), for example as a result of trauma or accident. It is also possible that other physical or learning disabilities may be involved. In cases of deafblindness specialised support and guidance is needed to ensure that needs are best met both in terms of communication and assessment. Such loss may be gradual / deteriorating over time, (as is the case with Usher's Syndrome – a genetic deafness with progressive sight loss over time) or may be from birth, (congenital), for example due to maternal exposure to rubella. Specialised skills and knowledge are required to assess such individuals

Deaf/blind communication – Individuals who are deaf/blind require additional specialist assistance and will require some form of deaf/blind manual communication. This involves the interpreter using a 'hands-on' approach to allow the person to feel the signs by holding the interpreter's wrists/hands or using tactile finger-spelling on the deaf/blind person's hands. Individuals may for example use braille, so assessment may also require knowledge of working effectively with visual impairment as well as hearing loss. Such assessment is best conducted by individuals with specialist knowledge.

Deaf Community – The Deaf Community consists of deaf people who define themselves as a group, mostly those who use BSL. Deaf clubs and associations are where deaf people come together socially.

Finger spelling – Spelling-out words using the fingers – this tends to be used mainly for names, places and other proper nouns.

Hearing aid – An amplification device worn by a deaf or partially hearing person to assist hearing. Note that the wearing of a hearing aid does not mean that the person can hear perfectly or does not need an interpreter. There is considerable variability in the benefit gained by hearing-aid use; for some people, it assists merely with orientation to environmental noise while for others it is of great assistance in hearing speech.

Hearing loop – A sound system in which a loop of wire around an area in a building, such as a meeting room, produces an electromagnetic signal received directly by hearing aids. There are various types of loops:

- **Room loops** – these can be used in larger rooms
- **Portable loops** – similar in principle to the room loop, the microphone and amplification process are portable.
- **Counter loops** – these are more permanent and enable dialogue at counters for example in banks to be directed via microphone.
- **Infrared systems** – these are similar to other loops but use infrared.

More information about such systems can be obtained from Action on Hearing Loss.

Lip reading – Some deaf people do not sign and rely on lip reading. This group includes those who become deaf in older adulthood and those with mild hearing loss.

Others who are deaf from birth, by choice or chance, grow up without the opportunity to learn BSL, so they rely on lip-reading and speech may still be very difficult for them. It is important to note that lip-reading is very difficult and is further affected by unfamiliarity with the speaker, accents, or even beards. Even under optimum conditions (good light and being only 3–6 feet away from a questioner who is facing the deaf person and who does not look down while speaking), a skilled lip-reader who is not particularly anxious may still clearly understand only 25–40 per cent of what is said (**www.hearinglink.org**). This is because a high percentage of English words are not seen on the lips or look the same as other words. (Try looking in a mirror and mouthing the words 'this' and 'these', 'walk' and 'wall'; 'pale', 'male' and 'bail').

In order to lip-read a word, you need to know that word already; hence for BSL users, whose first language is not English, many words are likely to be impossible to lip read. Remember that if a person has intelligible speech, this does not mean that they will necessarily be able to lip-read reliably.

Lip-speakers – are registered professionals who are trained to speak very clearly with lip patterns that are as easy to read for the deaf person as possible. Some may enhance this with finger-spelling and occasional signs.

Makaton – is a language programme using signs and symbols to help people to communicate and is usually association with people with a Learning Disability. It is designed to support spoken language and the signs and symbols are used with speech, in spoken word order. Makaton is a system of communication, borrowing individual signs from BSL, but is not a language per se.

Oral/aural – describes the process of relying on speech, lip-reading and technical aids to assist hearing.

Sign language interpreters / BSL interpreters – are qualified professionals who are skilled in the interpretation of English into BSL and vice versa and are accountable to their registration body, the NRCPD.

Sign Supported English (SSE) – refers to the use of BSL signs in English word order and implies that the individual's first or internal language is English rather than BSL. In reality, many deaf people use a hybrid of BSL and SSE. In some instances, speech is used at the same time as SSE.

Total Communication (TC) – This is relevant when considering the deaf person's background and education. TC is an acceptance and use of all means of communication, including sign language. This is in contrast to oralism, which promotes speech and lip-reading and discourages the use of sign language. Some deaf children will have been educated in a TC environment, others in oral schools.

Background / Equality Act 2010

Under the Equality Act 2010, disability is defined as, 'physical or mental impairment which has a substantial and long term adverse or negative effect on the ability to carry out normal day to day activities'. For people with hearing loss or deafblind individuals, this could for example, include difficulty hearing or

understanding verbal information in social interactions or hearing others speaking over the telephone. Profoundly deaf people will therefore fit such a definition, as may those people using a hearing aid or assistive technology, (dependent upon the situation.) The same is likely to be the case for deafblind individuals. It may not be as relevant to people with a relatively minor hearing loss.

The Act makes it unlawful (for employers or services for example), to treat a disabled person less favourably than a nondisabled person and those who provide services must make them accessible to clients with disabilities. Therefore, when psychometric tests are being used, for example in connection with employment (in making selection decisions) employers or test users have a duty to make reasonable adjustments so that disabled persons are not placed at a substantial disadvantage. In educational, clinical or forensic contexts, disabled people therefore have the right to expect the same quality of service, including accuracy of diagnostics and assessment as other users of the service, especially where such psychometrics are used to inform decision-making processes.

The Equality Act 2010 therefore requires all service providers to make reasonable adjustments to make their service accessible for disabled people, and indicates that they must anticipate and promote these adjustments rather than make them on a responsive basis. In addition, under the Human Rights Act, health practitioners and staff must establish effective communication with patients with hearing loss, as part of their human rights. Similar communication accessibility requirements would be equally important in educational, clinical and forensic contexts, as well as in an employment situation.

Impact on testing

As with a number of disabilities, consideration of the functional implications of deafness or hearing loss on the individual is essential. Ensuring that you are able to communicate effectively in this context will be vital and there is guidance later in this document on such communication issues.

Fundamental to the assessment is consideration of whether the person's first language is English or BSL, as this has profound effects on the nature of your assessment. In cases of mild hearing loss or when a person functions in English, adjustment is relatively straightforward, to accommodate the loss of hearing. However, in cases of more severe deafness, when the person's first language is BSL, an understanding of the impact of this on development and learning as well as consideration of which, if any, tests can be uses, is required. If psychometric assessment of a BSL user is required, it is recommended that specialist advice is sought, from Subject Matter Experts (i.e. psychologists and other professionals with expertise in this area).

The nature of deafness and implications on educational performance is also an important factor to consider when using psychometrics with this client group and will be expanded on in due course. It is likely therefore to be necessary to make adjustments to standardised test administration procedures in order to ensure

validity of assessment and to avoid discrimination due to deafness. However, such changes to a test cannot be made without affecting its reliability and validity. Advice should therefore be sought from the test publisher or a Registered / Chartered psychologist with suitable exxpertise in assessing people with hearing loss before any changes are made. Publishers may be able to offer guidance and advice on appropriate adjustments to administration procedures and in addition, some Test Manuals will also offer advice. (A list of useful specialist contacts is attached.)

Discussing with the individual or others who know them about what works best for them, including how they best communicate and what adjustments they use in everyday situations will offer some guidance, for example, are they a lip reader; do they use sign language / require the services of an interpreter; can they hearing effectively with a hearing aid or an inductive loop etc. Finding out how the individual's deafness affects them functionally, is always informative and may provide useful information in respect of reasonable adjustments in an interview or psychometric testing situation.

Practical advice in advance of the testing session

- If you are considering test administration, you need to consider how you will communicate effectively with someone who is Deaf, with a hearing loss or who is deafblind. The first key question is whether the person's first language is BSL or English. This has an impact on the types of tests which are reliable and valid and the extent to which adaptation is required.

Testing someone with mild hearing loss with first language English

- This might require arrangements to test people individually or the setting up of specific arrangements, (for example use of a loop system), to communicate effectively. It is always useful to discuss with the individual how they best access communication and indeed potentially, access IT. Someone who is deaf blind for example, may be able to access IT but might require larger font size, different type faces or different colour combinations for example, dependent upon degree of sight loss.
- When inviting people to a testing session, ask them to contact you in advance if they have a disability or any condition that might affect their performance on the tests. This allows the test user / administrator to seek advice and to prepare for any special needs in advance. You may for example want to invite an individual along prior to any testing session to discuss individual needs in more detail and, if required, to bring a support worker. (It should be noted that this applies to all test takers, no matter what their degree of hearing loss).
- Providing any practice materials that are supplied with the tests in advance of the testing session, may enable test takers to check and consider if they would have difficulty with any of the tasks.
- If a hearing loss is reported, ask, 'how does it affect you?'. Enquire how the person prefers to access communication when interacting in an everyday

context, for example, what is helpful to them if they have a doctor's appointment or a meeting at the bank etc. Individuals will be able to explain what works well for them, for example a loop system; the need for good lighting levels; good clear face to face dialogue etc. Individuals might also be able to let you know what support if any they have had previously in school exams for example, which might also provide useful pointers in terms of additional support, reasonable adjustment processes and communication needs in terms of assessment generally.

- Think also about the room and location in which testing is being carried out. This is not only in terms of lighting levels in that room, but also wider issues such as does the room have an induction loop system or can you arrange to provide a portable loop system. Such devices allow people to hear sounds more effectively, by linking into the hearing aid and reducing any background sounds. When an individual's hearing aid is switched to a T setting, (to the loop system), the focus is on the sound from the external (loop) microphone and not the internal microphone of the hearing aid, which picks up all sounds. In the latter case, all sounds are amplified making it difficult for the individual to differentiate. This system therefore focuses attention on the specific communication, enabling clearer, more focused communication.

Testing someone whose first language is BSL

- It is important to note that letters sent in advance of the appointment may not be understood if English is not the person's first language; avoid sending complex correspondence or questionnaires prior to the appointments.
- A registered qualified BSL interpreter will be required and can be found at **www.nrcpd.org.uk**. When booking the interpreter, ask if they are familiar with working with a psychologist / working with psychometric assessments; if not you will need to arrange a half hour session prior to the appointment to brief them on the session.
- In considering test materials, note that for first language BSL users, any questionnaire measure are likely to be unreliable and invalid, even if translated into BSL. This is because interpretation is in terms of meaning rather than exact words, rendering the measure no longer standardised.
- Verbal measures, such as the verbal subtests of the WAIS-IV are not valid or reliable indicators of ability and should not be used. These tests are more a measure of the extent to which the individual has been able to access education via English, rather than revealing anything about their intellectual function. Verbal subtests should NEVER contribute to a Full-Scale IQ. The Perceptual Reasoning Index is a more useful estimate of ability / potential of a Deaf person. (It will indicate minimum level of (intellectual) ability for an individual.)
- Non-verbal tests such as the performance subtests of the WAIS-IV are reliable and valid measures when used with deaf people (Braden 1994) although instructions in BSL do alter the nature of the test to some extent.

- Book extra preparation time with the interpreter; to explain the nature and purpose of the assessment, show the interpreter the tests and, if you have not worked with an interpreter before, to allow the interpreter to brief you on their role and any difficulties they anticipate.
- Note that written communication is not a reliable or effective means of communicating with a deaf person and certainly not a substitute for a BSL interpreter.
- Remember that when working through an interpreter, this will require additional time for interpretation and in order to check out understanding, so this needs to be factored into the process. It is not always possible for example to translate exactly from English to BSL and there are other implications linked to translation, which are highlighted elsewhere in the document, (for example, some signs will, of their nature, provide the answer to the question being asked; some may require additional context explanation and some language may be beyond the experience of the individual.) It is important to recognise that BSL is a recognised language in its own right and that when using an interpreter, the question may not be interpreted as an English-speaking person would understand it so the answer may not fit the question.
- As well as considering the test itself, consider any other equipment or processes involved. Will the test taker be able to use a standard or modified answer sheet? How does the person usually use a calculator if one is needed for a test? The needs of a deafblind individual may be different for example to the needs of a deaf person in this respect.
- Consider the relevance of the test being used for the assessment purpose. Would the test be as relevant to an individual who is deaf? For example, questions about feeling excluded or misunderstood have a completely different meaning in the case of deafness.
- Consider whether the test has been normed on the types of individuals in question, or whether individuals were represented within the norm group.

Adaptations during the assessment

Testing individuals whose first language is English

- It is important to maintain eye contact during the time you are talking to a person who is Deaf or hearing impaired. They need to be able to see you and your lips clearly, especially if a lip reader. Don't look down or turn away when you are speaking. If you have a beard, a strong accent or minimal lip patterns when you talk, you will be more difficult to lip read.
- Speak clearly and at a normal pace and be careful not to exaggerate lip patterns. It is ok to be expressive, but not overly so.
- If apparent that language and words used are not being understood, try a different word or explain in a different way. Demonstrate and explain fully if possible.

- Do not shout or speak too loudly. This can seem aggressive and may be uncomfortable to the hearing aid wearer.
- Whilst hearing aids make sounds louder, they do not clarify reception or understanding of the sound by the individual. Having a hearing aid does not mean that the individual can hear as normal.
- Use written communication, a notepad and pen to write things down. Often this is a last resort, if other communication approaches have not worked. Even those with a mild hearing loss may have less well-developed reading and written literacy skills.
- Group situations can be very difficult for a person with a hearing loss; consider avoiding this if possible. In any group situation, the individual with the hearing loss needs to be able to see others in the room and the chair must insist that people speak one at a time and indicate they wish to do so with a raised hand, so that the deaf person can orientate to the new speaker.
- Ensure that visual aids are used where helpful; arrange a loop system. Lighting is crucial and good visibility of the speaker is key; do not stand in front of a window as you will appear as a silhouette. Ask the deaf person if the lighting level is ok.
- Avoid background noise as this is distracting and makes use of residual hearing more difficulty.
- Monitor reception of your communication, either by observing the individual's expressions or body language, or by asking them to indicate if they have not understood everything. Repeat, explain further or use different words as needed.
- Where difficult to receive communication as the listener, for example where an individual's speech is not clear or is hard to understand, ask for repetition and clarity rather than making assumptions.
- Simple, clear language without jargon or abbreviations is most helpful, as is checking out understanding on a regular basis.

There are a number of really useful Factsheets and guidance documentation on communicating with deaf people guidance, for example from Action on Hearing Loss, (formerly the Royal National Institute for Deaf People – RNID); SENSE provide useful information on communicating with deafblind individuals and there are a number of other support organisations signposted later in the document.

Testing individuals whose first language is BSL

- Use an appropriately qualified interpreter. If you have some BSL, it is appropriate to use this to 'meet and greet' the person. However, avoid using sign language for the formal part of the assessment if you not qualified, to avoid conveying incorrect information inadvertently.
- The interpreter is a resource who can advise on communication, for example if the lighting and seating are appropriate.

- The interpreter will tell you if s/he has the impression the Deaf person does not understand.
- It is important that you talk directly to the individual who is deaf and not the interpreter.
- Do not ask the interpreter about matters other than communication, as this is outside of their role.

The interpreter's code of conduct requires that everything is interpreted; therefore, do not say anything you do not wish the deaf person to 'hear'.

Making adjustments to tests

The standardised nature of psychometric tests is one of the main contributors to their effectiveness and objectivity, and any arbitrary modifications to the test or administration procedure are likely to invalidate the results and render standard norm groups and score interpretations meaningless. Changing the way, a test is administered can alter what is being measured. Professional advice will be needed to ensure that adaptations are appropriate and to offer guidance on how changes might affect interpretation of scores, as well as appropriateness of standard norm groups.

Therefore, where such modification is required, advice should be taken from a Chartered or Registered psychologists with expertise in this area or from the test author, distributor or publisher. They will have knowledge of the type and degree of modifications that might be needed. Equally, they will have knowledge of / expertise in terms of the impact of hearing loss and deafness, (the psychology of deafness). This knowledge will enable them to consider which tests may be appropriate and those which may disadvantage individuals, (create adverse impact), especially for those individuals with congenital deafness.

The way the person accesses any test will affect timings where tests have a fixed time limit. This is always something to consider.

The amount of extra time required will depend on the person's disability, the tests being used, the way they are to be administered and their relationship to the characteristic being measured. Only a relevant professional can determine what is appropriate. An arbitrary decision should never be made.

Some test takers may want to bring along some special equipment (such as a portable loop system) or ask for specific lighting conditions or a room loop system. For other test takers, the best way to administer the test may be using interpreter support.

There is also a need to consider whether the individual can indicate responses in the standard manner. A modified answer sheet may be required by some deafblind individuals for example, or it may be more appropriate for the test administrator to note down the responses in certain cases, even when this is not the normal procedure. Where test takers are providing quite personal information, e.g. by answering a personality questionnaire, make sure that the administration method does not require greater disclosure than the standard procedure. For instance, responding to an interpreter will mean another individual is aware

of individual answers, whereas this is not so for a (self-completion) paper and pencil administration. This may affect the way a person responds, especially where personal or sensitive information is being asked about. (Using a qualified interpreter should mitigate any concerns about confidentiality, as Deaf individuals know they operate to ethical standards, adhere to a professional code of practice and are mindful of issues of confidentiality etc.)

Whilst not about the use of psychometric tests per se, it is important to remember other aspects of selection and recruitment processes that may need consideration, for example at Assessment or Development Centres. Certain assessment tasks or some group based activities may also disadvantage an individual with a hearing loss. Individuals may not be able to easily pick up on group based dialogue for example and may, as a consequence, feel isolated or disadvantaged in group discussion exercises. Again, such issues need consideration and sensitivity when considering the adjustments that may be needed to accommodate an individual's needs.

Practical advice during the testing session

Whether adjustments have been made to standard test procedures or not, careful administration can help ensure that the test results for individuals with hearing loss can remain valid.

- A calm and understanding approach on the part of the administrator is important. A one-to-one interview process or administration, where an individual has a hearing loss or uses a hearing aid can be helpful as it allows a less formal approach, will relax the individual and could facilitate good communication and test takers may also feel more able to take their time to become familiar with the task and materials and ask any questions. A portable loop might be of value, or equally, this may enable an interpreter to be involved and for checking out understanding on an ongoing basis.
- Setting up the environment to ensure good lighting levels, loop systems or opportunity to repeat information where needed will be more suited to certain individual needs.
- Note down in the test log any adjustments made, and comments by the test taker, as well as any other non-standard occurrences.
- If further advice is required in interpreting the results, test users may wish to contact the test publisher or consult with a Chartered or Registered psychologist with expertise in deafness or hearing loss to make best sense of (outcome) information.

Much of the advice provided here is just good testing practice and is intimated within the test user competencies on which test users have been assessed. It requires the test user to proceed in a way that is fair and at the same time makes adjustment for any disability.

Working effectively with prelingually profoundly Deaf people who are sign language users

It is important to be prepared in order to work effectively with such individuals and to be aware that it is incorrect to assume that a hearing aid will resolve any communication difficulties. In reality this is unlikely to be the case and working with an Interpreter will usually be required for profoundly deaf individuals. There are useful guidelines on use of interpreters and being aware of such guidelines is important, as is working with an appropriately qualified Interpreter. (More information is provided later in this document.)

There are few psychometric materials available specifically for prelingually profoundly deaf people. Consideration of validity and reliability is important when using any test and equally so, with this client group, especially given any changes that are needed to the standardised approach when using an interpreter. Ensuring access to appropriate norm groups is also important.

Although there are some standards for psychological testing in terms of assessing people with disabilities, there is limited research to validate test accommodations, adjustments or modifications from the standard test administration process. Equally, there is a limited amount of guidance in terms of test interpretation for people with sensory disability generally. Where deviation from standard test administration is involved, for example introducing Sign Language, this can change the demand or nature of the task, (Braden 1994 and Maller, 2003). It can also affect functioning and performance on the test too, especially where people are deaf from birth. Equally, where people are lip readers, given that this is a complex skill, it lends itself to 'guesses' as many sounds look similar on the lips and are therefore difficult to differentiate. This changes the cognitive demand of the task and requires greater concentration levels. The need to repeat information and/or check out understanding is therefore crucially important. If a person is relying on lip reading, it is important to remember that a failure or erroneous response on a test item may simply reflect a difficulty in lip reading and therefore may not be reliable.

If working with an interpreter, there are also differences and BSL dialects around the country, so checking out a shared understanding of different signs may also be helpful. Some words may not have equivalent signs, so the signer may need to spell out words, which may bring into question whether this is fully understood by the receiver. Grammar and syntax of BSL is different to spoken language, (i.e. it is not a version of English, but an entirely differing language) and this too may impact on the communication process. A signed interpretation may need to offer or provide additional cues, may present more or less information than in a comparable spoken presentation due to the nature of signing and also, as a consequence of cultural differences in the deaf community. Asking a deaf person to point at their ear, for example, will require the interpreter to sign such instruction literally.

Being aware of the impact of prelingual deafness in particular is important, as this can impact on the development of English Language verbal skills, (reading, writing or understanding of words, grammar or syntax more generally) and the gaining of

incidentally acquired knowledge generally. Research has shown that verbal skills and reading fluency of this groups of individuals is different to hearing individuals, therefore use of tests that are heavily verbally loaded is highly questionable. Verbal items or tools are generally therefore considered inappropriate for this client group, with performance measures generally being better indicators of capacity. This has tended therefore to lead to performance scales of intellectual ability measures being used to provide an estimate of overall level of intellectual ability, rather than focusing on or including verbal scales (Braden 1994) BSL (British Sign Language) has a differing vocabulary and grammatical structure and in addition, research, (for example Conrad 1979; Kyle 1980, 2005) has shown reading age to be lower in deaf school-leavers than comparable aged hearing school leavers, (Conrad has estimated for example a 7-year-old level of reading capacity for deaf school leavers who are profoundly prelingually deaf.) Such differences relate to the psychology of deafness / hearing loss, so being aware of research and literature is important, hence why speaking with relevant professionals and subject matter experts can be helpful. Likewise, exploring if / where there are norm groups for hearing impaired individuals is helpful. [Raven's Standard Progressive Matrices for example has been normed on hearing impaired individuals. The Leiter 3 International Performance Scale is another tool sometimes used with this client group and again has some normative data.] Seeking advice from Registered / Chartered psychologists with knowledge of the psychology of deafness is therefore helpful to ensure that you are not inadvertently disadvantaging or discriminating a deaf individual or misinterpreting outcomes of measures.

Even with performance tasks there will be verbal instruction, so again potential for discrimination to be introduced and even working with an interpreter, will of necessity mean that administration deviates from standard. Even where there are attempts to address cultural differences, for example referring to texting rather than using a phone, there will be difference in terms of experiences. Using a normative group which includes deaf individuals where possible therefore is important. Norms for deaf people are not common and there may be value in comparison of the individual with both hearing and deaf individuals when trying to draw any conclusions from psychometrics.

Even where communication and interpretation is effectively in place, it is important that items in a test are discussed with interpreters in advance where possible. It is helpful for you as the Test User to be aware of the nature and implications of the signed administration so that the psychometric equivalence of the standardised version, versus the signed administration of that item can be considered. There may be an assumption that verbal information can easily be translated into BSL and be understood by Deaf individuals in exactly the same manner, but this is not always the case. Therefore, using verbal measures can be misleading and may not be valid. Also, some signs are visually similar in terms of hand shape and also, signed in similar positions, which in themselves might offer cues not be available to hearing individuals or alternatively, might be misleading and lead to confusion between different signs, lending themselves towards

incorrect answers. There are also differences between signed language and spoken English, which may mean that incidental issues are involved in test use. Such issues are best understood by individuals with expertise in deafness and therefore guidance on the use of tests from such experts is useful. There are a number of professional articles on such issues and seeking the support of a Registered or Chartered psychologist is helpful as they may be aware of professional literature / professional guidance documentation. A few such research articles and books, for example, the International Test Commission Handbook on Testing and Assessment are signposted at the end of this document as reference texts.

An article by Jim Cromwell, (a specialist psychologist in working with deaf people), in *The Psychologist*, has recommended that test users, when working with profoundly deaf individuals in particular:

- Assess the deaf person with support from qualified BSL interpreters;
- Discuss each item of each test in advance with the interpreters, and afterwards so that any 'instances of note' may be raised and accommodated in the interpretation of the results;
- Consider which, if any, tests to use in the light of some of the issues outlined regarding the nature of test items, adjustments in terms of test administration, and the need for appropriate reference / norm groups;
- Interpret results with extreme caution, especially concerning some of the issues that arise in relation to communication;
- Make any such shortcomings explicit in the report; and
- Where departures from standard administration are in place, be aware of increased potential for errors. For example, if shortcomings and departures from the standardised administration have potential to disadvantage the candidate, then any result or test outcome may more usefully be understood to reflect more of a minimum level of functioning rather than an estimated actual level of functioning.

There are also known to be differences evidenced when using personality tools and indeed memory tasks with Deaf individuals. There is strong recommendation that personality tools are not therefore used with BSL users and there is research to support this recommendation. Some memory tasks involve English structure and an ability to 'think in English', which has potential to disadvantage BSL users, and as a consequence, deaf test takers may score lower, despite having sound memory skills. Some aspects of memory tasks also rely upon retrieval of information using language and alphabetic approaches, again meaning that the deaf person may be inadvertently disadvantaged. Likewise, if you provide deaf people with written instruction, their language skills may not be comparable with hearing populations and they are unlikely to understand the instructions. The tasks and demands are therefore not the same. (Being aware of such potential for indirect discrimination is important, as well obviously as considering direct discrimination when using tests.)

In terms of personality tests, reading ability, exposure to language and understanding are all important when using them with any individual. The

language used is often quite complex and sophisticated in nature, requiring understanding of concepts and opportunity for certain experiences. For these reasons and in addition to the fact that the experiences and the culture of deaf individuals is different, the recommendation is not to consider using personality tools with Deaf people. Conclusions reached can be erroneous and highly questionable (O'Rourke, S. & Grewer, G., 2005).

In non-verbal tasks, items can also be complicated, difficult to interpret exactly and may also need English grammar understanding to fully appreciate requirements. The way in which instructions are given is also potentially different, for example, where visual information is laid out to observe, the deaf individual is watching the signed communication, not looking at the cards at the same point as a hearing person, who would therefore be afforded additional exposure time. The deaf person starts the task therefore at a different point in time.

The point at which a person loses hearing is relevant, with those people who lose hearing prior to acquisition of spoken language being qualitatively different to those who lose hearing later. The exposure to spoken language and corresponding development is different at different developmental stages so this plays a part in understanding of test information. There is also known to be differences where a deaf child has hearing or deaf parents; the latter being more likely to be accomplished BSL users. Deaf children or hearing parents may not have been exposed to BSL until quite late, depending on their educational experiences and therefore have had no effective language until this age. This is of obvious significance in terms of learning and development. Being aware of such background information may be helpful when interpreting test outcomes and such issues should be explored when using tests, to aid interpretation.

Such factors indicate that choice of test, how information is interpreted and the process of administration itself are far from straightforward, and may suggest a referral to a specialist is appropriate. Outcomes offer an indication of functioning for deaf individuals, but communication about the potential and nature of possible error sources is important when using psychometrics with this population in particular.

Useful contacts

Action on Hearing Loss (formerly RNID – Royal National Institute for Deaf People)
19–23 Featherstone Street
London EC1Y 8SL

Information line: 0808 808 0123
Textphone: 0808 808 9000
SMS: 0808 808 9000
e: informationline@hearingloss.org.uk
w: www.actiononhearingloss.org.uk

Tinnitus information line: 0808 808 6666
Textphone: 0808 808 9000
SMS: 0808 808 9000
e: tinnitushelpline@hearingloss.org.uk

Action on Hearing Loss Shop: 03330 144525
Textphone: 03330 144530
e: solutions@hearingloss.org.uk

For information about making services fully accessible for people who are deaf or hard of hearing, the Louder than Words team are useful to be aware of:
t: 0333 240 5658
Textphone: 0161 276 2316
e: access.solutions@hearingloss.org.uk

SIGNATURE (formerly Council for Advancement of Communication for Deaf People)
Mersey House
Mandale Business Park
Belmont
Durham DH1 1TH

t: 0191 383 1155
Text: 07974 121594
f: 0191 383 7914

NRCPD
c/o Mersey House
Mandale Business Park
Belmont
Durham DH1 1TH

t: 0191 383 1155
Text: 07974 121594
f: 0191 383 7914
e: enquiries@nrcpd.org.uk
w: www.nrcpd.org.uk

Other specialist contacts

Adult Mental Health and Deafness Services

John Denmark Unit
Prestwich Hospital
Bury New Rd
Manchester M25 3BL

t: 0161 358 0507
e: jdu@gmmh.nhs.uk

The Barberry
National Deaf Service – Jasmine Suite
25 Vincent Drive
Edgbaston
Birmingham B15 2SG

t: 0121 3012460/2497

National Deaf Services
Springfield Hospital
Tooting
London SW17 7DJ

t: 020 3513 4646
e: deafadultservices@swlstg-tr.nhs.uk

Deaf CAMHS

High Trees
Springfield Hospital
Tooting
London SW17 7DJ

t: 0203 513 6925
e: ndcamhs@swlstg-tr.nhs.uk

National Deaf CAMHS (Leeds and York)
Lime Trees
31 Shipton Rd
York YO30 5RE

t: 01904 294231
SMS: 07964 294326

National Deaf CAMHS (Manchester)

t: 0161 701 4519
f: 0161 7015165
m: 07980967207
e: NDCAMHSNorth.lypft@nhs.net

National Deaf CAMHS (Central England)
Canalside House
Abbotts Street
Walsall
West Midlands WS3 3AZ

t: 01922 608822
f: 01922 607825
e: deafcamhs@dwmh.nhs.uk

Forensic Mental Health and Deafness

Rampton Hospital (High Secure)
Woodbeck
Retford
Nottingham DN22 0PD

t: 01777 248321

Cygnet Hospital (Medium and Low Secure)
Buller Street
Bury
Lancashire BL8 2BS

t: 0161 762 7200

All Saints Hospital (Medium and Low Secure)
Grange Avenue
Oldham
Greater Manchester OL8 4EF

t: 0161 622 4220

St Andrews Hospital (Medium secure)
Cliftonville Rd
Northampton NN1 5DG

t: 01604 616000

Independent psychologists working with deaf people can be found at:

w: www.deafexpert.co.uk

Other associations

British Deaf Association

Head Office
3rd Floor
356 Holloway Road
London N7 6PA

t: 020 7697 4140
SMS/FaceTime: 07795 410 724
ooVoo/Skype: bda.britdeafassoc
e: bda@bda.org.uk

Action for Deafness

22 Sussex Road
Haywards Heath
West Sussex
RH16 4EA

t: 01444 415582
e: info@actionfordeafness.org.uk

ActionDeafness

1st Floor
Peepul Centre
Orchardson Avenue
Leicester LE4 6DP

t: 0844 593 8440
f: 0844 5958441
Minicom: 0844 5958445
e: enquiries@actiondeafness.org.uk
w: www.actiondeafness.org.uk

Royal Association for Deaf People

Offer Interpretation Services
t: 0845 688 2525
e: info@royaldeaf.org.uk

Deaf blind contacts

SENSE

101 Pentonville Road
London N1 9LG

t: 0300 330 9250 or 020 7520 0999
Textphone: 0300 330 9252
f: 0300 330 9251 or 020 7520 0958
e: facilities@sense.org.uk

Deafblind UK Head Office

National Centre for Deafblindness
John & Lucille van Geest Place
Cygnet Road
Hampton
Peterborough PE7 8FD

t: 01733 358 100
f: 01733 358 356
e: info@deafblind.org.uk

Equality act contacts

Equality and Human Rights Commission

Fleetbank House
2–6 Salisbury Square
London EC4Y 8JX

t: 0207 8327800
w: www.equalityhumanrights.com

Equality Advisory and Support Service (EASS)

t: 0808 800082
Textphone: 0808 8000084
w: www.equalityadvisoryservice.com

Useful professional guidance documentation / Research articles on deafness and psychometrics / Text and reference books

Braden J.P. (1994). *Deafness, deprivation and IQ*. New York: Plenum Press.

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Zieziula, F.R. (Ed.) (1982). *Assessment of hearing-impaired people. A guide for selecting psychological, educational, and vocational tests*. Washington DC: Gallaudet College Press.

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