



Addressing Common Errors in Neuropsychological Assessment Report Writing with Reference to Cross-Cultural Challenges in South Africa

Introduction

The assessment report in modern Clinical Neuropsychology is grounded in a conceptual framework where the questions being asked and opinions arrived at, ultimately relate to brain function (Lezak, Howieson, Bigler, & Tranel, 2012). A hypothetico-deductive approach is employed, using a clinically contextualized flexible cognitive test battery located within an individualized deficit measurement paradigm (Lezak et al., 2012). Within the South African scope of practice, referrals for neuropsychological assessment may be addressed to clinical, counselling and educational psychologists, as well as neuropsychologists, according to the broader parameters of those categories (HPCSA, 2019). Commonly occurring errors in the writing of neuropsychological case reports have come to the attention of the authors, who are all supervisors of neuropsychological assessment in university professional training and/or credentialling contexts.¹ It is of concern that the problems encountered in training contexts are observed to occur also in professional assessment practices.

Accordingly, it was decided to assemble report writing problem areas in the form of the present review, including explanatory material to assist in the circumvention of such errors. *Most of the problems raised are of a general nature and apply to any assessment report involving cognitive testing.* Issues that pertain specifically to assessments conducted within the culturally diverse South African arena are covered in points 5 to 9. Frequently occurring concerns that have been identified are as follows.

1. Insufficient attention paid to the purpose of a report

Reports are often written without due attention being given to what is required of the practitioner depending on the purpose of the report, and to whom the report will be submitted, e.g. whether it is a full report for medico-legal or clinical purposes, or a brief summary opinion to an attorney, a medical practitioner, another psychologist, parent, or school. Reports may need to be succinct for quick cursory transmission of information, for



example in a hospital ward setting, or lengthy for an in-depth case analysis such as may be called for in private practice. Contextual factors such as these will affect the content and how much detail is required, although the core components of a report remain the same.

Medico-legal reports may be 20 to 30 pages in length. These demand an opinion grounded in an evidence base that is clearly delineated in the report and can be used to defend the opinion in court, including highlights of past medical records and other expert reports, all elements of the clinical history from several sources, clinical observations that are clearly operationalized, test results and details of the assessment process itself. In contrast, *clinical reports might be eight to ten pages in length.* Here the focus is on diagnostic and related intervention issues within medical and educational forums, requiring less fine detail of prior records and the assessment procedure than is required for court purposes. Finally, *a brief summary report may be as concise as only one or two pages*, often being presented in letter form. Brief reports convey the final case synthesis and opinion only, in the absence of all the detailed information that was required to arrive at the opinion, having the same structure and content as the summary/ concluding section of a long report (see point 14, paragraph 1, italicized section).

For medico-legal reports, specific report writing guidelines and definitions of pertinent terminology (e.g. ‘Curator Bonis’; ‘Curator Ad Litem’), are available in Hemp & Pomario (2020). For noting is the Judge President’s directive from 05 July 2019: “*expert reports must be drafted in a format designated for lucidity, brevity, and convenient cross-referencing. To this end, it must be in numbered paragraphs. When referring to other expert reports, refer to the numbered paragraphs therein.*”

2. Inadequacies in the structure of a report

It is important to be vigilant about what should go where in a report to enable user-friendly accessibility to the information, and to avoid repetition. *A document entitled ‘Guidelines on Report Writing’ has been prepared by the South African Clinical Neuropsychological Association (SACNA) which is freely available online (SACNA, 2021a).*² Despite access to



the detailed guidelines contained in that document, trainers frequently encounter the following errors in the structure of the report, therefore demanding some extra emphasis.

(i) When reporting an accident or neuropathological incident, it is best to give the medical details first, followed by the patient and collateral's description of the event, so that this material can be cross-checked with the medical facts; (ii) If psychiatric inventories and behavioural scales are administered, these results should be in a separate subsection from the cognitive test results, and delineated before the cognitive test results; it is useful to know of the examinee's emotional and behavioural status before attempting to interpret the test results; (iii) Overall neuropsychological opinions of the case that integrate the history, clinical information, test-taking observations and test results, should not be given in earlier sections of a report such as the test result section, when they should be reserved for the conclusion section; (iv) New information should never be encountered for the first time in the concluding section; (v) When summarizing the case details there should be a clear differentiation between what pertains pre- versus post- neurological event; (vi) Recommendations should not be made when delineating the diagnostic opinion in the concluding section; (vii) The recommendations should be provided in a separate section following the conclusion, where they can be clearly differentiated in a scholarly manner, including peer-reviewed references to support the type and duration of psychotherapy being proposed.

3. Omission of critical background information

A frequent error is failure to give sufficient attention to developmental information with *adult* clients, as well as child clients, thereby potentially missing pre-existing problems in examinees. Understanding if there are any familial predispositions is also important, e.g. learning disabilities; Huntington's, Parkinson's or Alzheimer's Disease; Epilepsy. Information about the sociocultural context in the family background is of prime relevance, such as home support and attitude to education.



4. Under-reporting of clinical impressions on interview and testing

Clinical impressions and qualitative observations of test behaviour are often inadequately delineated. Descriptions of this type would normally appear in separate sections of the report designated under Mental State Examination and Observations of Test Behaviour. In these sections, a report should delineate critical clinical and behavioural features of the person on interview and testing, which are just as important as the person's test results. *The SACNA Guidelines on Report Writing document (SACNA, 2021a)², provides a structure for commenting on the mental state, including an ordered checklist of the elements that need comment.*

As part of the mental state examination, difficulty with evaluating the person's level of insight is often evident. It is not sufficient to state that the person has poor insight without describing why. Similarly, 'judgment' is often described as poor without giving reasons for the statement. *Generally, all observed elements of the mental state require further delineation with relevant individualized examples.* For example: The examinee revealed depressed mood with tearfulness and frequent sighing throughout the interview; Insight and judgement were good in that the examinee understood the potential deleterious effects of his/her injuries on future employment opportunities, and that improvement going forward was unlikely.

5. Misapplication of norms for age stage

Due to the lack of suitably normed tests historically, it is not uncommon for South African psychologists to use 16-year-old child norms for an adult examinee. While it may be a route to investigate whether a function is grossly intact, it remains a crude practice, with risk of misdiagnosis of the presence or absence of brain dysfunction. Different patterns of performance pertain for adults depending on the domain, and specific adult range. For example, when perusing the standardization norms for the Wechsler IQ and Wechsler memory tests across the adult age range, tests of acquired learning and reasoning tend to improve with age, whereas memory and processing speed decline. Someone of premorbid above average ability may appear intact when being compared with the ceiling norm of a 16 year-old group, yet brain impairment might be apparent when using a test of the same



function for which there is an age appropriate norm. Essentially, wherever possible, tests should be sought which have norms stratified for the relevant age stage of an examinee.

6. Uncritical use of tests and norms in relation to sociocultural characteristics

The South African population is characterized by extreme population diversity in terms of language of origin, socio-economic status and exposure to advantaged versus disadvantaged educational backgrounds³. Accordingly, there is no fixed battery or single set of norms that can be deemed applicable for all examinees, yet many psychologists adopt the erroneous route of using a single fixed battery.

In place of a fixed battery, *it is necessary to make an individualized test and norm choice in every single case which must be clearly motivated in the report, in a form that can be upheld under scholarly peer challenge*. The specific demographic features of the examinee need to be evaluated in relation to the demographic features of the norming sample, not omitting the critical variable of quality of education. Where suitable tests and normative data are not available, the best possible alternatives need to be identified. Strengths and weaknesses of the assessment must be indicated in the report, including whether the norms used are likely to be too lenient or too stringent for a particular examinee. Finally, when making extrapolations from norms of less than optimal fit, it is especially important to ensure that the overall test interpretation is conceptually coherent with the clinical history and ecological features of the case.

It is essential that South African practitioners engage with current debates about which tests would work best and which norms to use, with the continuum ranging from population-based to within-group demographically stratified norms (Cockcroft, 2013; Shuttleworth-Edwards, 2016; Suchy, 2016). These researchers draw attention to the problem of using tests standardized in South Africa during the apartheid era (e.g. SSAIS-R) (van Eeden 1992), as well as more recently (e.g. SAWAIS-III and WAIS-IV^{SA}) (Claassen et al., 2001; Wechsler, 2014, respectively), which are derived on racially mixed samples of the South African population, and not stratified for quality of education. As suggested by Cockcroft (2012, p.53), post-democratization, it is no longer valid to stratify norms according



to language or ethnicity, given the potent effect of quality of education on cognitive test performance *within* race groups.

South African practitioners should advisedly move towards the use of well-researched internationally relevant instruments with new norms that are coming on stream which take quality of education into account as the influential variable and not race. For various reasons, such as a paucity of relevant norms, or clinical familiarity with a particular test, practitioners may use tests and norms that are not optimal and may be open to peer challenge in clinical or court settings. An especially clear motivation is then required in the report which argues for their *tentative* use in a particular case, accompanied by an evaluation on defensible scientific grounds, of how this may have influenced the validity of the test interpretation.

7. Failure to take account of variability *across* educationally disadvantaged groups

It is encouraging that norms for educationally disadvantaged South Africans in different geographical locations have been collected on many of our commonly employed tests. These norms reveal significantly poorer test scores compared with those of South Africans with advantaged quality of education or US-based scores *regardless of race* (e.g. Andrews, Shuttleworth-Edwards & Radloff, 2012; Ferrett, 2011; Fike, Knoetze, Shuttleworth-Edwards & Radloff, 2012; Shuttleworth-Edwards & van Der Merwe, 2016). However, the availability of norms for South African disadvantaged groups is relatively sparse, they do not apply to all tests, and nor are they directly applicable to all disadvantaged populations in the country. A common error is when available norms for educationally disadvantaged individuals are employed without careful attention being given to the fine details of the norming sample, and how this may impact on the interpretation of test results.

While norms countrywide consistently reveal poorer scores for educationally disadvantaged individuals compared with those from advantaged backgrounds, the degree of disadvantage *within* the disadvantaged educational arena is not uniform across the country, nor is the degree of disadvantage homogenous within every region in the country. Geographical region *per se* may be less pertinent than the type of economic status within a



region, e.g. impoverished rural areas are likely to have more poorly resourced educational opportunities than less impoverished urban areas across the country.

Therefore, to guard against misdiagnosis of the presence or absence of brain impairment, the fine details of the schooling that the targeted disadvantaged norms are based on should be identified from the sample description (i.e. profoundly disadvantaged versus somewhat disadvantaged)³, and compared with the fine details of the examinee's quality of schooling. Where these are not deemed equivalent for the degree of disadvantage, tentative adjustments can be made towards the need for more leniency or stringency when interpreting the examinee's score in relation to those norms.

8. No account taken of quality of education when evaluating premorbid ability

A problem arises when trying to establish a pre-morbid level of ability based on school reports from disadvantaged educational settings. Here it is not uncommon for incorrect assumptions to be made as to how reported levels of ability on school reports are likely to translate into a learner's cognitive level based on psychometric testing. For example, a well above average performance indicated in a school report from a poorly resourced rural or township school would typically *not* equate to the same level of cognitive test performance on testing that would apply to an examinee with a well above average performance reported in a school report of a well-resourced advantaged school. Therefore, depending on the age of the individual and the domain being tested, 'well above average' for the disadvantaged examinee on a school report might translate into an average level compared with a US standard, whereas 'well above average' for the advantaged examinee on a school report would likely translate into a well above average psychometric test performance relative to the US standard.

For similar reasons, it is not possible to deduce a certain level of pre-morbid cognitive ability on the basis of the highest level of education (i.e. grade) achieved, which will differ markedly in association with poor versus good quality of education. Further, if low marks are achieved in a particular subject such as Mathematics, caution should be applied to



denoting the presence of a learning disability when this may be due to inadequate teaching in poorly resourced contexts.

Finally, it is often called upon practitioners to make projections about the level of scholastic and occupational achievement that might be expected of an individual *per se*, or premorbidly had they not been involved in a brain injury event. These projections need to be made within the context of what is possible for those from South African educationally disadvantaged backgrounds, not in general, but in a nuanced way for the case in question. An in-depth individualized analysis should be undertaken of the *extent* of educational disadvantage given geographical location and type of educational facility³, the personal home circumstances and the cognitive test results relative to similarly educationally disadvantaged peers.

9. Neglect of the Language Issue

Often there is no attention, or insufficient attention given to the language of the examinee, and all the intricate issues that apply to language usage in the South African multilingual assessment situation. These issues should be meticulously addressed in every case report as follows: (i) Identify and name the examinee's primary language; (ii) Note whether the person is tested in their primary language or another language and whether or not this may have influenced the test results; (iii) Note whether a formal test translation or informal translation using an interpreter was used to conduct the assessment, and evaluate whether these are considered adequate or not, and the extent to which they may have impacted on the test results.

It cannot be assumed that an individual should be tested in their language of origin. In post-Apartheid South Africa, it is increasingly the case that individuals are educated in English and use English at work and are therefore proficient in English even though it is not their primary language. Educational Psychologists generally advocate that an examinee be tested in the language of study which in South Africa is frequently English, even when this is not the home language. In support of this, a number of research studies reveal that test performance may be at least as good or better for South African young adult examinees of



various geographical and language origins, if they are tested in English rather than their primary language, e.g. on verbal fluency tasks (Bethlehem, de Picciotto & Watt, 2003; Denckla et al., 2019; Truter & Shuttleworth-Edwards, 2018; 2019), as well as tests from a comprehensive spectrum of additional functional domains (Denckla et al., 2019). Notably this was not the case for older adults aged 40 to 60 years where the primary language produced better results for verbal fluency than being tested in English (Truter & Shuttleworth-Edwards, 2018; 2019). A cohort effect is likely to be in evidence for this group of older South African individuals who, pre-democratization, were less likely to have been educated in English.

Translations for an African indigenous home language, where they exist for some tests must not be used blindly, in that some may not reflect the vernacular of the language. For example, an isiXhosa translation of a memory test which is developed for Xhosa individuals living in Cape Town, may not apply for a Xhosa individual from the rural Eastern Cape. In such situations, use of an English version of the test that has been normed for non-English participants with a basic proficiency in English, may be a more valid option than testing them in an unfamiliar vernacular of their home language. This norming route has gained favour amongst some researchers as a more pragmatic option for norming than the translation of tests in the South African situation (e.g. Claassen et al., 2001; Andrews et al.; Cockcroft, Alloway, Copello & Milligan, 2015; Fike et al., 2012; Skuy, Schutte, Fridjhon & O'Carroll 2001; Wechsler, 2014).

In the final analysis, it is necessary for an examiner to delineate in the report how the language issue has been dealt with in every case, and to critically evaluate how the route taken may or may not have impacted on the test results.

10. Insufficient rigour when documenting tests

Tests are often carelessly labelled, spelt incorrectly, or not fully specified in terms of the particular edition used, etc. As for a regular scientific research report, the assessment procedure for an assessment case report should be clearly delineated in order to be replicable.



Tests and normative data used should be meticulously named and referenced, with the utmost scholarly care.

11. Statistical errors

Examiners are often prone to making statistical errors because of flimsy understanding of the statistical modes used for the presentation of tests scores. These can be presented in many formats including standard IQ and subtest scores, means and standard deviations, Z-scores, or percentiles. It is essential that examiners are familiar with these various types of data, and adopt an informed, consistent approach. A table is available in Maganlal, Truter & Shuttleworth-Edwards (2021)², to assist practitioners in contrasting statistical methods in the delineation of their test data.

A very common error for beginners is to misinterpret the meaning of a low score as poor performance when it designates good performance, e.g. in the case of scores delineating time to complete a test, or error scores, where low scores equate with good performance, and high scores with poor performance. Vigilance is needed to be sure of what your test is measuring, and report this in a clear manner in the report. Generally, if you find a score that doesn't make conceptual sense, it is important to be sure it is not a statistical misinterpretation, before looking for other possible interpretations.

12. Inconsistent labelling of categories of ability

Labelling of levels of ability and impairment in relation to test scores often differ between test manuals and change over time. This is an area of great confusion for psychologists, and especially for training psychologists. It is essential that a coherent approach to labelling is adopted, which should be formally documented in the report itself, preferably using a table to assist the reader of the report. *A user-friendly article on the use of categories is available on the SACNA website (Maganlal et al., 2021)², based on a consensus statement of the American Academy of Clinical Neuropsychology (Guilmette et al., 2020).*



When applying categories of ability, caution needs to be applied to the language used to describe an examinee's test performance. For instance, do not label an individual. It is a test performance that falls within a particular category, which may be for a number of reasons in addition to the examinee's general level of ability, or may not even be commensurate with the overall level of ability. A common error is to write something like: 'Mr M fell in the average range on the Digit Span subtest' instead of 'Mr M's performance on the Digit Span subtest was in the average range'.

13. Problematic approaches when interpreting test results

This error takes several forms:

- (i) *The adoption of a purely statistical approach.* This is where an examiner simply reports on the psychometric test result in terms of level of ability indicated without further elaboration. A neuropsychologist is required to take the additional steps of using qualitative observations of test behaviour to understand why a test performance is impaired, and thereafter develop clinically contextualized hypotheses about the meaning of a *pattern* of test performances across a whole test protocol in terms of brain functioning.
- (ii) *Potted lists of possible explanations for a test result.* Importantly, 'further elaboration' on a test score, does not imply that a potted list of all possible explanations for a test score should appear in the report, on a test-by-test basis. These remain as background knowledge in the practitioner's head. Only synthesized positive indications of impaired or spared functioning, based on commonalities and dissociations *across* the various tests and functional domains are drawn out for the report.
- (iii) *The interpretation of test results in isolation.* The extrapolation of any specific functional impairment based on a single test score in isolation should never occur. Each one of our commonly employed cognitive tests, to a greater or lesser extent, taps into multiple functions to perform the task. For example: A low score on Trail Making Test B does not in



itself indicate a dual mental tracking problem in that it may be indicative of a visual scanning problem, a hand motor graphic problem, slowness of information processing, losing one's place, inability to remember the task set, illiteracy, lack of test wiseness, or poor effort. A poor performance on the Logical Memory test might not be an indication of a memory problem *per se*, but rather be due to difficulties with language processing, inability to deal with an overload of information, inability to sustain attention or encode new information, or again poor effort (which is always a possibility to be considered). On the RAVLT, a score of 14/15 does not necessarily reflect intact recognition in the context of an individual who also falsely indicates the presence of ten words that were not on the list. Such information, in addition to the levels of ability indicated by the test scores themselves, is combined to identify common patterns across the test profile that can point to neuropathological conditions.

(iv) *Restricted parameters of test categorization within functional domains.*

Frequently examiners make the error of conceptualizing tests too narrowly as though they belong clearly within a single functional category. However, the multifunctional nature of all tests makes their division into distinct categories according to functional domain extremely difficult, and to some extent artificial, although necessary to provide some organizational structure to the material being presented. *The SACNA document entitled 'Guidelines on Test Usage' on the SACNA website (2021b)² provides a simple system for categorizing test choices in a report according to broad-based differentiating characteristics across a typical test battery, on the assumption that each test might involve additional functions that an examinee would consider when evaluating the test results.* For instance, the Rey Complex Figure might be listed under tests of untimed visuospatial function, but its test result might warrant inclusion when discussing findings for executive functioning as well, because it involves planning. In short, the fundamental error around test categories, is to assume that each test performance equates to ability according to a particular functional category only, and appropriate test interpretation should never be restricted to an analysis on that basis.

To circumvent all of the above problems, *a summary should be provided at the end of each domain as categorized in the report* (e.g. taken together, impaired functioning on verbal associate learning, verbal list learning and logical memory tasks support the presence of



verbal memory difficulties which are more pronounced on delayed rather than immediate recall). *This should be followed by a summary discussion of all the test results going across all the various domains (e.g., overall problems are in evidence for hand motor function, verbal memory which is more pronounced on delayed rather than immediate recall, verbal fluency, processing speed, etc.). In addition, there should be a summary of behavioural factors that are observed to impact the results across a number of test categories (e.g. generally the person has trouble with novel material, any task involving sequencing ability, tasks requiring sustained attention and double tracking). A synthesized quantitative and qualitative analysis of reasons for test score performance in this way within a domain, and across all domains, allows for meaningful links to be made to brain function.*

14. Inadequacies in the conclusion/ summary subsection

This section is frequently poorly executed, which is a problem in that it may be the only part of the report read by the referring attorney or other agent, who will be looking for guidance in terms of a specific referral problem. *This concluding section needs to be a stand-alone case summary, in a form that will orient a recipient of the report to key elements of the case devoid of all the fine detail and can serve as the basis of a brief report-back letter to another practitioner.*

Common difficulties when writing the conclusion include: (i) poor integration of material where large chunks of material are reiterated verbatim from the main body of the report rather than being synthesized and presented succinctly, resulting in a repetitive and unnecessarily lengthy report (ii) the introduction of new information for the first time which was not in the body of the report; (iii) providing an opinion that is not consistent with the test results and other information in the report; (iv) proposing a diagnosis and interpretation of the assessment results without delineating how these will provide difficulties specifically for the examinee in question; (v) not answering the referral question.

The conclusion should be a summary which draws out the highlights of the case only, in the following order: (i) the core identifying details of the person; (ii) the problem; (iii) highlights of the background information; (iv) highlights of the current clinical impressions and



psychometric test results; (v) diagnostic hypotheses that arise from the findings; (vi) recommendations for the future management of the case. Essentially, there is a need to orientate the reader of the report chronologically as to *who this person is, the problem, key background features, what you have discovered, your diagnostic opinion, and whereto from here*. All basic information needs to be made available in brief, pithy form, so that an immediate impression of the case can be formed, as well as a way forward.

15. Failure to answer the referral question

The most all-encompassing error is failure to provide a referral agent with the information requested of a neuropsychological assessment. Referrals are made because of the need to discover more, in the hopes that a neuropsychological opinion can take the case to a new level of diagnostic understanding and recommendations for treatment. If there is not a clear answer, then be clear about saying why this is not possible. Even where there is a high degree of uncertainty, always suggest a way forward: e.g. referral for investigation from another professional source; gaining access to supplementary information; waiting for more time to elapse prior to another neuropsychological assessment.

CONCLUSION

This review alerts practitioners to commonly occurring errors in neuropsychological reports and cognitive test assessment reports in general, and ways of circumventing these. It covers basic report writing skills, with special directives to deal with the complexities of psychometric test usage and interpretation principles in the culturally diverse South African situation. Due to a paucity of demographically appropriate norming data there is confusion and controversy amongst practitioners on how best to achieve valid test interpretations. This is an area of much debate, the search for solutions and further research. The review provides recommendations on how to manage these challenging and sometimes contentious issues in an assessment report whether for clinical or court purposes, in a manner that will be defensible if put to the test under scholarly peer review.



REFERENCES

- Andrews, K., Shuttleworth-Edwards, A. B., & Radloff, S. (2012). Normative indications for Xhosa speaking unskilled workers on the Trail Making and Stroop tests. *Journal of Psychology in Africa, 22*(3), 333-342. doi:10.1080/14330237.2012.10820538
- Bethlehem, D., de Picciotto, J., & Watt, N. (2003). Assessment of verbal fluency in bilingual Zulu-English speakers. *South African Journal of Psychology, 33*(4), 236-240. doi.org/10.1177/008124630303300406
- Claassen, N., Krynauw, A. P., & Mathe, M. (2001). A standardisation of the WAIS-III for English-speaking South Africans. Pretoria, South Africa: Human Sciences Research Council.
- Cockcroft, K. (2013). The Senior South African Individual Scales – Revised: a review. In S. Laher, & K. Cockcroft, *Psychological Assessment in South Africa: Research and Applications* (pp.48-59). Johannesburg, South Africa: WITS University Press.
- Cockcroft, K., Alloway, T., Copello, E., & Milligan, R. (2015). A cross-cultural comparison between South African and British students on the Wechsler Adult Intelligence Scales Third Edition (WAIS III). *Frontiers in Psychology, 1*-11. doi:10.3389/fpsyg.2015.00297
- Denckla, C. A., Spies, G., Heaton, R., Vasterling, J., Franklin, D., Korte, K. J., . . . Seedat, S. (2019). Generalizability of demographically corrected Zambian neuropsychological norms to South African women. *The Clinical Neuropsychologist, 33*(1), 40-57. doi:10.1080/13854046.2019.1588995.
- Fike, L., Knoetze, J., Shuttleworth-Edwards, A., & Radloff, S. (2012). Normative Indicators for Xhosa Speaking Unskilled Workers on the Wechsler Memory Scale Associate Learning and Visual Reproduction Subtests. *Journal of Psychology in Africa, 22*(3), 323-332. doi:10.1080/14330237.2012.10820537
- Ferrett, H. L. (2011). *The adaptation and norming of selected psychometric tests for 12- to 15-year-old urbanised Western Cape adolescents*. PhD Thesis, Stellenbosch University, Psychology, Cape Town. Retrieved from <https://pdfs.semanticscholar.org/95b1/cb95c2e6368e9d7c391ddce7764feb703566.pdf>
- Guilmette, T. J., Sweet, J. J., Hebben, N., Koltai, D., Mahone, E., Spiegler, B. J., . . . Westerveld, M. A. (2020). American Academy of Clinical Neuropsychology consensus conference statement on uniform labelling of performance test scores. *The Clinical Neuropsychologist, 34*(3), 437-453. doi:10.1080/13854046.2020.1722244
- Hemp, F., & Pomario, T. (2020). Neuropsychological Assessment in the Medicolegal Context. Ch.11, pp. 279-343. In S. Badenhorst, *Principles and Practices of Forensic Psychology*. Juta.



HPCSA: Health Professions Council of South Africa (2019).

https://www.hpcsa.co.za/Uploads/PSB_2019/Exams/scope_of_profession_of_psychology_sept_2011.pdf

Lezak, M., Howieson, D., Bigler, E., & Tranel, D. (2012). *Neuropsychological assessment* (5th ed.). Oxford: Oxford University Press.

Maganlal, U., Truter, S. & Shuttleworth-Edwards, A.B. (2021).² Uniform labelling of cognitive test scores: Recommendations from SACNA based on Guilmette et al. (2020). *Brainwaves: South African Clinical Neuropsychological Association (SACNA)*.
<https://sacna.co.za/brainwave.php?id=22>

SACNA (2021a).² South African Clinical Neuropsychological Association (SACNA) Guidelines on Report Writing.
<https://sacna.co.za/files/pdf/report%20writing%20guidelines%20sacna%20submit%2027%20januaray%202021.pdf>

SACNA (2021b).² South African Clinical Neuropsychological Association (SACNA) Guidelines on Test Usage.
<https://sacna.co.za/files/pdf/test%20usage%20doc%20sacna%20submit%2027%20januaray%202021.pdf>

Shuttleworth-Edwards, A.B. (2016). Generally representative is representative of none: Commentary on the pitfalls of IQ test standardization in multicultural settings. *Clinical Neuropsychologist*, 30(7), 975-998. <https://doi.org/10.1080/13854046.2016.1204011>

Shuttleworth-Edwards, A.B. & van der Merwe, A.S. (2016). WISC-IV and WAIS-III South African cross-cultural normative data stratified for quality of education. Ch.5, pp. 72-96. In R. F. Ferraro (Ed.), *Minority and cross-cultural aspects of neuropsychological assessment: Enduring and emerging rands* (2nd ed.). Psychology Press.
<https://doi.org/10.4324/9781315708690>

Suchy, Y. (2016) Population-based norms in crisis. *Clinical Neuropsychologist*, 30(7), 973-974. <https://doi.org/10.1080/13854046.2016.1225363>

Skuy, M., Taylor, M., O'Carroll, S., Fridjhon, P., & Rosenthal, L. (2000). Performance of black and white South African children on the Wechsler Intelligence Scale for Children-Revised and the Kaufman Assessment Battery. *Psychological Reports*, 86, 727-737.
doi:10.2466/pr0.2000.86.3.727

Truter, S., & Shuttleworth-Edwards, A. B. (2018). Eleven neuropsychological tests in the public domain: Normative data for disadvantaged adults. In P. S. (PsySSA) (Ed.), *Mamela Psychology, 2018 Congress Programme* (p. 29). Johannesburg: PsySSA.



Truter, S., & Shuttleworth-Edwards, A. B. (2019). Neuropsychological testing in a multi-lingual society: Normative data for South African adults in more than eight languages. *International Conference on Neurology and Cognitive Neuroscience IRC 2019 Conference Proceedings* (p. 941). Bangkok: International Research Conference.

van Eeden, R. (1992). *Manual for the Senior South African Individual Scale - Revised (SSAIS-R)*. Pretoria: Human Sciences Research Council.

Wechsler, D. (2014). *WAIS-IV-SA Administration and Scoring Manual*. Johannesburg, South Africa: JvR Psychometrics.

Notes:

¹ Authors: Ann B. Shuttleworth-Edwards, Erika Steenberg, Frances Hemp, Sharon Truter, Menachem Mazabow, June C. Rossi, Urvashi Maganlal, and Naomi van Wyk. At the time of submission of this document to the SACNA website, the authors were Executive Members of the South African Clinical Neuropsychological Association (SACNA), who were involved with professional training in university or hospital settings, and/or continuing education and credentialing reviews for SACNA. (Document submitted June 2022).

² This is one of three cited documents that are freely available on the SACNA website (www.sacna.com).

³ South Africa's history of segregated education left a legacy of profound educational inequality which for research purposes has allowed for division into the two stratification variables of 'disadvantaged' versus 'advantaged' quality of education (Ferrett, 2011; Shuttleworth-Edwards & van der Merwe, 2016). Initially these categories were based on the racially segregated educational systems of poorly resourced schooling *versus* well-resourced schooling (former Department of Education and Training and House of Representative schools *versus* former Model C and privately funded schools, respectively). Since democratization and the desegregation of schools, the massive disparity between educational opportunities in the country persists although no longer officially on racial lines. Currently, equivalent categories of 'disadvantaged' versus 'advantaged' education can be made according to the formalized South African Quintile ratings. These delineate the poverty status of desegregated schools according to Quintiles 1 to 3 (poorly resourced, disadvantaged schooling), and Quintiles 4 to 5 (well-resourced, advantaged education).

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