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FACT SHEET

CHANGING TALENT ASSESSMENT LANDSCAPE

INTRODUCTION

As organisations, the world of work, and technologies are evolving, so is the talent assessment landscape. This factsheet explores the changing talent assessment landscape in South Africa and the new generation of assessments that are enabled by the fourth industrial revolution (4IR) technologies. These technologies are reshaping the nature of assessments and the assessment space, whether specific processes or the entire end-to-end process of assessments. There are advantages in terms of convenience, candidate engagement, efficiency, and accuracy. However, there are also disadvantages and concerns regarding these changes. HR practitioners need to recognise these and understand how these could be addressed by sound theory, research, peer review and policy. In relation to policy, the factsheet discusses the evolving legislative and regulatory context in South Africa and how psychological tests and assessments are defined and regulated in terms of classification and certification.

The factsheet is structured as follows:

Evolving talent assessment landscape	New generation of assessments
	Advantages and disadvantages of the new generation assessments
	Implications for organisations and HR practitioners
Evolving legislative and regulatory context in South Africa	Assessment classification and certification in SA
	Health Professions Council of South Africa's (HPCSA) revised mandate
	Establishment and role of Assessment Standards South Africa (ASSA)
Role of the HR Practitioner	Key questions for good practice in selection and talent assessment

EVOLVING TALENT ASSESSMENT LANDSCAPE

The talent assessment landscape is evolving rapidly due to the fast-paced changes in the design, delivery, reporting and experience of psychological/psychometric tests and other methods of assessments[1]. These are enabled by 4IR technologies and from the transformations in work, the workplace and workforce (see the factsheets on ***HR's place in 4IR***, ***workforce transitions***, and the ***role of algorithms, automation and artificial intelligence***). Commercial test developers are leading the digitisation, digitalisation, and digital transformation[2] of the process of talent assessments; and are pioneering the 'next generation' of assessment methods and platforms. Organisations are adopting these changes as they themselves grapple with and transform how they manage work, the workplace, and their workforce. The COVID-19 pandemic is further accelerating the adoption of these changes and the shift to online assessments, which is making face-to-face and paper-and-pencil-based assessments redundant.

NEW GENERATION OF ASSESSMENTS

The 'next generation' of assessment methods and platforms are challenging our conceptions of the site, times and format of assessments as well as how these are interpreted, reported on, and used. The available technologies are enabling the delivery of assessments through mobile devices, tablets, and personal computers. This means candidates can complete assessments at a time and a place that is convenient for them. The use of automation, artificial intelligence (AI) and algorithms in assessment platforms is pioneering autonomous scoring, reporting, and predictive analytics for talent decisions for individuals, teams, business units and the organisation as a whole. For example, algorithms are now being used to help predict the success of job candidates.

The table on the next page provides examples of specific technologies that are entering the assessment space and reshaping the nature, specific processes or the entire end-to-end process of assessments.

1. The word 'test' is used for brevity hereafter to refer to any device, instrument, questionnaire, apparatus, method, technique or test that measures construct(s). When referring to psychological or psychometric tests this means any device, instrument, questionnaire, apparatus, method, technique or test that measures psychological constructs.
2. See the factsheets on ***HR's place in 4IR*** for a discussion of the differences between digitisation, digitalisation, and digital transformation.

Assessment process cycle	Technologies reshaping specific assessment processes	Technologies reshaping the entire end-to-end assessment cycle
Assessment administration	• use of gaming elements, thinking and mechanics in the assessment of an individual's reasoning, problem-solving, learning, personality, and work-based preferences and behaviours (see the textbox below on the difference between gamification and game-based assessments) • use of video, augmented reality, and virtual reality for administration • use of robotic process and cognitive automation for administration tasks	• collection and use of big data to make inferences on psychological traits and profiles • use of AI to scan and score the candidate's facial expression, tone, and language in a video interview to evaluate job fit • use of AI and machine learning techniques for behavioural and predictive modelling
Assessment scoring and reporting	• use of robotic process and cognitive automation at different levels[3] i. resume filters that scan and score for keywords and phrases in a candidate's CV ii. collection and scoring of personality data from social network activities from Facebook, LinkedIn and Twitter iii. pattern identification and matching in candidate's online activities, data or responses iv. auto transcribing, language modelling and natural language processing of a candidate's data or responses	
Assessment interpretation and decisions	• behavioural-linguistic analysis of personality data from social network activities from Facebook, LinkedIn and Twitter	

3. See page 8 of the factsheet on ***Workforce Transitions*** for the different levels of automation.

Robotic process and basic cognitive automation are achieved by gathering and transferring expert knowledge and then programming the system with an 'if/then' rule-based approach. Chatbots and computer-generated interpretative reports are examples. However, these rule-based systems are not capable of learning and improving without being given explicit instructions. **AI** and the techniques of **machine learning** such as **deep learning** are attempts to go beyond rule-based systems. These enable advanced cognitive automation. For example, these algorithms enable a system to model predictions from any given data; and add or modify this model to improve its predictions over time. In this way it can provide predictive people analytics to inform talent decisions. Algorithms can check the sequence of responses to determine if there is a pattern or identify facial expressions and emotions. Text and speech analytics can help process natural language in interviews or simulations.

See this brief video introduction to ***machine learning and how predictive models are built***; and these videos on ***statistical bias and variance*** of these models and in an example of a ***classification model***.

The use of AI and algorithms as well gamification in assessment and virtual reality simulation provides new directions for adaptive testing. Computerised adaptive testing adjusts the difficulty level of the test to suit that of the test-taker. This means that questions automatically get harder or easier following a correct or incorrect answer respectively. However, building this capability into computerised assessments is a lengthy process. Typically test developers need a huge item bank and large samples of test takers to calibrate an adaptive test item bank as researchers need sufficient data to identify the item banks' psychometric properties and select the best questions. Developers require knowledge of advanced psychometric theory, most importantly item-response theory. Given this, not many tests have an adaptive test function built in. However, the use of 4IR technologies could potentially make the collection and mining of such data quick, easy, and reliable. The advantage of adaptive testing for HR is the opportunities this offers for more valid and relevant testing of applicants as well as the potential time saving across each test administration session.

4IR technologies offer much to the dynamicity of the assessment context. Testing has long been criticised for being static and providing a small snapshot of a person at a given moment. Gamified and game-based assessments offer an interactive, simulated environment that offers the opportunity of providing a clearer and more accurate assessment of the persons' characteristics in a more dynamic manner. While the jury is still out on the reliability, validity, and fairness of these types of assessments in South Africa, the opportunities offered with the combination of adaptive and dynamic testing are worth reflecting on. In a game-based environment, this allows for an assessment of potential rather than static ability – something that is core to the social justice imperative in organisations. It also allows, as an example, for the traditional in-basket task to evolve to a more virtual, technologically based platform that is not resource intensive.

Differentiating gamified assessments and game-based assessments

In **gamified assessments**, the traditional assessment and its psychometric properties are unchanged and the application of game elements is used to give the assessment the look and feel of a game, clothing the assessment in a more playful context. Examples of gaming elements include clear goals divided into milestones, a clear path to achieve the milestones, avatars as a representation of the person, rewards or badges for achievement of each milestone, and where applicable the display of these achievements as a leaderboard.

When done correctly, this approach has the potential to counteract negative applicant reactions, increasing engagement, as well as reducing test anxiety and mitigating cheating behaviours (Attali & Arieli-Attali, 2015; Collmus & Landers, 2017; Mavridis & Tsiatsos, 2016; Ramsay, 2017). However, there is a need to ensure a good alignment between the game elements and the aims of the assessment, as there is a possibility of motivating behaviours which are inadequate for the purpose of the assessment (Belland, 2012; Kim, 2015; Mislevy et al. 2012).

Game-based assessments (GBA) change the core of the assessment model. In this way it harnesses the full scope of game-thinking, not just for better applicant reactions, but also to capitalise on the inherent psychometric properties of games. Games, for example, are well suited for assessment purposes as they naturally present players with a stream of choices during gameplay. The recording of both player choices and the game's paradata (i.e. data about how the player arrived at their choice; Stieger & Reips, 2010) allows GBAs to analyse information that often cannot be captured by traditional psychological assessments (Landers, 2015; Shute & Ventura, 2013). While gamified assessments present traditional assessment in a new format, GBAs rebuild the assessment as a game. This means that in GBAs, a candidate's interactions with game elements become an integral part of the assessment model, allowing for a more effective unification of game elements' potential effects with the aims of the assessment.

ADVANTAGES AND DISADVANTAGES OF THE NEW GENERATION ASSESSMENTS

There are many advantages for organisations with the new generation assessment in terms of convenience, efficiency and accuracy of the assessment process and effective processing of volumes of assessment data. These include:

- Improvement of the assessment process flows
- Capturing of real-time data as the assessment happens
- Allowing for more dynamic assessment as opposed to current static assessment techniques
- Engagement of the candidates through gamification and use of augmented and virtual reality
- Increased breadth and depth of information that can be collected, which is not possible by even an experienced assessor
- Processing of large volumes if the system is stable
- Algorithms that are meant to produce error-free calculations
- AI that can provide analytics without any human intervention or biases
- AI that can analyse vast amounts of data accurately and relatively error-free for faster decision-making

New generation of assessments

Advantages and disadvantages of the new generation assessments

Implications for organisations and HR practitioners

However, there are also many concerns and disadvantages regarding accuracy, validity, and effectiveness. These include:

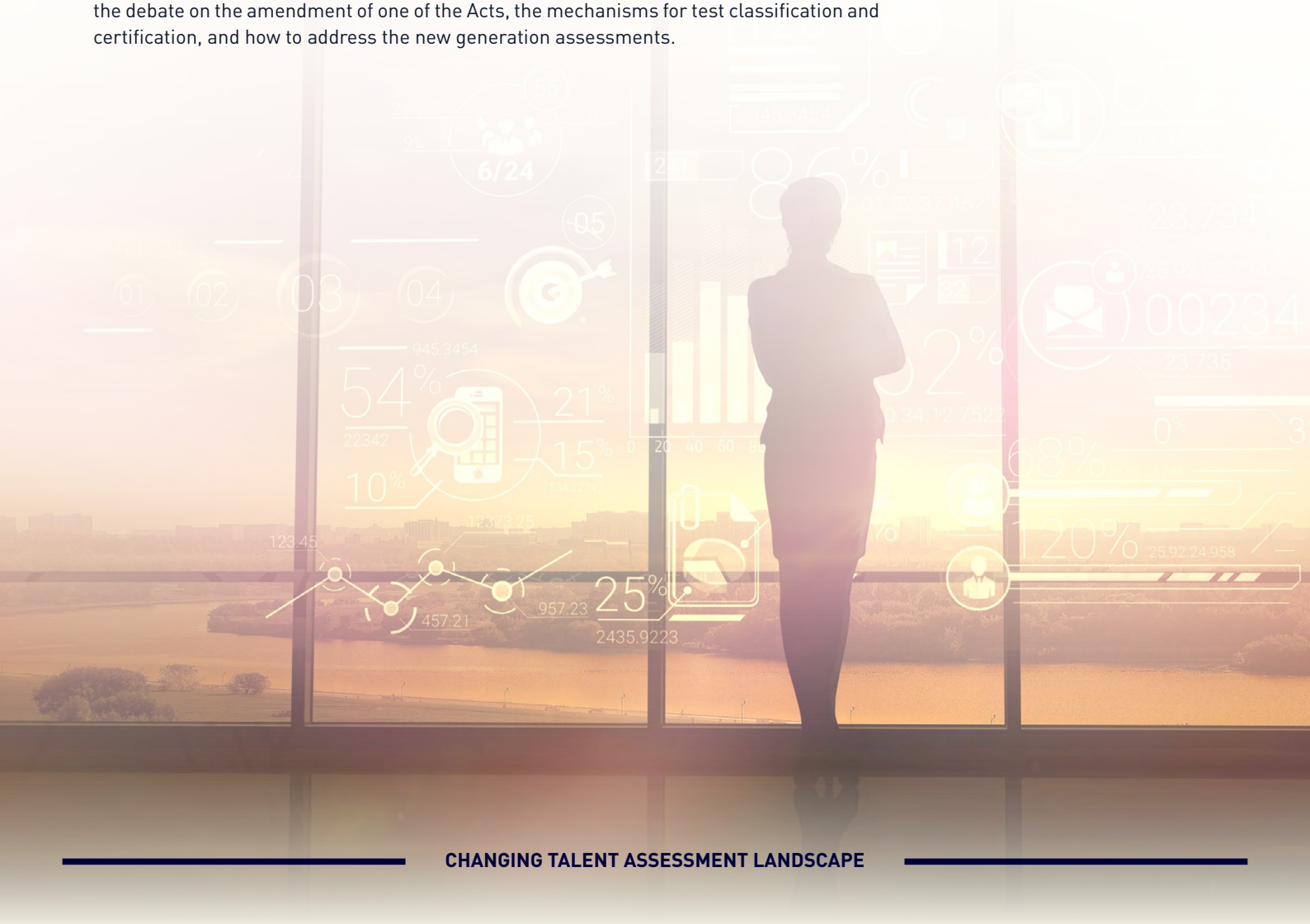
- Test developers misuse of the "AI" label and not being transparent about what actually is being measured and scored (see ***Narayanan, 2019***)
- Test developers may not be able to ***explain*** the AI or algorithms and cannot test for the validity of the AI-based decisions
- Challenge of how the outcomes of a standardised 'plug-and-play' AI system can be defended when not aligned with specific job requirements
- Historical and social biases in the AI or algorithms due to the design choices, test developers' own inherent social, economic and cultural biases built in or creeping into the system, and/or sampled (or training and validation) data[4] (see ***Raghavan, Barocas, Kleinberg, & Levy (2019) for examples of AI-based tests/instruments and a critical review of these***)
- Ethical concerns regarding the accuracy of content identification, facial recognition, speech to text translation, and 'deepfakes'
- Questions on the ethics and validity of identifying facial expressions and emotions, and the assumption of universalism (see ***Barrett, Adolphs, Marsella, Martinez, & Pollak (2019)*** and ***Laher (2013)***)
- Face validity and applicability of certain next generation assessments are questionable in certain countries and environments. For example, the use of UK or US gamified or game-based assessments such as a 'space adventure' for South African participants or for a CEO-level assessment
- Ethical concerns regarding delegating selection and talent decisions to an AI system – humans are more adept at noticing individual characteristics
- Although AI excels at analysing massive amounts of data, the results can be misinterpreted or even deliberately abused. For example, there are ethical concerns regarding how big data from social media has been used (consider the Cambridge Analytica scandal for example).
- Possible violation of individual privacy. In South Africa this might also be in contravention to the POPI Act.
- The impact of the lack of access to, and lack of familiarity with, digital technologies (hardware and software), connectivity, and data on test performance. This refers to the ***digital divide*** which can negatively influence the test performance of disadvantaged and underprivileged candidates. This highlights the imperative of social justice in assessments (which the Employment Equity Act with other Acts attempts to address).
- Literacy and language proficiency issues will, together with the lack of proficiency with technology, compound the negative impact on disadvantaged and underprivileged candidates' test performance.

4. See, for example, the critical review by Henrich, Heine, & Norenzayan (2010) on how psychological research draws mainly from samples of Western, Educated, Industrialized, Rich, and Democratic (WEIRD) societies. With regard to AI, machine learning and algorithms the key question is what samples are used for building, training, and validating the prediction model as well as to test for bias.

IMPLICATIONS FOR ORGANISATIONS AND HR PRACTITIONERS

The local and global legislation, including the research on, and the classification and certification of, assessments, are lagging in relation to the pace of changes in the assessment space. The above-mentioned concerns need to be addressed through sound theory, research, peer review and policy. The new generation assessments may appear to be more effective, efficient, and accurate. However, we need to critically examine how these assessments are constructed, what constructs they measure, how these are delimited and measured, where they can be effectively used, and what the implications are for the South African environment. The research into the constructs and the validity and reliability of these new generation assessments should be informed by both theory and data-driven models. The ethical and informed use of AI can identify where it can support and augment the various stages of the selection and talent decision processes in organisations. This means that we need to be careful that algorithms do not become or substitute for our ethical compass; and that they do not negatively impact equity, diversity, and inclusion within organisations.

HR practitioners need to understand as well as learn how to leverage and use the new generation of assessments to enable better selection and talent decisions. They need to recognise that presently there is clear legislation in South Africa that defines and regulates the use of psychological assessments. These are discussed in the next section, including the debate on the amendment of one of the Acts, the mechanisms for test classification and certification, and how to address the new generation assessments.



EVOLVING LEGISLATIVE AND REGULATORY CONTEXT IN SOUTH AFRICA

There are two key legislations that regulate testing and assessment of psychological constructs and its use in the workplace, that is, the Health Professions Act (Act No. 56 of 1974) and the Employment Equity Act (Act No 55 of 1998). The testing and assessment of psychological constructs fall within the definition of 'psychological acts' as stated in the Health Professions Act. These include psychometric measuring devices, tests, questionnaires, techniques, or instruments that assess psychological constructs such as intellectual or cognitive ability or functioning, aptitude, interest, personality make-up or personality functioning. The administration, interpretation and reporting of these tests are deemed psychological acts which are reserved for psychologists registered with the HPCSA. Psychometrists registered with the HPCSA can administer, interpret and/or report on all tests except projective and neuropsychological tests.

The conduct of these acts and its use is also regulated and contextualised by the Employment Equity Act to ensure there is no unfair discrimination in employment, there is equity and the redress of the effects of discrimination, and the achievement of a diverse and representative workforce. Clauses A to C of Section 8 of the Act prohibits 'psychological testing and similar assessments' unless these are shown to be valid and reliable scientifically, can be applied fairly to all employees, and is not biased against any employee or group. There was much debate when Clause D, an amendment to Section 8 of the Act, was proposed and later proclaimed and gazetted regarding the certification of psychological tests and similar assessments by the HPCSA (see the text box below). Certification concerns the quality of the psychological tests; and it requires the development of quality standards and the mechanisms, processes, and capacity for quality assurance

ASSESSMENT CLASSIFICATION AND CERTIFICATION IN SA

The amendments were challenged by the Association of Test Publishers (ATP) in South Africa regarding the ability of the HPCSA (and its Psychometrics Committee) to deliver on its new mandate effectively and efficiently with limited capacities and resources. This is in relation to both the traditional form of assessments and the new generation of assessments. The court judgment found the Clause D to be null and void, ruling that Clauses A to C remain as is in the Employment Equity Act.

Amendments of Section 8 of the Employment Equity Act No 55 of 1998 (Government Gazette 37871 dated 25 July, 2014), which previously comprised Clauses A to C as below:

(8) Psychological testing and other similar assessments of an employee are prohibited unless the test or assessment being used-

a. Has been scientifically shown to be valid and reliable;
b. Can be applied fairly to all employees;
c. Is not biased against any employee or group;

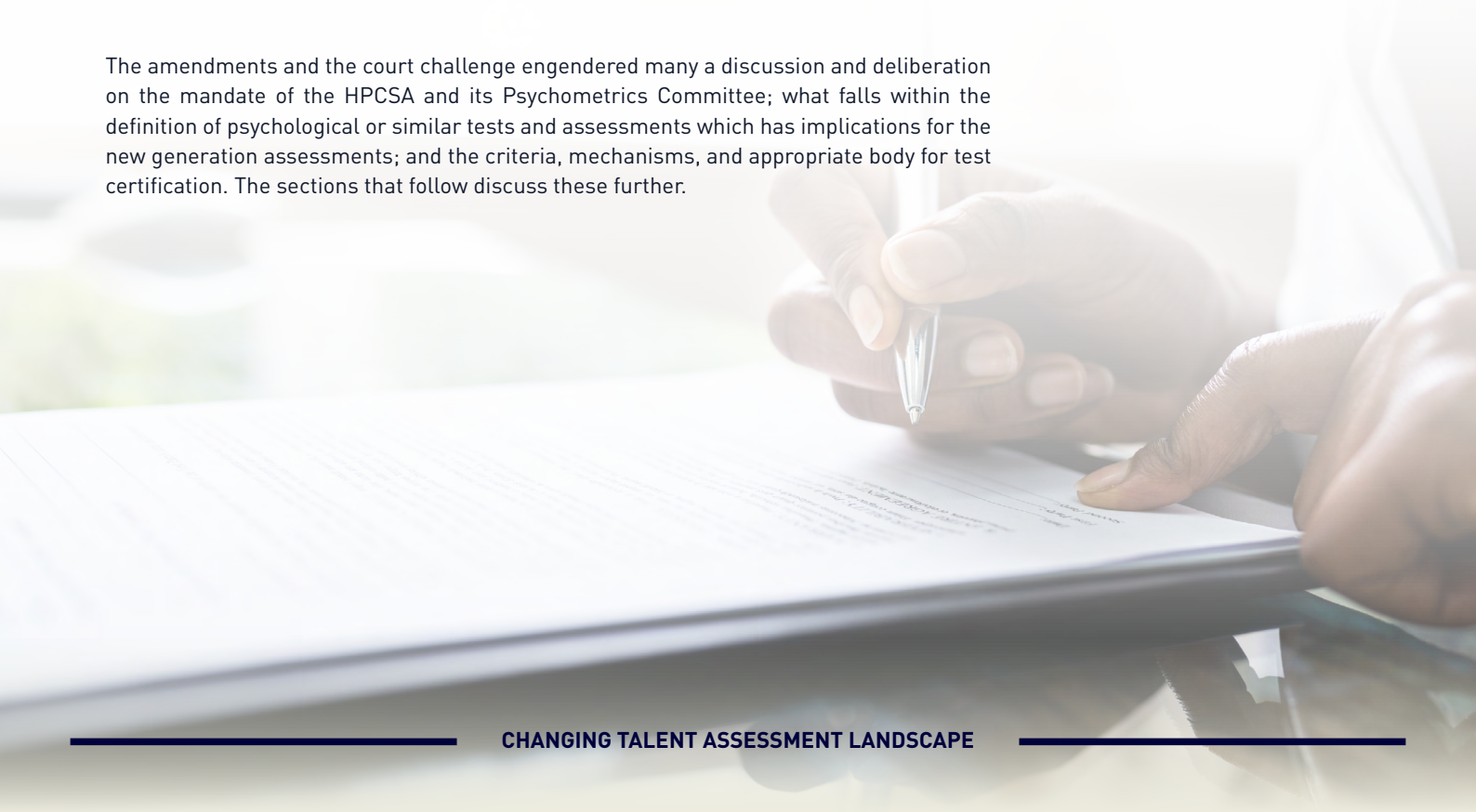
Clause D amended by section 4 of Act No. 47 of 2013 states:

d. Has been certified by the Health Professions Council of South Africa established by section 2 of the Health Professions Act, 1974 (Act No. 56 of 1974), or any other body which may be authorised by law to certify those tests or assessments

On 2 May 2017 Judge Mali provided the following judgment and granted the following order in the legal challenge by ATP:

1. That the Proclamation 50 published in Government Gazette 37871 on 25 July 2014 is null and void and of no force or effect to the extent that it brings into operation the amendment of section 8 (clause "d") of Employment Equity Act, Act 55 of 1998 in terms of section 4 of the Employment Equity Amendment Act, 2013, Act 47 of 2013.
2. That Section 8 of the Employment Equity Act, Act 55 of 1998 as it pertained on 31 July 2014 (clauses "a" to "c") continues, unabated as from the aforesaid date

The amendments and the court challenge engendered many a discussion and deliberation on the mandate of the HPCSA and its Psychometrics Committee; what falls within the definition of psychological or similar tests and assessments which has implications for the new generation assessments; and the criteria, mechanisms, and appropriate body for test certification. The sections that follow discuss these further.



HEALTH PROFESSIONS COUNCIL OF SOUTH AFRICA'S (HPCSA) REVISED MANDATE

Assessment classification and certification in SA

Health Professions Council of South Africa's (HPCSA) revised mandate

Establishment and role of Assessment Standards South Africa (ASSA)

During June 2019, the Professional Board for Psychology of the HPCSA released a revised mandate of its Psychometrics Committee, indicating that the committee would be focusing on test classification and not test certification. The registration of a test with the HPCSA and its classification as a psychological test, as published and gazetted by the HPCSA, is not a certification of the compliance of the test with the Employment Equity Act or any other evaluative certification. Through the registration the HPCSA will be indicating whether the test measures a psychological construct or not and if it does, it will be classified as a psychological test that must be controlled and used by a HPCSA registered psychologist and psychometrist as indicated. It is important that HR practitioners be aware that the classification of a test does not provide any assurance of the quality of the test. A gap exists currently in South Africa with regards to quality assurance of tests or assessments.

The Psychometrics Committee is now mandated to:

- *classify* any device, instrument, questionnaire, apparatus, method, technique or test aimed at the evaluation of emotional, behavioural and cognitive processes or adjustment of personality of individuals or groups of persons, or for the determination of intellectual abilities, psychopathology, personality make-up, personality functioning, aptitude or interests by the usage and interpretation of questionnaires, tests projections or other techniques or any apparatus, *whether of SA origin or imported*, and to report thereon to the Professional Board.

  Classification will entail verifying whether a test is psychological or not. Thus, practitioners and publishers will need to submit the full test manual that states the construct(s) tapped by the test, the evidence of psychometric properties, an indication as to whether the item content was culturally appropriate.
- *annually publish* a list of psychological tests/psychometric instruments *classified* by the Professional Board
- develop *training guidelines/standards* related to psychometrics and psychological assessment that can inform and be used in the accreditation of qualifications, universities and internship programmes, when setting the national Board examinations, and for continuing professional development purposes
- develop *guidelines for ethical practice* related to test use and psychological assessment and how to assess whether a psychological test meets the required standards
- develop *minimum requirements/standards* for psychological tests

ESTABLISHMENT AND ROLE OF ASSESSMENT STANDARDS SOUTH AFRICA (ASSA)

An urgent need for a test certification process had arisen given the revised HPCSA mandate. A task force was convened to address this need, that is, to consider the development of assessment standards in South Africa and to provide a platform for public reviews of tests, and the certification of tests. The task force comprised representatives from South African professional societies, namely, the Psychological Society of South Africa (PsySSA), the Society for Industrial and Organisational Psychology (SIOPSA) and its interest group People Assessments in Industry (PAI); the South African Association of Test Publishers (ATP); and the International Test Commission (ITC).

One of the recommendations of the task force was the formation of an independent, non-regulatory structure for developing assessment standards and certifying tests against these[5]. This structure was constituted as the Assessment Standards South Africa (ASSA), a non-government and non-profit organisation (NPO). ASSA aims to assist in implementing a robust, best practice and technology-enabled process that could be used to review people assessment instruments and tests. Further, based on the experience in other countries, the voluntary submission of assessment instruments for objective evaluation and reviews will raise the general standard and awareness of using quality tests.

It is envisaged that this body will look at the broad spectrum of instruments that are used in South Africa and will not be limited to psychological tests only. In this way it will contribute towards establishing standards for the new generation of assessments.

ASSA Mission Statement

To establish Assessment Standards South Africa as an independent South African test review centre which promotes the quality standards of testing, assessment, and measurement practices in the country.

ASSA Activities

Assessment Standards South Africa will:

- provide minimum standards in South Africa for all activities in relation to tests and testing
- provide guidelines and other literature on standards for the construction, use and availability of tests
- provide a website and online platform to disseminate information on the standards as well as test registration and qualifications for test use
- provide reviews of tests and advisory statements

5. See for example the ***European Federation of Psychologists' Association*** (EFPA) and its ***EFPA Test Review Model***.

ROLE OF THE HR PRACTITIONER

The HR practitioner should ensure good and ethical practice in selection processes and decisions as well as in the broader talent and succession decisions as per the SABPP HR Professional Practice Standards. As stated in the Standards, where psychological testing and assessments are used, compliance with legislative requirements and good practice codes of the HPCSA and relevant professional bodies is necessary. As discussed above, the good practice codes are evolving especially with the formation of ASSA.

Key questions for good practice in selection and talent assessment

KEY QUESTIONS FOR GOOD PRACTICE IN SELECTION AND TALENT ASSESSMENT

As stated in the Standards, valid, objective, and ethical reasons are needed for talent and selection decisions. The HR practitioner therefore needs to ask the following key questions of test vendors and assessment consultants:

- what theory and theoretical assumptions are informing the test and what specific constructs are measured
- is the test appropriate for the organisation's context and specific HR purpose
- is there a detailed test manual with evidence of validity and reliability of the test
- is there a set of appropriate South African norms for the test
- has test fairness and bias been addressed
- if AI or the techniques of machine learning are used, (1) can the test provider ***explain*** the model and the decisions based on it, and (2) can the test provider indicate the sample or data used for building, training, and validating the model
- are the interpretations from the test or assessment adequate and appropriate
- is the test measuring a psychological construct
- is the test classified or awaiting classification with the HPCSA

With the future capacity development and functioning of the ASSA, HR practitioners could additionally ask about the adherence to the ASSA standards and the peer review and certification of the specific psychological test or assessment.

CONCLUSION

Although the talent assessment landscape is changing with the enablement of 4IR technologies, the requirement for ethical, sound, and good practices in talent processes and decisions remains critical. This factsheet helps the HR practitioner navigate this changing landscape and good practices. It introduces the trends in assessment platforms, methods, and processes; and identifies the key issues in these new generation of assessments. This includes the legislation regulating psychological testing and assessment, the evolving mechanisms of classification and certification of the tests and assessments, and the SABPP HR Professional Practice Standards.

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