

# Best Practice, Ethical and Legal Considerations in Psychometric Testing for Guidance Counsellors

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## **Summary**

Over the last twenty years there has been a notable increase in the popularity of psychometric testing in both occupational and educational settings. This increase in popularity has led to the proliferation of diverse psychometric tests and testing internationally. The last twenty years has also seen a convergence in what is seen as best practice. The current article aims to provide test users in Irish secondary schools with a broad perspective on best practice in using psychometric tests based on international best practice standards. These standards highlight the importance of managing the testing process, to ensure clients are effectively briefed on the strengths and limitations of tests and debriefed on the meaning of their scores.

The effective management of the testing process ensures students can realistically interpret psychometric test information and are effectively prepared for future encounters with psychometric testing. This article will explore best practice standards within an international context and highlight potential ethical and legal considerations, pertinent to the use of psychometric tests in Irish post-primary schools.

## **Keywords**

Individual Differences, Guidance Counselling, Testing Standards, Psychometric Testing, Psychometric Testing Training, Ability Testing, Psychometric Test Feedback, Culturally fair testing, Fairness in Testing,

# 1. Introduction

## 1.1 Overview of Psychometrics

It is apparent that as human beings we share many psychological needs. William Glasser (1925-2013) developer of reality therapy and choice theory reminds us of the core human needs he identified (survival, freedom, potency, fun, and belonging). From a guidance perspective the need to help all students feel they can “belong” in the world of work and to feel “potency” (e.g., a sense of their own competence) is fundamental.

However, as well as these common needs students have different abilities, interests and motivations. The asymmetry of these differences makes the work of the guidance counsellor much more difficult. The desire to understand these individual differences, and make inferences about how people might adapt and behave in the future, led to the development of psychometrics. In the early twentieth century, the French educational establishment felt many children were being left behind in primary school classrooms. In order to develop an early warning of those who might need special support Alfred Binet (1857-1911), a medical practitioner, was tasked with objectively measuring “learning capability” as a marker of different educational needs. His success in this task signalled the advent of psychometrics.

Psychometrics is the branch of psychology concerned with systematically measuring individual differences. Following on from Binet, psychologists turned their attention to a broader range of adult differences and started to differentiate personality types (Jung, 1875-1961) and measure different personality traits (Catell, 1905-1998). These attempts to objectively measure, not only intelligence, but also people’s interests, personality and motivations, has led to the development of a wide range of psychometric tests. These tests are applied in many facets of our lives, from schools and corporations, to mental health clinics and prisons, to help us understand and predict human behaviour.

## 1.2 Psychometric Testing

International testing standards highlight two broad categories of psychometric tests: tests of ability and self-report measures. Tests of ability are considered measures of maximum performance and are designed to measure the test taker’s learning capability. Ability tests have a right or wrong answer and are considered a reliable measure of a person’s potential in specific aptitude areas (e.g. verbal, numerical or abstract). Ability tests are subject to strict timing, and aim to identify the speed with which test takers reason and process information. They are most effective in predicting the speed with which someone will learn new skills or how effectively they will cope in an environment that demands non routine cognitive problem solving. It is worth noting that while “speed of learning” can accelerate progress in one’s career (particularly the early stages), most jobs become routine over time and non-cognitive factors become more important for career success.

Self-report measures, on the other hand, assess personal qualities or traits such as personality, interests and motivation. They are measures of typical performance and have no absolute right or wrong answers. The aim of such measures is to identify the individual’s typical or preferred disposition as deemed by the test taker. Self-reports, when used appropriately can help develop the test takers self-awareness. Both ability and self-report measures aim to systematically measure individual differences so that reasonable inferences can be made about likely future behaviour.

### 1.3 Psychometric Test Use in Irish Secondary Schools

Before we look at the use of ability testing in Irish schools we would like to put the “challenge of difference” in context. Attainment tests are very much a part of Irish school life. They provide teachers with quality information, which can be used to make decisions about what and how a student is learning, relative to a curriculum. Teachers are used to having to deal with differences in attainment by different students. They can deploy a wide range of strategies to motivate and encourage students who do not perform so well on school exams, without saying that they are lacking in potency or competence.

To create a context we will contrast attainment tests and ability tests (the most commonly used psychometric tests in Irish schools). Ability tests are designed to be relatively curriculum independent and measure more enduring and long term traits than the attainment of learning. Attainment tests therefore can be considered as a measurement of “what the test taker knows”. By contrast, an ability test is designed to measure what they are “capable of knowing”. The measurement of what a student is “capable of knowing” is much more labelling than “what the test taker knows”.

Binet’s legacy poses a challenge for test users dealing with lower ability test scores. In deploying ability tests we must be cognisant of the dangers of undermining the students need for “potency” (a sense of one’s own competence). At the same time we cannot ignore the reality of difference. If we assess underlying capability as different, while students have equal needs for potency, we need to be prepared to address how the results make those assessed as being less “capable of knowing” feel. Clearly, users of tools which purport to measure such an underlying capability have a significant responsibility to their clients.

The Department of Education and Skills (DES) has published a Circular Letter 0034/2015 on assessment instruments, including tests and web-based resources, approved for use in guidance and/or learning support contexts in post-primary schools. The Circular also provides clarification in relation to the selection and administration of the assessment instruments, the interpretation and retention of assessment information, and the provision of feedback. [http://www.education.ie/en/Circulars-and-Forms/Active-Circulars/cl0034\\_2015.pdf](http://www.education.ie/en/Circulars-and-Forms/Active-Circulars/cl0034_2015.pdf) It is notable that the DES Circular Letter does not include self-report measures of personality as they are not seen as appropriate for use with students. Self-report measures of personality require a high level of self-awareness to maximise their benefits therefore such tools may be less appropriate for use with second level students.

Historically, the most frequently deployed tests of ability in Irish secondary schools are the Cognitive Ability Tests (CATs) and the Differential Aptitude Tests (DATs). The DATs were particularly popular, with the Education Research Centre (ERC) in St Patrick's College, Drumcondra providing a relatively low cost version. Tests such as the DATs and the CATs measure student ability or aptitudes in different cognitive areas (see Table 1) and can be used to assess academic performance or identify potential learning difficulties. For example, we would expect a profile of a student with specific learning difficulties to show spikes and troughs in different areas of their profile (see Figure 2).

General Ability	Principle components	Specific Aptitudes	Sample Tests
General Ability(G)  = IQ	Academic intelligence (Gf)	Verbal Reasoning	Verbal Fluency
			Verbal Comprehension
		Numerical Reasoning	Working w Numbers Interpreting Data
	Mechanical Reasoning	Using levers and pulleys	
	Non-Academic intelligence (Gc)	Non Verbal/ Abstract or Inductive Reasoning	Figure Sequences / Pattern Recognition
			Features in Common
		Spatial Reasoning/ Visualisation	3 D Rotation
		Perceptual Speed	Proofing/ Checking/ Filing

**Table 1 Key Components of Cognitive Assessments**

On September 6, 2013 the ERC announced it intended to discontinue its support for the DATs by August 2016, after which time they will no longer distribute any of the DAT materials. They have advised users to look for other suppliers after that time. They are also phasing out the current Drumcondra Reasoning Test (DRT) but intend to have a parallel computer and paper based versions of the DRT available from spring 2016.

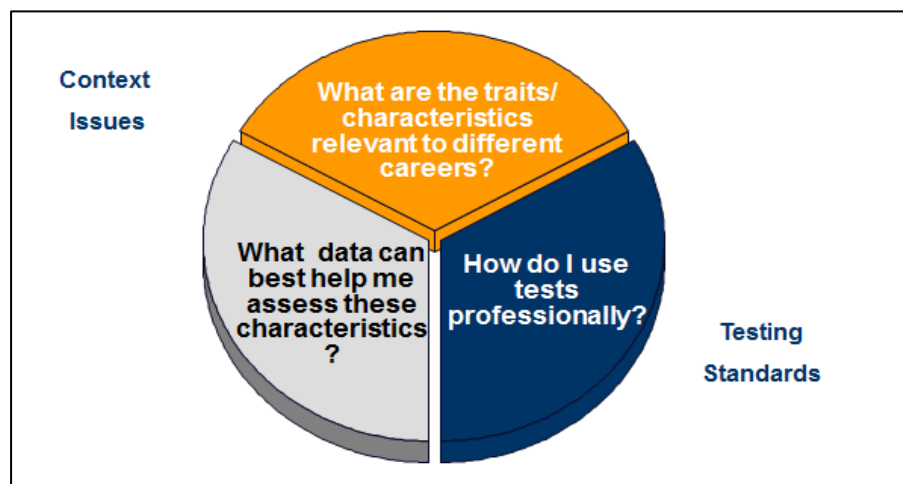
It is currently common practice to administer aptitude tests to large groups in the fourth or fifth year of their secondary schooling. The results are often used by guidance counsellors to help inform and influence Leaving Certificate subject choice or post Leaving Certificate choice. The list of formal assessments approved by the DES on the Department's website (see above) also includes a number of focused non-academic ability tests which may be used to identify more fluid intelligences where a student is underperforming academically. Examples of non-academic intelligence tests include picture vocabulary tests, Lucid Ability tests, Naglieri Non Verbal tests and Wide Range intelligence tests. Many of these assessments require individual administration and will usually require more in depth familiarisation or training.

A wide range of Interest Inventories with psychometric properties have also been approved for use at post-primary level. The DES approves the use of these interest inventories (e.g. Career Directions, Career Interest Inventory) to help advise students on career and further education choices. Interest inventories systematically measure an individual's likes and dislikes for different types of work or activities, and thus, have an obvious application for career guidance in secondary schools.

## 2. Test User Competence and Best Practice

The “challenge of difference” is not new to the international testing community and the last twenty years has seen the evolution of a common set of standards to ensure such practices as “informed consent” and “constructive feedback” are applied by test users. Guidance counsellors involved in psychometric testing should be cognisant of what it means to be a competent test user and embrace best practice standards in test use. The International Test Commission (ITC) guidelines for Test Use describe a competent test user as one who will “use tests appropriately, professionally, and in an ethical manner, paying due regard to the rights of those involved in the testing process, the reasons for the testing, and the broader context in which the testing takes place” (ITC Guidelines, 2000).

A guidance counsellor who is applying best standards ought to demonstrate competence in five key areas; Administration, Scoring, Interpretation, Feedback and Evaluation. Understanding the limits of test use and awareness of best practice steps are the foundations of competent test use. While applying best practice standards, guidance counsellors engaging in test use for the purpose of guidance, should also consider the broader testing context. It is important that as test users we do not overplay the benefits of testing and ignore the limitations of using data derived from a series of short cognitive assessments, taken at a moment in time. Consideration of the broader context should see guidance counsellors addressing such questions as: what characteristics are relevant to different careers; what data can best help me assess these characteristics; as well as how I use chosen tests professionally (Figure 1).



**Figure 1 Best Practice Guidance Considerations**

The broader context issues highlighted above reminds us that psychometric tests are just one tool in developing an understanding of a client’s career options. We should never use a piece of testing data in isolation as the basis for recommending or not recommending a particular career path. Neither should data be interpreted out of context. Just as employers are legally required (*Employment Equality Act, 2004*) to ensure testing data used for selection decision making is demonstrably relevant to job demands, so too should guidance professionals understand how their use of tests relates to relevant job and career challenges. Cognisant of this broader context and ethical questions, we have divided our discussion of best practice in psychometric testing into the following sections: Test Choice, Test Preparation and Administration, Fairness in Scoring and Interpretation, Confidentiality in Testing, Storage and Access to Materials and Written and Oral Feedback.

## 2.1 Test Choice

A significant part of being a competent test user is having the necessary knowledge and understanding to choose tests appropriately. There are several factors to consider, and information to seek out, in order to choose an appropriate test for use at post-primary level. The test user must consider things such as: what are the needs of the client? Is the test relevant for this purpose (validity)? How accurate is the chosen test (reliability) and how the test experience could benefit or harm the student test taker?

From a psychometric perspective test choice should be primarily influenced by the relative validity and reliability of a test. These should be determined by considering the relevance of the test to the traits that are to be assessed (validity) and the likelihood of error in the methods used to assess these traits (reliability). Prior to test selection the test user should ensure that they are familiar with the primary types of cognitive abilities (see Table 1), how they relate to each other, and the underpinning research on how these abilities relate to real world outcomes. During test decision making, it is also useful to review test publisher manuals for technical information on the tests' reliability and population norms etc. before embarking upon a testing process.

## 2.2 Test Preparation & Administration

A professional administration session will result in clients knowing exactly what they are doing, as well as presenting a clear rationale as to how and why this might benefit them. Frequently this means taking the edge off the assessment process as students can often be in awe of the process believing it has almost magical powers. The tests need to be positioned as a snapshot of performance and not an absolute measure of talent long before the session begins. International guidelines stress the importance of engaging in appropriate test preparation and following good practice during test administration (EFPA, 2012). In advance of test administration, guidance counsellors should disseminate information to students as to the purpose of the testing, how the results can be used by them, and access to data (EFPA, 2012, P. 12) <http://www.schoolguidancehandbook.ncge.ie/docs/000003/data-protection-for-the-guidance-counsellor.pdf> . In an educational setting, it is also important to explain the consequences of taking or not taking the test so that students and parents are primed appropriately and expectations are managed accordingly. These activities will contribute to the ethical consideration of gaining informed consent. Best practice dictates that competent test users should “gain the explicit consent of test takers or their legal guardians or representatives before any testing is done” (ITC, 2000, 2.4.5).

Other preparations include acquiring all the necessary test materials (including any modified materials for those with special educational needs/ disability) and ensuring an appropriate testing environment which will facilitate standardised assessment procedures. This generally means ensuring all test takers are prepared according to their needs and given sufficient preparation. In the event of a supervised group administration, error may be introduced if there are insufficient administrators on hand to assist with explaining examples during testing.

As with any group of students, test takers will differ in terms of cultural background and expectations. Lack of sensitivity to these issues could easily lead to an underestimation of a student's latent ability and adversely impact the future motivation of a student arising from an unreliable assessment process that has been given too much credence. Differences in cultural context and understanding may affect expectations and so administrators should always be aware of what doing an “ability test” means for each individual and/or their family. Where



identified cultural differences exist between those being assessed it is important to ensure that the test itself is not culturally biased (i.e., favour one culture over another).

Group differences in performance on psychometric tests may be due to factors such as socio-economic status, educational background, language. It is important that prior to test administration guidance counsellors identify any accommodations which will mitigate any unfair adverse impact. Test users should ensure that students are able to take verbal assessments in their native tongue if it is intended to make any inferences about general reasoning ability. It is important to note, that acquiring the assessments in the appropriate language will not always negate group differences as the content, language and/or images used may not translate across cultures accordingly. As such, it is important to ensure that during test administration those of different cultural backgrounds receive reasonable attention and are made feel comfortable and at ease by assessors. Non verbal tests (for example pattern recognition) are considered to be more culturally fair than more wordy or academically orientated tests.

In the case of a student with a physical disability (e.g., visual impairment) we must consider reasonable accommodations such as ensuring test materials (e.g., large print) and the test environment (e.g., lighting) are appropriate. The guidance counsellor should also identify and make appropriate accommodations for students who have highlighted hidden disabilities such as dyslexia. For instance, test preparation and administration could incorporate appropriate briefing to minimise test taker anxiety and extra time for test takers with dyslexia where necessary.

### **2.3 Fairness in Scoring & Interpretation**

As highlighted throughout, psychometrics is concerned with the measurement of individual differences and as such, responses are quantified and scored. Test scores should be collated and scored in the context of clearly defined criteria. In many cases, where tests are administered online, the scoring of tests is automated. When conducting hand scoring, the test user should refer to the scoring procedures contained within test manuals (EFPA, 2012). The competent test user should also be cognisant of the different scoring systems and how to use them appropriately when interpreting test scores and giving feedback. For example, test users need to understand the normal distribution, and be cognisant of the danger of clients overestimating percentile differences near the mean, due to ranking effects. Test scores must be interpreted on the basis of the norm groups drawn from larger populations that have characteristics similar to that of the client population. It is the test user's responsibility to ensure that conclusions drawn from comparison of scores with norms are appropriate to the people being tested (ITC, 2000, 2.6.5).

The competent test user should be able “to analyse and interpret test results appropriately” (EFPA, 2012, 2.4, Pg 9). Appropriate interpretation of cognitive test results requires a good understanding of cognitive test components (see Table 1) and a “good professional understanding of the tests theoretical or conceptual basis” (ITC, 2000, 2.7.1, Pg 21). Appropriate interpretation also requires that you “take account of available information about the test taker with due regard to the testing context, conditions, methods and modes; the technical qualities of the test; and the assessment needs” (EFPA, 2012, 2.4, A, Pg 9). It is important that, during interpretation, both the guidance counsellor and student test taker identify any factors which may have influenced their scores. Variations in standardised testing procedures, such as disruptions during administration have the potential to negatively influence performance on the day. Candidate related error, such as test anxiety or prior testing experience, can also influence student performance on the test. Taken together, these

variations will introduce measurement error. An understanding of this margin of error during interpretations is important and will contribute to effective feedback to test takers.

As responsible test users, it is imperative that we give “due consideration to issues of fairness in testing” (EFPA, 2012, 2.3, pg. 8) and subsequently avoid unfair adverse impact and test bias. Adverse impact refers to group differences in performance on psychometric tests. In many cases, adverse impact is due to real group differences rather than any inherent test bias. However, as competent test users it is our responsibility to identify where adverse impact on a test might be unfair and lead to unfair discrimination if used for decision making. Test bias occurs where an aspect of the testing process systematically underestimates the real ability a person has in the area being assessed (e.g., inadequate test preparation for a minority group, testing people’s verbal reasoning ability in a language they are not fluent in). Steps are required to minimise test bias. Test bias can be controlled by appropriate test selection, a briefing process that identifies special needs, and well managed test administration.

In psychometric testing in schools, reasonable accommodations must be made for physical disability, diagnosed dyslexia, visual or hearing impairment. In these cases, during test preparation, we can take steps to promote fair testing and to avoid test bias. Such steps include ensuring the mode of test administration is suitable to all test takers, ensure that the test materials are published in the native language of all test takers and are accessible by all and ensure that the chosen assessment can be generalised across cultures. In essence, test bias can be reduced by ensuring standardisation and adherence to best practice principles.

## **2.4 Confidentiality in Testing, Storage and Access to Test Materials**

As an ethical test user, you must ensure that tests materials are kept securely and test results are treated confidentially (EFPA, 2012). Test users should ensure that test materials do not circulate freely. Where tests are used for selection, it would clearly disadvantage some candidates if unauthorised individuals acquire test materials. This could create a particular type of test bias. In a career guidance context the content and quality of the feedback clients themselves will receive will be compromised if they have become overly familiar with the test. It is the test user’s responsibility to store hard copy materials securely and regulate access to online assessments. It is also important to note that test materials are subject to copyright law and agreements and should be not be copied or disseminated to others without permission (ITC, 2000).

As specified above, the test user should treat test results confidentially. For legal and ethical reasons you must inform test takers, prior to test administration about who will have access to their results and how long they will be retained for. It is your responsibility as the test user to control who has access to these results. *The Data Protection Act of 1988* will also apply where test scores are held within computer software. The student test taker owns their test results and therefore is entitled to review or access them when they deem necessary. They also have the right to know where their results will be stored, how they will be used and who will have access to them. Test results should not be stored indefinitely and therefore preparations should be made for results to be destroyed after a specified amount of time.



***“Michael of those 13 questions you attempted you got 9 of those correct. How does that sound?”***(Allow Michael to reflect and respond appropriately)

***“Now Michael with these types of tests we look at how others perform as well. In the working with numbers section most students get 13 correct. So in this area you performed just slightly below most people in the comparison group. What does that mean to you, Michael?”***

Once you establish a baseline understanding of the test results, you may find it useful to use the profile chart to extend the discussion (Figure 2). In doing this we would again need to reassure Michael that test results are determined by how many questions were completed in the time given, compared to others. The profile chart may indicate different areas of ability. Even if it does not we need to help Michael appreciate that he (like others) will have different talents in different areas. It would also be useful to engage Michael in a discussion around the relevance of the results to him and whether he might need to allow himself more time when working on numerical tasks. Finally, we might need to explore how hard work and motivation could help Michael outperform others in achieving real world results. The ultimate goal is to ensure Michael does not place too much emphasis on the results, but still takes time to consider them in context of other characteristics, interests, opportunities and talents. The time it takes to integrate such diverse information should lead us to exercise caution when offering guidance on courses or career paths.

The checklist below provides a best practice model for delivering written and oral feedback:

#### INTRODUCTION

- ✓ Focus on Client Context/ Needs?
- ✓ What was the purpose of the assessment?
- ✓ Who will have access to the results?
- ✓ What does the assessment measure and what are its limitations?
- ✓ How does the scoring system work?

#### DISCUSSING PERFORMANCE

- ✓ Present raw scores (number of items correct and the number attempted)
- ✓ Explain how performance compares with others
- ✓ Relate results to the client’s context
- ✓ Use appropriate language / factual not judgemental

#### ACTION PLANNING

- ✓ Support client’s considering implications of results
- ✓ Offer follow up support as appropriate

### 3. Conclusion

The authors believe it is instructive for guidance counsellors to consider broad context questions such as “what are the traits/ characteristics relevant to different careers?” and “what data can best help me assess these characteristics?” prior to even considering using psychometric tests in a particular situation. Beyond this, the specific standards for using tests professionally must be considered. International standards for test use have converged in recent years and there is now a common set of standards derived from the International Test Commission Standards which are endorsed by the European Federation of Psychological Associations, the British Psychological Society and the Psychological Society of Ireland.

These standards highlight a number of specific challenges pertinent to the use of psychometric tests at post primary level, particularly for career guidance. These challenges include dealing with special needs clients and/or diverse cultural backgrounds, providing adequate feedback, disseminating quality written feedback, dealing with low scores and ensuring test results are used appropriately by students. In this article we have shown that best practice guidelines are relevant and provide clear direction as to how guidance counsellors can address these challenges. If the guidance counsellor feels they cannot make reasonable provisions for supporting students for whom test results could have a negative impact, then the test should not be administered. When using psychometric tests, guidance counsellors need a clear focus on how they brief students, elicit informed consent and make provision for appropriate feedback (oral or written as appropriate).

## Resources

British Psychological Society (BPS) - <http://www.bps.org.uk/>

European Federation of Psychologists Association (EFPA) - <http://www.efpa.eu/>

International Test Commission (ITC) - <http://www.intestcom.org/>

JMB - <http://www.dataprotectionschools.ie/en/>

NCCA: Education Passport -

[http://www.ncca.ie/en/Curriculum and Assessment/Early Childhood and Primary Education/Primary-Education/Assessment/Report Card Templates/transfer/](http://www.ncca.ie/en/Curriculum_and_Assessment/Early_Childhood_and_Primary_Education/Primary-Education/Assessment/Report_Card_Templates/transfer/)

Psychological Society of Ireland (PSI) - <http://www.psihq.ie>

Psychological Testing Centre (PTC) - <http://www.psychtesting.org.uk/>

State Examinations Commission – <http://www.examinations.ie>

## Biography

### **Declan Fitzgerald – Chartered Occupational Psychologists and Director of Enact**

**Declan Fitzgerald** is a Director of Enact ([www.enact.ie](http://www.enact.ie)). He has been working in the area of psychological assessment and development for over 20 years. He has delivered the BPS Certificate in Occupational Testing to over 600 participants in that time. Currently he delivers public courses in the area as well as lecturing on Masters Work and Organisational Psychology and Masters in Guidance and Counselling programmes on psychometrics in DCU, UL and UCD.

### **Ciara Farrell – Occupational Psychology Research Consultant at Enact**

**Ciara Farrell** graduated from MSc from University of Limerick in Work and Organisational Psychology (First Class Honours). Ciara has recently joined Enact ([www.enact.ie](http://www.enact.ie)) as a Research Consultant in the talent management and employee engagement area. Her role involves working as an administrator on client projects as well as preparing project and evaluation reports. Ciara recently started working on the development of new verification materials for Test User: Ability and Test User: Personality programmes.

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