About Revelian

Revelian is Australia’s leading provider of employment assessments.

Founded in 1999, Revelian’s goal is to provide a more effective and economical way to recruit and develop talented people for your business.

Revelian’s products and services deliver significant benefits such as:

- Providing a highly automated and objective recruitment process
- Delivering better quality hires who are likely to be safer, smarter and more reliable
- Ensuring improved retention and higher morale.

The end result is lower recruitment costs, faster time to hire and finding better people.

About Revelian

Some of the key attributes that distinguish Revelian include:

- Full range of recruitment and development tests
- Unrivalled 7 days per week client and candidate support
- Australian assessments, Australian normative data
- Unlimited assessments per hire pricing option
- Immediate results for both candidates and clients
- Australian based psychology and development teams
- Quality endorsed company (AS/NZ ISO9001)
Revelian Cognitive Ability Test (RCAT)

- **Assesses**: Candidate levels of cognitive ability
- **Predicts**: Future job performance
- **Number of questions**: 51
- **Time to complete**: 20 minutes (timed)

**What is Cognitive Ability?**

Cognitive ability is another term for intelligence, problem solving capacity or reasoning ability. Technically, cognitive ability refers to the ability to process information, encompassing its acquisition, organisation, retention, and application. The Revelian Cognitive Ability Test (RCAT) consists of 51 questions, each of which requires the candidate to process verbal, numerical, or abstract information in order to answer the question correctly. The candidate is scored based on the number of questions they have answered correctly.

**Why measure Cognitive Ability when selecting staff?**

People who score well on cognitive ability tests use their high-level information processing skills to solve job related problems more effectively, and to learn the job more quickly. As a result, people with strong scores on cognitive ability tests tend to perform better on the job and in training. Research clearly shows that cognitive ability is one of the strongest predictors of subsequent job performance.

Cognitive ability becomes more important as a predictor of job performance as the complexity of the job increases. Cognitive ability is especially important in jobs that require people to process large amounts of information, such as complex technical jobs and managerial roles. Cognitive ability is also very important in jobs that involve a great deal of training, such as apprentice and graduate roles.

**Example Questions**

The RCAT includes a mixture of verbal, numerical and abstract information processing questions. Each question requires the candidate to acquire some information from the question, and then retain, organise and manipulate that information in order to answer the question correctly. By examining the performance of the candidate across a number of different question types, an

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estimate of the candidates overall level of cognitive ability can be obtained. One example of each type of question is shown below.

Example Question 1
Four of the following are alike in some way. Please select the other two.

- train
- bus
- car
- boat
- run
- walk

Example Question 2
What is the missing number that should take the place of the question mark?

```
?  7  10
6  9 ...
8  ... 14
```

Type your answer here: 

The example questions shown here are relatively easy questions – most individuals get all the questions correct. In the actual assessment, the questions become more difficult as the candidate moves through the test. Questions in the assessment range in difficulty from questions that a large majority of candidates answer correctly, to questions that only a small proportion of candidates answer correctly. This broad range of questions, and range of question types, means that the RCAT provides a comprehensive assessment of cognitive ability, which is applicable to a broad range of complex and less complex job roles.

**Normative Groups**

When a candidate completes the RCAT, their score is calculated by totalling the number of correct answers they achieved out of a possible 51. This score is actually meaningless until you contrast it with scores achieved previously by specific groups of people. The group that you contrast the score against is vitally important for the interpretation you make. In other words, the more relevant the comparison group to the position, the greater confidence you can place in the interpretation of the score achieved by the candidate. Revelian has four types of comparison groups that may be used when interpreting candidate scores on the RCAT (up to three of these can be displayed in the candidate’s report at any one time):

1. Employed Adults
2. Industry Group
3. Management Level
4. Company Specific Benchmark

Note: Additional normative comparison groups beyond the general Employed Adults group are available to enterprise clients only.

1. Employed Adults Normative Groups for RCAT

Over 62,000 people from a wide range of industries make up Revelian’s employed adults’ normative group. The group consists primarily of non-indigenous Australians (approximately 73%). The remaining 27% of this population is comprised of a broad array of ethnic groups.

2. Industry Normative Groups for RCAT

Revelian also has many comparison groups covering a broad range of industries and are constantly working towards the development of new industry benchmarks. The industry normative groups that are currently available for use are displayed in the table below along with some examples of what is classified as a typical role within this industry.

<table>
<thead>
<tr>
<th>Industry Group</th>
<th>Example Roles</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accounting &amp; Finance</td>
<td>Accountant, Accounts Payable/Receivable, Book Keeper, Credit Officer, Financial Controller.</td>
</tr>
<tr>
<td>Australian Public Service – General</td>
<td>A range of professions across Australian Government departments (non-graduate Australian Public Service position).</td>
</tr>
<tr>
<td>Aviation</td>
<td>Air Traffic Controllers, Flight Coordinators, Aviation Engineers Aircraft Maintenance Staff, Baggage Services Staff, Pilots</td>
</tr>
<tr>
<td>Call Centre</td>
<td>Call Centre Consultant, Contact Centre Operator, Customer Contact Consultant.</td>
</tr>
<tr>
<td>Clerical &amp; Administration</td>
<td>Administration Officer, Database Administrator, Secretary, Inventory Co-ordinator, Office Support.</td>
</tr>
<tr>
<td>Correctional Services</td>
<td>A range of positions across Australian prisons.</td>
</tr>
<tr>
<td>Customer Service &amp; Support</td>
<td>Receptionist, Help Desk Officer, Client Services Advisor, Member Services Officer, Customer Service Representative.</td>
</tr>
</tbody>
</table>
3. Management Level Normative Groups for RCAT

Revelian also provides managerial level comparisons from graduate level through to senior level. This provides additional information that aids in determining whether a candidate has the cognitive capacity commonly found in managers at a like level. The management level normative groups are as follows:

<table>
<thead>
<tr>
<th>Engineering</th>
<th>Technician, Mechanical Engineer, Manufacturing Engineer, Mining Engineer.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Human Resources</td>
<td>Training &amp; Development Officer, Recruitment Consultant, OH&amp;S Officer, Employee Relations Officer, HR Advisor</td>
</tr>
<tr>
<td>Information Technology</td>
<td>Web Developer, Data Analyst, Network Administrator, Programmer, Software Engineer.</td>
</tr>
<tr>
<td>Legal Profession</td>
<td>Article Clerk, Lawyer, Legal Assistant, Legal Secretary, Solicitor.</td>
</tr>
<tr>
<td>Marketing</td>
<td>Marketing Manager, PR Manager, Marketing Director, e-Business Manager.</td>
</tr>
<tr>
<td>Production &amp; Process</td>
<td>Driver, Dispatch Officer, Inventory Controller, Logistics Coordinator, Packaging Officer.</td>
</tr>
<tr>
<td>Resources</td>
<td>Mining, Oil, Gas Production Worker, Mining, Oil, Gas Maintenance / Fitter, Mining, Oil, Gas Shift / Site Supervisor, Mining, Oil, Gas Driver</td>
</tr>
<tr>
<td>Retail</td>
<td>Store Administrator, Branch/Store Manager, Food Safety Officer, Inventory Controller, Retail Sales Assistant.</td>
</tr>
<tr>
<td>Sales</td>
<td>Account Manager, Business Development Manager, Sales Representative, Product Manager, Sales Support, Sales Executive.</td>
</tr>
<tr>
<td>Science-General</td>
<td>Chemist, Lab Technician, Pharmacist, Environmental Officer, Food Technologist, Geologist.</td>
</tr>
<tr>
<td>Trades</td>
<td>Electrician, Fitter &amp; Turner, Mechanic, Technician, Tradesperson, Draftsperson.</td>
</tr>
</tbody>
</table>
Management Level | Example Roles
---|---
**Apprentices** | Apprentice positions
**Australian Public Service – Graduate** | Graduate positions within the Australian Government
**Graduates** | Graduate positions
**Entry Level Managers** | Team Leader, Coordinator, Supervisor, Assistant Manager
**Mid Level** | Store Manager, Area Manager, Branch Manager, General Manager
**Senior Level** | Chief Executive Officer, Director, National Account Manager, Executive

4. **Company Specific Benchmark for RCAT**

Revelian can benchmark the existing level of cognitive ability of current employees at an organisation. This ensures that only candidates applying for positions that meet or exceed this level are selected. If you would like further information about organisational RCAT benchmarks please contact Revelian.

**Reporting Results**

Once a candidate has completed the assessment, they are assigned a percentage score which indicates the proportion of the comparison group(s) that they exceeded. In the example below, the candidate answered 28 questions correctly, and this score has been compared against three comparison groups. The score exceeded 95% of people in a company specific group formed of individuals currently employed in “ABC Company”; 79% of people in an industry benchmark of Engineers; and 86% of people in the general population group of Employed Adults.
When multiple candidates for the one position complete the RCAT, then the results of those candidates are compared against one another in a position report, which ranks the candidates in terms of their performance on the assessment. An example of this type of reporting is shown below.

### Online Security

Like all Revelian assessments, the RCAT can be completed remotely over the internet under unsupervised conditions. This provides a high level of flexibility and convenience for the candidate. When testing is conducted under unsupervised conditions, however, it is possible that the candidate may have had assistance in completing the assessment, and it is essential to protect the security of the assessments. Revelian adopts the following best practice strategies to ensure on-line security, and reduce the likelihood of cheating.

#### Motivating candidates to complete honestly

All candidates are informed that if they progress in the recruitment process, they will be tested again with different questions to confirm their results. This ensures that candidates are motivated to complete the assessments honestly and accurately. Prior to completing the Revelian
assessments, all candidates are required to electronically endorse a short statement, indicating that they:

- Will not receive help from others when answering assessment questions; and
- Will be honest, accurate and perform at the best of their ability.

**Unique assessment form for every candidate**

Candidates who sit the assessment will randomly receive a unique set of questions, different to those streamed to other candidates. This is achieved through Revelian’s application of Linear-on-the-Fly (LOFT) item streaming for the RCAT. Furthermore, answer options in each test are randomly scrambled. Both these features ensure that no two candidates will receive the same test, thus greatly reducing the possibility that candidates will collaborate when completing assessments.

**Secure assessment delivery via flash**

Our online testing engine is delivered via Flash technology, which allows us to deliver the assessment securely, and to ensure that assessment time is tracked accurately. Flash delivery also allows Revelian to securely download the entire assessment to the candidate’s computer, which eliminates the influence of internet connection speed on the candidate’s testing experience. Finally, our testing engine disables the “copy” and “paste” functions on the candidate’s computer, which prevents them from copying test questions to provide to others.

**Detailed assessment session logging**

From the moment the candidate logs on to the Revelian website, to the moment they finish their assessments, Revelian creates detailed test logs of the candidates testing session, including time spent answering questions, and internet connectivity. Should the candidate indicate that their internet connection dropped out, or that they were disturbed while completing the assessment, then assessment logs can be consulted to verify the candidate’s claims.

**Candidates can only complete the assessment once within a 12 month period**

Candidates can get better at specific assessments through practice. In order to ensure that all candidates can be compared against one another fairly, Revelian restricts candidates to one assessment within a 12 month period. To facilitate this, we gather identification details from candidates at a number of stages of the application and assessment process, so that new candidates can be compared against candidates in our database. If a candidate has been tested within the previous 12 months, then they are not able to sit the assessment again. Rather, they are provided with the opportunity to “release” their previous results to the new employer. This strategy eliminates candidate practice effects, resulting in fairer and more accurate assessment scores.
Verification testing

Revelian provides a free verification service, whereby individuals who have been tested remotely on the Revelian Cognitive Ability Test (RCAT) can be re-tested on a parallel form of the test with different questions under supervised conditions. Revelian’s systems automatically compare the results from the initial unsupervised assessment to the verification assessment. If the candidate does not verify their initial score then their results are updated to reflect the results from the second verification assessment and the client is informed.
Validation and Psychometric Summary

Theoretical Background

The Revelian Cognitive Ability Test (RCAT) is a test of general cognitive ability, or general intelligence, defined as the capacity to acquire, retain, organise and apply information in order to solve problems. The concept of general intelligence was first proposed to account for research findings demonstrated that there is almost always a high degree of overlap between people’s scores on supposedly different cognitive ability tests (e.g. verbal and numerical reasoning). Someone who scores above average, for example, in a test of verbal reasoning, is also likely to score well on a test of numerical reasoning. The higher the individual scores on one test, the more likely they are to also score higher on a range of other tests. These findings suggest that people have a general capacity to process information, regardless of whether that information is in a verbal, numerical, abstract, spatial or other form. A person’s general cognitive ability, therefore, represents a global factor that influences performance on a wide range of tests and tasks.

Tests of general cognitive ability use a wide range of question types, with each type of question requiring different information to be processed, and different cognitive strategies to answer. With such a broad range of questions, the overall result on the assessment reflects an individual’s general information processing capacity. The RCAT includes 25 different types of questions, each of which requires a different strategy to solve, and/or a different type of information to be processed. These 25 question types are grouped into three overall categories: verbal, numerical and abstract. A person’s overall score on the RCAT therefore provides a reliable insight into that person’s general information processing capacity.

People who score well on the RCAT also tend to perform better in learning and training tasks, because learning new information requires a great deal of new information to be acquired, retained, organised and applied. Furthermore, the questions within the RCAT get more difficult as the assessment progresses. In order to solve the more difficult questions at the end of the test, an individual has to apply the lessons learnt in solving the easier questions at the beginning of the test. Someone who scores well, therefore, has demonstrated within the test the capacity to learn.

These findings are similar to those that are typically reported in the scientific literature. For example, a large scale study of 32,000 individuals from 515 different jobs showed that general cognitive ability was the single most powerful predictor of job performance across this wide variety of jobs\(^2\). Findings such as these provide confidence that general cognitive ability is one of the most important factors to assess in any job candidate.

Development and Validation of the Revelian Cognitive Ability Test

The Revelian Cognitive Ability Test was developed in a number of stages. These were:

- **Question development**: Initially a large sample of questions was developed across the verbal, numerical and abstract fields. These questions were evaluated and modified through a process of expert review.

- **Question testing**: Subsets of potential verbal, numerical and abstract questions were administered to a total 716 individuals in order to assess the extent to which the questions distinguished clearly between high performing and poor performing people. On this basis, a final assessment set of 51 questions was developed, including 17 numerical, 17 verbal, and 17 abstract type questions.

- **Assessment Validation**: The final set of 51 questions was put in computerised format and administered to 350 individuals from a wide range of industries, with a wide range of educational backgrounds. The assessment was found to validly measure general cognitive ability, and to correlate in meaningful ways with factors such as educational background.

Once the initial form of the cognitive ability test was developed, work commenced on developing more items and growing the item bank. Over the course of a number of years these items formed parallel tests which were randomly streamed to candidates. Each parallel form of the test included questions that were matched for type and difficulty and produced results that were highly correlated with the original version of the assessment. For this reason, confidence could be placed in the comparability of results across the parallel forms.

As item development and validation efforts continued, the RCAT item bank reached a size sufficiently large enough to utilise Linear-on-the-Fly (LOFT) item streaming methodology. Under LOFT items are streamed randomly to candidates, ensuring that each candidate is administered a unique form of the assessment. Both item type and difficulty is controlled, allowing fair and equitable comparisons between candidate scores. LOFT also affords the opportunity for Revelian to continually develop and integrate new items into the RCAT item bank, thus further enhancing the validity and security of the assessment.

Ongoing validation of the RCAT has included large scale exploratory and confirmatory factor analysis involving over 30,000 test scores, all of which have supported the identity of the RCAT as an assessment of an individual’s global information processing capacity. Furthermore, case studies conducted with multiple clients have demonstrated the capacity of the RCAT to predict job related performance criteria, training criteria, and assessment criteria across a range of job types as broad as sales, air traffic control, administration, management, truck driving and finance.
Psychometric Summary

The statistical results of the development and validation process are summarised below, and provide confidence that the RCAT represents a reliable and valid measure of cognitive ability. The RCAT has:

- An internal consistency of 0.89 ($p<.05$). This indicates that the questions within the RCAT form a coherent group that reliably assess cognitive ability.

- A test-retest reliability of 0.78 ($p<.001$; average 2 months between administrations). This indicates that an individual’s score on the RCAT is very stable over time. Someone who sits the assessment twice is likely to achieve a very similar score on both occasions.

- A correlation with the Wonderlic Personnel Test of 0.72 ($p<.05$). The Wonderlic is a well-established and empirically supported assessment of cognitive ability. This correlation indicates that the RCAT is validly assessing the construct of cognitive ability.

- An uncorrected predictive validity of 0.39 ($p<.002$) when predicting supervisor rated job performance measured 3-12 months post-hire. Corrections for unreliability in the criterion and range restriction provide a predictive validity of 0.52 ($p<.002$).
The following case studies demonstrate the capacity of Revelian’s Cognitive Ability Test (RCAT) to predict training effectiveness and job performance.

**Case Study 1: Prediction of training outcomes**

Revelian’s client used the RCAT to select candidates for an Aircraft Maintenance Engineering position. All successful candidates for the position were required to undertake a lengthy and expensive training course qualifying them to conduct maintenance on specific aircraft. Unfortunately, an unacceptable number of candidates were not passing the course.

The RCAT was introduced as part of the selection procedure to ensure that candidates had the general cognitive ability required to complete the training course and perform in the role. In the year prior to the introduction of the RCAT, 102 candidates were admitted to the training course, and 68% passed the course. In the next year, the RCAT was used to screen out candidates with below average levels of cognitive ability. In that year, 130 candidates were admitted to the training course, and 92% passed the course. This increase in pass rates saved the organisation considerable expense in recruiting and training individuals who were ultimately unable to perform in the role.
Case Study 2: Prediction of supervisor ratings of job performance

Revelian’s Client used the RCAT to select customer service operators (tellers) in banking roles. Candidates who performed better on the RCAT were favoured for selection into the role. The role involved aspects of customer service and sales, including the identification of banking products most suited to customer needs. The role also involved solving customer problems, some of which were complex, involving multiple banking products and services.

As part of an assessment validation program, Revelian and the client investigated the relationship between RCAT scores obtained by the candidates when they applied for the job, and supervisor evaluations of performance taken 4-6 months post-hire. Forty-two employees in the customer service operator role were assessed. The relationship between RCAT scores and supervisory evaluations of performance is shown in the graph below. The results showed that employees with above average cognitive ability scores had supervisory evaluations that were 30% higher than employees with below average test scores, and made 31% fewer errors on the job. The correlation between RCAT results and supervisor evaluations in this case was 0.45.
Revelian’s Range of Assessments

Revelian has a number of psychometric assessments designed to reliably and validly measure key candidate characteristics. These assessments are summarised below.

**Revelian Cognitive Ability Test (RCAT)**

Predicts a candidate’s future work performance
The Revelian Cognitive Ability Test measures the candidate’s level of general mental ability. This is an indication of the candidate’s capacity to acquire, integrate, recall and apply new information. An analysis of 85 years of personnel selection has shown that general mental ability is the best predictor of performance in a wide range of roles.

- 51 items
- 20 minute time-limit
- The test can be completed either remotely or under supervised conditions
- Is a predictor of the candidate’s potential work performance

**Revelian Verbal Reasoning Test (RVRT)**

Predicts verbal reasoning element of future work performance
The Revelian Verbal Reasoning Test measures the candidate’s level of verbal reasoning. This is an indication of the candidate’s capacity to understand relationships and concepts framed in words, and solve problems using that information. Research has indicated verbal reasoning as a predictor of future job performance, particularly for roles that require the ability to comprehend and analyse written information.

- 35 items, 10 minute time limit
- Can be completed either remotely or under supervised conditions
- Is a predictor of the candidate’s work performance, particularly for roles involving the use of verbal reasoning ability

**Revelian Numerical Reasoning Test (RNRT)**

Predicts a candidate’s numerical reasoning element of future work performance
The Revelian Numerical Reasoning Test measures the candidate’s level of numerical reasoning. This is an indication of the candidate’s capacity to understand numerical relationships and concepts and problem solve using that information. Research has indicated numerical reasoning as a predictor of future job performance, particularly for roles that require individuals to process large amounts of data, such as complex technical and managerial roles.

- 25 items, 12 minute time limit
- The test can be completed either remotely or under supervised conditions
- Is a predictor of the candidate’s work performance, particularly for roles involving the use of numerical reasoning ability
Revelian Abstract Reasoning Test (RART)

Predicts abstract reasoning element of future work performance. The Revelian Abstract Reasoning Test measures the candidate’s level of abstract reasoning. This is an indication of the candidate’s capacity to solve conceptual problems by identifying relationships and analysing patterns. Research has indicated abstract reasoning as a predictor of future job performance, particularly for roles that require the ability to learn new skills quickly, problem solve and or develop strategies/solutions.
- 32 items, 10 minute time limit
- Can be completed either remotely or under supervised conditions
- Is a predictor of the candidate’s abstract work performance, particularly for roles involving the use of abstract reasoning ability

Revelian Values Inventory (RVI)

Match the candidate to the organisation. The Revelian Values Inventory predicts potential cohesion between company values and a candidate’s personal values; linked to organisation commitment.
- Un-timed (approximately 5-10 minutes, candidate can sit the test remotely or supervised)
- Matches candidate’s values to organisational values

Emotional Intelligence Assessment (MSCEIT)

Identifies candidates most likely to have greater career success. The MSCEIT assesses an individual’s ability to understand their own emotions, the emotions of others’ and to use emotions to enhance thought.
- Un-timed (approximately 45 minutes, candidate can sit the test remotely or supervised)
- Also available in a development version for use amongst existing staff

Revelian 16 Personality Factor Questionnaire (16PF®)

Measures core personality traits influencing behaviour. The 16PF Questionnaire (16PF®) is a widely recognised personality test and measures core personality traits that influence behaviour.
- Un-timed (approximately 30-minutes, candidate can sit the test remotely or supervised)
- Predicts work behaviour, communication style and performance
Revelian Work Preference Profile (RWPP)

Matches a candidate’s preference to the job. Work Preference Profiling predicts potential job satisfaction by matching the candidate’s preference to the task requirements of the job. This type of assessment is linked to predicting job satisfaction.

- Un-timed (approximately 10 -15 minutes, candidate can sit the test remotely or supervised)
- Matches a candidate’s preference to the job profile
- Supervisor or incumbent completes a Position Analysis prior to the candidates being compared to the role
- Predicts future job satisfaction

Revelian Behavioural Profile (RBP)

Measures workplace behaviour. Individual behaviour relates to communication, team cohesion, performance and effectiveness. The Revelian Behavioural Profile looks at the work style behaviours of the individual.

- Un-timed (approximately 15 minutes, candidate can sit the test remotely or supervised)
- The assessment measures how people are likely to respond to challenges, the amount of interpersonal interaction they require, how they will adapt to the pace of a work environment, and how compliant they will be
- As personal self-awareness of behaviour increases, so does productivity and performance
- Also available in a development version for use amongst existing staff

Revelian Work Safety Assessment (RWSA)

Measures a candidate’s workplace safety behaviour. The Workplace Safety Assessment identifies those most likely to embrace safe work practices and less likely to exhibit counterproductive safety behaviour.

- Un-timed (approximately 10 -15 minutes, candidate can sit the test remotely or supervised)
- Linked to lower absenteeism, lower compensation costs, and a more trustworthy team
- Measures factors such as:
  - Safety Control
  - Risk Aversion
  - Stress Management
  - Drug Aversion
  - Attitudes towards Violence
- Also available in a development version for use amongst existing staff
Revelian Work Reliability Scale (RWRS)

Measures a candidate’s level of workplace integrity. The Work Reliability Scale measures attitudes towards workplace theft and dishonesty. These have been shown to link with counterproductive behaviours such as theft, absenteeism, and property damage.

- Un-timed (approximately 10 minutes, candidate can sit the test remotely or supervised)
- Identifies candidates who have the potential to steal, be dishonest, take unwarranted sick days or be uncooperative with their team
- Linked to fraudulent behaviour, shrinkage, sick leave and unexplained losses