



# Can a candidate practice and get better at the ACE?

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- Can a candidate be taught or learn how to improve their result?
- If a candidate has taken the test before, will he or she not have an advantage by knowing how it works?

These are questions sometimes raised by ACE customers and candidates. They may be especially pertinent when a candidate has to take the test more than once. Some common reasons for this are:

- Uncertainty about whether the first test was taken under optimal conditions.
- Procedures in the organisation that create the possibility that a candidate may be asked to take the ACE on several occasions.

The quick answer to both questions is “No”: Since the ACE is a power test the result is not affected by taking the test more than once.

What can we learn from research on the subject?

## Studies on retesting with ability tests

At first glance, there are many studies that support the view that scores do in fact improve some when retesting with the same version of an ability test (e.g. Hausknecht et al., 2002).

However, these studies are exclusively done on non-CAT speed tests or a mix of speed tests and speeded power tests<sup>1</sup>. In fact, research that exclusively focuses on power tests – like the ACE – in industrial/organisational settings appears to be non-existent.

A meta-analytic study of retest effects on ability tests by Hausknecht et al. (2007) summarises the results from 50 studies of practice effects including 107 samples with a total of 134,436 participants:

- Motivation is not in itself important for the outcome of a retest result. Retest studies where test takers had specific motivation for gaining a higher score on the second testing (e.g. reapplying for a job or university) were compared to research retest studies where there was no obvious reason to motivate the candidate for a higher score. There was no significant difference in the increase of scores between the first and second testing for these two scenarios. Of course, this does not cover a scenario where the person is not motivated or careless on the first test, but very motivated on the retest.

<sup>1</sup> A speeded power test is a power test where maximum testing time is cut short to ensure that most test takers do not have time to complete all items. Unlike a pure speed test, item difficulty of a speeded power test will increase *and* there is insufficient time to complete all items. In a pure speed test the items are all simple, but there are so many of them that test takers cannot finish them all in time. Unlike the speeded power tests, the time limit on the ACE was picked to give everyone enough time for completing all items.

- General education/schooling does not affect scores positively. There is no evidence of increased retest scores as a result of formal education/schooling received by the test taker between test and retest.
- Specific test coaching (learning how best to take the type of test) is likely to improve test scores. However:
  - Specific test coaching does not provide unlimited help. The first coaching sessions add the most to the test results. The increase diminishes exponentially thereafter. This is shown in a meta-study by Messick & Jungeblut (1981), where as an example a 2% increase in scores on the SAT<sup>2</sup> could be done with 12 hours of coaching while a 5% increase required 260 hours of coaching. In other words: Although we may see a slight score increase as a result of coaching it is not possible to make a low scoring candidate a high scorer simply by coaching him/her on the test. Notably this was before the time of Computer Adaptive Testing (CAT) where students would be given the same questions pre- and post-coaching.
  - The effect of coaching is stronger on speeded tests than on power tests (Hausknecht, personal communication, 2008). Support for this is found in Powers (1986), reporting a correlation between the effect of coaching on a test

<sup>2</sup> The SAT test is the standardized reasoning test for college admissions in the USA.



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and how much time was given for each item of the test. That is: Coaching helps more on tests where there is only a short time allotted for each item than on tests with longer time for each item (like the ACE). Furthermore the effect of coaching on a CAT test is obviously weaker than on a test where the testtaker meets the same questions pre- and post-coaching.

- The average increase for identical non-CAT versions of speed/speeded power tests is 0.46 SD<sup>1</sup>. Note that on these test types one can expect some increase because being familiar with the test helps you save time on the retest letting you attempt more items. In other words, *even with speeded (power) tests* the increase between test and retest is quite small. As the ACE is a CAT based pure power test it is reasonable to expect that the retest effect on the ACE would be extremely low.
- Powers (1986) also found that there is a positive correlation between the length of test instructions for items and retesting effect: The longer the instructions were the more scores increased on retest. In Powers' study the longest instructions for an item type had more than 250 words, the shortest had fewer than 50 words. With 34 words in the longest instruction for an item (spatial items) the ACE clearly has short instructions.

An ACE retest study would aid clarification of the effects of repeated testing. So far, no formal test retest study has been carried out with the ACE. The main challenge of doing this is motivating a sufficient number of persons to take the test twice.

### Summary

In short, practice effects on the ACE are expected to be extremely limited, even if a person is motivated to increase the score. However, the basis for this is that the person was serious about the test the first time over.

If someone was to receive specific coaching on the test (as we could say people attending our courses do) there may be a small (<2%) increase in the test result. This is also why we recommend that administrators of the test never discuss individual items in the test with the candidate. Generally speaking it is not possible to significantly increase results by means of coaching.

Being a CAT based power test the ACE is not susceptible to coaching effects the way that speeded tests are.

The fact that items are straightforward and easy to understand adds further support for this, because understanding the instructions the first time over is as easy as at subsequent administrations.

January 2008 / revised September 2011

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