We have described how a validity coefficient can be an underestimate of the true validity of a test if it is undermined by problems such as criterion-unreliability or restriction of range due to selection effects.

However, validity coefficients can be corrected for both of these problems. Correction formulas can be applied and result in an increased, corrected validity coefficient which represents a more realistic estimate of the true validity of the test than the obtained (uncorrected) coefficient.

This training programme does not require delegates to be competent in the application of these formulae.

It is, however, important to know of their existence and they are included below for reference.

**CORRECTION FOR CRITERION-UNRELIABILITY**

This is sometimes known as “correction for attenuation” and requires an estimate of the reliability of the criterion data (eg job performance ratings). One way of arriving at such an estimate is to collect performance ratings for each test-taker from two separate managers or supervisors. The correlation between the two sets of ratings provides a measure of the criterion-reliability.

The correction formula is:

\[ r_{ca} = \frac{r_{xy}}{\sqrt{r_{yy}}} \]

where

\( r_{ca} \) = validity coefficient corrected for attenuation
\( r_{xy} \) = uncorrected validity coefficient
\( r_{yy} \) = estimated reliability of criterion

**CORRECTION FOR RESTRICTION IN RANGE**

Like the formula for correcting reliability for restriction of range (see Section 15.8), this formula depends on knowledge of the test standard deviation of both the restricted and non-restricted groups. In a validation study all applicants tested would typically comprise the non-restricted group. The restricted group consists only of those selected candidates who are included in the validation sample.

The formula for estimating the unrestricted validity from the restricted validity coefficient is:

\[ r_{cr} = \frac{v.r_{xy}}{\sqrt{v^2.r_{xy}^2 - r_{xy}^2 + 1}} \]

where

\( r_{cr} \) = validity coefficient for restriction of range
\( r_{xy} \) = uncorrected (ie restricted) validity coefficient
\( v \) = SD of test in unrestricted (applicant group)
SD of test in restricted (validation) group