Appendix E

DEFINITION OF TERMS AND CLARIFICATION OF CONCEPTS USED IN THE DUAL DISCREPANCY/CONSISTENCY MODEL OF SLD AND THE CROSS-BATTERY ASSESSMENT SOFTWARE SYSTEM (X-BASS)
<table>
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<th>Term or Concept</th>
<th>DD/C</th>
<th>X-BASS</th>
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<tr>
<td>Weakness</td>
<td>Performance on standardized, norm-referenced tests that falls below average (where average is defined as standard scores between 90 and 110 [inclusive], based on a scale having a mean of 100 and standard deviation of 15). Thus, a weakness is associated with standard scores of 85 to 89 (inclusive).</td>
<td>On the “Strengths and Weaknesses Indicator” tab, users must classify scores as either a strength or a weakness. The general guideline for a weakness is that the farther a score falls below 90, the greater the probability that the construct it represents (e.g., short-term memory) inhibits performance in some way. <strong>Caution:</strong> The user may classify any score as a weakness on the Strengths and Weaknesses Indicator tab, including scores that fall in the average range or higher. Selecting a score as a weakness, regardless of where it falls relative to most people, does not guarantee that it will meet criteria for PSW. Interpreting scores in the very narrow range of 85–89 requires clinical judgment, as abilities associated with these scores may or may not pose significant difficulties for the individual. Interpretation of any cognitive construct as a weakness for the individual should include ecological validity (i.e., evidence of how the weakness manifests in real-world performances, such as classroom activities).</td>
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<td>Normative Weakness or Deficit</td>
<td>Performance on standardized, norm-referenced tests that falls greater than one standard deviation below the mean (i.e., standard scores &lt; 85). This type of weakness is often referred to as “population relative” or “inter-individual.”</td>
<td>X-BASS automatically generates this information for all WISC-V Index Scales and new clinical composites. The range of 85–115, inclusive, is often referred to as the range of normal limits because it is the range in which nearly 70% of the populations falls on standardized, norm-referenced tests. Therefore, scores within this range are sometimes classified as within normal limits (WNL). As such, any score that falls outside and below this range is a normative weakness as compared to most people. Notwithstanding, the meaning of any cognitive construct that emerges as a normative weakness is enhanced by ecological validity.</td>
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Relative Weakness: Performance that falls significantly below an individual's own average or mean performance. This type of weakness is often referred to as “person relative” or “intra-individual.” Because this type of weakness is person relative, standard scores or scaled scores that are in the average range or higher may reflect relative weaknesses for a very bright or gifted individual.

X-BASS automatically conducts a person-relative analysis for WISC-V Primary Index Scales and the 10 corresponding subtests.

Most intra-individual analyses identify performances that fall significantly below an individual’s own average as relative weaknesses. Some of these analyses reflect statistical rarity in score differences as compared to the general population (based on actual discrepancy norms or base rate data). Nevertheless, statistical rarity is not synonymous with abnormality, impairment, or deficiency. Even though performance may be considered a relative weakness and the difference from the average may be rare, many relative weaknesses reflect average performance. Furthermore, a relative weakness for an individual may be a normative strength as compared to most people (i.e., standard score > 115). Therefore, whenever an intra-individual analysis is conducted, scores that emerge as relative weaknesses should also be evaluated from a normative perspective (i.e., where the score falls as compared to most people). Some deviations from normal or average are valuable deviations, and not all rarities are abnormal in the negative sense. Differences from an individual’s own mean may be statistically significant and even rare, but not necessarily clinically meaningful or alarming. “The major weakness of the
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<td>Strength</td>
<td>Performance on standardized, norm-referenced tests that falls in the <em>average</em> range (standard scores between 90 and 110 [inclusive], based on a scale having a mean of 100 and standard deviation of 15) or higher. Thus, a strength is associated with standard scores of 90 or higher. On the “Strengths and Weaknesses Indicator” tab, users must classify scores as either a strength or a weakness. The general guideline for a strength is that the farther a score falls above 90, the greater the probability that the construct it represents (e.g., short-term memory) facilitates performance in some way. <strong>Caution:</strong> The user may classify any score as a strength on the Strengths and Weaknesses Indicator tab, including scores that fall below average or lower. Selecting a score as a strength, regardless of where it falls relative to most people, does not guarantee that it will meet criteria for PSW. Note that the term <em>strength</em> is typically only assigned to scores that are <em>average</em> (e.g., standard scores of ≥ 90) for the purpose of conducting a PSW analysis within the context of the DD/C operational definition. Ordinarily, average scores are just that, <em>average</em>, reflecting adequately developed skills or abilities. They are not strengths in the normative sense, although they may be strengths in the relative sense (both of which are described below). When the term <em>strength</em> is used to describe average performance in a PSW analysis it simply means that the ability area associated with the average score <em>does not appear to interfere with or adversely affect</em> the individual’s learning. No other meaning should be ascribed to the word <em>strength</em> in the PSW analysis, as operationalized by DD/C.</td>
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<td>Normative Strength</td>
<td>Performance on standardized, norm-referenced tests that falls greater than one standard deviation above the mean (i.e., standard scores &gt; 115). This type of strength is often referred to as “population relative” or “inter-individual.”</td>
<td>X-BASS automatically generates this information for all WISC-V Index Scales and new clinical composites.</td>
<td>The range of 85–115, inclusive, is often referred to as the range of normal limits because it is the range in which nearly 70% of the populations falls on standardized, norm-referenced tests. Therefore, scores within this range are sometimes classified as within normal limits (WNL). As such, any score that falls outside and above this range is a normative strength as compared to most people.</td>
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<td>Relative Strength</td>
<td>Performance that falls significantly above an individual’s own average or mean performance. This type of strength is often referred to as “person relative” or “intra-individual.” Because this type of strength is person relative, scores that are in the average range or lower may reflect relative strengths for some individuals who generally function in the below average range, for example.</td>
<td>X-BASS automatically conducts a person-relative analysis for WISC-V Primary Index Scales and the 10 corresponding subtests.</td>
<td>Most intra-individual analyses identify performances that fall significantly above an individual’s own average as relative strengths. Some of these analyses reflect statistical rarity in score differences as compared to the general population (based on actual discrepancy norms or base rate data). For intra-individual analyses that use actual discrepancy norms or base rate data, remember that even though performance may be considered a relative strength and the difference from the average may be rare, a relative strength for an individual may be a normative weakness as compared to most people (i.e., standard score &lt; 85). Therefore, whenever an intra-individual analysis is conducted, scores that emerge as relative strengths should also be evaluated from a normative perspective (i.e., where the score falls as compared to most people).</td>
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The \( g \)-value is automatically calculated by X-BASS and assists in answering the question, “How likely is it that the individual’s pattern of cognitive strengths represents at least average overall ability?” The higher the \( g \)-value, the greater the likelihood that the individual’s overall cognitive or intellectual ability (i.e., estimate of \( g \)) is at least average, despite one or more specific cognitive weaknesses. The \( g \)-value was calculated via the use of “\( g \)-weights” for broad CHC abilities—values that indicate the relative contribution of each broad ability to overall intellectual ability (see Rapid Reference E.1 for details).

A low \( g \)-value (e.g., not enough areas designated as strengths) suggests that overall intellectual ability is below average or lower. In other words, a low \( g \)-value suggests that in all likelihood the individual’s cognitive weaknesses are more pervasive or global, rather than specific. In this case, an estimate of overall intellectual ability is not calculated and the PSW analysis is not conducted.

**Don’t Forget:** Individuals with low overall cognitive or intellectual ability and achievement are in need of services, but do not meet the SLD criteria set forth in the DD/C definition. These individuals are perhaps best served at Tiers II and III of an RTI model.

| Cognitive Strengths that constitute at least average overall ability to think and reason—The Facilitating Cognitive | The DD/C definition requires that the examiner assess a minimum of seven CHC areas: Gf, Gc, Gsm, Glr, Gv, Ga, and Gs. Based on the CHC areas that were designated as strengths, a \( g \)-value is calculated. If the \( g \)-value is of sufficient magnitude, a composite is calculated and is considered a | When the \( g \)-value is of sufficient magnitude, a standard formula is used in X-BASS to calculate a composite based on all CHC scores that were designated as strengths by the user. The composite is called the FCC. Steps and formulae used in X-BASS to calculate a composite are summarized in Rapid Reference E.2. See also the “PSW-A Notes” tab in X-BASS for more information. | If too few CHC scores were designated as strengths, then X-BASS will not calculate an FCC. A sufficient breadth of cognitive abilities must be designated as strengths for the FCC to be calculated because the FCC is expected to be an estimate of \( g \) or general intelligence without the attenuating effects of specific cognitive weaknesses. For example, if an individual had relative weaknesses in working memory and processing speed, the FCC would be akin to |
Don’t Forget:
In addition to the seven CHC areas, common neuropsychological domains that are often assessed in cases of suspected SLD include orthographic processing (OP), speed of lexical access (LA), cognitive efficiency (CE), and executive functions (EF). If any of these neuropsychological domains is evaluated, it may also be included in the PSW analysis.

Using the WISC-V GAI as an estimate of general intelligence rather than the FSIQ, because the GAI does not include explicit measures of working memory or processing speed. Also, if the areas that are designated as strengths by the user are sufficient in number, yielding a g-value that suggests at least average overall cognitive or intellectual ability, but the scores representing those areas are in the mid to upper 80s, for example, the FCC may fall below 85. In v1.2 of X-BASS, when an FCC fell below 85, the program did not report it and the PSW analysis was not conducted. The assumption here was that the individual’s weaknesses were more pervasive and global, rather than specific. Below average cognitive and academic ability in and of itself is not consistent with the SLD construct. However, because clinical judgment may suggest that multiple data sources support SLD, despite a below average FCC, versions 1.4 and 2.0 of X-BASS allow the user to continue with the PSW analysis by overriding the “at least average overall ability” criterion. However, when the FCC falls below 85, X-BASS conducts the PSW analysis.

(continued)
Don't Forget:
Although neuropsychological domains (e.g., CE, EF) may be included in the PSW analysis, they are not included in the calculation of the FCC.

| Discrepancy 1: Cognitive weaknesses that are domain specific and the Inhibiting Cognitive Composite (ICC) | The concept of at least average overall cognitive or intellectual ability implies that any cognitive weaknesses that are observed are “circumscribed” or domain specific, not general or more pervasive. | In the PSW analysis conducted automatically in X-BASS, any scores designated as weaknesses, regardless of magnitude, are labeled “Actual.” The Facilitating Cognitive Composite (FCC) is used in a regression equation to calculate a “Predicted” score. For a cognitive weakness to be considered domain specific, two conditions must be met: (1) the difference between the FCC and Actual (weakness) score must be statistically significant ($p < .05$); and (2) the difference between the Predicted and Actual scores must be considered unusual or rare in the general population. Note that X-BASS corrects for false negatives – this means that the program guards against missing SLD when the condition is present. When more than one cognitive weakness |
| Comments | automatically but reports that such an analysis is not consistent with the DD/C model. |

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Although neuropsychological domains (e.g., CE, EF) may be included in the PSW analysis, they are not included in the calculation of the FCC.
(among the seven CHC areas) is identified, then an ICC is automatically calculated. The purpose of the ICC is simply to provide a summary of the individual’s cognitive weaknesses. For the purpose of the PSW analysis, the user may select either the ICC or an individual cognitive ability or processing composite to represent “cognitive weakness.”

Discrepancy 2: Academic weaknesses that represent unexpected underachievement are identified when two conditions are met: (1) the difference between the Facilitating Cognitive Composite (FCC) and Actual (weakness) score is statistically significant ($p < .05$); and (2) the difference between the Predicted and Actual academic scores is unusual or rare in the general population.

Note that X-BASS corrects for false negatives—this means that the program guards against missing SLD when the condition is present.

Even if a weakness represents unexpected underachievement, the actual score may not be below average. The actual score must be below average to meet part of the criteria for “consistency” in the DD/C definition.

Don’t Forget:
Because individuals benefit from explicit instruction, evidence-based interventions, strategy instruction, and the like, those individuals who have received such instruction and services may very well perform in the average range academically, which should not automatically rule out SLD, particularly when all other criteria are met. Results of a PSW analysis must always be considered within the context of the entire case history and current level and type of services provided to the individual.

(continued)
Areas of cognitive and academic weakness are below average and there is an empirical and/or ecologically valid relationship between them.

For this component of the PSW analysis, X-BASS answers two specific questions and based on the answers to those questions, provides a statement about the presence of Below Average Aptitude-Achievement Consistency. The first question is, “Are the scores that represent the cognitive and academic areas of weakness actually weaknesses as compared to most people (i.e., below average or lower compared to same-age peers from the general population)?” The program parses the cognitive and academic weakness scores into three levels: <85, 85-89 inclusive, and >90. Scores that are less than 85 are considered normative weaknesses; scores that are between 85 and 89 (inclusive) are considered weaknesses because they are below average; and scores of 90 or higher are not considered to be weaknesses. Next, the two scores (academic and cognitive) are examined relative to each other. When both scores are less than 85, the program reports a “Yes,” meaning that both scores are normative weaknesses. If one score is less than 85 and the other is between 85 and 89, the program reports “Likely.” If both scores are between 85 and 89 (inclusive), the program reports “Possibly” (because the scores are within normal limits, despite being classified as below average aptitude-achievement consistency). In some cases, the question of whether or not an individual’s pattern of strengths and weaknesses is marked by a below average aptitude-achievement consistency may not be clear based on the quantitative data alone. As such, it is always important to interpret an individual’s pattern of strengths and weaknesses within the context of all available data sources (e.g., including exclusionary factors, behavioral observations, work samples) and render a judgment about SLD based on the totality of the data.
average). The program also reports “Possibly” when one score is less than 85 and one is 90 or higher. If one score is between 85 and 89 (inclusive) and the other is 90 or higher, the program reports “Unlikely” and when both scores are 90 or higher, the program reports “No,” indicating that the scores cannot be considered weaknesses as compared to most people. The second question is, “Are the areas of cognitive and academic weaknesses related empirically?” The strength of the relationship between the cognitive and academic areas of weakness is reported automatically by X-BASS as either LOW (median intercorrelation < .3), Moderate (i.e., MOD) (median intercorrelation between .3 and .5), or HIGH (median intercorrelation > .5), based on a review of the literature (see Flanagan et al., 2013; McGrew & Wendling, 2010) and the technical manuals of cognitive batteries (e.g., WJ IV, WISC-V). Information regarding where the cognitive and academic weakness scores fall as compared to most people and the strength of the relationship between the two areas is used to answer the question, “Is there a below average aptitude-achievement consistency?” The answer automatically generated by X-BASS is either “Yes, Consistent,” “No, Not Consistent,” or “Possibly, Use Clinical Judgment.” For example, if the cognitive and academic areas
selected by the evaluator as weaknesses are associated with scores that fall below 85 and if the strength of the relationship between the areas of cognitive and academic weakness is moderate or high, then the program reports “Yes, Consistent.”

Caution:
X-BASS does not ask the user if exclusionary factors have been ruled out as the primary explanation for the cognitive and academic weaknesses. The assumption is that these factors have been ruled out, otherwise the user would not be conducting a PSW analysis.

Note that the DD/C criteria indicate that there must be a cognitive and academic weakness and that these weaknesses must be below average. Although this is true, these findings in and of themselves do not guarantee that these weaknesses will meet PSW criteria. This is because the cognitive weakness must be domain specific (Discrepancy 1) and the academic weakness must reflect unexpected underachievement (Discrepancy 2). Also, the relationship between them must be supported empirically and/or have ecological validity (Consistency). These conditions are determined by specific formulae and procedures that are programmed into X-BASS.
• A pattern that differentiates SLD from generalized learning deficiency or more pervasive cognitive deficiency

**Don’t Forget:**
The specific criteria for determining whether each of these conditions is present are automated in X-BASS.

**Don’t Forget:**
X-BASS requires estimates of *seven* CHC areas (Gf, Gc, Glr, Gsm, Gv, Ga, and Gs). These estimates may represent *broad* or *narrow* cognitive constructs. Either one or two estimates of each CHC area may be included in the PSW analysis. In addition to these cognitive estimates, at least one area of academic achievement must be selected for inclusion.
Rapid Reference E.1: Development and Meaning of the g-Value

Because many definitions of SLD presume that the individual has at least average overall intellectual ability, marked by a pattern of cognitive strengths in the presence of specific cognitive weaknesses (see Flanagan & Alfonso, 2011, in press), practitioners are often asked to make this determination in the course of their evaluation. The g-value is helpful in this regard because it assists in answering the question, “How likely is it that the individual’s pattern of cognitive strengths represents at least average overall ability?” The higher the g-value, the greater the likelihood that the individual’s overall intellectual ability (i.e., estimate of \( g \)) is at least average, despite specific cognitive processing or ability weaknesses.

The g-value was calculated via the use of “g-weights” for broad CHC abilities—values that indicate the relative contribution of each broad ability to overall intellectual ability. The g-weights were obtained from the WJ III Technical Manual (McGrew & Woodcock, 2001) and were also calculated for each of seven principal CHC broad abilities using cross-battery data sets (for ages 5-19). Three different cross-battery data sets were used, including KAIT and WJ-R (Flanagan & McGrew, 1998), CAS and WJ III (Keith et al., 2001), and KABC-II and WJ III (data provided by Pearson, Inc., used with permission and published by Reynolds, Keith, Flanagan, & Alfonso, 2013). All data sets were constrained to the same seven broad ability factors so that the g-weights would remain comparable. The resulting g-weights from each data set were then aggregated to form mean g-weights for each of the seven broad abilities routinely measured by current batteries. The abilities and their corresponding g-weights are as follows: Gc (.2355), Gf (.1870), Glr (.1572), Gsm (.1152), Gv (.1167), Ga (.1029), and Gs (.0864).

The g-value is sensitive to the abilities that are considered most important for academic achievement at two different grade levels (i.e., K-2 and 3+) based on a review of the literature (Flanagan et al., 2013; McDonough, Flanagan, Sy, Alfonso, in press). This value takes into account how many of the seven major broad cognitive abilities are “strengths” and then uses a sum of the g-weights associated with these areas of strength along with an additional weighting applied to the four most important abilities among the seven that are related to academic success at each grade level (i.e., Gc, Glr, Gsm, and Gs for Grades K-2 and Gc, Gf, Glr, and Gsm for Grades 3+). The additional weighting applies only to the areas among the four that were considered by the examiner to be a strength for the individual.

The interpretive schema for the g-value is as follows:

- \( \geq .60 \) = average overall ability is very likely
- .51 - .59 = more information needed
- \( \leq .50 \) = average overall ability is unlikely

If the g-value is found to be substantial (\( \geq .60 \)), it can be presumed that any identified deficits are circumscribed (rather than pervasive, affecting all or nearly all aspects of cognitive functioning). The value of \( \geq .60 \) was selected because it is high enough to allow for a conservative estimate of \( g \) (or a proxy for overall general...
ability), including cognitive abilities most closely associated with academic skills, that would seemingly facilitate academic learning and production at or close to grade level (keeping in mind, of course, that analytic-type ability or \( g \) explains only about half of the variance in academic performance), especially when specific cognitive weaknesses are minimized through compensatory efforts, accommodations, and the like. When the \( g \)-value is \( \leq .50 \), it can be assumed that the individual’s pattern of cognitive performance is marked by more pervasive impairment, rather than a circumscribed weakness. If the \( g \)-value falls in between these ranges (i.e., from .51 to .59, inclusive), it is difficult to ascertain the individual’s level of overall cognitive ability based on this value alone. Additional data sources that may assist in determining whether the student’s pattern of cognitive strengths is consistent with at least average overall cognitive ability include the following: (1) performance in academic areas not related to the referral; (2) teacher and parent reports; (3) informal assessments and observations; (4) performance in non-academic areas (e.g., language and communication skills, social skills, adaptive behaviors, emotional functioning); (5) performance on curriculum-based measures; and (6) performance on state-level achievement tests.

Source: Adapted from the Cross-Battery Assessment Software System (X-BASS v1.2; Ortiz, Flanagan, & Alfonso, 2015)

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### Rapid Reference E.2

#### Steps and Formulae for Calculating Composite Scores and Composite Score Reliabilities*

The formula for calculating a composite score is relatively straightforward. A somewhat simplified version of the formula commonly used for this purpose is provided here:

\[
\text{Composite Score} = \frac{((SS_x + SS_y + \ldots) - n*100)}{\sqrt{(SD_x^2 + SD_y^2 + \ldots + (2*SD_x*SD_y*SD_{xy} + \ldots))}} * 15
\]

Although it is possible to specify a single formula for calculating a composite score or the reliability of a composite, the values used in the formula require their own set of computations and clarifications. Therefore, most presentations of the procedure for determining composites and their reliabilities take a step-by-step approach by calculating the intermediate values first before placing them into the final formula to derive the final value. Following are some basic steps used in making these calculations and that form the basis of the code contained in X-BASS for determining all composite values used in the program. Note that all subtest scores should be converted to the same Deviation IQ metric prior to their use in the formula. This results in a common mean (\( SS = 100 \)) and standard deviation (\( SS = 15 \)) for all scores and facilitates computation to a certain degree.
Steps for Calculating Composite Score

The necessary values required for this calculation consist of:

1. \( n \) = Number of scores to be used to calculate the composite
2. \( SS_x + SS_y + \ldots = \) Sum of all \( n \) standard scores used in the composite (SumSS)
3. \( SD_x^2 + SD_y^2 + \ldots = \) Sum of all \( n \) variances, or the number of scores \( \times \) 225 because all score SDs are 15\(^2\) (SumVar)
4a. \( 2SD_x \times SD_y \times R_{xy} = \) Each covariance pair is calculated as \( 2 \times SD \) ScoreA \( \times SD \) ScoreB \( \times \) Intercorrelation of A and B where the SD is always 15 and the intercorrelation provided by our own analyses
4b. \( 2SD_x \times SD_y \times R_{xy} + \ldots = \) Sum of all covariances is the sum of each covariance (SumCov)
5. \( n \times 100 = \) Product of the mean of the composites and the number of scores, and when converted to same metric, the mean for all scores is simply 100 (MEANc)
6. \( \sqrt{SD_x^2 + SD_y^2 + \ldots + (2SD_x \times SD_y \times R_{xy} + \ldots)} = \) Standard deviation of composite is square root of SumVar + SumCov (SDc)
7. Using these intermediate values, the Composite Score is calculated as ((SumSS – MEANc)/SDc)\(\times 15\) + 100. The latter part of the equation just converts the value back to the Deviation IQ metric.

Example 1: Assume two-score composite with Score X = 95, Score Y = 89, mean = 100, SD = 15, intercorrelation is .62.

1. Sum of two standard scores = SumSS = 184
2. Sum of variances is 2 \( \times \) 225 = SumVar = 450
3. For two scores, only one covariance and intercorrelation exist and is calculated as \( 2 \times 15 \times 15 \times .62 = 279 \) = SumCov
4. Mean of composite is 2 \( \times \) 100 = MEANc = 200
5. Standard deviation of composite is square root of 450 + 279 = SDc = 27
6. Composite Score is (184 – 200/27)\(\times 15\) + 100 = 91 (rounded)

Example 2: Assume a three-score composite with Score X = 100, Score Y = 95, Score Z = 90, Rxy = .62, Rxz = .60, Ryz = .62.

1. Sum of three standard scores = SumSS = 285
2. Sum of variances is 3 \( \times \) 225 = SumVar = 675
3. For three scores, three covariances and three intercorrelations exist that yield:
   - \( COV_{xy} = 2 \times 15 \times 15 \times .62 = 279 \)
   - \( COV_{xz} = 2 \times 15 \times 15 \times .60 = 270 \)
   - \( COV_{yz} = 2 \times 15 \times 15 \times .62 = 279 \)
   - Sum of all COVxyz = 279 + 270 + 279 = 828
4. Mean of composite is 3 \( \times \) 100 = MEANc = 300
5. Standard deviation of composite is square root of $675 + 828 = SDc = 38.7$

6. Composite Score is \((285 - 300/38.7)*15 + 100 = 94\) (rounded)

The formula for calculating the reliability of a composite score is also rather straightforward. A somewhat simplified version of the formula commonly used for this purpose is provided here:

\[
\text{Reliability of Composite Score} = \frac{((R_{11} + R_{22} + \ldots) + 2 * (R_{12} + R_{21}))}{(n + 2 * ((R_{12} + R_{21})/n + 2 * R_{12})}
\]

This formula is a bit simpler than the one for calculating the composite, but it can still be made easier to use by engaging in steps that produce intermediate values. Following are basic steps used in making these calculations and that form the basis of the code contained in X-BASS determining the reliability of any composite value derived by the program.

**Steps for Calculating the Reliability of a Composite Score**

The necessary values required for this calculation consist of:

1. \(n\) = Number of scores to be used to calculate the composite
2. \(\text{Rel}_x + \text{Rel}_y + \ldots = \text{Sum of all reliabilities of all scores entering into composite (SumRxx)}\)
3. \(R_{xy} + R_{yx} = \text{Sum of all intercorrelations for all scores entering into composite (SumRxy)}\)
4. Composite reliability is \((\text{SumRxx} + (2 * \text{SumRxy}))/n + 2 * \text{SumRxy}\)

**Example 1:** For two scores, assume .87 and .93 reliabilities, with intercorrelation of .62.

1. \(n = 2\)
2. Sum of all reliabilities = SumRxx = 1.8
3. Sum of all intercorrelations = SumRxy = .62
4. Composite reliability is \((1.8 + 2 * .62)/2 + 2 * .62 = .94\) (rounded)

**Example 2:** For three scores, assume .87, .93, and .87 reliabilities, and correlations of .62, .60, and .62.

1. \(n = 3\)
2. Sum of all reliabilities = SumRxx = 2.67
REFERENCES


