FIGURE 1.4

READING EXPECTANCY FORMULAS

Background: The Concept of “Mental Age”

The first Reading Expectancy formula below uses the type of intelligence score often used in early intelligence tests. This “Mental Age” score can be easily calculated from the familiar “Intelligence Quotient,” or IQ, score as follows:

\[ MA = \frac{IQ \times CA}{100} \]

By this formula, an 8-year-old child with an IQ of 120 would be translated into a “Mental Age” of 9.6; the child’s raw score was equal to the score of the average child of 9.6 years of age. On the other hand, an 8-year-old child with an IQ of 80 would be translated into a “Mental Age” of 6.4. It should be noted that most intelligence test producers have abandoned the use of “Mental Age” as a construct because it tends to give the misimpression that “Mental Age” somehow equals maturity level, when in fact it merely is an index of cognitive functioning.

Harris’s Reading Expectancy Formula.

Albert Harris (1961) seems to have been the first to apply the idea of reading expectancy. A child’s Mental Age score could be interpreted as his or her “Reading Expec-
tancy Age. Simply by subtracting 5 (the number of years before entering school) from a child’s Mental Age score, translates Mental Age into a grade level “Reading Expectancy”:

Reading Expectancy = MA - 5

By this formula, an 8-year-old third grader with an IQ of 120, which translates into an MA of 9.6, would have a Reading Expectancy of 4.6, or 1.6 years above grade placement. An 8-year-old third grader with an IQ score of 80 would have a Mental Age score of 6.4, and a Reading Expectancy of 1.4, which is 1.9 years below grade placement. This second third grader, reading barely above first-grade level, would be considered to be reading up to expectancy, and not in need of remedial assistance.

Conceptually, this is somewhat problematic; if the high-IQ children above were reading on grade level, they would be in need of remedial assistance because they “should” be reading at close to a fifth grade level; the low-IQ children, even if reading on a first-grade level, would be considered to be reading up to expectancy and not in need of remedial assistance.

Harris and Sipay’s Reading Expectancy Age

Harris and Sipay (1985) later adjusted the formula somewhat, to yield Reading Expectancy Age scores that would be slightly lower than Mental Age scores:

REA (Reading Expectancy Age) = \( \frac{2MA + CA}{3} \)

By this formula, an 8-year-old third grader with an IQ of 120 and Mental Age of 9.6 would have a Reading Expectancy Age of 9.1. An 8-year-old third grader with an IQ of 80 and Mental Age of 6.4 would have a Reading Expectancy Age of 5.6.

Harris has suggested that the differences between Reading Achievement (RA = a grade equivalent score on a reading achievement test) and Reading Expectancy Age (REA) should be considered of more significance at earlier grades and less significance at higher grades, according to the following guidelines:

<table>
<thead>
<tr>
<th>Grade</th>
<th>REA exceeds RA</th>
</tr>
</thead>
<tbody>
<tr>
<td>1–3</td>
<td>by 6 mo. (0.5 yr)</td>
</tr>
<tr>
<td>4–5</td>
<td>by 9 mo. (0.7 yr)</td>
</tr>
<tr>
<td>6+</td>
<td>by 1 year or more</td>
</tr>
</tbody>
</table>

The 8-year-old third grader with an IQ of 80 and a Reading Expectancy Age of 5.6 would need to have a Reading Achievement lower than age 5.1 (below first grade level) to be considered a significant problem.

**Bond & Tinker’s Formula**

Bond & Tinker (1973) offered a formula for calculating reading expectancy (RE) directly from an IQ score without reference to mental age, and actual number of years in school (not counting kindergarten) rather than assuming that age minus 5 years is an accurate estimate of this figure.

\[
RE = \frac{(Years \ in \ School \times IQ) + 1}{100}
\]

The significant discrepancies suggested by Bond and Tinker are:

<table>
<thead>
<tr>
<th>Grade</th>
<th>RE exceeds RA</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>.50</td>
</tr>
<tr>
<td>2</td>
<td>.66</td>
</tr>
<tr>
<td>3</td>
<td>.75</td>
</tr>
<tr>
<td>4</td>
<td>1.00</td>
</tr>
<tr>
<td>5</td>
<td>1.50</td>
</tr>
<tr>
<td>6+</td>
<td>2.00</td>
</tr>
</tbody>
</table>

By this formula, a third grader (who had been in school for three years) with an IQ of 80 would have a Reading Expectancy of 3.4

\[
RE = \left( \frac{3 \times 80}{100} \right) + 1
\]

and would be considered to have a significant problem if reading below grade 2.6; that is, if reading achievement fell 0.75 below this student’s reading expectancy of 2.6:

\[
3.4 - 0.75 = 2.6
\]