

significant difference for each test (except filtered words) and composite score. A thorough analysis of test results to correctly identify those with or without an APD purports to provide support that the tests have diagnostic utility depending on the cutoff selected for the scaled scores. However, the evidence provided by the manual suggests that the SCAN-3:A is more accurate in identifying those with an APD than in identifying those without an APD. For example, when the cutoff score is  $\leq 8$ , SCAN-3:A diagnostic tests correctly identified 93% of those with an APD, but only 49% were correctly identified as not having an APD. This should raise serious doubts about the use of the instrument as a diagnostic measure.

**COMMENTARY.** The relationship between an APD and learning and behavioral disabilities continues to be controversial in special education. Though the belief persists that auditory processing deficits related to learning difficulties can be identified and remediated, research supporting this position has not been established (Cacace & McFarland, 1998), though Kavale and Forness (2000) found some evidence for a connection between reading and perceptual skills when visual and auditory processes were considered together. However, even if there was a clear relationship between auditory processing skills and learning (especially reading) there is a general consensus among researchers that it is not possible to assess central APDs directly (Kavale & Forness, 2000). The author of the SCAN-3:A does not address these concerns in the description of the measurement's development.

The usefulness of the SCAN-3:A to accurately identify auditory processing deficits is questionable for at least three reasons. First, validity of the assumption that there exists a relationship between APDs and learning problems has not been established in the research, and the test author has not provided any significant support or evidence that the skills assessed in the SCAN-3:A are, in fact, related to learning difficulties. Second, the battery's underlying construct(s) are not well developed or connected to any substantial research base. Third, the psychometric characteristics of the battery are marginal at best. Though the evidence for criterion-related validity is adequately established, evidence for content and construct validity are weak. Reliability data presented in the manual indicates lower than acceptable reliability for most of the tests (Salvia, Ysseldyke, & Bolt, 2007).

**SUMMARY.** The SCAN-3:A is a norm-referenced assessment battery of Auditory Processing that can be administered and scored in a relatively efficient manner. However, its usefulness as either a screening or diagnostic measure is questionable due to the concerns expressed earlier. Evidence for reliability falls short of accepted standards, and without adequate construct validity, it cannot be recommended as a diagnostic tool.

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## SCAN-3 for Children: Tests for Auditory Processing Disorders.

**Purpose:** "Designed to identify auditory processing disorders in children."

**Population:** Ages 5-12.

**Publication Dates:** 1986-2009.

**Acronym:** SCAN-3:C.

**Scores, 21:** 4 screening test scores: Gap Detection (ages 8-12 only), Auditory Figure-Ground +8 dB, Competing Words-Free Recall, Total (P/F); 5 diagnostic test scores: Auditory Processing Composite (Filtered Words, Auditory Figure-Ground +8 dB, Competing Words-Directed Ear, Competing Sentences, Total); 3 supplementary test scores: Auditory Figure-Ground +12 dB, Auditory Figure-Ground 0 dB, Time Compressed Sentences; ear advantage summary score for each of the following: Auditory Figure-Ground +8 dB, Competing Words-Free Recall, Filtered Words, Competing Words-Directed Ear-Directed Right Ear, Competing Words-Directed Ear-Directed Left Ear, Competing Sentences, Auditory Figure-Ground +12 dB, Auditory Figure-Ground +0 dB, Time Compressed Sentences.

**Administration:** Individual.

**Price Data, 2010:** \$255 per complete kit including 25 record forms, manual (2009, 124 pages), and Audio CD; \$57 per 25 record forms; \$97 per manual; \$107 per Audio CD.

**Time:** (10-15) minutes for the screening tests; (20-30) minutes for the diagnostic and supplementary tests.

**Comments:** Screening test scores are "criterion-referenced"; Auditory Figure-Ground +8 dB test is identical across the screening and diagnostic levels; all scores (except for Gap Detection) are calculated as a composite of the participant's right ear score and left ear score, and the ear-advantage score is the difference between the right and left ear scores; additional materials

required: “CD player with a track display or a two-channel audiometer” or access to a computer, two sets of stereo headphones, and a stereo Y-adaptor if necessary; revision of SCAN-C Test for Auditory Processing Disorders in Children—Revised.

**Author:** Robert W. Keith.

**Publisher:** Pearson.

**Cross References:** For reviews by Annabel J. Cohen and Jaclyn B. Spitzer and Abbey L. Berg of an earlier edition entitled SCAN-C Test for Auditory Processing Disorders in Children—Revised, see 16:217; for an earlier edition, see also T5:2300 (1 reference); for a review by Sami Gulgoz of the original edition, see 11:341 (2 references).

*REVIEW of the SCAN-3 for Children: Tests for Auditory Processing Disorders by GARYL. CANIVEZ, Professor of Psychology, Department of Psychology, Eastern Illinois University, Charleston, IL:*

**DESCRIPTION.** The SCAN-3 for Children: Tests for Auditory Processing Disorders (SCAN-3:C) is a revision of the SCAN-C Revised and is an individually administered test using a standard compact disc of audio recordings of instructions and stimuli played through headphones to purportedly measure “auditory processing disorders” (APD) in children ages 5–12. The definition for APD provided in the manual is that of the American Speech-Language-Hearing Association (ASHA, 1996, 2005). Robert W. Keith, the test author, implies that APD is related to academic and behavioral difficulties and that information from the SCAN-3:C will provide information about functional abilities and auditory system neuromaturation. Precious little theoretical background information and theoretical support for the construct of auditory processing is provided in the manual.

The SCAN-3:C is divided into three screening tests (Gap Detection [GD], Auditory Figure Ground +8 dB [AFG8], and Competing Words–Free Recall [CWFR]), four diagnostic tests (Auditory Figure Ground +8 dB [AFG8], Filtered Words [FW], Competing Words–Directed Ear [CWDE], and Competing Sentences [CS]), and four supplementary tests (Competing Words–Free Recall [CWFR], Auditory Figure Ground 0 dB [AFG0], Auditory Figure Ground +12 dB [AFG+12], and Time Compressed Sentences [TCS]). The manual is a bit confusing in that Keith notes there are four diagnostic tests (one supplementary test is also included among the diagnostic tests) but notes there are only three supplementary tests when one of the screening tests

is also included as a supplementary test (Competing Words–Free Recall). Those not passing *all* screening tests (two for ages 5–7, three for ages 8–12) are then administered the diagnostic tests. The manual notes that performance on diagnostic tests is to be used “in combination with observations and other information” (p. 2) to make a diagnosis of APD but specific examples of observations or behaviors and other information to be used in diagnosing of ASD were not delineated.

**DEVELOPMENT.** Goals for revision noted inclusion of temporal processing tests; increasing difficulty of the Filtered Words subtest to improve ceiling; including tests with different signal-to-noise ratios; modifying the Competing Sentences subtest to allow partial credit; modifying scoring for Competing Words to allow only direct order correctness; include screening, diagnostic, and supplementary tests with scaled scores; and providing ear advantage prevalence for all tests. Changes from the SCAN-C and item development were presented in the manual, as were summaries of field research and pilot research before standardization. Test instructions are included on a professionally recorded compact disc and extensive information is provided regarding equipment needed to present the SCAN-3:C. Examiner qualifications indicate who may administer the SCAN-3:C but there is no guidance as to who or what qualifications are needed to interpret the scores. Detailed description and examples for administration and completion of the record form are provided.

**NORMS AND SCORES.** The standardization sample ( $N = 525$ ) was obtained using a stratified national sampling across variables of race/ethnicity, geographic region, and education level of the child’s primary caregiver (a likely proxy for SES as reliable income information is difficult to obtain). Tables comparing the standardization sample to 2004 U.S. Census estimates across stratification variables showed a close match on *single* variables. Unfortunately, there are no tables comparing sample proportions and population matches crossing two stratification variables (i.e., race/ethnicity X caregiver education level), so although there is a close match to the Census estimates across single variables, it is not possible to tell from the manual if disproportional representation exists in some cells within the matrix. Such tables are commonly published in other Pearson products such as Wechsler scales of intelligence. There were between 50 and 77 individuals within each age group from

5 through 9 years but 198 within the combined ages 10, 11, and 12. This is consistent with the SCAN-C Revised but there appears to be no information as to why these three age groups were combined. The manual presents standardization sample exclusionary criteria of pure tone hearing screening failure, past or present otitis media (or other illnesses that affected hearing), speech and/or language disorder, intellectual disability, and/or limited English proficiency, which could affect test performance.

Subtest scaled scores ( $M = 10$ ,  $SD = 3$ , range 1-19) within each of the six age groups were obtained using a "method of inferential norming" (manual, p. 64) where means, standard deviations, and skewness were examined from first through fifth order polynomial regressions with comparison to theoretical distributions and growth curves that produced percentiles for raw scores. Although minor irregularities were reportedly corrected through smoothing, the method of smoothing (statistical vs. hand/visual) was not noted. The composite score ( $M = 100$ ,  $SD = 15$ ) was generated by summing the four diagnostic subtest scaled scores and normalized with composite score distribution smoothed (method unreported) to eliminate irregularities. Specification of methods to determine criterion-referenced cut scores for determining pass or fail was presented in the manual.

**RELIABILITY.** The manual contains common errors in a number of places by referring to reliability as a property of the test (i.e., "reliable tests," "test was perfectly reliable," "more reliable the test," p. 37) when reliability and error are properties of test scores obtained on a particular sample at a particular time. Reliability estimates are generally considered to be acceptable for individual clinical decision making when correlation coefficients meet or exceed .90 (Salvia & Ysseldyke, 2001). Reliability of SCAN-3:C scores was estimated with short-term test-retest (stability), internal consistency, and interscorer agreement. Short-term stability (1-29 days) for a small sample ( $n = 48$ ) of standardization sample participants produced subtest stability coefficients ranging from .47 to .70 (uncorrected) and from .54 to .73 (corrected) and composite score stability coefficients of .78 (uncorrected) and .77 (corrected). These estimates indicated inadequate short-term stability for individual decision making. Internal consistency estimates across the six age groups ranged from .89 to .93 ( $M_r = .91$ ) for the composite score and from .52 to .94 ( $M_r$

ranged .59 to .91) for the subtests. The Filtered Words and Competing Sentences subtests met or approached internal consistency sufficient to allow individual decision making where the other subtests did not. Among the diagnostic subtests, the Auditory Figure-Ground +8 dB had the lowest internal consistency estimate averaging .72 across all age groups. Thus, many subtest scores generally lacked sufficient reliability for individual decision making. Although composite score internal consistency estimates were generally acceptable, short-term stability estimates were not. Finally, all SCAN-3:C standardization tests were independently scored by two scorers, and due to the objective nature of SCAN-3:C scoring, interscorer agreement was very high, ranging from .98 to .99.

Standard errors of measurement are provided based on internal consistency estimates by age group and for the total sample and should be considered best case estimates as they consider only one source of error variance (Hanna, Bradley, & Holen, 1981). Estimated true score confidence intervals (90% and 95%) are provided in the manual for the composite score but test users are required to apply the appropriate standard score confidence interval critical values provided in the raw score to scaled score conversion tables. The formula to produce the increasingly asymmetrical confidence interval the farther the scaled score is from the mean is not provided in the manual. Obtained score confidence intervals also are not provided. When the assessment question is concerned with estimating the true score of the individual at the time of the evaluation (rather than the long-term estimate), the obtained score confidence interval is appropriate (Glutting, McDermott, & Stanley, 1987; Sattler, 2008). Obtained score and estimated true score confidence intervals are close in cases where the reliability coefficient is high but diverge as the estimated true score confidence interval becomes much more asymmetrical the farther the obtained score is from the mean and as reliability estimates decrease.

**VALIDITY.** The SCAN-3:C manual notes five approaches for examining validity evidence including test content, response processes, internal structure, special group studies, and diagnostic accuracy/utility. Test content appears to relate to characteristics outlined in the ASHA definition for APD. Examination of the SCAN-3:C internal structure was reportedly done by visually inspecting the correlation matrix of subtest intercorrelations.

Some moderate to high correlations were observed along with some low, near zero correlations between subtests. Such description in the manual seemed more like convergent and divergent (discriminant) validity considerations rather than internal structure *per se*. Factor analysis was apparently not conducted or reported in the manual; it is not always possible to visually inspect a correlation matrix and determine the latent structure of a test. Exploratory factor analysis (EFA) undertaken by this reviewer using the eight-subtest correlation matrix presented in the test manual produced communality estimates ranging from .22 (Filtered Words) to .74 (Competing Words–Directed Ear). Two factors had eigenvalues greater than one and scree analysis (Cattell, 1966) suggested the presence of two factors. Two factors were extracted and rotated with promax (oblique rotation) and factor pattern loadings placed CWDE, CWFR, and CS with Factor I and AFG12, AFG8, AFG0, FW, and TCS with Factor II, although pattern loadings for FW and TCS were not optimal ( $< .40$ ). The two factors were correlated .39. Also missing but potentially informative are subtest specificity estimates that are noted salient when exceeding subtest error variance and represent *potential* for subtest interpretation beyond composite scores. Only SCAN-3:C TCS, FW, and CS subtests had salient subtest specificity. Further exploration and research regarding the structure of the SCAN-3:C is necessary but these minimal analyses should have been conducted and described in the manual to better describe and understand the structure. Given that the subtest reliabilities for most subtests were inadequate for individual decision making, factor-based scores might provide a useful alternative.

Validity evidence based on distinct group differences for a small ( $N = 40$ ) sample of 5–12-year-olds “diagnosed” with APD were compared to a matched (race/ethnicity, age, parent education level) control group from the SCAN-3:C standardization sample. The APD group included children so identified by a certified audiologist or speech-language pathologist or “a composite score on a test of auditory processing”  $\leq 1$  *SD* from the mean (manual, p. 73). There is no indication as to how many children were identified APD by each method or if group differences existed between those different methods of APD identification. Also, there is no indication as to the criteria used by the audiologists or speech-language pathologists to diagnose APD or tests of auditory processing used.

Mean SCAN-3:C differences between the APD and normal groups were statistically significant ( $p < .05$ ) for all subtests (except Filtered Words) and for the composite score. Effect sizes were moderate to large (except Competing Words–Free Recall and Filtered Words). These results are supportive but group differences provide a necessary but not sufficient condition for diagnostic use of a test.

Examination of diagnostic accuracy/utility was also reported in the validity section of the manual and a method that should be used much more often for all diagnostic tests. It was mentioned that a sample of audiologists estimated 2–5% of children have APD (low base rate) and 25–80% of clients referred for evaluation are diagnosed with APD. Epidemiologically based population prevalence estimates were not provided (if they even exist) so the actual population base rate may be unknown. Because diagnostic efficiency statistics and utility are dependent on base rates, substantial differences may occur depending on which base rate one applies. A major problem in the manual is the lack of description of characteristics of the sample used to generate the diagnostic efficiency statistics and how those with APD were so determined and with whom they were compared. Further, although positive and negative predictive power (PPP, NPP) are the more important statistics to report as they are “rule in” and “rule out” statistics, Kessel and Zimmerman (1993) noted that *all* diagnostic efficiency statistics and the observed cell frequencies should be presented in such studies. Two tables in the manual presented varied PPP and NPP estimates by varying base rates and it appears that the statistics presented for the Matched Sample 50% may be from the earlier described group difference study but it is not specifically identified as such. To put the predictive power statistics in perspective, Landau, Milich, and Widiger (1991) suggested a PPP benchmark of .75 for diagnostic purposes and only in the case of base rates of 80% (a most generous assumption) does the SCAN-3:C achieve this benchmark but at a substantial cost in low NPP. Most PPP estimates were not supportive for diagnostic use. When examining presented cut scores at more reasonable population base rates for APD (4% or 25%) PPP estimates are disappointingly low and the SCAN-3:C does not appear useful for classification of APD; however, it does appear to be helpful in ruling out APD (good NPP). Another method that could be used to illustrate the effect of different cut scores on sensitivity and



specificity would be to examine ROC curves and estimate the area under the curve (Swets, Dawes, & Monahan, 2000).

**CRITIQUE/FUTURE CONCERNS.** Compared to the SCAN-C Revised, the SCAN-3:C appears to be an improvement in content but there are very serious psychometric limitations yet present including questionable reliability for all but the composite score and very limited evidence for validity. Many more validity studies should have been conducted and presented in the manual such as comparisons with other tests purporting to measure auditory processing to examine convergent validity. Much greater detail regarding sample characteristics of diagnostic efficiency/utility studies should have been provided. It would also be helpful for the manual to present and summarize empirical studies of reliability, validity, and utility of earlier editions to provide a review of research demonstrating psychometric support. From the SCAN-3:C manual it appears that no empirical studies were published in peer-reviewed journals. It would have been helpful to see how children classified with ADHD perform on the SCAN-3:C in comparison to children with APD (but not ADHD) and, more importantly, whether the SCAN-3:C can distinguish individuals with ADHD from APD. Also, there is no indication nor are there data to suggest how aspects of performance on the SCAN-3:C relate to the construct and measures of attention or how APD differs from ADHD or executive functioning. Also, how do individuals of varying levels of intelligence perform on the SCAN-3:C? Do individuals of higher intelligence perform better than those of average intelligence? Do those with average intelligence perform better than those with below average intelligence or mental retardation? Cohen (2005) remarked in her review of the SCAN-C that "clarification of the theoretical part of the manual is recommended for a next revision and reports of tests of convergent and discriminant validity are needed" (p. 910). Sadly, it appears that this important advice was ignored. Further, the cost of this test appears exorbitant given these psychometric data and the dearth of SCAN-3:C research presented within the manual. A great deal of additional research is required to fully understand the parameters of the SCAN-3:C and it is hoped that Keith (and others) will embark on a mission to further study the reliability, validity, and utility of scores from the SCAN-3:C. It is also hoped that in future revisions greater attention will be paid to the

critical psychometric issues noted in this and other reviews. But at present, the SCAN-3:C should not be used in diagnostic decision making.

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*Review of the SCAN-3 for Children: Tests for Auditory Processing Disorders by CONNIE THE-RIOT ENGLAND, Professor, Graduate Education, Lincoln Memorial University, Knoxville, TN:*

**DESCRIPTION.** According to the test manual, the SCAN-3 for Children: Tests for Auditory Processing Disorders (SCAN-3:C) is an individually administered screening test designed to identify auditory processing disorders in children ages 5 years to 12 years. The test kit includes 25 record forms, test manual, and audio CD. Not included in the kit but needed for assessment are a CD player or CD drive, stereo Y-adaptor, and an audiometer to calibrate the CD player or CD driver to 50 dB HL. The screening subtests, Gap Detection, Auditory Figure-Ground +8 dB (AFG+8), and Competing Words-Free Recall (CW-FR) take about 10-15 minutes to administer. The Gap Detection subtest is only for children ages 8:0-12:11. Examinees must pass the AFG+8 dB and the CWFR to pass screening. The diagnostic and supplementary tests take 20-30 minutes to complete. The diagnostic subtests include Filtered Words (FW) and AFG+8, Competing Words-Directed Ear (CW-DE), and Competing Sentences (CS). The supplemental subtests include Auditory-Figure Ground +12 dB (AFG+12), Auditory Figure-Ground 0 dB (AFG 0), and Time Compressed Sentences (TCS).

Administration procedures are clearly defined. All subtests are recorded on the provided audio CD. Directions for calibration procedures using an audiometer and CD player or CD driver are also provided.

**DEVELOPMENT.** The manual defines Auditory Processing Disorders (APD) using skill sets adopted by the American Speech-Language-Hearing Association (ASHA, 1996, 2005), which includes poor performance in one or more of the following skills: Sound localization and lateralization, Auditory discrimination, Temporal aspects of audition, Auditory performance with acoustic signals, Auditory performance with degraded acoustic signals, and/or Auditory pattern recognition.

Quoting ASHA (1996, 2005), the manual states the purpose of SCAN-3:C is “to determine if an APD is present, and if so, to describe its parameters, including functional auditory abilities and neuromaturation of the auditory system. The auditory processing assessment should provide information about developmental and acquired disorders of the central auditory system” (p. 2).

The SCAN-3:C can be used to evaluate a child’s skills in temporal processing, listening in noise, dichotic listening, and listening to degraded speech. The test developer’s close association with his consumers permitted him to expand and deepen understanding of the concept of APD. A feedback loop between test developer and experts, diagnosticians, and clinicians in the field of auditory processing allows for constant redevelopment and refinement of this type of assessment tool. For example, one suggestion from the consumers was to include ear advantage in the subtests. With the exception of Gap Detection, all subtests include ear advantage. The test manual gives an excellent description of ear advantage and the reader is referred to that section of the manual for further information.

Improvements to the differential diagnostic capability of the SCAN-3:C include: The AFG subtest is administered at the 0 dB, +8 dB, and +12 dB rather than only at +8 dB; the FW subtest is administered at the 750Hz low-pass filter instead of the 1000Hz filter used in the earlier SCAN-C; and the revision of the directed ear instructions.

**TECHNICAL.** Much of the technical information for individual subtests is included within the description of the revision process used in the development of the SCAN-3:C. The

SCAN-3:C retains all four of the SCAN-C’s subtests (Auditory Figure-Ground, Filtered Words, Competing Words, and Competing Sentences) with Competing Words and Competing Sentences using new scoring procedures. The SCAN-3:C has five additional subtests: Gap Detection, Auditory Figure-Ground 0 dB signal-to-noise ratio, Auditory Figure-Ground +12 dB signal-to-noise ratio, Competing Words-Free Recall, and Time Compressed Sentences.

Normative data were collected through the administration of the SCAN-3:C to 525 children representative of the general population to age, sex, race/ethnicity, geographic region, and primary caregiver’s education level. All examiners were properly licensed to conduct the assessments (i.e., audiologists and speech-language-pathologists). Children excluded from the standardization sample were those who failed a pure-tone screening hearing test; presented with ear infections; had an identified speech articulation, rhythm, or language disorder; had an identified intellectual disability; and/or had limited English Proficiency.

The SCAN-3:C gives an ear advantage score that may indicate hemispheric dominance for language as well as provide information on the development of the child’s auditory system (e.g., “A child with a typically developing auditory system will have higher right ear scores than left ear scores on the dichotic listening tests,” manual, p. 35).

Subtests’ raw scores for the SCAN-3:C are converted to standard scores with a mean of 10 and a standard deviation of 3 and a range of 1–19. Average scores fall between 7 and 13. The SCAN-3:C’s Auditory Processing Composite (APC) score provides information on the auditory processing skills of children in degraded speech, listening with background noise, and dichotic listening.

To evaluate test-retest reliability, 48 children were tested on two occasions. The interval between testing sessions ranged from 1 to 29 test days. Composite test/retest correlation coefficients averaged .77, with effect sizes ranging from .14 to .75, and with consistent improvement across subtests upon retesting. Confidence intervals, based on the internal consistency reliability coefficients of each test or composite score, are available at the 90% and 95% levels. Percentile ranks and descriptive classifications are given for scale scores of 7 and above (84<sup>th</sup> percentile) as falling within the normal range, scale scores of 4 to 6 as border-

line, and scale scores of 3 or below as disordered. Interscorer reliability data were extremely strong with coefficients ranging from .98 to .99.

Evidence of validity estimates are provided for test content, response processes, and internal structure. The manual's comprehensive coverage of the revision of its earlier version, along with research on the utility of the current SCAN-3:C as an assessment tool for clinicians, supports the test developer's commitment to his consumers.

As stated in the manual, test content validity of the SCAN-3:C represents an improvement in the measurement of temporal processing; adding a different response mode for dichotic listening, and including additional conditions for listening in noise. Evidence based on response processes showed that the frequency of "blends" impacting the scoring system was not statistically significant. Validity evidence based on internal structure reflects the degree to which the pattern of intercorrelations among subtests provides a more complete interpretation of the child's auditory processing abilities (e.g., highest correlation between tests of measuring similar skills).

**SUMMARY.** The SCAN-3:C appears to be a psychometrically sound assessment instrument for the screening and identification of APD in children aged 5–12. Strengths of the instrument are its firm grounding in ASHA approved "auditory skills processing sets," its commitment to its clinicians in the form of a feedback loop of data to improve or redesign aspects of the instrument, and its strong reliability and validity scores. The SCAN-3:C manual provides theoretical underpinnings, construct descriptions, and intervention strategies for APDs.

Additional research on the SCAN-3:C will provide much information on the use of this tool as a measure of the functional auditory abilities and neuromaturation of the auditory system of young children as well as "provide information about developmental and acquired disorders of the central auditory system" (manual, p. 2). If the examiner's manual is an indication of the test developer's commitment to ongoing research and development, no doubt the needed research will be accomplished.

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### School Motivation and Learning Strategies Inventory.

**Purpose:** Designed to measure "strategies students actively employ in learning and test taking."

**Population:** Ages 8–12, 13–18.

**Publication Date:** 2006.

**Acronym:** SMALSI.

**Scores, 11:** Study Strategies, Note-Taking and Listening Skills, Reading and Comprehension Strategies, Writing and Research Skills, Test-Taking Strategies, Time Management (teen only), Organizational Techniques (teen only), Time Management/Organizational Techniques (child only), Academic Motivation, Test Anxiety, Attention and Concentration.

**Administration:** Group.

**Levels, 2:** Child, Teen.

**Forms, 2:** Child Form, Teen Form.

**Price Data, 2008:** \$199 per complete kit including manual (108 pages), 25 child test forms, 25 child profile sheets, child scoring template, 25 teen test forms, 25 teen profile sheets, teen scoring template, and audio CD; \$135 per child or teen kit including manual, 25 test forms and 25 profile sheets (specify form), scoring template (specify form), and audio CD; \$45 per 25 test forms, \$32.50 per scoring template, \$28 per 100 profile sheets (specify forms); \$16.50 per audio CD; \$52.50 per manual; \$399 per scoring CD.

**Time:** (20–30) minutes.

**Comments:** The same manual is used for both Child and Teen forms.

**Authors:** Kathy Chatham Stroud and Cecil R. Reynolds.

**Publisher:** Western Psychological Services.

*Review of the School Motivation and Learning Strategies Inventory by CHRISTINE NOVAK, Associate Clinical Professor, School Psychology Program, The University of Iowa, Iowa City, IA:*

**DESCRIPTION.** The School Motivation and Learning Strategies Inventory (SMALSI) is a self-report tool designed to determine student performance across a comprehensive set of behaviors representing learning strategies, academic motivation, and test-taking. This inventory is unique in that it is designed especially for use with school-aged youth. There are two forms: a Child Form for students aged 8–12 years, and a Teen Form for students aged 13–18 years. Both forms consist of over 100 items written at a third grade reading level, which should take from 20–30 minutes to complete. The SMALSI can be administered individually or to a group; the form also can be read to students who have difficulty reading. The