Test Review: NEPSY-II

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Test Description

The *Developmental Neuropsychological Assessment* (NEPSY-II), published by Harcourt Assessment Inc., is a customizable neuropsychological battery which can be tailored to assess executive functioning abilities of individuals between the ages of 3-years, 0-months to 16-years, and 11-months (Kemp & Korkman, 2010). The NEPSY-II is a Level C measure, and may only be administered and interpreted by those trained at that level. The purpose of the NEPSY-II is to investigate both school-based problems and clinical or referral questions in problem areas of executive functioning (Kemp & Korkman, 2010). Understanding a child's strengths and weakness can assist in the identification of areas that are related to academic and/or social difficulties which require intervention planning in school. Due to the NEPSY-II's flexibility of subtest choice combinations, clinicians are able to create tailored assessment batteries across six domains, specific to the referral questions or diagnostic concerns (Brooks, Sherman, & Strauss, 2010; Kemp & Korkman, 2010). The results provide information relating to a variety of childhood disorder, which could lead to an accurate diagnosis (Kemp & Korkman, 2010).

The NEPSY-II kit is comprised of an Administration Manual, Clinical and Interpretive Manual, Record and Response forms for two age groups (3- to 4- year olds, and 5- to 16-year olds), Memory for Design Card Set, Memory for Names Card Set, Animal Sorting Card Set, Block Set, Memory Grid, Scoring templates for Design Copying, Training CD, and a pencil. The manuals present the subtests in alphabetical order, making it easy to follow and locate information regarding each subtest. The Clinical and Interpretive Manual provides a vast amount of information on the psychometrics of the NEPSY-II, as well the various interpretive possibilities of each subtest and combinations of subtests that may be obtained through administration of the NEPSY-II.

Theoretical Background and History of NEPSY-II

Executive functioning (EF) involves a variety of interrelated cognitive processes, such as planning, attention, mental flexibility, initiation and monitoring of actions, problem solving, working memory, and verbal reasoning (Anderson, 2002). Alexander Luria, a Russian psychologist, viewed the brain as a functional mosaic, organized into three primary functional units which contribute to overall neural functioning; therefore, when one of these units is not operating at an optimal level, overall neuropsychological functioning can be impaired (Korkman, 1999; Wittrock, 1992).

In 1980, Dr. Marit Korkman, a neuropsychologist from Finland, incorporated Lurian neuropsychological theory in the development of the NEPS as a means of assessing various aspects of attention, language, sensorimotor functions, visuospatial processing, and memory and learning for children 5- to 6-years of age (Kemp & Korkman, 2010). Dr. Ursula Kirk and Dr. Sally Kemp joined Dr. Korkman in the development and creation of the NEPSY during the late 1980's and the three authors have since continued to work together in the revisions of both the Scandinavian and American NEPSYs (Kemp & Korkman, 2010). The NEPSY was published in the United States (U.S.) in 1998. It contained five domains and 27 subtests and could be administered with children between the ages of 3-years, 0-months to 12-years, and 11-months (Korkman, Kirk, & Kemp, 2007b). The NEPSY-II was published in the U.S. in 2007 (Korkman, et al., 2007b). Some of the biggest changes between the NEPSY-II and NEPSY were the addition and deletion of certain subtests, the deletion of total domain index scores, the addition of the Social Perception domain, expansion of floor and ceilings, and an increase in age range between 3-years, 0-months to 16-years, and 11-months (Korkman, et al., 2007b).

Major Features

Domains and Subtests

The NEPSY-II contains 32 subtests and 4 delayed recall subtests which are divided into six theoretically-based domains of cognitive functioning: Attention and Executive Functioning, Language, Memory and Learning, Sensorimotor, Social Perception, and Visuospatial Processing (Korkman, Kirk, Kemp, 2007a). Appendix A provides a summary of the six domains, the subtests, and possible interpretive consideration.

The NEPSY-II is one of the few assessments specifically designed to measure neuropsychological functioning of children using co-normed subtests (Brooks, et al., 2010). Though subtests are divided up into six domains, they are actually designed to measure varied, though theoretically related, cognitive abilities (Brooks, et al., 2010; Davis & Matthews, 2010; Kemp & Korkman, 2010). Therefore, numerous combinations of subtests and order of presentation may be created into tailored assessment batteries to address each unique individual referral question a clinician must investigate further into (Kemp & Korkman, 2010). The addition of the Social Perception domain and related subtests to the NEPSY-II provide the assessor an opportunity to investigate possible presence of autistic spectrum symptoms as well (Kemp & Korkman, 2010).

Administration of NEPSY-II

Administration

To enhance the flexible usability and ease of administration of the NEPSY-II, the authors encourage examiners to choose the specific subtests they feel are the most appropriate for a clinical assessment. It is important to remember that with the NEPSY-II, assessment is centered on determining which subtests can be combined to address specific diagnostic and/or referral

questions. Therefore, subtests can be combined in numerous ways and in any order to address a variety of questions.

There are four types of assessments that may be conducted with the NEPSY-II (Korkman, et al., 2007a). The first type of assessment is the Full Assessment, and involves administrating all subtests within the six domains. The Full Assessment takes approximately 90 minutes for preschool-aged children (3- and 4-year olds) and 2 ½- to 3 ½-hours for school-aged children (5- to 16-year olds) to be administered (Korkman, et al., 2007a). The second type of assessment is the General Referral, which is recommended for most assessments, and consists of the most clinically sensitive subtests from five out of the six domains (all but Social Perception) (Korkman, et al., 2007a). The General Assessment for preschool-aged children consists of seven subtests and takes approximately 45 minutes to administer; whereas for school-aged children ten subtests are administered in approximately one hour (Korkman, et al., 2007a). The Diagnostic Assessment may be conducted when a primary score, process score, referral question, or previous diagnosis indicates the presence of a specific problem (Korkman, et al., 2007a). The authors have suggested nine referral batteries that may be utilized when planning an assessment. The NEPSY-II referral batteries include: The General Referral, Learning Differences-Reading, Learning Differences-Math, Attention or Concentration, Behaviour Management, Language Delays/Disorders, Perceptual or Motor Delays/Disorders, School Readiness, and Social/Interpersonal (Brooks, et al., 2010). The final type of assessment is the Selective Assessment, which involves the examiner choosing subtests for a particular evaluation when the presence of a disorder of a complex function which may involve or affect components from several domains is suspected (Korkman, et al., 2007a). Subtest selection should be based on theory and research findings concerning the presenting problem.

Scoring and Interpretation

Scores on the NEPSY-II are divided into four different categories: primary, process, and contrast scores, and behavioural observations (Korkman, et al., 2007b). Primary scores represent the main clinical aspect of a subtest, and are typically expressed as age-adjusted scaled scores, though a few are presented as percentile ranks as well (Korkman, et al., 2007b). Combined scaled scores are a type of primary score, which combines two measures within the same subtest (Korkman, et al., 2007b). Combined scores emphasize the construct being measured, and are weighted toward one specific skill against another (Kemp & Korkman, 2010).

Process scores assess specific abilities or error rates demonstrated within a subtest that may influence a child's performance (Korkman, et al., 2007b). Information gained from process scores is dependent on the referral question; therefore, process scores are not relevant for every child administered the NEPSY-II (Kemp & Korkman, 2010). Process scores can be expressed as scaled scores, percentile ranks, or cumulative percentage (Korkman, et al., 2001b).

Contrast scores allow a clinician to statistically compare primary scores depicted within a subtest that represent lower, basic level cognitive functions with primary scores that represent higher, complex level cognitive functions (Korkman, et al., 2007b). This comparison assists the assessor in ascertaining where the problem lies by providing data on one variable while controlling the other (Kemp & Korkman, 2010). Contrasts scores are expressed as scaled scores (Korkman, et al., 2007b).

Behavioural observations provide quantitative scores for behaviours demonstrated during the assessment which are common in clinical populations (Korkman, et al., 2007b). Behavioural observations are presented as percentile ranks or cumulative percentages due to the occurrences of skewed distributions (Korkman, et al., 2007b).

Interpretive classifications for the NEPSY-II standard scores differ slightly from other interpretive classification models. The NEPSY-II portrays any standard score at and above 13 as being 'above expected level' (Brooks, et al., 2010). The lack of differentiation of standard scores greater than 13 may lead a clinician to focus more on the weaknesses a client is portraying, rather than on both the strengths and weaknesses (Brooks, et al., 2010). A comparison of the Wechsler percentile rank interpretive classification model and the NEPSY-II's standard score interpretive classification model can be viewed in Appendix B.

Technical Adequacy

Standardization

According to the NEPSY-II's *Clinical and Interpretive Manual* (Korkman, et al., 2010b), the NEPSY-II normative sample was collected between 2005 and 2006. The random sample consisted of 1 200 individuals between the ages of 3-years, and 0-months and 16-years, and 11-months. There were 100 children in each of the twelve age groups, which were divided up by single age groups between ages 3 and 12, and then one group for 13- and 14-year olds, and one group for 15- and 16-year olds.

An analysis of data based on the October 2003 U.S. census survey provided the basis for stratification for the following variables: age, race/ethnicity (which included White, African American, Hispanic, or Other), geographic location (which consisted of four quadrants: Northeast, Midwest, Southern, and Western U.S.), and parental education. Gender of the sample was not stratified according to the census; instead 50% were male and 50% were female. Information regarding the percentage of the sample population which resided in urban or rural settings was not provided (Davis & Matthews, 2010). According to the manual, another 260 individuals with the following disabilities or diagnoses were also included in the normative

sample: Attention Deficit/Hyperactivity Disorder (ADHD), Reading Disorder, Language Disorder, Mathematics Disorder, Intellectual Disorder, Autistic Disorder, Asperger's Disorder, Traumatic Brain Injury, Deaf and Hard of Hearing, and Emotionally Disturbed (Korkman, et al., 2007b).

Reliability

Internal consistency. Reliability coefficients for primary and process scores across individual age groups, as well as an average score across six combined age groups, were conducted (Korkman et al., 2007b). Internal consistency scores were calculated using split-half reliability coefficient using the Spearman Brown formula for most subtests, however, test-retest reliability and decision consistency procedures were also used when split-half reliability could not be appropriately employed (Korkman, et al., 2007b). Overall, adequate to high internal consistency was depicted, with the highest internal consistency scores found on Comprehension of Instructions, Design Copying, and Fingertip Tapping subtests (Korkman, et al., 2007b). The lowest internal consistency scores were depicted on the Inhibition and Memory for Design subtests, which may have been influenced by practice effects as test-retest reliability procedure was employed for both these subtests (Korkman, et al., 2007b).

Test-retest reliability. A diverse group of 165 children, divided into six age groups (3- to 4-year olds, 5- to 6-year old, 7- to 8-year olds, 9- to 10-year olds, 11- to 12-year olds, and 13- to 16-year olds) were administered the NEPSY-II on two separate occasions ranging from 12 to 51 days apart (with a mean of 21 days) (Korkman, et al., 2007b). Overall, test-retest reliability correlations derived from Pearson's product-moment coefficients were adequate to high, ranging from .21 to .91 (Korkman, et al., 2007b). The lowest coefficient was found in the Imitating

Hand Positions subtest for 7- to 8-year-old range, and the highest was on Picture Puzzles subtest in the 13- to 16-year-old range (Korkman, et al., 2007b)

Interrater reliability. Interrater reliability was found to be excellent, with agreement rates ranging from 93% to 99%, with Word Generation at the lowest level and Memory for Names at the highest level (Korkman, et al., 2007b).

Validity

Content validity. Previous research utilized in the development of the 1998 NEPSY was reviewed and compared to the current literature and research in child neuropsychology to ensure content validity of the NEPSY-II was accurate and up to date (Kemp & Korkman, 2010). An examination of specific items and content within subtests, age range, and responses elicited in relation to the intended inforamtion was conducted during the pilot, tryout, and standardization phases for the NEPSY-II (Kemp & Korkman, 2010). The procedures and revisions conducted to produce the NEPSY-II continue to be aligned with Lurian neuropsychological theory, and a battery of tests that adequately measure the intended constructs was ensured (Kemp & Korkman, 2010; Korkman, et al., 2007).

Construct validity. Each subtest within a domain is designed to measure varied, though theoretically related, cognitive abilities, therefore, low correlation between subtests should be expected between some subtests within each domain (Korkman, et al., 2007b). Most intercorrelations for the Attention and Executive Functioning subtests were negligible to small, with the exception of medium to large correlations reported for the various components of the Inhibition subtests, and medium intercorrelations between Auditory Attention and Response Set, and Clocks and Inhibition Total Errors (Korkman, et al, 2007b). Most subtests in the Language domain had medium to large intercorrelations, however, these results are to be expected due to

the verbal language aspect of each subtest (Korkman, et al., 2007b). In the Memory and Learning domain, some intercorrelations between subtests were negligible to small, except for medium to large correlations between the immediate and delayed portions of a subtest, and a medium correlation between Narrative Memory and Sentence Repetition and Work List Interference Recognition (Korkman, et al., 2007b). In the Sensorimotor domain, intercorrelations between the various components of Fingertip Tapping subtests were medium to large, whereas, most Visuospatial Processing subtests had medium intercorrelations with one another. The two subtests in Social Perception domain demonstrated a small intercorrelation, indicating that each subtest measures a different aspect of social perception than the other.

Concurrent validity. Due to the wide assortment of skills assessed by the NEPSY-II, the authors used a variety of instruments for data regarding evidence of concurrent validity. Correlations with the NEPSY (Korkman, Kirk, & Kemp, 1998) indicated that subtests that remained relatively consistent between editions had a medium to large correlations (Davis & Matthews, 2010).

Correlations between the Wechsler Intelligence Scale for Children-Fourth Edition (WISC-IV; Wechsler, D, 2003), Differential Abilities Scales-Second Edition (DAS-II; Elliott, 2007), and Wechsler Nonverbal Scale of Ability (WNS; Wechsler, 2006) and the NEPSY II suggest that the NEPSY-II is suitably predictive of cognitive performance in both verbal and nonverbal applications (Davis & Matthews, 2010). Correlations between the WISC-IV Verbal Comprehension Index and NEPSY-II subtests Animal Sorting, Comprehension of Instructions, Phonological Processing, Narrative Memory, and Word List Inference ranged from medium to large (Korkman et al., 2007b). The Perceptual Reasoning Index depicted medium correlations with all but two of the subtests within the Attention and Executive Functioning domain, two

within the Memory and Learning domain, and all three Language domain subtests; as well, as a medium to high correlation with all the subtests within the Visuospatial Processing domain (Korkman, et. al., 2007b). The Working Memory Index demonstrated medium correlations with Inhibition Naming and Inhibition Switching, Phonological Processing, and Speeded Naming, as well as a large correlation with Word Inference (Korkman, et al., 2007b). The Processing Speed Index depicted a medium correlation with all but three subtests within the Attention and Executive Functioning domain, with the two Narrative Memory subtests, Non-dominant Hand Fingertip Tapping and Word Inference (Korkman, et al., 2007b). The WNS four subtest full-scale score correlated most strongly with the subtests within the Visuospatial Processing domain (Korkman, et al., 2007b). The DAS-II General Conceptual Ability composite score correlated the most strongest with Comprehension of Instruction, Phonological Processing, and Word List Inference (Korkman, et al., 2007b).

Correlations between the Children's Memory Scale (Cohen, 1997) and the NEPSY-II were the strongest within the Memory and Learning domain. Moderate correlations were also depicted between Dot Location and all but one subtest within the Attention and Executive Functioning domain, Inhibition-Inhibition Combined Scaled Score and Word Pairs, Verbal Immediate Index, and Learning Index, as well as between Speeded Naming and Word Pairs and Verbal Immediate Index (Korkman, et al., 2007). In general, correlations between the Delis-Kaplan Executive Function System (D-KEFS; Delis, Kaplan, & Kramer, 2001) were low to moderate with many of the NEPSY-II's Attention and Executive Function subtests, moderate to high with the subtests within the Language domain, and moderate with certain subtests within the Memory and Learning and Sensorimotor domains (Korkman, et al., 2007b). Only three NEPSY-II subtests demonstrated meaningful relationships with clinical scales on the Devereux

Scales of Mental Disorders (DSMD; Naglieri, LeBuffe, & Pfeiffer, 1994); Comprehension of Instruction was negatively correlation with the Autism scale, and Affect Recognition was negatively correlated with both the Conduct scale and the Externalizing composite (Korkman, et al., 2007b). Most correlations depicted between Brown Attention-Deficit Disorder Scales for Children and Adolescents (Brown, 2001) were negative, indicating that as ADHD symptoms increase, performance on the NEPSY-II will decrease (Korkman, et al., 2007b). Very little correlation between adaptive behaviour as measured by the Adaptive Behavior Assessment System-Second Edition (Harrison & Oakland, 2003) and neuropsychological functioning as measured by the NEPSY-II was depicted (Korkman, et al., 2007b).

Correlations between the Wechsler Individual Achievement Test-Second Edition (WIAT-II; Harcourt Assessment, 2005) and the NEPSY II suggest that the NEPSY-II is suitably predictive of academic achievement. Moderate correlations were depicted between the Attention and Executive Functioning domain and tests of Mathematics, Oral Language, and Written Language (Korkman, et al., 2007b). The Sentence Repetition subtest demonstrated a strong correlation with the WIAT-II tests of Reading Comprehension and Pseudoword Decoding as well (Korkman, et al., 2007b).

Clinical validity. Special group studies with children with ADHD, Specific Learning Disorders, Language Disorders, ID, Autistic Spectrum Disorders, TBI, Hearing Impairments, and Emotional Disturbances were conducted to assess the NEPSY-II's clinical utility in providing information in the area of diagnosis or disability classification (Korkman, et al., 2007b). Data reported in the manual indicated that the NEPSY-II discriminative validity across the above mentioned disability conditions were good (Davis & Matthews, 2010).

Commentary and Recommendations

The NEPSY-II offers examiners more options and flexibility in assessing executive functioning abilities in children. Although there have been a number of improvements in this measure, some limitations have been noted as well.

Strengths

The NEPSY-II is one of the few assessments developed specifically as a neuropsychological battery for children using co-normed subtests (Brooks, et al., 2010). The age range extension to include children between the ages of 3-years, 0-months to 16-years, and 11-months is an asset for clinicians working with children, as most neuropsychological assessments are geared towards individuals 17-years and older (Brooks, et al., 2010).

The NEPSY-II's flexible battery allows for the assessor to create or utilize a number of different combinations of subtests to construct batteries to address specific referral questions without the concern of order effects (Brooks, et al., 2010; Davis & Matthews, 2010). Many of the subtests are designed to identify specific patterns of cognitive difficulties found within clinical groups (Brooks, et al., 2010). The inclusion of the new domain of Social Perception permits an assessor to investigate into areas of concern that may be involved in such disorders as Autism Spectrum Disorder (Brooks, et al., 2010; Davis & Matthews, 2010). Most of the subtests are also quite brief in time, ranging from 4–minutes to 14-minutes, to administer (the mean average being approximately 5- to 6- minutes). The inclusion of contrasts scores also allows the assessor to compare scores to determine where the key concerns lie between cognitive functions (Davis & Matthews, 2010; Kemp & Korkman, 2010).

Overall, the NEPSY-II appears to be technically adequate as many of the subtests demonstrate solid to excellent psychometric properties, especially within the studies in clinical

samples (Brooks, et al., 2010). Generally, the battery demonstrated expected internal reliabilities with a high amount of concurrent validity evidence, supporting the NEPSY-II has being a good predictor of cognitive, academic, and behavioural performance (Brooks, et al., 2010; Davis & Matthews, 2010).

Limitations

Despite the strengths in the NEPSY-II, some limitations have also been noted. One possible drawback is that the assessor must have extensive background knowledge in neuropsychological and developmental constructs to properly administer and interpret the NEPSY-II (Davis & Matthews, 2010). Since subtest selection should be based on theory and research findings concerning the referral question, a deep understanding of exactly what each subtest measures, and what combination of subtests measure, is of absolute necessity.

The manual does not include information on the results of a factor analysis which supports the NEPSY-II conceptualization of being a scale containing multiple separate domains that are theoretically derived (Brooks, et al., 2010; Kemp & Korkman, 2010). Seven of the NEPSY-II's subtests were not re-normed from the previous NEPSY (Brooks, et al., 2010; Davis & Matthews, 2010). Two other previous NEPSY subtests which were included in the NEPSY-II only provide new normative data for the 13- to 16-year-olds age group as well (Brooks, et al., 2010; Davis & Matthews, 2010). Therefore, data scores depicted from nine of the current NEPSY-II's subtests for age groups 12 years and younger may need to be viewed with some caution, as the normative data was not co-normed with the other current NEPSY-II's subtests (Brooks, et al., 2010; Davis & Matthews, 2010).

Conclusion

Overall, the strengths of the NEPSY-II outweigh the limitations and would be a beneficial assessment battery for the measurement executive functioning abilities of children.

References

Anderson, P. (2002). Assessment and development of executive function (EF) during childhood. *Child Neuropsychology, 8*(2), 71-82. doi: 10.1076/chin.8.2.71.8724

Brooks. B. L., Sherman, E. M., & Strauss, E. (2010). Test review: NEPSY-II: A developmental neuropsychological assessment, second edition. *Child Neuropsychology, 16*(1), 80-101. doi: 10.1080/09297040903146966

Brown, T. E. (2001). *Brown attention-deficit disorder scales for children and adolescents.* San Antonio, TX: The Psychological Corporation.

Cohen, M. J. (1997). *Children's memory scale.* San Antonio, TX: The Psychological Corporation.

Davis, J. L., & Matthew, R. N. (2010). NEPSY-II review. *Journal of Psychoeducational Assessment, 28*(2), 175-182. doi: 10.1177/0734282909346716

Delis, C. C., Kaplan, E., & Kramer, J. H. (2001). *Delis-Kaplan executive function system*. San Antonio, TX: The Psychological Corporation.

Elliott, C. D. (2007). *Differential ability scales-Second edition.* San Antonio, TX: Harcourt Assessment.

Harcourt Assessment. (2001). *Wechsler individual achievement test-Second edition*. San Antonio, TX: Author.

Harrison, P. L., & Oakland, T. (2003). *Adaptive behaviour assessment system-Second edition*. San Antonio, TX: The Psychological Corporation.

Kemp, S.L., & Korkman, M. (2010). *Essentials of NEPSY-II assessment.* NJ: Wiley & Sons.

Korkman, M. (1999). Applying Luria's diagnostic principles in neuropsychological assessment of children. *Neuropsychology Review, 9*(2), 89-105. doi: 10.1023/A:1025659808004

Korkman, M., Kirk, U., & Kemp, S. (1998). *NEPSY: A developmental neuropsychological assessment*. San Antonio, TX: The Psychological Corporation.

Korkman, M., Kirk, U., & Kemp, S. (2007a). *NEPSY-II: Administration manual*. San Antonia, TX: Psychological Corporation.

Korkman, M., Kirk, U. & Kemp, S. (2007b). *NEPSY-II: Clinical and interpretive manual*. San Antonia, TX: Psychological Corporation.

Naglieri, J. A., LeBuffe, P. A., & Pfeiffer, S. I. (1994). *Devereux scales of mental disorders.* San Antonio, TX: The Psychological Corporation.

Wechsler, D. (2003). *The Wechsler intelligence scale for children-Fourth edition*. San Antonio, TX: Harcourt Assessment.

Wechsler, D., & Naglieri, J.A. (2006). *The Wechsler nonverbal scale of ability*. San Antonio, TX: Harcourt Assessment.

Wittrock, M.C. (1992). Generative learning processes of the brain. *Educational Psychologist, 27(*4), 531-541. doi: 10.1207/s15326985ep2704_8

Appendix A

Attention and Executive Functioning Domain			
Subtest	**Age Range**	**Description of Abilities Being Assessed**	**Interpretation of Low Score(s)**
Animal Sorting *	7-16	Ability to formulate basic concepts, transfer those concepts into categories, and shift from one concept to another	Poor initiation, cognitive flexibility, self-monitoring, conceptual reasoning or semantic knowledge
Auditory Attention	5-16	Selective auditory attention and vigilance	Reduced selective and sustained attention, or slow responding
Response Set	7-16	Complex auditory attention and to resist a previously learned stimulus in order to shift to a new set, while controlling selective attention to matching stimuli	Poor sustained attention, inhibition, or working memory
Clocks *	7-16	Planning and organization, visuospatial skills, and time concepts	Poor planning and organization, visual-spatial/drawing, reading ability, or time
Design Fluency	5-12	Ability to generate unique dot-patterned designs	Difficulty with initiation and productivity or cognitive flexibility
Inhibition *	5-16	Ability to quickly inhibit automatic responses in favor of novel responses and switch between response styles	Inhibition-Naming: slow processing speed Inhibition-Inhibition: difficulty with inhibitory control Inhibition-Switching: poor inhibitory control or cognitive flexibility
Statue	3-6	Motor persistence and inhibition	Difficulty with overall inhibitory control
Language Domain			
Body Part Naming and Identification	3-4	Confrontation naming and name recognition, and basic component of expressive and expressive language	Difficulty with word finding, expressive language, vocabulary, or semantic knowledge
Comprehension of Instruction	3-16	Ability to receive, process, and execute oral instructions of increasing complexity	Difficulty with receptive language, linguistic or semantic knowledge, or trouble following multi-step commands
Oromotor Sequences	3-12	Abilities of the neurological pathways and muscles of speech	Difficulty with motor programming for speech production

Phonological Processing	3-16	Auditory processing skills of being able to identify words from segments as well as syllables and phonemes	Reduced phonological awareness and processing
Repetition of Nonsense Words	5-12	Phonological encoding and decoding	Difficulty with analyzing or producing words phonologically or articulation
Speeded Naming	3-16	Rapid semantic access to and production of names	Difficulty with expressive language, lexical access, processing speed, or naming
Word Generation	3-16	Rapid generation of words in specific semantic and initial letter categories	Difficulty with expressive language, processing speed, executive control, initiation, or ideation
Memory and Learning Domain			
List Memory List Memory Delayed	7-12	Verbal learning and memory, rate of learning, and the role of interference in recall for verbal information	Difficulty with learning skills for verbal material, rote memory, or span of verbal memory
Memory for Designs * Memory for Designs Delayed *	3-16 5-16	Spatial memory for novel visual memory	Difficulty with learning or recall of learned visuospatial information
Memory for Faces Memory for Faces Delayed	5-16	Encoding of facial features and face recognition and discrimination	Poor face discrimination or recognition
Memory for Names Memory for Names Delayed	5-16	Ability to learn names	Reduced capacity to learn and remember visual information with verbal labels
Narrative Memory	3-16	Memory for organized verbal material of free recall, cued recall, and recognition memory	Difficulty with verbal learning for contextual information, comprehension or immediate memory for large verbally provided information
Sentence Repetition	3-6	Ability to repeat sentences of increasing complexity and length	Difficulty with verbal immediate (working) memory
Word List Interference *	7-16	Verbal working memory, repetition, and word recall after interference	Poor verbal working memory or difficulty with verbal interference
Sensorimotor			
Fingertip Tapping	5-16	Finger dexterity and motor speed and ability to copy a series of rapid finger motions	Poor fine motor control or motor programming

Imitating Hand Positions	3-12	Visual spatial analysis, motor programming, and kinesthetic feedback when imitating static hand positions	Difficulty with fine motor programming, differentiation, or visuospatial abilities
Manual Motor Sequences	3-12	Ability to imitate a series of rhythmic hand sequences using one or both hands	Difficulty with manual motor programming
Visuomotor Precision	3-12	Graphomotor and accuracy within a time frame	Poor psychomotor processing speed, visual attention, motor control, or coordination
Social Perception *			
Affect Recognition*	3-16	Ability to recognize emotional affect from photos of children's faces	Difficulty with recognition and discrimination of facial affect
Theory of Mind*	3-16	Ability to understand mental functions that may differ from one's own	Difficulty with comprehending perspective, experiences, and beliefs of others
Visuospatial Processing Domain			
Arrows	5-16	Ability to visually judge line orientation	Reduced visuospatial abilities, difficulty judging line orientation and angles
Block Construction	3-16	Visuospatial and Visuomotor ability to reproduce three dimensional constructions	Poor visuoconstructional abilities, difficulty with three-dimensional tasks
Design Copying	3-16	Motor and visual perceptual skills associated with ability to copy two dimensional figures	Poor visuoconstructional abilities, difficulty with two-dimensional tasks
Geometric Puzzles*	3-16	Mental rotation, visuospatial analysis and attention to detail	Poor visuospatial abilities, trouble with perception or mental rotation
Picture Puzzles*	7-16	Visual discrimination, spatial localization, and visual scanning	Difficulties with visual perception, visual attention, or scanning
Route Finding	5-12	Knowledge of visual spatial relation and directionality	Difficulty with visuospatial relations or with orientation

(Table information adapted from Brooks, et al., 2010; Davis & Matthew, 2010; Korkman, et al, 2007a)

*New subtests compared to the NEPSY

Appendix B

Classification Descriptors for Scaled Score Performance on the NEPSY-II Compared to Wechsler Classification

Scaled Score	Percentile Rank	NEPSY-II Classification	Wechsler Classification
19	99.9	Above expected level	Very superior
18	99.6		
17	98.6		
16	97.7		
15	95		Superior
14	91		
13	84		High average
12	75	At expected level	Average
11	63		
10	50		
9	37		
8	25		
7	16	Borderline	Low average
6	9		Borderline
5	5	Below expected level	
4	2.3		Extremely low
3	1.4	Well below expected level	
2	0.4		
1	0.1		

Note. Scaled scores have a mean = 10 and standard deviation = 3. Percentile ranks corresponding to the scaled scores are based on the Wechsler classification.

Table taken from Brooks, et al., 2010