OCCUPATIONAL THERAPY COGNITIVE ASSESSMENT INVENTORY – *v. 2: April 2014 update*

Purpose: This inventory was developed to complement the algorithm entitled "An OT Approach to Evaluation of Cognition/Perception". This is an inventory of cognitive (but not perceptual) assessment tools identified by OTs within VCH and PHC. These tools are not meant to be used in isolation during the process of cognitive assessment but, instead, during Steps 4 & 5 of the assessment process (as per the algorithm). Although this inventory provides a comprehensive list of standardized tools available to OTs to measure cognition, it is not an exhaustive list. **Note: a fairly comprehensive source of Perceptual Assessments (and many of the Cognitive Assessments) can be found on Strokengine (http://strokengine.ca/assess/).

Category of Assessment: adopted from "An OT Approach to Evaluation of Cognition/Perception", Vancouver Coastal Health, April 2011 (revised March 2013)

	Screening assessment	In-depth assessment
Level of task performance (ICF: activity & participation)	• Provides screening assessment in context of occupation *(e.g. Cognitive Performance Test, Kettle Test)* • May provide higher ecological & predictive validity than impairment-based screening	• In-depth understanding of the impact of cognitive deficits on occupation *(e.g. AMPS, EFPT, ILS)* • May provide higher ecological & predictive validity than in-depth assessment at level of impairment
Level of Impairment (ICF: body-structure)	• To augment screening at level of task performance *(e.g. SMMSE, MoCA, Cognistat)* • Be aware of limitations (e.g. predictive validity, depth of assessment)	• To provide some in-depth understanding of specific cognitive components such as memory, attention. *(e.g. Rivermead Behavioural Memory Test, Test of Everyday Attention)*

Statistical Evaluation Criteria: from StrokEngine *(accessed Sept 2013)*, **http://strokengine.ca/assess/statistics-en.html**

Reliability	
Internal consistency (Chronbach's α or split-half statistics)	
Excellent	≥ 0.80
Adequate	0.70-0.79
Poor	< 0.70
Test-re-test or Inter-rater reliability (ICC or kappa statistics)	
Excellent	≥ 0.75
Adequate	0.40-0.74
Poor	<0.40
Validity	
Concurrent and construct/convergent correlations	
Excellent	≥ 0.60
Adequate	0.31-0.59
Poor	≤ 0.3

DEFINITIONS: ***In deciding whether or not an assessment tool is precise, it is important to consider both reliability and validity.*

Reliability: "*Does the test provide a consistent measure?*"

Internal consistency = the extent to which the items of a test measure various aspects of a common characteristic (e.g., "memory"). Do the items/subtests of the measure consistently measure the same aspect of cognition as each other?

Test-retest reliability = the extent to which the measure consistently provides the same results when used a second time (re-test). *Parallel-form reliability* would involve 2 different/alternate versions of the same test.

Inter-rater reliability = the extent to which two or more raters (assessors) obtain the same result when using the same instrument – do they produce consistent results?

Validity: "*Does the test measure what it is supposed to measure?*"

Criterion validity = the extent to which a new measure is consistent with a gold standard criterion (i.e., a previously validated measure). For ***concurrent validity***, the measures are administered at approximately the same time. For ***predictive validity***, typically one measure is administered at some time prior to the criterion measure (to examine whether the measure can predict, or correlate with, the outcome of a subsequent criterion event). Note: *poor* concurrent validity would suggest that the tests being compared measure different constructs; *adequate* concurrent validity suggests some shared variance in the constructs being measured; and *excellent* concurrent validity suggests that the tests measure very similar constructs. If 2 tests are highly correlated with each other, then one would want to question the need for having both tests – you would then want to determine other ways in which one test might be more superior than the other (for example, one takes less time to administer).

Construct validity = the extent to which a test can be shown to measure a construct, e.g. "memory" or "cognition for everyday function". The construct validation process may be used when a gold standard (previously validated criterion) does not exist, thus, when one cannot test for concurrent validity. ***Convergent validity*** is the extent to which a test agrees with another test (or test) believed to be measuring the same attribute. ***Discriminant validity*** is the extent to which tests that are supposed to be unrelated are, in fact, unrelated (i.e., measure different things). ***Group differences*** refers to: "Does the measure allow you to differentiate between 2 or more populations?" for example as determined by analyzing for statistically significant differences between the groups on the measure. *Ecological validity* refers to: "Does the measure reflect behaviours/function that actually occur in natural/everyday settings?"

Assessment Name	Overview	Psychometrics – Reliability & Validity	Pros & Cons
AMPS: Assessment of Motor and Process Skills In-depth assessment; Task performance level **Population**: age > 2 years http://www.ampsintl.com/AMPS/	A standardized, performance-based, observational assessment to measure the quality of a person's ability for ADL and IADL tasks by rating the effort, efficiency, safety and independence in chosen, familiar, and life-relevant ADL tasks. The assessor selects 2-3 tasks from a list of 87 tasks within 13 major groups (from "very easy ADL tasks" including eating a snack with a utensil, to "much harder than average ADL tasks" including making Spanish omelette with added ingredients). Other tasks include raking grass, cleaning a bathroom, ironing a shirt, upper body grooming, shopping, etc.). Task is selected according to level of difficulty and meaning to person being assessed. **Time to administer:** varies with activity chosen **Scoring:** 16 motor and 20 process skill items are rated on a 4-point scale (from 1-deficit, to 4-competent), generating a Process score and a Motor score. Cut-off scores have been developed between "needs assistance" and "independent". Once an OT has successfully calibrated as a reliable and valid AMPS evaluator, s/he is able to use a personal coy of the AMPS computer-scoring software to generate a Graphic Report and a Results and Interpretation Report. **Minimal Clinical Difference (MCD)**: *not determined to date.*	**Reliability**: *A number of studies have been conducted showing excellent internal consistency, test-retest reliability and inter-rater reliability (Douglas et al., 2008).* *Some examples from the literature:* • Excellent test-retest reliability (elderly adults) • The "severity calibrations" (using 'many faceted Rasch analyses') were stable over time for ≥ 92.5% of ratings for a group of 40 trained raters. **Predictive Validity:** • Excellent validity (for Process score) for predicting safety 2 weeks post-discharge home (acute psychiatry) • Process score is stronger than Motor score in predicting need for level of assistance to live in the community, although new (2010) cut-off scores have only fair to good discrimination power using "ROC analysis" **Group Differences:** *(no literature reviewed to date)* **Other Aspects of Validity:** *Many studies have been conducted and, overall, the AMPS correlates with at least 5 other measures and is predictive of ADL, level of care, and independence in the home (Douglas et al., 2008).* *Some examples of research findings:* • Adequate to excellent concurrent validity compared to tests of cognition & function e.g. FIM & MMSE (mild memory impairment or dementia) • Poor concurrent validity in comparing AMPS Process score (measure of task) and the Large Allen Cognitive Level Test (measure of impairment) (stroke) • Adequate concurrent validity between AMPS Process score and level of employment (schizophrenia)	**Pros**: • Provides for a standardized ADL analysis • Identifies between difficulties with process (cognitive) & motor (physical) tasks • Some cultural sensitivity (e.g. client plans own meal of choice) • Useful in mental health & physical disability settings • Easy to convert data to a written report (a program does this for you; also provide graphics) • Good for variety of age groups • May be more appropriate than using the assessment activities offered by other task/performance tests such as ILS • Based on MOHO • Is recommended for assessment of executive functions in a published inventory of tests of executive function for stroke (Poulin et al, 2013) **Cons**: • OT needs specific training to administer • Expensive training: 5-day course (and must follow-up training by testing 10 people within 3 months and submitting results to become "calibrated"). • Not specifically designed to evaluate for presence of cognitive impairments – but Process score can represent cognitive limitations • Research recommends assessing client in home instead of clinic because environmental factors may influence performance in particular Process score (Park 1994) • Limitations for use on its own to predict level of assistance or predict employment (see psychometrics)
Behavioural Assessment of Dysexecutive Syndrome (BADS) *(a version is also available for children: BADS-C. However, no information is contained here about it)* In-depth assessment; Impairment level. **Population**: • adults with: -schizophrenia -brain injury -dementia/Alzheimer's disease (may not be so good for MCI-mild cognitive impairment)	The BADS aims to assess for "everyday executive impairment". There are 6 subtests (rule shift cards, action program, key search, temporal judgment, zoo map, & modified 6 elements). The test kit also provides a questionnaire, the DEX (Dysexecutive Questionnaire), which is scored separately. **Time to administer**: approx. 40 minutes assuming OT is familiar with the test; plus extra time to score (including conversion from raw to profile to standardized scores). **Scoring**: For each BADS subtest, the raw scores are converted to profile scores (0-4), which are then summed to produce an overall total score (battery profile score, 0-24, which in turn gets converted to a standardized score with a mean of 100). The DEX is not included in the BADS total score; it is scored separately, by adding up the individual items.	**Reliability**: • Excellent inter-rater reliability (r=0.88-1.00 for subtests) (adults with brain injury) • Test-retest reliability is not expected to be high, considering that a critical aspect of the test is novelty. However, it has been found to range from poor to excellent (at 3 weeks) for a group of adults with schizophrenia, and poor to adequate (at 6 to 12 mos) for a group of adults with brain injury. • Note: for both groups, participants tended to obtain higher scores on re-administration (may be a practice effect including that the test was not so novel the second time; or could possibly show improved function over time) • adequate internal consistency (α= 0.73) (schizophrenia) **Predictive Validity**: • chronic schizophrenia: BADS found to be a predictor of IADLs (beyond outcomes accounted for by basic cognitive skills	**Pros**: • Has been validated with a number of populations • BADS demonstrates some ecological validity (in terms of predicting everyday function) for: (a) schizophrenia (b) traumatic brain injury, including more so than traditional neuropsych measures of executive function – although the predictive validity is improved if multiple modes of assessment are used (e.g. BADS + neuropsych tests + observations) • In addition to providing numerical scores, the BADS can provide useful qualitative (observational) information, e.g. in terms of the efficiency or effectiveness of strategies a person uses (or not) to complete subtests • DEX appears to be a good measure of executive function if administered by a clinician (but not by the client or a relative) • If time is limited, then the DEX (or similar questionnaire) is likely the best measure of

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-chronic alcoholism, substance dependence, Korsakoff's • maybe useful for: -Parkinson's disease -multiple sclerosis **Norms**: Based on 216 UK healthy controls age 16-87 (details in manual). http://www.pearsonassessments.com/HAIWEB/Cultures/en-us/Productdetail.htm?Pid=015-8054-350&Mode=summary	Using the BADS standardized score, follow the manual to allow for an age-controlled classification of executive function performance (based on the normative sample): *impaired*, *borderline*, *low average*, *average*, *high average*, *superior*. **Interpret with caution, because a person may fall into "*average*" even though they did badly on 1 or 2 tests. **Minimal Clinical Difference (MCD)**: not identified (and not likely to be determined, because there are problems with test-retest for the BADS – see reliability findings).	• traumatic brain injury (TBI): some ability of BADS (total score) to predict executive function for everyday activity (as measured by the DEX), but only if the DEX is administered to a clinician (OT or neuropsych) and not to a family member or client; also, the predictive validity increases if BADS is used together with multiple other neuropsych tests, but still only 46% of variance predicted • for adults with "higher brain dysfunction" from acquired brain injury: BADS does not predict capacity for competitive employability • older adults with dementia: in combination with 5 other cognitive tests the BADS has some predictive validity (67% accuracy all tests combined) in determining safety for driving. • for chronic alcoholics, BADS was statistically significant in predicting work outcome (whereas 11 other neuropsych tests were not); and for substance dependent adults, predicted everyday problems related to executive dysfunction (whereas Wisconsin Card Sort did not) **Group Differences:** • differentiates between healthy controls and: - schizophrenia (acute & chronic) - mod-sev brain injury - mild Alzheimer's disease (but mixed results in studies involving mild cognitive impairment - MCI) - chronic alcoholics - substance dependency • for early Alzheimer's disease and non-demented Parkinson's disease, group differences between healthy controls did not show up for all subtests, but showed for total BADS score • differentiates between MCI and early Alzheimer's; and between chronic alcoholics and Korsokoff's (thus, sensitive to progression of cognitive impairment) • one study indicated that the BADS does not do a good job at differentiating between younger and older adults; but another study (in manual) shows significantly poorer performance overall for subjects older than 65. **Other Validity**: • for schizophrenia: some studies show normal performance for some subtests (thus, all subtests should be administered, resulting in the full battery profile score) • BADS appears to best assess *planning* and *problem solving* aspects of executive impairment (chronic schizophrenia; moderate-severe brain injury) • mixed results in terms of showing a correlation between BADS subtests and other neuropsych tests of executive function (e.g., Tower of London - TOL, and Modified Card Sorting Test ; with TOL showing the least sensitivity to executive deficits in at least 2 studies) • convergent validity: adequate convergence	executive functioning instead of trying to do BADS subtests (but only if filled in by a clinician) **Cons**: • Expensive (about $435.00) • Even though BADS is comprehensive, on its own it still does not provide a full picture of executive functions (at least for dementia and TBI); instead, multiple ways of assessment (i.e., battery of tests + qualitative information) need to be performed • Avoid saving time by doing just some of the BADS subtests (although the manual suggests that 5/6 tests could be done, then prorate the total score). The full BADS test score is needed for validity findings to apply. (Although, as per above, the DEX may be useful on its own, if administered by a clinician who knows the client – and not just filled in by the client.) • Based on test-retest reliability data, this test is not very suitable for using as a measure of change over time (because there may be a practice effect including that the test is not so novel the second time). • Socio-cultural background may have some influence on results (no influence comparing Japanese with British adults with schizophrenia; but differences between different American cultural/language groups for healthy controls.

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		(r=0.36-0.59) with neuropsych tests purporting to measure executive functioning (schizophrenia) • adequate correlation between BADS and daily life functioning (measured using Life Skills Profile) (schizophrenia) • Specific to DEX: - Factor analysis shows that 3 aspects of EF are measured: behaviour, cognition, and emotion. - As per manual, subjects with brain injury tend to underrate themselves as compared to others - as per manual, poor to excellent concurrent validity with neuropsych tests of executive functioning and also with BADS total score (with highest correlation being with BADS total score) – but only if DEX is rated by others. No concurrent validity if DEX is rated by clients (brain injury). - as per other studies, when comparing results of the DEX and BADS, if the DEX was completed by the client, caregiver or family, then it is not sensitive to EF performance (as measured by BADS) (chronic schizophrenia, brain injury, multiple sclerosis). However, if DEX is completed by a clinician (e.g. psych, OT) who works with the client, then it is sensitive to EF as measured by BADS (brain injury)	
Butt Non-Verbal Reasoning Test (BNVR) In-depth assessment; Impairment level **Population**: adults with aphasia related to stroke **Norms**: based on 84 community living (UK) healthy controls and 93 people with CVA with difficulties initiating communication, ages 34-95. http://www.speechmark.net/shop/bnvr-butt-non-verbal-reasoning-test	A standardized measure of problem-solving (reasoning) ability for individuals with aphasia post stroke. It is suggested to be most useful in the acute (<6 months post CVA) stage to inform strategy use and interventions. First, a screening test component is administered to ensure the person has the perceptual skills needed to complete the test. Then the individual solves 10 everyday problems presented in photographic format. The photos are comprised of the stimulus, target response, visual distracter, semantic distracter and unrelated distracter to help identify the type of error(s) made, if any. **Time to administer**: not stated in manual but approximately 15 minutes. **Scoring**: scored out of a possible 10 correct responses. Three error responses can be obtained to identify visual errors, semantic errors and unrelated errors which can inform further assessment and intervention. **Minimal Clinical Difference (MCD)**: not determined to date.	**Reliability**: • Good test-retest and inter-rater reliability (27 participants with CVA aged 52-90 (19 male, 8 female) **Predictive Validity:** • Not researched to date **Group Differences:** • Differentiates between healthy controls and: - adults with CVA **Other Aspects of Validity**: • Poor to adequate concurrent validity with the Pyramids and Palm Trees Test and the Spoken Word to Picture Matching Test (correlations ranged from 0.27-0.44). Errors on these tests account for less than 20% of the variance in BNVR error performance indicating that the BNVR is measuring some aspect of semantic processing which is additional or different to these other 2 tests.	**Pros**: • discriminates between healthy controls and people with CVA • appears sensitive to change • quick to administer and score • aimed at stroke patients with aphasia • may guide further assessment and intervention • cost is not too prohibitive (approx. $150.00) **Cons**: • No further research yet on this test, including correlating test results to functional measures • Testing for cultural sensitivity needed • No MCD available (thus it's difficult to measure if there is a significant clinical change over time on re-test)
Cognistat (Neurobehavioural Cognitive Status Examination) Screening assessment;	The Cognistat has 11 subtests which screen for 3 general factors (consciousness, attention and orientation) and 5 major ability areas (language, construction, memory, calculation, & reasoning). **There is now a "Cognistat Five" available, for	**Reliability**: • Excellent inter-rater reliability (psychiatry) • Adequate to excellent test-retest reliability (psychiatry) • (*no reliability studies were found for geriatrics or acquired brain injury*)	**Pros**: • Broader profile than SMMSE or MoCA, more sensitive than MMSE • Has been found to identify presence of cognitive impairment in TBI (reliably classifies individuals in acute & post-acute settings into the Cognistat impairment categories)

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Impairment level *(global)* **Population**: Adolescents to over 65 years **Normative Data**: Based on 4 groups, each with about 30 subjects: age 20-30, age 40-66, and age 70-92. http://www.cognistat.com/	an even faster screening tool (measuring orientation, memory and construction) – reported to provide an "MCI" index as a risk assessment algorithm for MCI and dementia. **Cognistat is available in pencil & paper format; computer-based PDF format (not requiring web access); and web-based format; Cognistat Five is available as "off-line" PDF format and web-based format (no pencil & paper format) – all versions require purchase. **Time to administer**: approx 45 minutes. Screening score for original version also available – but high false positive. Takes about 5 minutes for the Cognistat Five version. **Scoring**: 1. Original (long) version provides a "cognitive profile" (not a single numerical score), with a cut-off for each test. Cut-off scores place client within categories of "average range" or "mild", "moderate, or "severe" cognitive disability. *Note: As per manual: "…profiles in which no score falls below the gray zone cannot be taken as proof that no cognitive dysfunction exists…" (page 18). 2. Also (new), both versions provide a "MCI Index" reportedly to help estimate the risk for mild cognitive impairment (MCI) and dementia (but with a reminder provided that the score does NOT diagnose MCI or dementia – which of course depend on clinical judgment from the appropriate expert. **Minimal Clinical Difference (MCD)**: *not determined to date*.	**Predictive Validity:** • Poor validity for predicting FIM self-care scores upon discharge from acute care, and adequate validity for predicting FIM cognitive scores (Chinese adults with stroke) • Cognistat's comprehension and repetition subscales were found to be useful in predicting (accounts for 64.4% of the regression model) functional independence as measured by the Barthel Index for persons recovering from stroke. • Cognistat's comprehension and similarities subscales were found to be useful in predicting functional performance as measured by the FIM for persons recovering from stroke. **Group Differences:** • differentiates between healthy controls and: - dementia - neurosurgical groups - stroke - individuals on an outpatient geriatric mental health team **Other Aspects of Validity:** • Adequate to excellent concurrent validity with "parallel" neuropsych tests (range of neurological & psychiatric diagnoses, including traumatic brain injury) • Poor to adequate concurrent validity with an IADL measure, the Observed Tasks of Daily Living-Revised (persistent schizophrenia) • Lacks correlation with the BADS (i.e., basic cognition vs. executive function) (schizophrenia) • Non-significant correlations with a measure of functional outcome (Routine Task Inventory), thus lacking ecological validity (schizophrenia) • Moderate validity of using both the Cognistat and the Rivermead Behavioural Memory Test together to detect MCI and mild dementia.	• Is predictive of function (BI or FIM) for persons with stroke • When used with the Rivermead Behavioural Memory Test can detect MCI and mild dementia • The new MCI Index might be helpful for OTs working in programs/clinics involving clients with MCI and dementia • **Cons**: • Individuals with frontal lobe lesions may not perform in the impaired range on this test • Significant difficulties in reading, writing and spelling will not be detected • Poor performance may reflect a long-term learning disability (rather than new, acquired cognitive impairment) • Although may help to determine specific cognitive impairments, evidence varies to support concurrent/predictive validity of function • Scoring is a profile (not a single numerical score) – although some researchers create a composite score for purposes of their research, e.g. Drane et al., 2003; and there is now the new MCI Index score. • "Screening" score (of original version) produces high false positive (so it is recommended to use total score) • Cautions in interpreting results if presence of frontal lobe lesion, pain, medications, sleep deprivation, sensory deficits, language deficits • May not be sensitive to mild impairment. For example, the Cognistat detected only 60-80% of cognitive deficits diagnosed by a skilled neuropsychologist (Nokleby et al., 2008) (stroke). • It may be too simple for post-acute, high functioning TBI. • Not recommended by researchers to use with TBI for planning rehab & community reintegration (because not sensitive enough to residual cognitive deficits across different stages of recovery) • One study found a gender bias in the judgment subtest (females more often score 1 rather than 2 as compared to males).
The Cognitive Assessment of Minnesota (CAM) Screening assessment; Impairment level *(global)* **Population**: adults with a brain injury or CVA and at Level IV and above on the Rancho Los Amigos Cognitive Scale. **Normative data**: sample of 200 healthy adults, age 18-70 years.	The CAM is a hierarchical approach to screening a range of cognitive skills to identify general areas of cognitive impairment and to guide treatment activities. It can be used as a baseline and to measure change, and to indicate areas for in-depth investigation. The 17 subtests (with total of 29 items) range from simple to complex and cover: attention, memory, visual neglect, math, ability to follow directions, and judgment. These are grouped into 4 categories: fund of acquired information or store of knowledge (18 items); manipulation of old knowledge, calculation or problem solving (9 items); social awareness & judgment (1 item); and abstract thinking (1 item).	**Reliability:** • Excellent internal consistency (residents of long term care facilities with acquired brain injury) • Excellent inter-rater reliability (acquired brain injury) • Excellent test-retest reliability (acquired brain injury + healthy controls) **Predictive Validity:** • No validity for predicting functional status 3 months later using FIM + FAM (acute care inpatients up to 3 months post acquired brain injury) **Group Differences:** • Differentiates between healthy controls and acquired brain injury	**Pros**: • Easy to administer allowing a quick and inclusive assessment of significant areas of cognition. • Evaluates a variety of cognitive skills in a short time. • Utilizes materials that are easily accessible and inexpensive. • Uses familiar tasks and gives clear directions and guidelines. **Cons**: • May not pick up on subtle/mild cognitive deficits • Not appropriate for individuals with severe visual-perceptual motor or visual acuity deficits, or aphasia. • Not a complete test battery or in-depth cognitive

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http://www.pearsonclinical.com/therapy/products/100000577/cognitive-assessment-of-minnesota-the.html	**Time to administer:** approximately 40 minutes, or two 20-minute sessions. **Scoring:** The raw scores are plotted on a scoring profile, which shows a pattern of how many items fit into "none to mild impairment", "moderate impairment" or "severe impairment". *Note: As per manual: If an individual scores at below the cut-off, then it is extremely probable that s/he has cognitive impairment. If s/he scores at above the cut-off, then there is still a 23.5% chance that impairment is present. If the examiner continues to suspect cognitive impairment, then further assessment is required. **Minimal Clinical Difference (MCD)**: *not determined to date*.	• Differentiated between 3 groups of cognitive impairment (mild, moderate, severe) which had been determined by clinician ratings. **Other Aspects of Validity:** • Adequate concurrent validity with 2 impairment-based tests: MMSE and Porteus Maze Test Quotient (acquired brain injury)	evaluation and is best used as a screen of abilities and deficits. Identifies problem areas to further evaluate. • No alternate version available for re-test. • For acute care inpatients with acquired brain injury, no value in predicting function for 3 months later
Cognitive Competency Test (CCT) Screening assessment; Impairment level *(global)* **Population**: older adults	The CCT has 12 subtests of cognitive skills including: orientation to personal information, social intelligence, memory, reading, financial management, safety, judgment and spatial orientation. **Time to administer:** 60 minutes. Can be administered in sections. **Scoring:** per subtest and as a total. An Average Total Score (ATS) below 76% indicates some assistance will be required for ADLs. **Minimal Clinical Difference (MCD)**: *not determined to date*.	**Reliability:** • Cited by Douglas et al. 2008 as having "adequate" test-retest reliability. **Predictive Validity:** • Can be helpful when distinguishing between a recommendation for long-term care and a recommendation for retirement home (assisted living residence) or return home with supports **Group Differences:** • Pilot study showed the CCT to differentiate between a dependent group and an independent group; subsequent study showed discrimination between normal aging group and CVA & dementia groups (dementia) **Other Aspects of Validity:** • adequate concurrent validity with MMSE, and with judgment concerns & insight concerns (as reported by family, staff) (dementia) • poor concurrent validity with: safety concerns (as reported by family, staff), a non-standardized IADL scale, non-standardized kitchen assessment, level of supports received at home, Geriatric Depression Scale, and Cumulative Illness Rating Score.	**Pros:** • Commonly used by OTs to predict function for discharge planning **Cons:** • It may be difficult to find a manual. • Some items are dated, e.g. money management and sequencing • Note the poor concurrent validity with functional measures (for dementia) • does not measure insight, judgment, or awareness • ++caution in use for individuals other than dementia, because of the lack of psychometric studies for other populations • More research on reliability and validity is needed • Caution using subtests for prediction • It is a unidimensional outcome measure
Cognitive Performance Test Screening assessment; Task performance level **Population**: Developed primarily for use with older adults (focus=dementia). *Populations researched: first developed for persons with Alzheimer's Disease (AD); *website states that it*	The CPT is a performance test based on the Allen Cognitive Disability theory. There are 6 original tasks: dressing, shopping, telephone, toast preparation, washing, and traveling. Later, 7th task was added: "medbox". **Time to administer:** At least 45 minutes for all 7 tasks (if mild to moderate cognitive disability). Recommended to administer all tasks (at minimum, 4 – otherwise final score is skewed). **Scoring:** Divide total score by 7 for average (final) score, max 6 points, to determine cognitive level and mode (as relates to Allen's	**Reliability:** • Excellent internal consistency (dementia); adequate internal consistency (geriatric rehab unit patients) • Excellent inter-rater and test-retest reliability (Alzheimer's disease; outpatients with dementia) **Predictive Validity:** • May have some predictive validity of risk of institutionalization over time (over a 4-year follow-up period (dementia) **Group Differences:** • Differentiates between healthy elderly and	**Pros:** • Fairly easy to administer. • Focus is on function. • Research has shown that age, sex and years of education did not significantly relate to CPT scores (for geriatric rehab inpatient patients) **Cons:** • Requires significant materials (provided with purchase of the test) and designated space. • Dressing and travel subtasks are not portable so cannot be assessed if you see client in their home, although there is an alternate now for dressing (gloves). • Researchers suggest: avoid administering only

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has been researched with other elderly, dementia, and neuro groups (although it's unclear re: details on CVA and TBI populations). http://www.maddak.com/cpt-cognitive-performance-test-p-27823.html Additional resources: http://www.ot-innovations.com/content/view/22/46/ YouTube video on mock administration of this test: http://www.youtube.com/watch?v=b7xZh66Klgs	Cognitive levels). The lower the score, the more monitoring/assistance required for functional tasks. **Minimal Clinical Difference (MCD)**: *not determined to date.*	outpatients with dementia • Differentiates between unimpaired adults and those impaired who are on a geriatric rehab unit **Other Aspects of Validity**: • Excellent concurrent validity with MMSE (normal elderly controls, Alzheimer's disease, and outpatients with dementia); and adequate concurrent validity with SMMSE (older adults on geriatric rehab unit) • Excellent concurrent validity with the Routine Task Inventory (a cognitive functional scale that uses non-structured observation of daily tasks) (outpatients with dementia) • Adequate concurrent validity with AMPS and FIM (older adults on geriatric rehab unit) – which makes sense because AMPS and FIM scores include motor and process/cognitive elements • Adequate to excellent concurrent validity with 2 measures of caregiver-rated ADL (normal elderly controls, Alzheimer's disease) • *Further validity results are discussed on web-site, but specific details were not found in peer-reviewed literature.*	some subtests; to ensure reliability of the overall score, OT should administer all subtests • Expensive! (>$500.00).
Contextual Memory Test (CMT) In-depth assessment; Impairment level *(memory)* **Population:** Adults 18+ who have neurological or organic memory impairment which include: head trauma, CVA, dementia, MS, Parkinson's, brain tumour, AIDS, epilepsy, or chronic alcohol abuse, and are able to follow 2-step commands. May be useful with older children and adolescents. **Norms**: 3 age groups, based on 375 healthy adults aged 17-86. (There is also a Contextual memory Test for school-age children) http://www.pearsonclinical.com/therapy/products/100000075/contextual-memory-test.html	The CMT assesses awareness of memory capacity, use of strategy, and recall in adults with memory dysfunction. It can be used as a screen to determine the need for further evaluation or to indicate how responsive the individual is to memory cues to recommend compensatory or remedial treatment. There are 2 parallel forms: Morning version and Restaurant version. **Time to administer:** Requires 5-10 minutes, in addition to the 15-20 minute delayed task. **Scoring**: The test yields three recall scores (immediate, delayed and total), and scores for cued recall, recognition, awareness and strategy use. Scores are compared to the norms and then analyzed for patterns using the Summary of Findings worksheet. Recall scores are classified into categories of WNL, suspect, mild, moderate or severe deficit. **Minimal Clinical Difference (MCD)**: *not determined to date.*	**Reliability**: • Adequate to excellent reliability for parallel form (brain injury) • Adequate to excellent test-retest, using immediate recall and delayed recall scores (healthy adults, brain injury) **Predictive Validity:** • (*not determined to date*) **Group Differences:** • Differentiates between healthy controls and: - Alzheimer's disease - brain injury **Other Aspects of Validity:** • Excellent concurrent validity with the Rivermead Behavioral Memory Test (brain injury).	**Pros**: • Asks about strategies thus aids in planning intervention • Option of contextual prompt • Flexible testing procedures – recall vs recognition • Uses pictures of everyday objects • Easy to transport **Cons**: • Scoring is confusing and lengthy • Not appropriate for individuals with moderate or severe aphasia or visual perceptual deficits • Ceiling effect – may not identify clients with subtle memory deficits. • Normative data focused on Caucasian, highly educated young population (although results were replicated for the most part with an Israeli population).
Dynamic Assessment of Categorization (Toglia Category Assessment –	Examines the ability to establish categories and switch conceptual set and deductive reasoning. Emphasizes qualitative aspects of performance, and is based on Toglia's dynamic	**Reliability:** • Adequate to excellent internal consistency (stroke, traumatic brain injury, inpatients with schizophrenia)	**Pros**: • Portable; can be used at bedside • Short time to administer • Uses familiar items (i.e., objects to be categorized)

Assessment Name	Overview	Psychometrics – Reliability & Validity	Pros & Cons
TCA) In-depth assessment; Impairment level *(cognitive flexibility, develop strategies)* **Population:** age 18-86, with brain injury or chronic schizophrenia (with negative symptoms). http://www.therapro.com/Toglia-Category-Assessment-TCA-P321997.aspx	interaction principles of testing. The evaluee needs to be able to follow two step directions, discriminate between size, color and form, and attend to a task for a minimum of 15 minutes. **Time to administer:** 10-30 minutes **Scoring:** Standardized test score sheet is used. Scores range from 1 (unable to sort after reduction of amount) to 11 (independent sort, no cues given). Provides a total score plus 3 sub-test scores: sort by colour, type, and size. **Minimal Clinical Difference (MCD)**: *not determined to date*.	• Excellent inter-rater reliability (stroke, traumatic brain injury, inpatients with schizophrenia). **Predictive Validity:** • Adequate validity for predicting IADL tasks (acquired brain injury on acute neurosurgery unit) **Group Differences:** • differentiates between healthy controls and brain injury **Other Aspects of Validity:** • Adequate concurrent validity with the Risks Object Classification Test (stroke, traumatic brain injury, inpatients with schizophrenia)	• Links assessment results with treatment planning (in particular, developing strategy use) • Deductive reasoning test may be used to demonstrate the potential for change or learning • Deductive reasoning test can be used as a re-assessment tool **Cons**: • Cost: about $100.00 (for simple items and score sheets). • Requires use of language skills (cannot be used for individuals with moderate to severe aphasia) • May not be applicable to populations other than acquired brain injury or chronic schizophrenia • Cannot be used to measure change over time • Scoring is rather lengthy and may not provide very useful information as applied to assessment of cognition or function.
Executive Function Performance Test (EFPT) In-depth* assessment; task performance level *(executive functions)* (*acts as a screening assessment if you use only 1 or 2 subtests, or if EFPT is used with higher functioning clients) **Population:** Research has been conducted with stroke, MS & schizophrenia, but no specific normative data yet. Could be used with other groups (ABI, older adults). http://www.ot.wustl.edu/about/resources/executive-function-performance-test-efpt-308 YouTube videos on mock administration of this test: http://www.youtube.com/watch?v=vO2uvlIh_ao http://www.youtube.com/watch?v=5SMzCougcOs	A performance-based, standardized assessment of cognitive (executive) function. It examines 5 executive function components (initiation, organization, sequencing, safety & judgment, and completion) for each of 4 tasks (cooking oatmeal, telephone use, medication management, and bill payment). Aims to determine level of support required (i.e., what type of cueing or assistance is required) to perform IADLS. *Current research is investigating use of only the bill-paying task along with a neuropsych battery to augment discharge planning for acute stroke.* **Time to administer:** 45 - 60 minutes. Preferable to administer full test (4 tasks) but can use fewer tests for screening purposes. **Scoring:** Based on the amount of cueing provided. A score can be calculated for each of the 5 executive function components (max 20 points each), or each of the 4 tasks (max 25 points per task), or total score (max 100 points) – this is simplified by a scoring grid developed by VCH. The higher the score, the more cueing/assistance is required. **Minimal Clinical Difference (MCD)**: *not determined to date*.	**Reliability**: • Excellent internal consistency (stroke, healthy controls, schizophrenia) • Excellent interrater reliability (mild stroke & healthy controls, multiple sclerosis) **Predictive Validity:** • *No information to date.* **Group Differences:** • differentiates between healthy controls and: - mild stroke, moderate stroke • differentiates between acute and chronic schizophrenia **Other Aspects of Validity:** • Poor to adequate concurrent validity with various neuropsych tests, suggesting EFPT measures some different aspects of cognition than these tests (stroke & healthy controls) • Adequate to excellent concurrent validity with 2 executive function tests (BADS, DKEFS), supporting the EFPT as a measure of executive functioning (schizophrenia, acute stroke) • Adequate concurrent validity with FIM, plus **e**xcellent concurrent validity with FAM and AMPS, suggesting EFPT is a good measure of function in particular IADLs (stroke & healthy controls)	**Pros**: • Ecological validity (assessment of executive function in context of function), portable • Helps determine supports needed for living at home • The manual (test protocol booklet) is available on-line, no cost • VCH has developed forms that provide all instructions and score sheets (with information taken from manual and laid out in a more organized manner) • Is recommended for assessment of executive functions in a published inventory of tests of executive function for stroke (Poulin et al, 2013) **Cons**: • Need to gather and replenish items; need stove and phone (cell phone is okay) • Verbal and written English fluency required • Does not provide a sufficient challenge for higher-functioning clients
Executive Function Route Finding Task (EFRT) Screening assessment; Task performance level *(executive functions)* **Population:** Adults with	A performance-based screening of executive functioning to relating to route: task formation, strategy approach, detection & correction of errors, dependence on cueing **Scoring**: 1- to 4-point scale for each of: o Task Understanding o Information-seeking o Retaining directions	**Reliability**: • Excellent inter-rater reliability (traumatic brain injury; older adults with mild cognitive impairment) **Predictive Validity:** • (not determined to date) **Group Differences:** • differentiates between healthy controls and:	**Pros**: • Ecological validity (measure of executive function for task performance), portable • No cost; information readily available in a published article (Boyd, 1993) • VCH has developed a form that provides the reference, all instructions, and scoring **Cons**

Assessment Name	Overview	Psychometrics – Reliability & Validity	Pros & Cons
traumatic brain injury or mild cognitive impairment; no normative data to date	○ Error detection ○ Error correction ○ On-task behaviour (the higher the score, the fewer the difficulties) -clinician can also record potential contributing problems evaluated e.g. visual/perceptual; and overall independence is evaluated **Minimal Clinical Difference (MCD)**: not determined to date.	- mild cognitive impairment (MCI) **Other Aspects of Validity:** • Adequate concurrent validity with some neuropsych tests (verbal comprehension, perceptual organization, flexibility of hypothesis testing), and no correlation with test of speed of information processing (traumatic brain injury) • Adequate concurrent validity with 1 of 2 subtests of the EFPT – with "bill payment" but not "telephone use".(older adults with mild cognitive impairment) • Adequate concurrent validity with another measure of "everyday cognition" (RBMT) and non-significant correlations with more impairment-based measures (MMSE, block design, vocabulary scores) (older adults, some with mild to moderate dementia)	• Need to plan ahead for the route that you will be using for each client (cannot necessarily be the same route for every client)
Executive Secretarial Task In-depth assessment; Task performance level *(high level executive functions)* **Population**: adults with brain injury. No normative data so far (although a research article provides a possible cut-off score of 34-35/45)	Provides an in-depth assessment of executive function. A job assessment procedure is simulated, involving simple secretarial assignments. A new assessment which, to date, has been used mostly for research. **Time to administer:** very lengthy, 3 hours. Must administer full test. **Scoring**: A score form is filled out (available in Lamberts et al., 2010), with the various tasks scored in terms of initiative, prospective memory, execution of task; and various topics in terms of overall impressions (of planning, effort etc.) – maximum score of 45 (higher scores reflect higher level of function). Client also rates own performance in terms of 5 questions asked at end of task. The authors have developed a possible cut-off score of 34 or 35 (in comparing normal healthy controls with brain injury). **Minimal Clinical Difference (MCD)**: not determined to date – cannot really be used as test-retest due to there not being parallel versions.	**Reliability**: • *Test-retest and inter-rater reliability not yet tested – limited by lack of a parallel test.* **Predictive Validity:** • Poor validity predicting changes in life roles in correlating this test with the Role Resumption List (a structured interview) (brain injury). **Group Differences:** • differentiates between healthy controls and: - brain injury **Other Aspects of Validity:** • Poor to adequate concurrent validity with measures of executive function (BADS, Dysexecutive Questionnaire, Executive Observation Scale) (brain injury).	**Pros**: • No cost involved. Information available in Lamberts et al. (2010), including tasks, score form • Ecological validity • Challenges high-level cognitive and executive functions and therefore may be of benefit in an outpatient or return-to-work assessment setting **Cons**: • Very lengthy test, may not be useful in most areas of clinical practice • Takes extra time to set up for each client; various materials are required (quiet room with desk, phonebook, calculator, telephone, office supplies, day agenda, envelopes, etc.)
EXIT-25 (The Executive Interview) Screening assessment; Impairment level **Population**: Persons with dementia, Alzheimer's Disease (AD), dementia of major depression (DMD), schizophrenia (dementia praecox), and vascular dementia without cortical features	The EXIT-25 was developed as a "bedside screen" of executive dysfunction. It provides a standardized clinical assessment (screen) of executive function. The 25 items assess perseveration, intrusions, apathy, disinhibition, verbal fluency, design fluency, frontal release signs, motor/impulse control, imitation behavior, and other clinical signs associated with frontal system dysfunction. **Time to administer**: approximately 15 minutes **Scoring**: EXIT-25 scores range from 0 to 50, with high scores indicating impairment. Scores ≥ 15/50 suggest clinically significant EF impairment in young and elderly populations.	**Reliability**: • Excellent interrater reliability (dementia). • Excellent internal consistency (dementia). **Predictive Validity**: • Adequate predictive validity of change scores of EXIT25 on change scores in an IADL measure – over time for individuals (whereas NO correlation between change scores in EXIT25 and change scores in MMSE). (elderly retirees age 70+ at non-institutional levels of care, evaluated a 3 points over 3 years). **Group Differences:** • differentiates between healthy controls and individuals with dementia • one study indicated EXIT25 does NOT differentiate	**Pros**: • The EXIT-25 and information about scoring is readily available on internet (no cost involved) • Quick to administer • Adds important information about executive functioning when screening for cognitive impairment (to add to information from other cognitive screens which do not screen well for executive dysfunction, such as the MMSE) – for individuals with dementia, and also in psychiatry (Royall et al., 2000; Schillerstrom et al, 2003), but unclear how useful it is for outpatients with TBI (and with mild/moderate disability). • For individuals with dementia, it links well to function. • Has also been shown to have utility for individuals with psychiatric diagnoses.

Assessment Name	Overview	Psychometrics – Reliability & Validity	Pros & Cons
Test form: http://www.dementia-assessment.com.au/frontotemporal/EXIT25_Executive_Interview.pdf Scoring guide (with references: http://www.dementia-assessment.com.au/frontotemporal/EXIT25_Scoring_Guide.pdf	(Normal range for young adults ≤ 5/50; normal range for elderly adults ≤ 10/50.) **there have been some attempts to create an even shorter/quicker version, such as the "Quick EXIT", Larson et al, 2010) – but not yet well researched. **Minimal Clinical Difference (MCD)**: *not determined to date.*	between healthy controls and mild cognitive impairment (MCI), whereas another study indicates it differentiates between healthy controls and "mild dementia" (and that MMSE did not). **Other Aspects of Validity**: • There is concurrent validity of the EXIT25 and MRI findings that show frontal lobe pathology, as analysed by comparing individuals above and below a cut-off score of 15/50 and the effect of various frontal lesions (analysis does not use correlational analysis) (individuals seen at a dementia assessment clinic). • Excellent concurrent validity with MMSE (individuals seen at a dementia assessment clinic) • Excellent concurrent validity with MMSE, 3MS, and cognitive score of FIM (traumatic brain injury [TBI] inpatients). • Marked ceiling effects when used with TBI outpatients. • Excellent concurrent validity with BADS, but non-significant correlation with 2 neuropsych measures of executive function (Stroop & Trail Making) (TBI outpatients) • Excellent concurrent validity with the Direct Assessment of Functional Status-Revised test (DAFS-R) (normal controls and also people with dementia); and adequate concurrent validity for persons with mild cognitive impairment (likely because of higher variance in scores for the MCI group). • Excellent concurrent validity with MMSE (at a geriatric memory clinic). • Adequate concurrent validity with an IADL score (from the Physical Self-Maintenance Scale and Instrumental Activities of Daily Living Scale) (at a geriatric memory clinic) • Excellent concurrent validity with another screen of executive functions/frontal lobe dysfunction (the Frontal Assessment Battery) (at a geriatric memory clinic). • Adequate to excellent concurrent validity with neuropsychiatric tests measures that aim to assess executive functioning including: Wisconsin Card Sorting Test (r=0.54), Lezak's Tinker Toy Test (r=0.57), Test of Sustained Attention (time, r=0.82; errors, r= 0.83), and Trail Making Part B (r=0.64). (older adults assessed for dementia)	**Cons**: • Practice is needed to administer and score appropriately • May not be able to detect MCI, or cognitive impairment in TBI outpatients. • Moderately influenced by age and education • Research findings advise that there was NO clear cut-off score found for presence of dementia; and advised that other testing is required to confirm dementia (Moorhouse et al, 2009)
Independent Living Scales (ILS) *(Loeb 1996; not to be confused with the "Independent Living Scale" developed for brain injury)* In-depth assessment; Task performance level **Population**: The most recent psychometric data	The ILS is a standardized assessment of competence in IADLs, requiring the client to demonstrate problem solving, demonstrate knowledge, or perform a task. There are 5 subscales: memory/orientation, managing money, managing home and transportation, health and safety, and social adjustment – total 70 items. **Time to administer**: about 45 minutes but varies. The manual recommends giving the entire test in one session.	**Reliability:** • Adequate to excellent internal consistency ('non-clinical cases') • Excellent test-retest reliability ('non-clinical cases'; schizophrenia) • Excellent inter-rater reliability ('non-clinical cases') **Predictive Validity:** • (*no studies to date*) **Group Differences:** • Differentiates between healthy controls and: - schizophrenia	**Pros**: • Includes performance-based testing (with scenario-based questions and actual tasks for the person to do, related to function at home), thus enhancing ecological validity • Fairly good psychometric properties for use with individuals with schizophrenia and dementia – there is some initial research with other populations (as per manual, 1996), but lack of further studies with these other groups • Appears to reflect cognitive aspects of performance (but may not reflect emotional influence e.g. depression; positive & negative

Assessment Name	Overview	Psychometrics – Reliability & Validity	Pros & Cons
focuses on dementia and schizophrenia. The norms provided in manual (1996) are for various diagnostic groups: mental retardation, traumatic brain injury, dementia, 'chronic psychiatric disturbance', major depression, and schizophrenia. http://www.pearsonclinical.com/therapy/products/100000181/independent-living-scales-ils--.html	**Scoring**: Convert raw scores to standard scores (using charts in manual, with different norms tables for different populations) – resulting in a total score as well as a score for each of the 5 subscales and a score for each of problem solving and performance/information. Plot these 8 standard scores on a graph (provided in test form) to determine if the person falls within category of *low*, *moderate* or *high* functioning for each score. (The standard score has a mean of 100 and a standard deviation of 15; higher scores = higher performance.) **Minimal Clinical Difference (MCD)**: *not determined to date*.	- severe brain injury • Does not differentiate between healthy controls and mild or moderate brain injury (but could be because of small sample sizes in the study): • Differentiates between these 3 groups: adults with chronic psychiatric disorders who have *high* vs. *moderate* vs. *low* Global Assessment of Functioning (GAF) scores • Differentiates between 3 levels of functional outcome – minimum, moderate and maximum supervision – better than the GAF did (for inpt and outpt schizophrenia **Other Aspects of Validity:** • Excellent concurrent validity with some tests of cognition (WAIS-R, MicroCog) ('non-clinical cases') • Adequate to excellent concurrent validity with various executive function neuropsych tests (dementia) • Adequate concurrent validity with the "MATRICS consensus cognitive battery" (schizophrenia) • Excellent concurrent validity with the personal self-maintenance scale and the IADL scale of the Philadelphia Geriatric Centre Multilevel Assessment Instrument ('non-clinical cases'). • Excellent concurrent validity with the shorter (21 item) performance-based Test of Everyday Functional Ability - TEFA (dementia) • Excellent concurrent validity with the Dementia Rating Scale; poor concurrent validity with the Geriatric Depression Scale (dementia) • Poor to adequate concurrent validity with the Hopemont Capacity Assessment Interview (healthy elders) • Poor concurrent validity with a negative & positive symptom scale and with a quality of life scale – suggesting that ILS does not measure impact of these areas on independent living skills (schizophrenia)	symptoms) **Cons**: • May not be sensitive enough to identify individuals with mild cognitive impairment. • Quiet room (private setting) recommended. • Cheque-writing and phonebook tasks are not relevant to many clients. • Map-based way-finding task seems to be more of a memory and attention task than measuring the person's ability to way-find • Cost: about $329 for initial kit, and then $62.00 for each set of 25 replacement forms. • OT must obtain additional materials: telephone, telephone book, various denominations of money, and stop-watch. • OTs working with dementia clients may want to explore use of TEFA (sold as the Texas Functional Living Scale, TFLS) instead of ILS. The TEFA (TFLS) is a shorter measure with excellent correlation with ILS (r=0.872), although lower correlation between memory subscales (r=0.425) (Weiner, 2006); and cost is less for manual/kit
Kohlman Evaluation of Living Skills (KELS) (3rd Edition) ***as of early 2014, the 4th Edition is being developed.* Screening assessment; Task performance level **Population:** Developed for acute psychiatric setting and later assessed and adapted for a geriatric population. Wider application includes clients with "mental retardation", brain injury, geriatric, or otherwise cognitively impaired – although there is a lack of	A fairly quick and simple evaluation of an individual's ability to perform basic living skills to determine degree of independence for return to community living. The KELS tests knowledge, not actual task performance. Includes 17 items in 5 categories: Self Care, Safety and Health, Money Management, Transportation and Telephone, and Work and Leisure. **Time to administer:** 30-45 minutes **Scoring:** Each item is scored as independent (0), or needs assistance (1 ½ or 1 point). Total score ranges from 0 to 17; a person with a score of <6 is considered capable of living independently. **Minimal Clinical Difference (MCD)**: *not determined to date*.	**Reliability:** • Excellent inter-rater reliability (acute psychiatry, and older adults) **Predictive Validity:** • (*no studies to date*) **Group Differences:** • differentiates between healthy controls and individuals with schizophrenia • Differentiated between 3 groups of elderly (living in community, living in sheltered housing, attending day care); and more sensitive than the FIM in differentiating these groups **Other Aspects of Validity:** • Excellent concurrent validity with Global Assessment Scale and with BaFPE. • Excellent concurrent validity with FIM and with an IADL measure (older adults). • Excellent concurrent validity with MMSE (older	**Pros**: • Helpful for many settings (inpatient, outpatient, acute care). Research has focused on use with schizophrenia and older adults. • Useful for quickly obtaining information regarding the ability of a person to perform basic living skills • Provides information to help clinician suggest appropriate living situations that will maximize independence – although needs to be augmented with performance-based assessment • Cost: $55.00 for manual through CAOT (member price) (also available through AOTA) **Cons**: • Not performance-based. • Based on urban lifestyles. Some items must be scored 'not applicable' in rural areas. • Additional performance-based testing should be done to supplement the KELS as it tests knowledge rather than the actual performance of living skills.

Assessment Name	Overview	Psychometrics – Reliability & Validity	Pros & Cons
psychometric studies to support use with these populations. https://www.caot.ca/store/detail.aspx?id=PUB-ML40 YouTube video showing KELS: http://www.youtube.com/watch?v=30FOxT2ubU4		adults) • Construct validity supported in assessing older adults' capacity to live safely and independently in the community – as was determined by comparing KELS scores with a battery of tests often used to screen ability to function safely & independently in the community (measures of cognition, affect, executive & functional status).	• Caution in using with individuals hospitalized more than 1 month. • Not applicable to long term care settings (because of activities/test items)
Kettle Test Screening assessment; Task performance level **Population**: adults with identified or suspected cognitive difficulties. (Research to date has been with stroke and older adults with suspected cognitive deficits) http://www.rehabmeasures.org/Lists/Admin%20fields/Attachments/939/Kettle%20Test%20final%20manual.pdf	Aims to evaluate the ability for independent community living of people with identified or suspected cognitive disabilities. Screens for many different cognitive areas (including memory, executive functions) – but score is based on cueing required, not specific cognitive performance. The client prepares 2 cups of hot beverage, one for self and one for clinician. The clinician requests a drink that differs in 2 ingredients from the client's selection. **Time to administer**: approx 20 minutes **Scoring**: Score the cueing required for each of 13 steps of the task. Total score = 0-52, with higher score representing higher need for cueing (more problems in performance). Information from the authors also allows the client's performance to be categorized as independent, mild assist required, or significant assist required.	**Reliability**: • Excellent inter-rater reliability (geriatric stroke) • *Note: authors of test feel that test-retest reliability is irrelevant: the test incorporates an element of novel problem solving, thus it is expected that the client would improve on re-test.* **Predictive Validity:** • When used together with the MoCA test, there is an improved prediction of whether or not a person needs supervision or not upon discharge, as compared to using MoCA test alone (but still fairly low predictive value even using these tests together) (stroke & TBI) **Group Differences:** • differentiates between healthy controls and stroke at discharge from rehabilitation **Other Aspects of Validity:** • Adequate convergent validity in comparing to a battery of cognitive tests (older adults with suspected cognitive deficits; stroke) • Adequate to excellent convergent validity (also considered "ecological validity") in comparing to tests of ADLs and IADLs (older adults with suspected cognitive deficits; stroke).	**Pros**: • Ecological validity, portable, assesses functional performance • Fairly quick to administer; provides a score of cognition through use of a functional task • VCH has developed a user-friendly instruction and scoring form • When used together with MoCA test, can improve OT's capacity to predict discharge needs in terms of supervision required at home – but still the OT must consider other information gathered in assessment, and not depend solely on these 2 scores • Is recommended for assessment of executive functions in a published inventory of tests of executive function for stroke – as having high clinical utility because it takes less than 20 minutes (Poulin et al, 2013) **Cons**: • No cost to order a kit or score sheets, but the OT needs to purchase and assemble all materials (kettle, drink items etc.) ahead of time; and replace some materials just prior to assessing client (e.g., milk)
Lowenstein Occupational Therapy Cognitive Assessment Battery (LOTCA, LOTCA-II, and LOTCA-G) ***2014: newest versions are the Dynamic LOTCA (DLOTCA) and Dynamic LOTCA-G (DLOTCA-G)** Screening assessment (extended); Impairment level *(global)* **Population**: adults with neurological deficits (stroke, traumatic brain injury), dementia, mental illness. For LOTCA: norms are provided (norm group = 20-70) with	Assesses basic cognitive skills. Used for treatment planning and to measure change. The original **LOTCA** has 20 subtests. The **LOTCA-II**, with 26 items, was developed to replace the original version, and provides more reliable and diverse set of testing methods, and allows for a shorter administration time. The **DLOTCA** has 28 subtests (in the areas of orientation, awareness, spatial perception, visual perception, visuomotor construction, praxis and thinking operations). The **DLOTCA's** addition of a new component aims to assess a client's "learning potential and thinking strategies which are important in choosing the best therapeutic approaches to elicit optimal patient responses…". The geriatric versions (**LOTCA-G** and **DLOTCA-G**) have enlarged items to reduce visual and motor coordination difficulties, shortened sub tests & reduced administration	**Reliability:** • Excellent internal consistency for LOTCA (stroke, traumatic brain injury, healthy controls, schizophrenia) • Excellent inter-rater reliability for LOTCA (stroke, traumatic brain injury, healthy controls) • Excellent internal consistency in all domains except poor for the memory domain (stroke rehab patients and healthy controls) **Predictive Validity:** • (*not established to date*) **Group Differences:** • differentiates between healthy controls and: - stroke/brain injury - dementia (LOTCA-G) - stroke (LOTCA-G) • For LOTCA-G: most subtests differentiate between individuals with mild vs. moderate dementia **Other Aspects of Validity:**	**Pros:** • A performance test with minimal verbal requirements • Procedures are included for use of LOTCA with clients with aphasia • Can be used to evaluate change over time (i.e., to re-test clients). • There is also a version available for geriatric population (LOTCA-G) • Provides a more detailed cognitive profile than the MMSE, and may be stronger than MMSE in predicting function (as measured by FIM). **Cons:** • No memory subtests in the LOTCA (but present in the LOTCA-G) • Can be long and difficult to administer. • One study found a substantial ceiling effect for a sample of adults with schizophrenia – therefore, may not be useful with this population (and perhaps also may not be useful with adults with mild cognitive impairment).

Assessment Name	Overview	Psychometrics – Reliability & Validity	Pros & Cons
Israeli norms found to be suitable for US population. The DLOTCA is valid for age 18-69 years. Psychometrics and norms also available for children age 6-12 (DOTCA-Ch). http://www.lotca.com/	time; and addition of memory subtests. **Time to administer:** 30-90 minutes for LOTCA; 30-45 minutes for LOTCA-G. (No specific details available to date re: other versions.) **Scoring:** Most subtests are scored 1-4 (from 'fails to perform' to 'demonstrates good performance'), some are scored 1-5 or 1-8. Total score for LOTCA-II ranges 26-115. Results provide a cognitive profile, with higher scores = less cognitive impairment. Authors caution that use of a total score impacts ability to identify aptitude for each cognitive area. Scoring for the DLOTCA-G has some inaccuracies (including: there are directions to score up to a 2, but the sheet only goes as high as a 1). **Minimal Clinical Difference (MCD)**: *not determined to date*.	• Construct validity supported for LOTCA using factor analysis • Adequate concurrent validity with LOTCA and MMSE (stroke) • Construct validity of the DLOTCA-G matches with the LOTCA-G and DLOTCA • Adequate concurrent validity with LOTCA and FIM-cognitive; lower correlations between LOTCA and FIM-total (but higher correlation than between MMSE and FIM-total) (stroke) • Adequate concurrent validity with LOTCA-G and MMSE, with strongest correlations between MMSE and with LOTCA-G categories of orientation, visuomotor organization, thinking operations, and memory (dementia).	• Scoring for the DLOTCA-G has been found to be hard to understand and some of the administration instructions difficult to follow, and with apparent inaccuracies on the score sheet. Pay close attention.
Middlesex Elderly Assessment of Mental State (MEAMS) Screening assessment; Impairment level *(global)* **Population:** Developed for use with elderly, dementia. Also researched with acquired brain injury. http://www.pearsonclinical.com/education/products/100000142/middlesex-elderly-assessment-of-mental-state-the-meams.html	Designed to detect (screen) gross impairment of cognitive skills in the elderly. 12 subtests: orientation, memory, new learning, naming, comprehension, arithmetic, visuo-spatial skills, perception, fluency, motor perseveration. Two of the sub-tests are taken from the Rivermead Behavioural Memory Test (RBMT). Two parallel versions (A and B) allow for test-retest. **Time to administer:** 10 minutes **Scoring:** Each subtest is scored 1 (pass) or 0 (fail). Total score: 10-12: expected range for normal elderly 8-9: borderline cognitive impairment, needs further cognitive assessment <7: definitely needs full cognitive evaluation **Minimal Clinical Difference (MCD)**: *not determined to date*.	**Reliability**: • Adequate to excellent internal consistency (hospitalized elderly, acquired brain injury) • Excellent parallel form reliability between Version A and B (community living older adults with depression or dementia) • Adequate parallel form reliability (hospitalized elderly) • Excellent test-retest reliability (dementia) • Excellent inter-rater reliability (older adults with dementia or depression) **Predictive Validity:** • (*no research to date)* **Group Differences:** • Differentiated between older adults with dementia vs. depression. **Other Aspects of Validity:** • Construct validity: found to be more sensitive than MMSE in detecting mild cognitive impairment (elderly acute psychiatry) • Construct validity: questionable as a cognitive screen by findings of one study in that the MEAMS, as compared to a detailed neuropsych battery, had an unacceptable high false negative rate – i.e., not a very sensitive screen for overall cognitive impairment (or specifically for memory, language, perception or executive problems) (stroke) • Adequate to excellent concurrent validity with MMSE and Clock-drawing (hospitalized elderly) • Adequate concurrent validity with FIM (hospitalized elderly, acquired brain injury)	**Pros** • Quick to administer • The test "manuals" provide very clear guidance for all questions to be asked. • Two parallel forms allow for test-retest (although only adequate parallel version reliability in one study) **Cons**: • Developed only for use with elderly • Not suitable for those with severe receptive language problems (i.e., unable to follow simple instructions) • Cost (approx $200.00) for the manual, plus extra for score sheets • Questionable in some research as a cognitive screen (not very sensitive to cognitive impairment) • Adequate but low correlations with function as measured by FIM

Assessment Name	Overview	Psychometrics – Reliability & Validity	Pros & Cons
Mini-Mental State Examination (MMSE) (aka Folstein MMSE; Standardized MMSE – SMMSE) ***See also Modified MMSE (3MS) – next item.*** **Note: do not confuse with use of "SMMSE" in the literature to refer to a different test, the "Short form MMSE"* Screening assessment; Impairment level *(global)* **Population**: older adults, stroke, may not be useful for individuals with mild cognitive impairment (see Pros and Cons). *be aware of interpretation with individuals with low education, and influences of age, language, culture, presence of depression. MMSE: http://www.utmb.edu/psychology/Folstein%20Mini.pdf http://www.alzheimers.org.uk/site/scripts/documents_info.php?documentID=121 SMMSE: http://www.health.gov.bc.ca/pharmacare/adti/clinician/pdf/ADTI%20SMMSE-GDS%20Reference%20Card.pdf To purchase versions in different languages: http://www4.parinc.com/Search.aspx?q=MMSE	Developed as a brief, objective assessment to detect dementia. *To improve reliability, the SMMSE was developed, to provide strict guidelines for administration and scoring. *In an attempt to improve the MMSE, the 3MS was developed – see below. **Time to administer:** 10 minutes **Scoring** (out of 30): 26-30 = could be normal 20-25 = mild cog impairment 10-20 = mod cog impairment 0-9 = severe cog impairment *some researchers suggest ≤24 as 'suggesting dementia' or cognitive impairment (e.g. Godefroy et al., 2011) *different researchers have created cut-off and percentile tables to allow interpretation of results in context of different ages and levels of education, but nothing has become a standard yet for interpretation. **Minimal Clinical Difference (MCD)**: *not determined to date*.	**Reliability**: • Poor internal consistency (older adults without cognitive impairment); excellent internal consistency (older adults with Alzheimer's Disease) • Adequate inter-rater reliability for MMSE and excellent for SMMSE (i.e., with stricter administration and scoring guidelines). **Predictive Validity:** • Poor predictive validity of MMSE in predicting discharge FIM motor scores (geriatric rehabilitation; subacute stroke). • Poor predictive validity of cognitive sequelae at 6 months post discharge of survivors of critical illness **Group Differences:** • differentiates between community vs. facility dwelling older adults • In some studies, MMSE failed to differentiate between mild dementia and healthy adults. In one study, MMSE did differentiate, but with less accuracy than a combination of cognitive/ neuropsych tests. • SMMSE stronger at identifying dementia than MMSE. • MMSE unable to identify psychiatric inpatients who had significant deficits on a neuropsych battery (thus suggesting that MMSE may seriously underestimate cognitive impairment in this population). **Other Aspects of Validity:** • Adequate concurrent validity with FIM+FAM (inpatient rehab acquired brain injury) • Excellent concurrent validity between MMSE and a measure of daily function ("Direct Assessment of Functional Status') (MMSE score mean=23.8, but ranging up to 30/30) – strongest correlation was between MMSE 'orientation' and DAFS 'time orientation' (dementia). • Poor convergent validity with the Mini-Cog Screen	**Pros**: • Quick screen • Available in many languages (but for a cost) • SMMSE recommended by BC Ministry of Health (specifically in assisting in identification of cognitive impairment of elderly) & endorsed by VCH and PHA for this purpose • Some research has supported MMSE as a useful screen in community-based health care to capture early cognitive impairment **Cons**: • Lack of psychometric studies involving younger adults and adults with acquired brain injury. • Not recommended for inpatient psychiatric population. • Age & level of education may affect score (i.e., "age and education bias") – thus may have a "false positive" for individuals with low education. • Not suitable to be given through an interpreter, or to person with aphasia • Not sensitive enough for very mild cognitive changes (in which case the MoCA or Cognistat might be recommended as a screen) • Although some evidence of convergent validity with function, one study shows poor predictive validity of function. • Recent study cautions against using MMSE as stand-alone tool in determining decision-making capacity (Pachet et al. 2010)
Modified Mini-Mental State Exam (3MS) Screening assessment; Impairment level *(global)* **Population**: same as MMSE http://adrc.usc.edu/3ms/	The 3MS (a screen to detect and monitor progression of dementia) was developed to extend the scope of the MMSE (see item above), including to improve discrimination among different levels of dementia. There are additional items to the MMSE, and extended scoring to add precision (with 4 additional subtests, and modified scoring procedure to extend from the 30-point range of the MMSE to a 100-point range).	**Reliability**: • Excellent internal consistency – higher than the MMSE, likely reflecting in part the larger number of subtests (older adults with and without cognitive impairment) • Excellent test-retest reliability (various studies) • Adequate to excellent inter-rater reliability (general psychiatric population; elderly in community) **Predictive Validity:** • Predictive of later functional decline – with function	**Pros**: • Can obtain an MMSE score & 3MS score from same test **Cons**: • Takes a little longer than MMSE or MoCA • No psychometric studies involving younger adults or adults with acquired brain injury or mental illness. • Lacks sensitivity to mild cognitive impairment. • Similar issues as MMSE in terms of interpretation

Assessment Name	Overview	Psychometrics – Reliability & Validity	Pros & Cons
http://www.dementia-assessment.com.au/cognitive/3MSManual1996.pdf	The additional items to the MMSE cover: long term memory, verbal fluency, abstract thinking, and recall of 3 words an additional time. **Time to administer:** 15 minutes. **Scoring**: Maximum score of 100. A score ≤77may indicate cognitive impairment, in particular if education is 9+ years and age <80 years. As with the MMSE, it is important to take into consideration influence of age, education and culture – although one study found that corrected cut-off scores did not improve accuracy in screening for cognitive impairment or dementia (O'Connell et al., 2004). A clinically meaningful change (in measuring cognitive decline) is considered ≥5 points, although some researchers suggest 10 points. (elderly). **Minimal Clinical Difference (MCD)**: *not determined to date*.	measured by a semi-structed interview conducted with an informant, assessing a person's difficulties performing various ADLs for non-physical reasons (adults with probable dementia) (Zahodne et al., 2013). **Group Differences:** • For older adults with low education, 3MS may be better than the MMSE in differentiating between healthy adults and those with Alzheimer's disease. **Other Aspects of Validity:** • Excellent concurrent validity with MMSE, Blessed Dementia Scale, Camdex Cognitive scale (CAMCOG) (various studies, dementia and elderly). • Adequate to excellent convergent validity with various neuropsych tests such as the Boston Naming Test, Controlled Word Association Test, Logical Memory test. • Adequate concurrent validity with FIM (whereas same study showed poor concurrent validity of the MMSE and FIM) (geriatric stroke)	of results – including that cut-off scores are not 100% accurate (sensitive), and interpretation must take into consideration factors such as age, education, & culture.
Montreal Cognitive Assessment (MoCA) Screening assessment; Impairment level *(global)* **Population**: Many groups as per reference list on web site, including Alzheimer's Disease, Huntington's Disease, Multiple Sclerosis, Parkinson's Disease, stroke, brain tumour. *Note, no psychometric studies yet for traumatic brain injury. www.mocatest.org	A screen designed to "…to assist first-line physicians in detection of mild cognitive impairment…" (Nasreddine 2005, p. 695). Includes screen for visuospatial/executive, naming, memory (recall), attention, language, abstraction, orientation domains. **Time to administer:** 10 minutes **Scoring:** maximum 30. Education bias is considered by adding 1 point if education is ≤12 years. (Although recent research (Johns 2008) recommends adding 2 points if 4-9 years of education, 1 point if 10-12 years – but these recommendations have not yet been applied to standardized interpretation of scores). A score of 26-30 = considered normal (thus, <26 considered cognitively impaired). A recent study suggests cut-off score be adjusted, with <23 representing cognitive impairment for literate adults aged <80 years (Godefroy et al., 2011). **Minimal Clinical Difference (MCD)**: *for an ABI study (stroke and TBI) it was determined that the reliable change interval for a confidence interval of 80% is -2 to +4.*	**Reliability**: • Excellent internal consistency (normal elderly, mild cognitive impairment & mild Alzheimer's Disease) • Excellent test-retest reliability (normal elderly, mild cognitive impairment & mild Alzheimer's Disease) **Predictive Validity:** • Adequate predictive validity of functional status as measured by FIM motor scale, with highest correlation between MoCA visuo-executive items and FIM-motor scores (subacute stroke) • Poor predictor of an individual's supervision needs (independent vs. needing supervision) upon discharge – needs to be combined with a functional assessment to increase predictive value of the overall evaluation of the client (stroke & TBI) • Poor predictor of functional outcomes (for 1-year post aneurysmal subarachnoid hemorrhage in Hong Kong Chinese patients) **Group Differences:** • differentiates between healthy controls and numerous populations **Other Aspects of Validity:** • Found to be more sensitive than the MMSE in detecting cognitive impairment (e.g., for normal elderly, mild cognitive impairment and mild Alzheimer's disease; stroke; Huntington's disease). • Small to moderate sensitivity for monitoring cognitive change in early Alzheimer's Disease	**Pros** • Free score sheets, instructions, and lots of information on web site • Quick screen • More sensitive than SMMSE in identifying mild cognitive impairment • For English version: allows retest via 3 versions • Single version in many other languages • Recommended by BC Ministry of Health to assist in diagnosis for cognitive impairment of elderly & endorsed by VCH and PHA • Capable of detecting change over time (**but beware that there may need to be a decline of >2 or improvement of >4 points to be a reliable measure of change, as per recent ABI study) **Cons** • This is simply a screen for mild cognitive impairment; it is not otherwise a measure of degree of cognitive impairment • On its own, the MoCA is a good predictor of function (must combine with functional testing). • Conventional use of the MoCA as a screening tool to detect MCI may be problematic in cultures different from that in which the cut-off score was determined. • Need to use caution when applying cut-off score in lower education or ethnically diverse populations.
Multiple Errands Test	The MET is a complex shopping task performed in a shopping mall or hospital	**Reliability**: • Adequate to excellent inter-rater reliability (normal	**Pros**: • No cost for test materials

Assessment Name	Overview	Psychometrics – Reliability & Validity	Pros & Cons
(MET) In-depth assessment; Task performance level *(high level cognitive/ executive functions)* **Population**: For high level clients. Developed for individuals with cognitive deficits who are independently mobile, verbal, & able to read/follow instructions. No norms available.	environment. Includes completion of a variety of tasks, rules to adhere to, and a specific time frame. The assessor observes the client (follows client) while client carries out errands in a shopping centre or hospital. MET-HV = MET hospital version. MET-R = MET-Revised (revised scoring format, including to make scoring more objective, remove possible double-counting e.g. of a task failure also being scored as a rule break; and some new scoring) **Time to administer:** 20-60 minutes or longer (depends on tasks involved, client performance) plus travel time (if required) **Scoring**: a. self-evaluation (ratings) b. errors (scores for task failures, inefficiencies, rule breaks) c. observational (qualitative) information optional but can be very useful (behavioural observations, strategies used) **Interpretation of score**: The VCH form provides a general guideline for cut-off values for normal expected performance based on info in literature to date. One article proposes a cut-off of 7 errors total. **Minimal Clinical Difference (MCD)**: *not determined to date.*	controls and community dwelling acquired brain injury). • Excellent inter-rater reliability (community dwelling acquired brain injury). • Excellent inter-rater reliability (mild CVA, community dwelling) **Predictive Validity:** • Adequate predictive validity of MET-HV, administered on discharge from inpatient rehab, in predicting Participation Index (M2PI) score administered 3 months later (acquired brain injury) • Ecological validity was supported using MET-HV in terms of its ability to predict (using regression analysis) aspects of the FrSBE and DEX (measures of frontal lobe/executive function difficulties) (for community-dwelling adults with acquired brain injury). **Group Differences:** • differentiates between healthy controls and: - inpatients/outpatients with acquired brain injury -individuals with mild CVA (community dwelling) **Other Aspects of Validity:** • Adequate concurrent validity with other measures of executive dysfunction (including BADS, Wisconsin Card Sorting Test) (healthy controls, inpatients/outpatients and community dwelling acquired brain injury). • Adequate to excellent concurrent validity in correlating some subscores of MET with process and motor scores of AMPS. • Ecological (construct) validity: supported in that there are numerous adequate to excellent correlations with measures of executive dysfunction, function (AMPS) and participation (Mayo-Portland Participation and Adjustment Inventory). • Ecological (construct) validity: supported in that the MET is more sensitive than traditional neuropsych measures of executive function in differentiating between healthy controls and inpatients/ outpatients with acquired brain injury – i.e., individuals with ABI may do well on traditional tests but still present with dysexecutive syndrome as assessed by real-world shopping task. • Adequate concurrent validity with the EFPT (mild CVA, community dwelling)	• Ecological validity, assesses what individual can do • VCH has developed forms that allow for development of a MET for your own setting; & provide instructions & scoring • Is recommended for assessment of executive functions in a published inventory of tests of executive function for stroke (Poulin et al, 2013) **Cons**: • Need to develop your own MET (i.e., for your own setting/shopping mall) – but a template available from VCH • Need to provide client with some money
Paced Auditory Serial Addition Test (PASAT) In-depth assessment; Impairment level *(attention/working memory, processing speed)* **Population**: Initially developed for individuals with traumatic brain injury; it	The PASAT is frequently used by neuropsychologists in assessment of attentional processing and working memory. It is generally accepted as one of the more sensitive measures of how traumatic brain injury affects speed of information processing. The individual is presented with a series of single digit numbers and has to add the 2 most recent digits. There are different rates of presentation. PASAT is one of the major components of	**Reliability**: • Excellent internal consistency (many studies). • Excellent test-retest reliability (many studies). **Predictive Validity:** • * **Group Differences:** • Differentiates between healthy controls and: - traumatic brain injury - multiple sclerosis	**Pros** • If information is required about attentional processing and working memory, then this may provide a fairly quick screen. • The PASAT stimuli have been translated into 27 languages (but the scoring manual is in English). • Computerized version appears reasonable in terms of cost: $120.00 for initial cost. Then, for licensed users, $60.00 per copy if more copies required. **Cons**

Assessment Name	Overview	Psychometrics – Reliability & Validity	Pros & Cons
has since been used with many other populations. Preliminary norms (1977) were for adults age 14-40 years. Since then, updated norms have been published for various age groups. http://www.pasat.us/ Information about computerized version: http://www.robertmcinerney.ca/pasat.html	Multiple Sclerosis Functional Composite test (MSFC) – the visual version (PVSAT) can also be used for the MSFC. (Although recently, 2010, researchers have recommended replacing PASAT with SDMT in the MSFC.) A version is available for children (CHIPASAT). A computer version is also available: http://www.robertmcinerney.ca/pasat.html. **Time to administer:** 20 minutes to administer – 10 minutes to score. **Scoring**: scoring options include number of correct responses, percent correct, latency of responding, & number of errors. Interpretation is based on comparison to norms. **Minimal Clinical Difference (MCD)**: *not determined to date*.	**Other Aspects of Validity:** • Construct validity: studies indicate that PASAT scores reflect speed of information processing, some type of attentional process, and working memory – such as by correlations with other neuropsych measures (many populations including traumatic brain injury, cognitively intact, multiple sclerosis, lupus). • Adequate concurrent validity with test of functional status, the Environmental Status Scale – a broad measure of functional disability (multiple sclerosis) • Poor concurrent validity with a test of functional status, the Environmental Status Scale – a broad measure of functional disability (multiple sclerosis) • Does not correlate consistently with functional indices (Barthel Index, Extended Activities of Daily Living Scale, Rating Scale of Attentional Behaviour) (stroke) • The PASAT, in combination with the Stroop Color Test and the Hopkins Verbal Learning Test-Revised, is useful to detect cognitive impairment (sensitivity 86%; specificity 75%). Specificity rises to 87% with the addition of the Action Fluency test (persons with HIV).	• Poor correlation with measures of everyday function • Cannot be used for test-retest scores as it is susceptible to practice effects • Negatively affected by increasing age, decreasing IQ (and probably education), and low math ability. • May cause undue anxiety and frustration for the client. • Individuals with speech or language impairment at a distinct disadvantage. • Recent research has shown it to be difficult even for the general population (Brooks et al., 2011) • Care to be taken to identify the reasons underlying any low score before interpreting it as clinically significant. • One Multiple Sclerosis study found the PASAT3 to be less valid and reliable than the SDMT
The Perceive: Recall: Plan: Perform (PRPP) System of task analysis In-depth assessment; Task performance level **Population**: Adults or children as they perform routines or tasks in an individual or group context Used in multiple settings where the child or adult performs daily routines and tasks (e.g., home, hospital, school, or work). Populations researched to date include traumatic brain injury, schizophrenia, dementia, and HIV. Description: http://203.17.62.122/opma/index.php/au/home/opm_book/the_perceive_recall_plan_perform_prpp_system_of_task_analysis	The PRPP is a standardised, 2-stage, criterion-referenced assessment. In a general sense, it provides a framework to enhance observational assessment of a client's information processing (cognitive function) during routines, tasks and sub tasks that are meaningful and relevant to the client. Performance is analysed from a cognitive processing perspective in terms of Perceive (attention and sensory perception), Recall (memory), Plan and Performance (self-monitoring). (*See Fry & O'Brien 2002 for further description.*) **Time to administer:** varies with the severity of information processing difficulty and the complexity of tasks assessed. Able to complete the assessment on 4 or 5 tasks in most cases over one to two hours. **Scoring**: Stage 1: the OT employs a standard behavioural task analysis, breaking down everyday task performance into steps, and identifying errors in performance. Stage 2: a cognitive task analysis is used, directed at the cognitive processes underlying performance. **Minimal Clinical Difference (MCD)**: not determined to date.	**Reliability**: • Adequate internal consistency (schizophrenia) • Adequate to excellent inter-rater reliability between trained therapists (brain injury; schizophrenia, mild dementia). • Adequate to excellent test-retest reliability (children with autism; adults with brain injury) • Poor to excellent inter-rater reliability, depending on which aspect of the PRPP. Poor reliability for individual items, but adequate to excellent reliability for average test agreement – thus showing that the PRPP total is more reliable than single steps of the PRPP (dementia). • Higher inter-rater reliability for therapists who use the PRPP more often than monthly, than those using it less often than monthly (adults with brain injury). **Predictive Validity:** • (no research found to date) **Group Differences:** • (no research found to date) **Other Aspects of Validity:** • Ecological validity is supported by the PRPP being a criterion-referenced measure involving everyday activity/tasks. • Adequate concurrent validity of PRPP using a complex task (but not using a simple task) with a questionnaire that measures community functioning in people with severe mental illness – ILSS (schizophrenia) • Construct validity supported in terms of a measure of cognitive strategy use (strong parallels between a Rasch-generated hierarchy of PRPP items, and conceptual models of information processing and	**Pros** • developed by OTs • can use this framework with any functional activity selected by the client or OT (unlike the AMPS). • makes use of tasks within the client's own life. • takes into consideration: observation of task performance; contextual (environmental) influences, and cognitive component abilities. **Cons** • Training will enhance the OT's competence and confidence in using the framework. However, the trainers are based in Australia and so training is difficult to access for Canadian OTs. • Fairly newly developed and, therefore, there is a limited number of psychometric studies to date.

Assessment Name	Overview	Psychometrics – Reliability & Validity	Pros & Cons
		occupational performance (adults with brain injury).	
The Repeatable Battery for the Assessment of Neuro-psychological Status (RBANS) Now sold as: **RBANS Update (2012)** Screening assessment; Impairment level **Population**: originally developed for assessing dementia; but applied in research to other populations (schizophrenia, brain injury, etc.) **Norms**: Age 12 to 89 years. The norms in the manual are based on United States population normative standardization (and can be applied to various dementias; Huntington's disease, Parkinson's disease, depression, schizophrenia and traumatic brain injury). Subsequent publications have examined performance for a variety of populations including other languages, and for specific populations (e.g., Iverson et al., 2009, norms for schizophrenia). http://www.rbans.com/	This is a brief neuropsychological battery that consists of 12 subtests that provide for 5 index scores: immediate and delayed memory, attention, language (picture naming, semantic fluency), and visuospatial/ constructional skills. It was developed for 2 purposes: (1) as a stand-alone, core battery for detection and neurocognitive characterization of dementia; and (2) to detect and track neurocognitive deficits (and recovery) in a variety of disorders. There are 4 equivalent alternate forms, thus allowing for retesting. **Time to administer**: about 30 minutes (thus, an extended screening assessment). **Scoring**: the raw scores for the 12 subtests are scaled together to create 5 index scores, which are then summed to convert to a total scale score. As per test booklet, computation of scores takes <5 minutes. *Cautions*: *-The subtest data should not be used as "stand-alone" measures, but only to help interpret index (total) score performance* *-Do not rely on a single source of information, such as the RBANS retest scores, to conclude that there has been a significant change in the client's neurocognitive status.* *-Age, education, & level of cognitive functioning may affect the "effort index" (EI) – significant caution is warranted when interpreting EI results in older adults with suspected dementia.* *-For stroke, Green (2013) recommends using a cut-off of <70 as "highly likely to have cognitive impairment" and between 70-80 as "likely to have a cognitive impairment". Those who score >80 should be assessed on more detailed neuropsych tests before concluding that there is no cognitive impairment present.* **Minimal Clinical Difference (MCD)**: not determined to date.	**Reliability**: • Generally adequate internal consistency for each index score and total scale (*brain injury outpatients*) • Adequate test-retest reliability (using alternate versions) (*healthy controls*) • Excellent test-retest reliability (using alternate versions) (*schizophrenia*) **Predictive Validity:** • Linear regression analyses showed predictive validity of RBANS index scores for the 6 domains of the "CDR scale", a semi-structured interview of patients & informants (domains = memory, orientation, judgment & problem solving, community affairs, home & hobbies, and personal care) – in particular for the language and immediate memory subtests (*for individuals with dementia or mild cognitive impairment*) • Across studies there are inconsistent results in terms of the RBANS's predictive validity of occupational status (i.e., working or not working) post schizophrenia. **Group Differences:** • Differentiates between older adults who may have illnesses associated with aging but no cognitive impairment, and adults with dementia. • Poor sensitivity in differentiating between adults with mild cognitive impairment (MCI) and cognitively intact peers for only 3 of 5 indexes and 6 or 12 subtests • Differentiates between healthy adult controls and: -adults with bipolar disorder -adults with schizophrenia -adults post-stroke • Differentiates between healthy adolescents and adolescents with psychotic disorders **Other Aspects of Validity:** • Adequate to excellent concurrent/construct validity for most subtests and the 4 index scores, with neuropsych tests measuring similar cognitive constructs (*brain injury inpatients and outpatients*)	**Pros**: • Fairly quick to administer, and can be done at bedside, no major set-up required • Administration and scoring gets easier as you learn/practice using it • This is a "neuropsych" test that OTs can use (i.e. without needing a masters/PhD in psychology) • Researchers have found RBANS to be suitable for detecting and tracking mild cognitive impairment (MCI) presumed to be due to Alzheimer's Disease. • May be useful in reducing amount of testing administered to a client by providing a relatively quick screen without administering a full neuropsych test battery (depending on factors such as purpose of assessment). **Cons**: • Cannot use language component on non-English speakers • Difficult to understand results without having good knowledge on the concepts of statistical significance, bell curve etc. • Expensive, in particular to purchase full kit (with all 4 versions): $549.00 USD. Less expensive for only 1 version: $259.00. Cost of 25 forms: $99.00. • Use caution in using the RBANS to detect mild cognitive impairment (MCI); it lacks sensitivity to MCI for many subtests • Lacks assessment (screening) of executive functions • Research indicates that it does not necessarily have high specificity for cognitive impairment for individuals with schizophrenia or brain injury (being that this was developed for assessing dementia, and lacks assessment of "frontal functions")
Rivermead Behavioural Memory Test (RBMT) *note there is Version II (2003) and Version III (2008) *there is also a version for children: RBMT-C In-depth assessment; Impairment level *(memory)*	Assessment of memory related to functional tasks. Assesses visual, verbal, recall, recognition, immediate, delayed and prospective memory, & ability to learn new info. RBMT-3 adds "novel task". **Time to administer:** 30-40 minutes **Scoring**: RBMT-2: Screening score (max 12) or	**Reliability**: • Adequate parallel form reliability for RBMT (mixed sample of healthy adults and "clinical cases"). • Excellent inter-rater reliability (mixed sample of healthy adults and "clinical cases") **Predictive Validity:** • (*no studies to date*) **Group Differences:** • differentiates between healthy controls and:	**Pros**: • Allows comparison to norms • Results (strengths/weaknesses for memory) allow the OT to provide more specific and individualized memory strategies • Results are useful to include in an education session for family members • Modest ability to predict everyday memory failures • Parallel versions (RBMT-3) allow for test-retest (thus, evaluation of change over time) • Ecological validity is supported through use of

Assessment Name	Overview	Psychometrics – Reliability & Validity	Pros & Cons
Population: designed for adults with acquired, non-progressive brain injury. Normative group: English speaking adults to age 89 http://www.pearsonclinical.com/psychology/products/100000644/rivermead-behavioural-memory-test-third-edition-rbmt3.html?pid=978-074-9134-761&Community=CA_Psych_Settings_Military YouTube video providing description/overview of the RBMT3: http://www.youtube.com/watch?v=SrGe36ZqpY0	standardized profile score (SPS) (max 24) RMBT-3: Sum scaled score can be used to calculate a General Memory Index, Percentile Rank, and Confidence Interval. Subtests can be plotted on a Scaled Score Profile. Note: Standard Error of Measurement (SEM): 5.35 (RBMT-1); 5.32 (RBMT-2) **Minimal Clinical Difference (MCD)**: *not determined to date*.	- brain injury (RBMT and RBMT-3) - Korsakoff's Syndrome / chronic alcoholics (RBMT-3 **Other Aspects of Validity:** • Poor to adequate concurrent validity with various impairment-based tests of memory (brain injury) • Adequate to excellent concurrent validity between RBMT and therapists' observations of memory failures over a mean of 35 hours, thus evidence of ecological validity (brain injury) • Adequate concurrent validity between RBMT and relatives' ratings (brain injury) • Adequate concurrent validity between RBMT-3 and proxy rating of the Prospective and Retrospective Memory Questionnaire (mixed sample of healthy adults and "clinical cases") • Adequate concurrent validity for some subtests of RBMT with a test of functional status, the Environmental Status Scale – a broad measure of functional disability (multiple sclerosis) • More research is needed on the ecological validity of the RBMT-3 in individuals with alcohol-related memory deficits as well as in other client groups	some "task performance" elements and concurrent validity with therapists' and relatives' ratings of individuals with brain injury **Cons**: • Client needs to have good attention to participate. • Caution in using it with clients who have limited insight about memory changes. • Cost may be prohibitive ($651.00 for complete kit; $123.00 for extra forms) • OT needs to take time to learn how to administer, and become familiar with subtests (including spatial memory task) • Quiet room required (a con if one is not available) • Administration time can be quite lengthy. Despite manual suggesting 30 minutes, it can take up to 50 minutes or longer (especially if OT not very familiar with it) • Does not detect mild memory deficits • Caution if using with individuals who have limited English abilities (normative group = English speakers)
Swanson Cognitive Processing Test S-CPT In-depth assessment; Impairment level *(information processing, working memory)* **Population**: Norms for age 5 to adult. Research has focused to date on use in educational settings (learning disabilities).	A battery of 11 information processing/working memory subtests: semantic association and categorization; auditory digit, nonverbal, and picture sequencing; phrase recall, story retelling, rhyming; spatial organization, directions, and mapping skills. An abbreviated version has 5 subtests. A systematic cuing system is used, to allow measurement of the client's potential competence when provided with probes/hints (considered 'dynamic assessment'). Results therefore represent the client's "processing potential" which is the difference between their actual performance level, and what they can achieve with probes. **Time to administer:** 3+ hours (sometimes 4-5 hours) **Scoring**: 7 composite scores representing mental processing ability, 'probe score', processing difference score, etc. **Minimal Clinical Difference (MCD)**: *not determined to date*.	**Reliability**: • Adequate to excellent internal consistency (initial norm group of USA and Canadian children and adults; college students) **Predictive Validity:** • (no studies) **Group Differences:** • Differentiates between learning disabled and non-learning disabled (children, college students). **Other Aspects of Validity:** • (no information)	**Pros** • Some OTs have found this test useful with higher level clients who wish to return to school (for example, to help identify strategy use, strengths & weaknesses in working memory, connect performance to academic achievement) • Can use all 11 tests or selected subtests • Allows OT to come up with ideas for interventions • Can be administered in 1 or 2 sections • A dynamic tool, the OT can provide hints; demonstrates learning, strategies used **Cons** • The manual/forms may be difficult to find. • Takes a very long time to administer plus extra time to prepare • Research has focused on use of this test in educational (not health care) settings. • More sensitive to higher functioning clients • Query sensitivity to different ethnic/cultural groups • Not easy to learn; needs practice beforehand • May be a little overwhelming for client and therapist
SIMARD-MD ("**Screen for the Identification of Cognitively Impaired Medically At-Risk Drivers, a Modification of the DemTect**") Screening assessment; Impairment level *(pre-*	A newly developed (2010), brief screening tool for use by physicians to identify drivers who are cognitively impaired and, therefore, at risk for driving. A pencil-and-paper tool. **Time to administer:** Less than 7 minutes **Scoring:** Easy to score, with cut-off points to identify those who would very likely pass or fail a driving assessment. *(Note: *cut-off points do*	**Reliability**: • No information to date **Predictive Validity:** • Findings by Bedard et al. 2013 state that the SIMARD-MD lacks sufficient precision to provide clear recommendations about fitness to drive; recommendations solely based on this test place many seniors at risk of losing their license or incurring unnecessary stress and costs to prove	**Pros:** • Stated by authors to be predictive of driving – **but caution: see Predictive Validity and Cons • May be a helpful tool for driver screening of older adults (not yet researched with other populations) • No training required for the clinician • Test (and information) readily accessible on website, no cost. • Quick and easy to administer to English speaking clients

Assessment Name	Overview	Psychometrics – Reliability & Validity	Pros & Cons
driving) **Population**: Community dwelling elders referred for driving assessment http://www.mard.ualberta.ca/SIMARDMD.aspx	*not have 100% sensitivity, thus, there is potential for false positive results).* 0-30 – predicted to fail on-road driver test. 31-70 – unable to determine – need to be referred for driving assessment. 71-130 – predicted to pass on-road driver test. **Minimal Clinical Difference (MCD)**: *not determined to date*.	they are safe to drive. **Group Differences:** • Differentiated between individuals who are likely vs. unlikely to pass an on-road driver test (healthy & cognitively impaired older adults living in community) – but not 100% sensitivity/specificity **Other Aspects of Validity:** • Support for construct validity: a regression analysis identified test items from the DemTect which, when used together, could predict pass/fail outcome for an on-road evaluation.	**Cons:** • Only one research study to date • Highly language based test • Michel Bedard (Director, Centre for Research on Safe Driving) identifies the authors' claims as overstated; no independent research; possible conflict of interest due to DriveABLE connection • Poor screening discrimination because 50-80% of clients need to be sent for further testing (e.g. DriveABLE recommended)
Symbol Digit Modalities Test (SDMT) Screening assessment; Impairment level *(attention, visual scanning)* **Population**: Children and adults age 8 to 78 (norms available. Normative data is categorized for age groups and gender. The manual and subsequent research indicate that SDMT can be used for many different populations e.g. acquired brain injury, dementia, multiple sclerosis, schizophrenia etc. http://www4.parinc.com/Products/Product.aspx?ProductID=SDMT	The SDMT is a screening tool was developed to identify cerebral dysfunction in children and adults ages (age 8 plus) – involving attention, visual scanning, and (if written response is required) motor speed. The client is presented with a series of geometric figures and, with reference to a key at the top of the page, indicates which number (from 1 to 9) matches each figure. The client can provide written or spoken responses. This test is optimally not used on its own, but as part of a battery of cognitive (neuropsych) tests. More recently, a computerized version became available (c-SDMT) – initially developed to be used during fMRI research. There have also been some alternate forms developed for use by researchers, to try to eliminate practice effect with repeated use (Benedict et al., 2012). Researchers suggest clinicians consider replacing PASAT with SDMT in the Multiple Sclerosis Functional Composite – due to slightly better predictive validity & easier administration. **Time to administer:** usually 5-10 minutes total (including instructions) with 90 seconds for the actual test. **Scoring:** Scoring is simple, conducted using the "autoscore" form that is part of the test form. **Minimal Clinical Difference (MCD)**: *not determined to date*.	**Reliability**: • Excellent test-retest reliability (normal controls) • Excellent test-retest reliability for c-SDMT (healthy controls and multiple sclerosis) • Excellent test-retest reliability (schizophrenia) • Practice effect shown if administered 1 week apart (schizophrenia) • Excellent test-retest reliability using alternative forms of the SDMT (multiple sclerosis) **Predictive Validity:** • (*no studies to date relevant to OTs*) **Group Differences:** • differentiates between healthy controls and: - multiple sclerosis (C-SDMT more sensitive than paper version) - traumatic brain injury - acute stroke - mild cognitive impairment (MCI) - schizophrenia **Other Aspects of Validity:** • As part of a neurobehavioural screening battery, may help predict post concussion syndrome (mild traumatic brain injury) and may help predict employment status (multiple sclerosis) • Adequate concurrent validity with a test of functional status, the Environmental Status Scale – a broad measure of functional disability (multiple sclerosis)	**Pros**: • May be useful as an initial screen of attention and visual scanning for some populations (esp. stroke, traumatic brain injury, multiple sclerosis) – but without prediction of function • Can be administered in a group format • Easy for client to understand the results- thus may be empowering; may help client to develop awareness of cognitive skills, e.g. for someone returning to school **Cons**: • Avoid test-retest, especially as soon as 1 week, owing to potential practice effect • Recommended to be used as part of a more extensive cognitive battery, thus may not be very useful on its own • May be perceived by client as a math test and may be off-putting • Does not provide specifics about functional problems but may provide a place to start • Cost for manual (about $60.00) and test forms (about $50.00 for each package of 25). • Relies on visual system which is often compromised e.g. for MS, ABI. Thus, failure on SDMT may reflect impairment in visual processing as well as mental processing speed. • Limited evidence to support SDMT as predictor of everyday function (although together with other neuropsych tests, may help predict employment status for individuals with multiple sclerosis).
Test of Everyday Attention (TEA) In-depth assessment; Impairment level *(working memory, attention)* **Population**: Youth to elderly with cognitive difficulties, in particular, individuals who	The TEA has 8 subtests to measure different aspects of attention (as per factor analysis: visual selective attention/speed; attentional switching; sustained attention; and auditory-verbal working memory. As per test description in manual, also tests for divided attention). There are 3 versions (A, B, C). Note: children's version is also available (TEA-Ch). **Time to administer:** 45-60 minutes (sometimes as much as 75-90 minutes; 2	**Reliability**: • Adequate to excellent test-retest reliability for subtests, except poor test-retest reliability for the "dual-task decrement subtest" (perhaps due to learning effect?) (normal adults and stroke) • Generally adequate to excellent test-retest reliability for subtests except "telephone search while counting", which had poor reliability (chronic stroke). **Predictive Validity:**	**Pros**: • 3 parallel versions allows for test-retest (although there may be practice effects with the dual-task decrement) • Assesses auditory & visual attention (but bias is auditory) • May be useful for high level clients who have limited insight • Evidence of ecological validity (e.g., there is some concurrent validity with measures of function)

Assessment Name	Overview	Psychometrics – Reliability & Validity	Pros & Cons
may have impaired attention and/or impaired working memory. The norm group is a sample of 154 healthy subjects, age 18-80. Norm groups are divided into 4 age ranges (18-34, 35-49, 50-64, 65-80). http://www.pearsonclinical.com/education/products/100000182/test-of-everyday-attention-the-tea.html	sessions may be required to ensure sufficient time for repetition of the practice trials) **Scoring:** Score for each subtest. Option 1: Plot *raw* scores on the tables provided in the manual (appendices) to determine *scaled-score* for each subtest, which depends on client's age range. If *scaled-score* falls within shaded area, then performance is likely abnormal. Option 2: Use Table 9 in manual to compare the *scaled-score* with *percentile* range (e.g., *scaled-score* 10 = 43.4th-56.6th *percentile*); or use tables provided in Appendices to convert *raw score* to an approximate *percentile*. *In interpreting scores, the test manual recommends referring to the aspects of attention identified in the factor analysis. **Minimal Clinical Difference (MCD)**: *??not determined to date*.	• *not determined to date; see below re: concurrent validity with some functional measures* **Group Differences:** • Differentiates between healthy controls and: - brain injury (in particular the map and telephone search subtests) - stroke • Differentiates between mild cognitive impairment and dementia **Other Aspects of Validity:** • Adequate concurrent validity (although ranges from poor to excellent for various subtests) with neuropsych measures such as Stroop, PASAT, and SDMT (healthy controls and traumatic brain injury) • Adequate concurrent validity with test of functional status, the Environmental Status Scale – a broad measure of functional disability (multiple sclerosis) • Poor concurrent validity between some subtests and 3 measures of function (Barthel Index, Extended Activities of Daily Living Scale, Rating Scale of Attentional Behaviour) – although better than some neuropsych tests of attention (Stroop Test, PASAT, backward digit span and others) which did not correlate consistently with these measures of function (at 2 mos post stroke)	**Cons**: • Quiet room required + some extra materials required (stopwatch, CD player) • Quite high level, can be quite challenging • Need to take time (about an hour) to try it out yourself prior to attempting to administer • Interpretation of scores can be time-consuming • Ceiling effects for some subtests for some age groups • Caution in using with individuals with hearing or visual impairment
Trail Making Test A & B (TMT) Screening assessment; Impairment level *(working memory, visual attention, cognitive flexibility)* **Population**: children and adults. Studies with many populations including dementia, acquired brain injury, depression, schizophrenia. http://www4.parinc.com	A screening test of visual attention, working memory and task-switching/mental flexibility. This is a pencil-and-paper test where the client is required to connect numbers (A) or numbers and letters (B). It is typically part of a neuropsych battery. A variation of Test B is included in MoCA. May be included as part of pre-driver screen battery. There are also 2 versions of the "Color Trails Test" (CTT-1 and CTT-2); and an oral trail making test (OTMT-A, OTMT-B). Further, an eye-tracking version is now available (Hicks et al., 2013), which was found to have good correlation for speed with Trails B. **Time to administer**: 5-10 minutes **Scoring**: simple scoring. Don't use original cut-off scores, because age and education affect scores; instead, use 2004 norm data available on-line (see Reference List). A systematic review (Mononita & Molnar, 2013) reveals that for the Trails B, a cut-off of 3 minutes or 3 errors represents the best evidence-informed cut-off available to date. **Minimal Clinical Difference (MCD)**: *not determined to date*.	**Reliability**: • Excellent inter-rater reliability (population unknown). • Excellent test-retest reliability for both TMT A and B (major depression) – but other studies caution of practice effects. **Predictive Validity:** • Construct validity that a battery of neuropsych tests (including TMT) is associated with functional outcomes (with 37% of variance shared) (schizophrenia). • A systematic review indicates methodological limitations in research studies that aim to determine clinically useful cut-off scores in determining fitness to drive (Roy & Molnar, 2013). **Group Differences:** • Sensitive to normal age-related declines in cognition. **Other Aspects of Validity:** • Construct validity is supported for TMT-A to require mainly visuoperceptual abilities and TMT-B to reflect primarily working memory and task-switching ability, in correlating with other neuropsych measures (healthy subjects). • Construct validity of TMT A and B as cognitive impairment measure is supported by poor to excellent concurrent validity with other variations of trail-making tests (college students). • TMT-A and CCT-1 may help predict pass/fail of driving test (older adults referred for driver	**Pros**: • Simple, quick **Cons**: • For clinical populations, there is very little of research to date associating TMT results with measures of everyday function including driving – the best evidence is for neuropsych batteries that include TMT, and not a TMT on its own. • Cannot use for re-testing due to practice effects • TMT and CTT may not be equivalent – so do not use as alternative versions for test-retest • Be careful what norms are used (depends on part what test is used – TMT, CTT, OTMT). Norms of TMT A and B may no longer be applicable to current US population. The Comprehensive Trail Making Test (CTMT) was developed to overcome limitations (with excellent internal consistency, adequate test-retest reliability, and adequate concurrent validity with other neuropsych tests, for a large norm group). • Requires knowledge of the numbers and letters used in the English language

Assessment Name	Overview	Psychometrics – Reliability & Validity	Pros & Cons
		assessment; adults with acquired brain injury). • Excellent concurrent validity of OTMT-B with TMT-B, but poor concurrent validity of OTMT-A with TMT-A (healthy adults).	
Test for Nonverbal Intelligence (TONI) – "A language-free measure of cognitive ability" Screening assessment; Impairment level *(intelligence)* **Population:** recommended for use with children or adults (age 6-89) when a measure of intelligence is required and where traditional intelligence tests are inappropriate (language impaired, hearing impaired, non-English speakers). http://www.pearsonclinical.com/psychology/products/100000612/test-of-nonverbal-intelligence-fourth-edition-toni4.html?pid=TONI-4&Community=CA_Ed_AI_Ability	A neuropsych measure of a small piece of the construct of "fluid intelligence" (purporting to measure aptitude, abstract reasoning, problem solving).Designed for children and adults. There are 2 parallel versions (A and B) All items are abstract/figural; verbal or non-verbal instruction is provided; and the evaluee responds with simple but meaningful gestures such as pointing, nodding or blinking. The most recent version is the TONI-4, with updated norms. Not to be confused with the CTONI (Comprehensive Test of Nonverbal Intelligence). **Time to administer**: 15-20 minutes. **Scoring:** Raw scores can be converted to age-based percentiles or index (standard scores) and compared to norms. **Minimal Clinical Difference (MCD)**: *not determined to date*.	**Reliability**: • Poor to excellent internal consistency (various populations) • Excellent test-retest and parallel form reliability for an earlier version (children). • (*no additional published research could be found including for TONI-4; manual unavailable for review*) **Predictive Validity:** • (*no published research on validity could be found on TONI-3 or TONI-4; manual unavailable for review*) **Group Differences:** • (*no published research on validity could be found on TONI-3 or TONI-4; manual unavailable for review*) **Other Aspects of Validity:** • (*no published research on validity could be found on TONI-3 or TONI-4; manual unavailable for review*)	**Pros**: • Completely non-verbal • Simple instructions; can be administered by anyone who follows instructions carefully and has some formal training in assessment • Detailed directions for administering, scoring, and interpretation (in the manual). • A 20-year body of reliability and validity research is cited and summarized in the test manual • Good for pre- and post test application • Low cultural loading **Cons**: • A review of an early version of the TONI recommends exercising extreme caution in interpreting results of this test as a measure of intelligence, in part because it is a non-verbal test (Shelly, 1982). • Limited published research on current and recent versions (TONI-3, TONI-4); need test manual to review psychometrics. • Accessible research literature focuses primarily on use of the TONI as a measure of intelligence (for adults and children), without addressing any concurrent or predictive validity for measures of everyday function. • Cost is about $380.00 for initial kit, and then $60.00 for each subsequent package of 50 test forms.
Texas Functional Living Scale (TFLS) Screening assessment (more so than in-depth); Task performance level **Population**: Originally developed for people with dementia, but has expanded to other groups including adults intellectual disability, schizophrenia, traumatic brain injury. **Normative Data**: The norms provided in the manual (2009) are for various diagnostic groups: probable Alzheimer disease- mild severity, mild and moderate intellectual disability, major depressive disorder, TBI, schizophrenia, autistic disorder. Aged 16-90, 800 examinees included in	The TFLS is comprised of 24 items assessing cognition in the context of specific impairment items as well as various IADLs. It is divided into 4 subscales assessing ability to use analog clocks and calendars, perform calculations involving time and money, utilize basic communication skills in everyday activities, and memory. The 4 subscales are: time, money & calculation, communication, memory. **Time to administer**: approx 20 minutes. Can be administered across more than 1 session, as long as item #22 is done in 1st session. **Scoring**: Raw scores are converted into cumulative percentages and the total raw score can then be converted into a T-score. The manual provides qualitative descriptors for cumulative percentages and T-Score (i.e., "high average" to "severely impaired"). **The manual also provides suggestions for score cut-offs to suggest whether the person has adequate functional competence for independent living; assisted living; or a special	**Reliability**: • Adequate to excellent internal consistency (Alzheimer's disease) • Excellent inter-rater reliability (for normative sample) • Excellent test-retest reliability at 1 month (Alzheimer's disease) • **Practice effects: there is slightly higher performance when tested the 2nd time due to practice effects (roughly a ¼ standard deviation of the T-Score) suggesting relatively consistent performance over time – but the OT should be aware of this. **Predictive Validity:** • (*nothing found to date*) **Group Differences:** • differentiates between healthy controls and adults with Alzheimer`s disease, and dementia in general. • did NOT differentiate between normal controls and mild cognitive impairment (MCI). **Other Aspects of Validity:** • Excellent concurrent validity in comparing TFLS to	**Pros**: • provides a fairly quick screen of cognition in the context of IADLs • in considering the excellent convergent validity with the MMSE, the TFLS can be used to assess overall level of cognitive impairment while providing clinical information that is ecologically valid (regarding function) • test items are easily obtained (e.g. a current calendar, stopwatch, telephone etc.) • Allows OT to provide prompts to the client to obtain best score. • Direct observation reduced patient/caregiver reporting bias. • Memory subscale assesses 3 aspects of memory: immediate recall, delayed recall, prospective memory • May be quicker to administer than ILS. • Relatively affordable (compared to other measures): less than $200.00 **Cons**: • Money and calculation subscale use US $ including $1 bills (need to adapt for this); and pennies are also used (need to find some or adapt for this) • Communication subscale uses tasks that may not

Assessment Name	Overview	Psychometrics – Reliability & Validity	Pros & Cons
normative sample. http://www.pearsonclinical.com/therapy/products/100000222/texas-functional-living-scale-tfls.html YouTube video on mock administration of this test: http://www.youtube.com/watch?v=wgRmURZfOpU	care unit. ***However**, it is cautioned: "…Recommendations about level of care should not be based on a single score but should include multiple aspects of assessment and information sources…" – thus, consider NOT using these cut-off values. **Minimal Clinical Difference (MCD)**: *not determined to date*.	the Independent Living Scales (ILS), although only adequate concurrent validity in comparing the memory subscales (dementia). • Excellent convergent validity in comparing with the MMSE (dementia). • Adequate convergent validity in comparing with an informant-rated measure of daily functioning, the Blessed Dementia Rating Scale (BDRS) (Alzheimer's disease). • As expected, poor correlation in comparing TFLS with a dementia behaviour rating scale, thus demonstrating the expected discriminant validity (i.e., showing that the tests measure different constructs: the TFLS assesses functional skills, and the rating scale taps emotional and behavioral disturbance). (Alzheimer's disease)	be familiar to your client (especially younger adults): cheque writing, use of phone book, addressing envelope • Test results alone are NOT conclusive – must use clinical reasoning taking into consideration other assessment activities/tests

OCCUPATIONAL THERAPY COGNITIVE ASSESSMENT INVENTORY – REFERENCE LIST

GENERAL REFERENCES: (*updated spring 2014*)

Asher, I. E. (2007). *Occupational therapy assessment tools: An annotated index* (3rd ed.). Bethesda (MD): American Occupational Therapy Association.

Websites: Rehab Measures: http://www.rehabmeasures.org

StrokEngine: http://www.medicine.mcgill.ca/strokengine%2Dassess/

The Centre for Outcome Measurement in Brain Injury (COMBI): www.tbims.org/combi/

TEST-SPECIFIC REFERENCES:

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