Independent Assessment

Addendum to Selection of Assessment Tools to address children aged 1-6 years

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**Key messages**

* This addendum to the [Independent Assessment Tools paper](https://www.ndis.gov.au/media/2683/download) describes the properties of the standardised assessment tools proposed for the purpose of undertaking NDIS independent assessments (IA) for children aged under 7 years of age. Note children under one year of age will not undergo independent assessments.
* This update forms part of a wider program of work that is aiming to reset and improve the NDIS Early Childhood Early Intervention (ECEI) approach. The NDIA is consulting on the revised approach in financial quarter 2 and 3 of this financial year (2020)
* The process of identifying, evaluating, and proposing the most appropriate tools for children under 7 years of age (excluding those under one year old) was guided by:
	+ the COnsensus-based Standards for the Selection of health Measurement INstruments (COSMIN)
	+ the [NDIS Independent Assessment Framework](https://www.ndis.gov.au/participants/independent-assessments/independent-assessment-framework) (2020)
	+ the World Health Organisation’s International Classification of Functioning, Disability and Health (ICF)
	+ Reference to best practice in assessment for children in early childhood intervention, reflected in the NDIS ECEI approach.
* Please refer to the [Independent Assessment Selection of Assessment Tools](https://www.ndis.gov.au/media/2683/download) for a detailed description of methods.
* No single tool was identified that met all criteria. In the absence of an ideal tool, a suite of assessment tools has been selected. These are complemented by information gathered using an NDIS-designed interview with the primary caregiver (the Participant Information section of the IA) and interaction with the participant/caregiver (Participant Interaction section of the IA).
* The assessment tools included for children aged 1-6 years are:
	+ - Ages & Stages Questionnaire (ASQ-3) **OR** Ages & Stages Questionnaire -Talking About Raising Aboriginal Kids (ASQ-TRAK)\*
		- PEDI-CAT (Speedy) **OR** PEDI-CAT ASD (Speedy)
		- Vineland-3 Comprehensive (Interview Form)
		- Young Children’s Participation and Environment Measure (YC-PEM) for children under 6 years
		- Participation and Environment Measure - Children and Youth (PEM-CY) for children 5+ years

\*The ASQ-3 and the ASQ-TRAK are developmental screening tools and are currently being considered for their role in supporting access decisions for children against the developmental delay criteria in sections 9 and 25 of the NDIS Act (2013).

* Some adjustments may be made to the list of assessment tools over time, while remaining consistent with the foundations and concepts of the Independent Assessment Framework approach.

**What this addendum addresses**

The [Independent Assessment Selection of Assessment Tools paper](https://www.ndis.gov.au/media/2683/download) detailed the approach to selecting standardised assessment tools for the purpose of undertaking NDIS independent assessments (IA) for people aged 7 years and over.

It followed the COnsensus-based Standards for the Selection of health Measurement INstruments (COSMIN) framework, which includes four steps:

1. Conceptual considerations
2. Finding and evaluating all relevant existing instruments/tools
3. Evaluation of tools
4. Selection of tools.

A detailed description of this process is contained in the original report and is not repeated here. A full list of tools considered but not selected (including for young children) is also available in the Appendix of that paper.

This Addendum deals with steps 3 and 4 for assessments for children aged one to six years.

1. **Evaluating and selecting a suite of assessment tools for children aged under 7 years, excluding those under one year**

As stated in the main paper, a consensus method was used to determine which assessment tools were the ‘best fit’ from a short-list of assessment tools. The suite of tools for children aged under 7 years, includes the following tools that are also included in the suite for ages under 18 years, as they have strong psychometric properties and are appropriate for use with young children:

* PEDI-CAT **OR** PEDI-CAT-ASD
* Vineland-3 Comprehensive (Interview Form)
* Participation and Environment Measure - Children and Youth (PEM-CY) (this will be used for children 5+ years).

Descriptions and appraisals of these tools (including psychometric properties) are available in Tables 1 and 4 of the main report.

The following tools were added to satisfy the Independent Assessment Framework criteria and provide holistic information across ICF domains and NDIS activity areas for young children:

* Ages & Stages Questionnaire (ASQ-3) OR Ages & Stages Questionnaire -Talking About Raising Aboriginal Kids (ASQ-TRAK)
* Young Children’s Participation and Environment Measure (YC-PEM) for children under 6 years.

These are described in Table A1.

#### Table A1 Additional tools for children aged 1-6 years

| **Assessment Tool** | **Brief description** | **Reason for inclusion** |
| --- | --- | --- |
| Ages and Stages 3 (ASQ-3)(Squire et al., 2009)  | The ASQ-3 is a developmental screening tool designed for use by early educators and health care professionals. It assesses the main developmental areas of communication, gross motor, fine motor, personal-social, and problem solving skills. It is suitable for children aged 1-51/2 (66 months). | Relies on parents as experts, is easy-to-use, and has been recommended by UNICEF to verify if children have typical neurological development. |
| Ages & Stages Questionnaire -Talking About Raising Aboriginal Kids (ASQ TRAK)(D’Aprano et al., 2016) | The ASQ-TRAK is an alternate version of ASQ-3 that has been culturally adapted and validated for Australian Aboriginal children. It observes and monitors developmental progress at 2 months, 6 months, 12 months, 18 months, 24 months, 36 months and 48 months of age. Only 7 of the 21 ASQ-3 age intervals were adapted. It is shorter than the traditional ASQ-3, written in plain English and has items that have been modified to be more culturally appropriate and draw on materials that are available in remote communities.  | This tool was developed in collaboration with Aboriginal community members, and is available in two Yolngu Matha languages, Western Arrarnta language and plain English.It highlights a child’s strengths as well as catching delays early. It is designed to be administered by interview, in contrast to the ASQ-3, inviting caregivers to be co-observers and teaching them about child development and their own child’s skills.  |
| Young Children’s Participation and Environment Measure (YC-PEM) (Khetani et al., 2015) | The YC-PEM is a parent-completed measure that looks at the different activities of children aged 0-5 years by evaluating the level of participation and qualities of the environment in which these activities take place. The survey has 3 sections: Home, Daycare/preschool, and Community.Each section has two key parts:* A part that asks about the child’s participation in activities in that setting.
* A part that asks about the impact of the environment on the child’s participation in that setting.
 | Allows better understanding of a child’s level of participation and involvement in everyday activities across settings. This measure may assist in NDIS support planning by helping parents and caregivers to record and share what is known and what they want to change about the child’s participation.  |

Note that the information gathered for each participant/prospective participant during the IA appointment is considered on a case by case basis for decision making. Details from the assessment suite are considered collectively and with reference to the child’s particular circumstances. This is critical to providing reliable and consistent information and equitable decisions. A suite of tools also ensures the IA approach can reliably capture the functional capacity (including the impact of environmental factors on function) of the Scheme’s diverse participant base, including participants with complex and/or episodic disabilities.

Performance of each assessment tool against framework criteria for decision making and practical considerations is summarised in Table 2A, noting that all tools address (or partially address, and cover) selection criteria.

#### Table A2 Mapping of All Tools for children aged 1-6, against IA Framework Criteria

| Criteria | ASQ-3 | ASQ-TRAK | Vineland 3  | YC-PEM | PEM-CY | PEDI-CAT (SPEEDY) Original and ASD versions |
| --- | --- | --- | --- | --- | --- | --- |
| Supports Decision Making* Comprehensively covers NDIS Act activity domains
 | Satisfies Criteria | Satisfies Criteria | Satisfies Criteria | Satisfies Criteria | Satisfies Criteria | Satisfies Criteria |
| Supports Decision Making* Tool is diagnosis neutral
 | Satisfies Criteria | Satisfies Criteria | Satisfies Criteria | Satisfies Criteria | Satisfies Criteria | Satisfies Criteria |
| Supports Decision Making* Norm or criterion referenced
 | Satisfies CriteriaNorm referenced | Satisfies CriteriaNorm referenced | Satisfies CriteriaNorm referenced | Satisfies CriteriaNot applicable (tool is evaluative)  | Satisfies CriteriaCriterion referenced | Satisfies CriteriaNorm referenced |
| Supports Decision Making* Assesses functioning not diagnosis/ impairment
 | Satisfies Criteria | Satisfies Criteria | Satisfies Criteria | Satisfies Criteria | Satisfies Criteria | Satisfies Criteria |
| Supports Decision Making* Questionnaire based assessment
 | Satisfies Criteria | Satisfies Criteria | Satisfies Criteria | Satisfies Criteria | Satisfies Criteria | Satisfies Criteria |
| Administered in a reasonable amount of time | Satisfies Criteria15-20 minutes | Satisfies Criteria30-60 minutes  | Satisfies Criteria60 minutes | Satisfies Criteria25-40 minutes  | Satisfies Criteria30 minutes | Satisfies Criteria15 minutes |
| Discipline neutral  | Satisfies Criteria | Satisfies Criteria | Satisfies Criteria | Satisfies Criteria | Satisfies Criteria | Satisfies Criteria |
| No additional extensive training required | Satisfies Criteria | Satisfies Criteria | Satisfies Criteria | Satisfies Criteria | Satisfies Criteria | Satisfies Criteria |
| Cost effective | Partially Satisfies Criteria  | Partially Satisfies Criteria  | Partially Satisfies Criteria  | Partially Satisfies Criteria  | Partially Satisfies Criteria  | Partially Satisfies Criteria  |

How each tool fits together to cover the key activities and domains of assessment of function is explained in the Summary by Domain: Coverage of Assessment Tools for Functional Capacity for ages 1-6 years.

#### Summary by Domain: Coverage of Assessment Tools for Functional Capacity for ages 1-6 years

##### For Communication, Social Interaction, Learning, Mobility, Self-Care and Self-Management

* YC-PEM/PEM-CY
* PEDI-CAT/PEDI-CAT ASD
* Vineland-3
* ASQ3
* ASQTRAK

##### Social Participation

* YC-PEM/PEM-CY
* PEDI-CAT/PEDI-CAT ASD
* Vineland-3

##### Economic Participation

* Not Applicable

##### Capacity/Performance Without Assistance

* Vineland-3
* ASQ3
* ASQTRAK

##### Capacity/Performance With Assistance

* PEDI-CAT/PEDI-CAT ASD

##### Environment, Participation

* YC-PEM/PEM-CY

## **2. Appraisal of psychometric properties**

The Agency rated the quality of each tool’s measurement properties using COSMIN quality criteria. The first step involved identifying the measurement properties evaluated by the reviews or studies. Then, using the results for each measurement property, a “positive”, indeterminate’, or “negative”, rating was assigned. Where there were multiple sources, an overall determination was made as high, medium or low.

**Reliability and Validity**

Reliability includes internal consistency (the degree of interrelatedness among the items) and inter-rater/intra-rater reliability (the degree to which the tool is free from measurement error). All tools were rated positively for reliability, except ASQ-TRAK. This is because data has not yet been reported, as it is a relatively new version of the ASQ tool.

Validity encompasses the following aspects:

* Structural validity: the degree to which the scores of a measurement instrument are an adequate reflection of the dimensionality of the construct to be measured.
* Cross cultural validity: the degree to which the performance of the items on a translated or culturally adapted measurement instrument are an adequate reflection of the performance of the items of the original version of the measurement instrument.
* Criterion validity: the degree to which the scores of a measurement instrument are an adequate reflection of a ‘gold standard’.
* Construct validity: whether a scale or test measures the construct adequately.

Again, all tools were rated positively across all or most of these properties, although gaps in evidence exist for ASQ-TRAK and YC-PEM. The YC-PEM also performed poorly on construct validity for children in day care settings, but fair to good in home and community settings. Testing for cross cultural validity in the NDIS context will occur in the resumption of the pilot testing in 2020-21.

Results for the additional tools are summarised in Table 3A. Full assessment tables for each tool are in the Appendix. Please note that ratings for PEDICAT, PEDICAT-ASD, and Vineland 3 are presented in the original [Independent Assessment Selection of Assessment Tools paper](https://www.ndis.gov.au/media/2683/download).

#### Table A3 Summary of measurement properties for ADDITIONAL tools SELECTED FOR CHILDREN 1-6 YEARS

| **Criteria** | **ASQ-3** | **ASQ-TRAK** | **YC-PEM** |
| --- | --- | --- | --- |
| **Structural validity** | PositiveHigh Certainty | Unknown | Unknown |
| **Internal consistency** | PositiveHigh Certainty | Unknown | Positive Low certaintyᶲ |
| **Cross-cultural validity** | PositiveHigh Certainty | PositiveHigh Certainty | Unknown |
| **Reliability** | PositiveHigh Certainty | Unknown | IndeterminateLow certaintyᶷ |
| **Criterion validity** | PositiveHigh Certainty | ModerateLow certainty | Unknown |
| **Construct validity** | PositiveHigh Certainty | Unknown | NegativeLow certainty |

ᶲ Excellent for environment scale; moderate-excellent for participation scale

ᶷ Low in day care settings, fair-good in home and community settings

**Legend, Quality of Evidence:**

|  |  |
| --- | --- |
| High | Consistent findings in multiple studies of at least good quality or one study of excellent quality AND a total sample size of ≥100 patients |
| Moderate | Conflicting findings in multiple studies of at least good quality or consistent findings in multiple studies of at least fair quality or one study of good quality AND a total sample size of ≥50 patients |
| Low | Conflicting findings in multiple studies of at least fair quality or one study of fair quality AND a total sample size of ≥30 patients |
| Very low | Only studies of poor quality or a total sample size of <30 patients |
| Unknown | No studies |

## References

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Squire, J., Twombly, E., Bricker, D., & Potter, L. (2009). ASQ-3: Users Guide. Baltimore: Paul H. Brookes Publishing Co. ASQ-3 Technical Report with complete psychometric data available at: http://www.agesandstages.com Accessed December, 9, 2019.

**Appendix - Appraisal of Assessment Tool Psychometric properties**

The Agency rated the quality of each tool’s measurement properties using COSMIN quality criteria.
A “positive”, indeterminate’, or “negative”, rating was assigned. Where there were multiple sources, an overall determination was made as high, medium or low.

Legend, Quality of Evidence:

|  |  |
| --- | --- |
| High | Consistent findings in multiple studies of at least good quality or one study of excellent quality AND a total sample size of ≥100 patients |
| Moderate | Conflicting findings in multiple studies of at least good quality or consistent findings in multiple studies of at least fair quality or one study of good quality AND a total sample size of ≥50 patients |
| Low | Conflicting findings in multiple studies of at least fair quality or one study of fair quality AND a total sample size of ≥30 patients |
| Very low | Only studies of poor quality or a total sample size of <30 patients |
| Unknown | No studies |

### Quality Rating of [[1]](#footnote-1)Ages & Stages Questionnaire (ASQ-3)

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | Tool Appraisal, Rothstein (2017)1 | Systematic Review, Mendonça (2016)2 | ᷾ Systematic Review, Kjølbye (2018)3 | Research Study, Agarwal (2020)4 | Research Study, Chen (2018)5 |  **OVERALL RATING** |  **QUALITY OF EVIDENCE** |
| Structural validity  | Unknown  | Unknown  | Unknown  | Unknown  |  Positive | Positive | High  |
| Internal consistency | Indeterminate | Unknown  | Unknown  | Positive | Unknown  | Positive | High  |
| Cross-cultural validity | Positive | Positive | Positive | Positive | Unknown  | Positive | High  |
| Reliability | Positive | Positive | Positive | Positive | Unknown  | Positive | High  |
| Criterion validity | Unknown | Positive | Positive | Unknown  | Unknown  | Positive | High  |
| [[2]](#footnote-2)Construct validity |  Positive | Unknown  | Unknown  | Positive | Unknown  | Positive | High  |

᷾ restricted to studies of children 0-2 years old, and ASQ 1-2 versions
ᶤ adapted and validated for Australian Aboriginal communities, but very small study (N=24 parents)

### Quality Rating of Ages & Stages Questionnaire - Talking About Raising Aboriginal Kids (ASQ TRAK)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Research Study,Simpson (2016)6 | Research Study, Johansen (2020)7 | **OVERALL RATING** | **QUALITY OF EVIDENCE** |
| Structural validity  | Unknown  | Unknown  | Unknown  | Unknown  |
| Internal consistency | Unknown  | Unknown  | Unknown  | Unknown  |
| Cross-cultural validity | Positive | Positive | Positive |  High |
| Reliability | Unknown  | Unknown  | Unknown  | Unknown  |
| Criterion validity |  Negative  |  Unknown |  Negative  |  Moderate |
| Construct validity | Unknown  | Unknown  | Unknown  | Unknown  |

### Quality Rating of Young Children’s Participation and Environment Measure (YC-PEM)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Study 1, Khetani (2014)8 | Study 2, Khetani (2015)9 | **OVERALL RATING** | **QUALITY OF EVIDENCE** |
| Structural validity  | Unknown |  Unknown |  Unknown |  Unknown  |
| Internal consistency |  Unknown | Positive ᶲ | Positive  | Low  |
| Cross-cultural validity |  Unknown |  Unknown |  Unknown |  Unknown  |
| Reliability |  Unknown | Indeterminateᶷ | Indeterminate |  Low |
| Criterion validity | Negative |  Unknown |  Unknown |  Unknown  |
| Construct validity |  Unknown  | Negative | Negative |  Low |

ᶲexcellent for environment scale; moderate-excellent for participation scale

ᶷlow in day care settings, fair-good in home and community settings

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9. Khetani MA, Graham JE, Davies PL, Law MC, Simeonsson RJ. Psychometric properties of the young children's participation and environment measure. *Archives of physical medicine and rehabilitation.* 2015;96:307-316.
1. [↑](#footnote-ref-1)
2. [↑](#footnote-ref-2)