Developmental Assessment of Young Children 2 (DAYC2)

Prepared by Michaela Wooldridge, M.A.
Agenda

- **Morning: Administering the DAYC2**
  - Introduction
  - Domains
  - Basals & Ceilings
  - Scoring Domains & Sub-Domains
  - Recording

- **Afternoon: Interpretation & Report-Writing**
  - Interpretation of Scores
  - General Development Index (GDI)
  - Report Writing
Introduction

Why are we using a new assessment tool?

Why now?

What do we already understand about the developmental assessment of infants?
“the science of the strange behavior of children, with strange adults, in strange settings for the briefest possible period of time.”

Activity
1. Introduction to DAYC2 (2013)

Developed based on:

- reviews of child development research
- existing tests
- new items by child development experts
- 50% criterion for norms
Normative Information

N = 1832 children in 20 states

• Tested fall 2009 thru spring 2011

• Representative of US Census 2010 demographics

• Reliable (content, time, and scorer)

• Validity (content-description, criterion-prediction, & construction-identification)
Purposes of DAYC2

- Help identify children significantly below their peers in 5 domains
- Monitor children’s progress in special intervention services
- Used in research studying abilities in young children
DAYC2 Domains

- Cognitive
- Adaptive
- Social-Emotional
- Communication (Receptive, Expressive)
- Physical Development (Gross motor, Fine motor)

Time: 10-20 minutes per domain
Best practice for Early Childhood providers is that **all five domains are assessed**, as delays in one area of development may have an impact in another area.

*It is always better to assess and determine there is no delay than to assume the child has no delays in a specific domain that was not the primary area of concern.*
2. Administration of DAYC2

- Observation
- Interview
- Direct Assessment
No specific testing materials are used with the DAYC. Since children often exhibit different behaviors during a formal evaluation, the DAYC is designed to be completed through observation in the child’s natural setting. This provides a more accurate assessment of the child’s skills.

If certain skills are not observed, primary caregivers can be interviewed to gain the information.

A variety of materials in the child’s natural environment are helpful as the DAYC is administered.
Important reminders!

- If you know that the child’s environment does not contain items that you will need, then it is necessary to bring them with you. The key is to keep the feel of the setting as informal as possible.

- Do not go item by item through the test. You should have a sense of what you are looking for by studying the items beforehand. Incorporate opportunities for the child to demonstrate skills that you need to observe into your play with the child, observations and caregiver interview.

- For those skills that require the examiner to work directly with the child, join the child’s play and introduce items or games that fit into the child’s natural play activity.
Considerations for Direct Assessment

- Test individuals, not groups of children
- Practice giving & scoring items (may use coaches)
- Have materials available
- Test in environment free of distractions (ventilation, lighting, quiet, private, comfortable)
- Establish rapport with child & parent/caregiver
- Stop testing if child fatigued or loses interest
- Praise & encourage child without evaluating accuracy
Scoring: Basals & Ceilings

- Entry points determined by chronological age
- **Scoring:** passed (1 point)
  - not passed (0 point)
- **Basal:** when a child receives a score of ‘1’ on three items in a row
- **Ceiling:** when a child receives a score of ‘0’ on three items in a row
Some Scoring Considerations…

1. No credit given for emerging skills (if skill is not ‘mastered’ then score as ‘0’)

2. If child can only do a skill with one person, location, or set of materials, consider marking the skill as not mastered (score as ‘0’)

3. If child has not had the opportunity to develop a skill (e.g., has never had the chance to use scissors, or drink from an open cup), then child cannot demonstrate the skill (score as ‘0’)
Scoring Processes: Overview

**STEP 1:** Calculate Raw Scores

**STEP 2:** Convert to *normative* scores (age equivalent, standard score, percentile rank)

**STEP 3:** Subdomains in Communication & Physical Development – *separate raw scores converted to normative scores, then raw scores summed & converted*

**STEP 4:** General Development Index
Step 1: Raw Scores

- All items before the basal are scored as 1
- Any items present above the ceiling scored as 0

\[
\text{all items before basal} + \text{all items between basal & ceiling} = \text{Raw Score}
\]
Practice with Raw Scores

STEP 1: Calculate raw score

a. Review p. 9 sample scores

b. Calculate raw scores for 3 sample domains of case study 1 – Cognitive
   - Social-Emotional
   - Adaptive
Step 2: Convert to Normative Scores

What are normative scores?

- **standard scores** ($M=100$, $SD=15$)
- percentile ranks
- age equivalents
Practice with Standard Scores

Step 2: Convert to standard scores

- Convert our 3 sample raw scores to standard scores (Appendix B)
Step 3: Percentiles

*Step 3: calculate percentile scores*

- convert our standard scores to percentiles

(Appendix C)
Step 4: Age Equivalents

Step 4: Calculate age equivalents

- convert our raw scores to age equivalents

(Appendix A)
Step 5: Subdomain Scores
(Physical & Communication)

Subdomain Scores

1. Convert subdomain raw scores to normative scores (Appendices A, B, C)

2. Sum 2 raw scores & 2 standard scores

3. Sum of raw scores converted to age-equivalent (Appendix A)

4. Sum of standard scores converted to domain composite standard score (Appendix D)

5. [ Convert to percentile rank (Appendix C) ]
Practice with Subdomain Scores
(Physical & Communication)

Step 5: Calculate Subdomain Scores

- Use our physical and communication samples for case study 1 to calculate all scores (Appendix D)
**General Development Index (GDI)**

\[ \text{GDI} = \text{normative score for composite of all five domains} \]

Average-High scores (>90): attained/exceeded development for age

Low scores (<90): not attained developmental levels for age
Interpreting Scores

FOR A FAIR SELECTION
EVERYBODY HAS TO TAKE
THE SAME EXAM: PLEASE
CLIMB THAT TREE
Interpreting Normative Scores

Standard Scores – domains & composites

• Mean = 100 / SD = 15

• Can clearly compare child’s performance across domains

• Note: slight floor effect in cognitive domain < 2 months & physical domain < 7 mos.
Interpreting Normative Scores

**Percentile Ranks**

- Scale ranges from 0-99
  - Eg. percentile rank of 56 means 56% of standardization sample scored at or below

- **Remember**: differences between successive percentile ranks don’t represent equal amount of measured information (2 points much more when further away from average)
Interpreting Normative Scores

Age Equivalents

• Expressed in months

• Compared to normative sample (not child’s functioning age)

• Only use WITH percentile ranks & standard scores
Interpreting Normative Scores

GENERAL DEVELOPMENT INDEX (GDI)

= normative score for composite of all five domains

\[ M=100 \ / \ SD=15 \]

Average-High scores (>90): attained/exceeded development for age

Low scores (<90): not attained developmental levels for age
Interpreting…

Many conditions can cause low scores:

1. Lack of opportunity to observe or practice skills
2. Neglect or abuse
3. Poor nutrition
4. Complications of pregnancy or birth
5. Low intelligence
6. Vision problems
7. Hearing loss
8. Exposure to toxins
9. Genetic causes
10. Various syndromes
11. Etc.
Descriptive Terms Proposed

< 70: significantly (or very) delayed
70-79: moderately delayed
80-89: mildly (or slightly) delayed
90-110: average
> 110: above average
### Examiner Summary Sheet: *Practice with General Development Index (GDI)*

<table>
<thead>
<tr>
<th>Domain</th>
<th>Raw Score</th>
<th>Age Equiv</th>
<th>%ile Rank</th>
<th>Standard Score</th>
<th>Descriptive Term</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cognitive</td>
<td>35</td>
<td>25</td>
<td>77</td>
<td>111</td>
<td>average</td>
</tr>
<tr>
<td>Communication</td>
<td>35</td>
<td>22</td>
<td>61</td>
<td>104</td>
<td>average</td>
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<tr>
<td>Social-Emotional</td>
<td>34</td>
<td>26</td>
<td>75</td>
<td>110</td>
<td>average</td>
</tr>
<tr>
<td>Physical Dev</td>
<td>52</td>
<td>16</td>
<td>27</td>
<td>91</td>
<td>average</td>
</tr>
<tr>
<td>Adaptive Behavior</td>
<td>23</td>
<td>18</td>
<td>34</td>
<td>94</td>
<td>average</td>
</tr>
<tr>
<td><strong>Composite</strong></td>
<td><strong>510</strong></td>
<td></td>
<td></td>
<td><strong>102</strong></td>
<td>average</td>
</tr>
</tbody>
</table>

The **Composite Standard Score** is 510 with an **average** rank of 102.
Case Study 2: Helen

- Compare 2 sets of scores for same child
- Discuss strategies
Discrepancy Analysis

To determine if differences in standard scores between domains (or subdomains) are:

a. Significant

b. Meaningful

[Pages 22-24 in manual]
# DAYC2 Domain Differences: Statistical Significance

<table>
<thead>
<tr>
<th>Domain</th>
<th>Cognitive</th>
<th>Communication</th>
<th>Social-Emotional</th>
<th>Physical Development</th>
</tr>
</thead>
<tbody>
<tr>
<td>Communication</td>
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<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Social-Emotional</td>
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<td>9</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Physical Development</td>
<td>8</td>
<td>9</td>
<td>9</td>
<td>-</td>
</tr>
<tr>
<td>Adaptive Behaviour</td>
<td>9</td>
<td>9</td>
<td>9</td>
<td>9</td>
</tr>
</tbody>
</table>
## DAYC2 Domain Differences: Clinical Significance

<table>
<thead>
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<th>Social-Emotional</th>
<th>Physical Development</th>
</tr>
</thead>
<tbody>
<tr>
<td>Communication</td>
<td>21</td>
<td>-</td>
<td>-</td>
<td>-</td>
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<tr>
<td>Social-Emotional</td>
<td>24</td>
<td>25</td>
<td>-</td>
<td>-</td>
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<tr>
<td>Physical Development</td>
<td>30</td>
<td>32</td>
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<tr>
<td>Adaptive Behaviour</td>
<td>27</td>
<td>27</td>
<td>26</td>
<td>29</td>
</tr>
</tbody>
</table>
Practice with Discrepancy Scores

1. Marcos: Review example (communication)

2. Holly: Complete discrepancy analysis for subdomains (communication AND physical)

3. Jack: Compare all domains with each other
Interpretive Report Writing

Development is always dynamic and never discontinuous.

A child is more than a score.

~ Shonkoff, 1983
REPORT WRITING
1. Identifying Information

* Child’s name
  Holly M.

* Child’s date of birth
  July 30, 2012

* Parent/Guardian name
  S.M.

* Date of Assessment
  May 17, 2014

* Assessment(s) used
  Developmental Assessment of Young Children (DAYC2)
2. Background or General Information

* referral information
* birth history/medical/social information
* family context
* service status & other services
* assessment conditions {next slide}
Holly was referred to the Infant Development Program in September 2012 by the hospital therapist for developmental monitoring following a difficult birth and low Apgar scores. She spent a week in the NICU and had early difficulties with feeding and slow weight gain. Monthly home visits have taken place since December 2012.

Holly is the first child to S. & J. She lives with her parents, has frequent visits with her grandparents, and will become a big sister in July.

This assessment was carried out with Mom over the course of a slightly extended home visit. Holly had just had a nap but was recovering from a cold the week before. The assessment information was gathered through observation of play, answers provided by Mom, and some direct testing with Holly.
Examples to note:

- # sessions needed to complete assessment
- Formats used
- Accommodations made
- Any conditions that might affect validity
3. Domain Summaries

* domain standard score
* descriptive example(s) of item(s) in domain
* any meaningful domain or subdomain score differences
Cognitive: standard score 111 (average-above average)

Holly demonstrates age-appropriate imitation, matching, and sequenced behaviours in play, including emerging pretend play with her dolls and stuffed animals.

Communication: standard score 104 (average)

Expressive language consists of at least 15 spontaneously-used words and several 2-word phrases.

She demonstrates comprehension of language as she points to body parts or pictures when asked, carries out 2-step directions, and is beginning to discern prepositions (e.g. big/little).
Social-Emotional: standard score 110 (average)

With reminders, Holly says ‘please’ appropriately, enjoys simple make-believe play, tries to do many self-care activities without help, and shows concern when another person is visibly sad.

Physical: standard score 91 (average)

Holly runs with a fast walk, climbs on the playground equipment and her bookcase, and creeps backward down steps when not holding a parent’s hand.

Fine motor skills include turning the pages of books, poking with her index finger, and holding a crayon adaptively to scribble in her colouring book.

Adaptive: standard score 94 (average)

Holly drinks from a straw or sips from an open cup, puts on her hat when it’s time to go outside, and removes some clothes alone. She likes to ‘help’ with simple household tasks such as wiping the floor.
4. **Interpretive Summary**

* General Development Index Score
* Descriptive term
* Child’s strengths & needs
* Parent concerns
* Changes from previous assessments
Overall Development: GDI standard score 102 (average)

Holly’s development is typical, in general, and across all domains assessed. Her parents have no concerns about her development, finding her activity level tiring, but typical compared to her peers. They do wonder about how to best balance giving her a range of experiences while keeping her from getting injured, especially now that she is testing limits.
5. Recommendations & Sign-Off

* referrals to be made
* transitions to other services
* activities / resources recommended
* service status
* next test
* signatures
As Holly is now engaged with a range of peer group experiences (daycare, Strongstart, child-minding services), and the family has a well-established support network, home-visiting services are no longer needed. The family is aware that they may contact our program at any time should new concerns arise or further information or guidance be desired.

It has been a pleasure to work with Holly and her family, and I wish them the best with the addition of their second child this summer.
Tests don’t diagnose...

Well-trained professionals do