

1-1-2011

Intervention Intensity for Speech Sound Disorders: How Much and for How Long?

Elise Baker
The University of Sidney

A. Lynn Williams
East Tennessee State Univeristy, williamsl@etsu.edu

Follow this and additional works at: <https://dc.etsu.edu/etsu-works>

 Part of the [Speech and Hearing Science Commons](#), and the [Speech Pathology and Audiology Commons](#)

Citation Information

Baker, Elise; and Williams, A. Lynn. 2011. Intervention Intensity for Speech Sound Disorders: How Much and for How Long?. Seminar Presentation. *American Speech-Language-Hearing Association Convention*, San Diego, CA. <https://www.asha.org/Events/convention/handouts/2011/Baker-Williams/>

This Presentation is brought to you for free and open access by the Faculty Works at Digital Commons @ East Tennessee State University. It has been accepted for inclusion in ETSU Faculty Works by an authorized administrator of Digital Commons @ East Tennessee State University. For more information, please contact digilib@etsu.edu.

Intervention Intensity for Speech Sound Disorders: How Much and for How Long?

Copyright Statement

This document is the intellectual property of the author(s). It was originally published by the *American Speech-Language-Hearing Association Convention*.

Intervention intensity for Speech Sound Disorders: How much and for how long?

Elise Baker, PhD

The University of Sydney, Australia

A. Lynn Williams, PhD

East Tennessee State University

Seminar Outline

- 1) What is intervention intensity?
- 2) What do we know about the intensity of intervention for SSD in children?
- 3) How might SLPs use the evidence on intervention intensity in their everyday management of SSD in children?

Learner Outcomes

- 1) Define** the issues involved in the measurement of intervention intensity,
- 2) Describe** what is known about the intensity of intervention, for a variety of phonological intervention approaches.
- 3) Identify barriers and solutions** in your conduct of EBP, particularly with respect to the intensity of your intervention for children who have SSD.

1. What is intervention intensity?

(Based on Warren, Fey and Yoder, 2007)

Dose form

Dose

Session duration

Dose frequency

**Total
intervention
duration**

**Cumulative
intervention
intensity**

Intervention intensity

(Based on Warren, Fey and Yoder, 2007)

1. Dose form

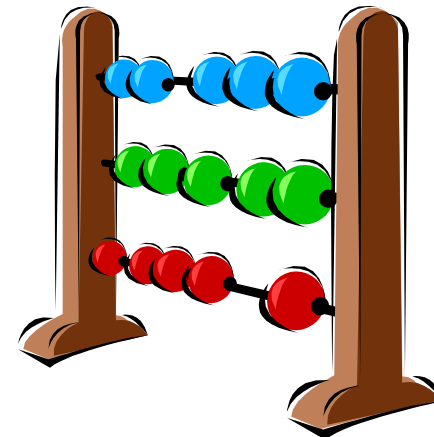
type of task or activity in which teaching episodes are delivered

(e.g., drill play, play)



2. Dose

number of times an active ingredient or teaching episode containing a combination of active ingredients occurs per session *(e.g., 100 trials)*



Intervention intensity

(Based on Warren, Fey and Yoder, 2007)

3. Session duration

Length of a session in time
(e.g., 50 minutes)



4. Dose frequency

Number of sessions per unit of time
(e.g., 2 x week)

TUESDAY

THURSDAY

Intervention intensity

(Based on Warren, Fey and Yoder, 2007)

5. Total intervention duration

Total period of time in which
intervention is provided

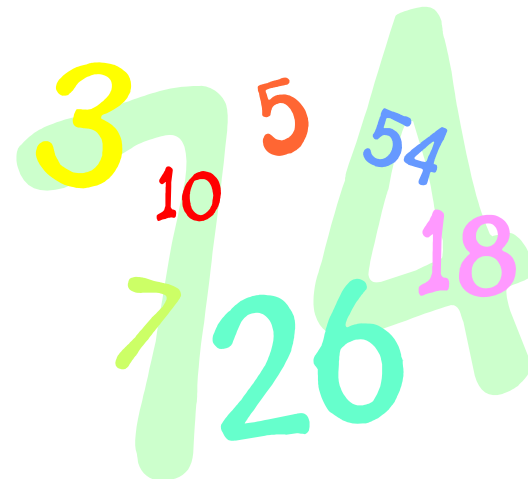
(e.g., 30 weeks)



6. Cumulative intervention intensity

Dose x dose frequency x total
intervention duration

(e.g., 100 trials 3 x week for 30
weeks = 9000 trials over)



Case example

Cody 4yrs 9 mths (Baker & McLeod, 2004)

- Intervention approach: Minimal pairs therapy
- Intervention target: Initial consonant clusters

INTERVENTION INTENSITY

- **Dose form** = drill play
- **Dose** = 100 trials
- **Session duration** = 45 minutes
- **Session frequency** = 2 x week
- **Total intervention duration** = 12 sessions over 7 weeks
- **Cumulative intervention intensity** = 1,200



Seminar Outline

✓ What is intervention intensity?

→ **What do we know** about the intensity of intervention for SSD in children?



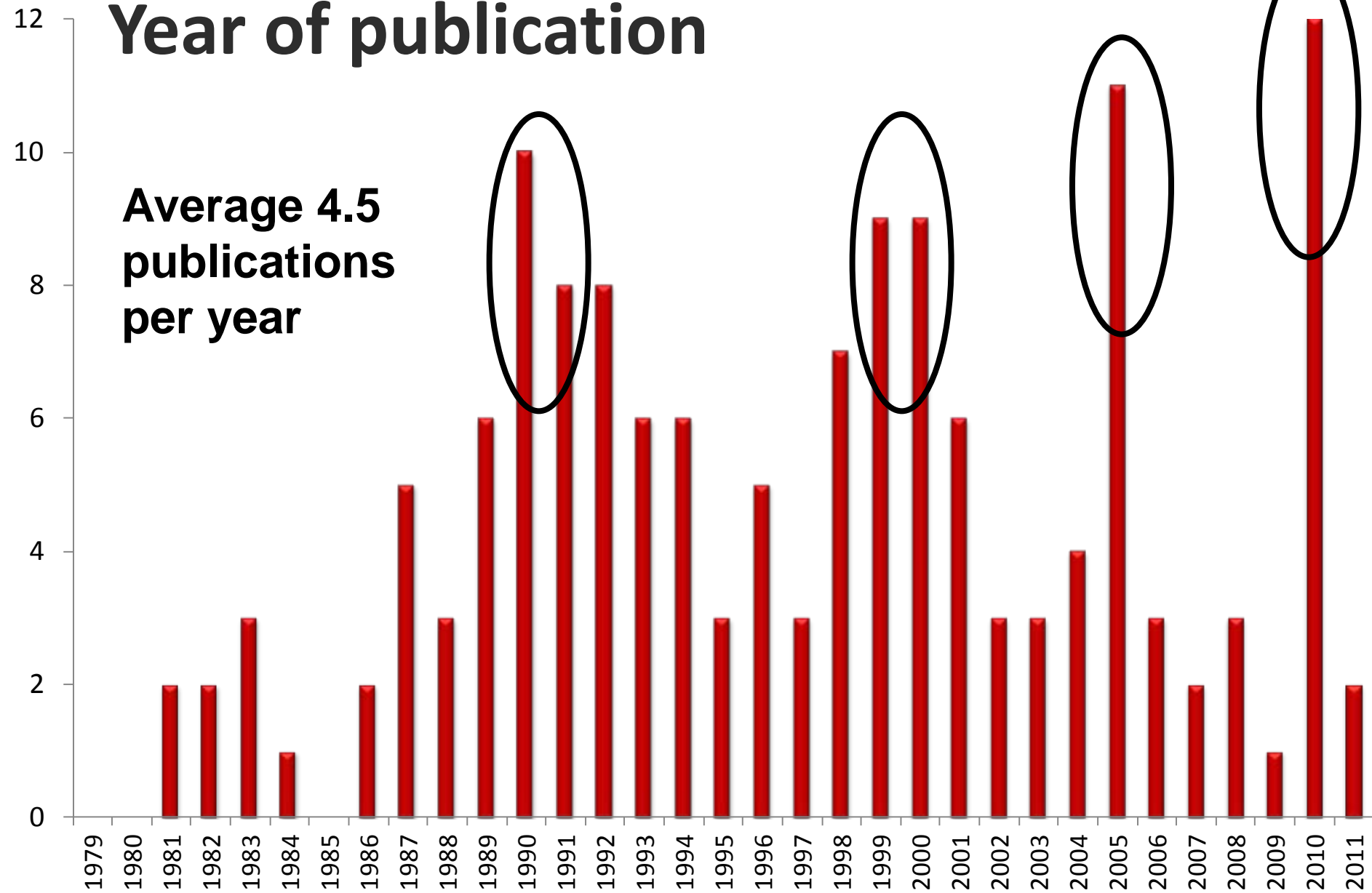
(A) Search for peer-reviewed published evidence



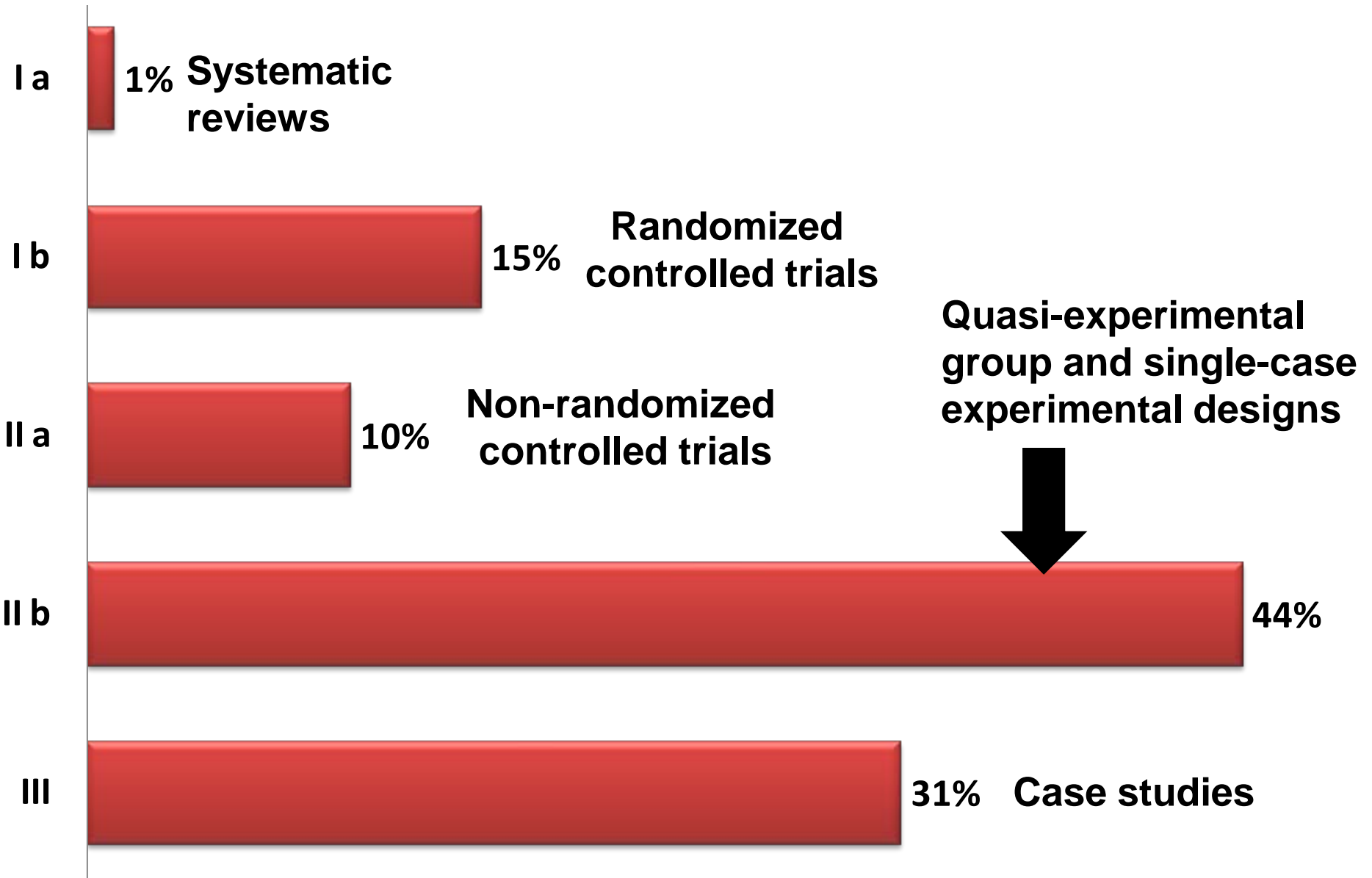
- Peer reviewed published intervention research
 - *Extended Baker & McLeod (2011)'s narrative review 134 studies*
 - *1979 to 2011*
- Search - multiple databases (*e.g., ERIC, Medline, CINAHL, Scopus, SpeechBITE, and ASHA's online journals + hand searches*)
- Search term examples
 - *phonological intervention / therapy / treatment*
 - *intervention for phonological or speech sound impairment / delay / disorder*
- **Identified 148 suitable publications**

Year of publication

**Average 4.5
publications
per year**

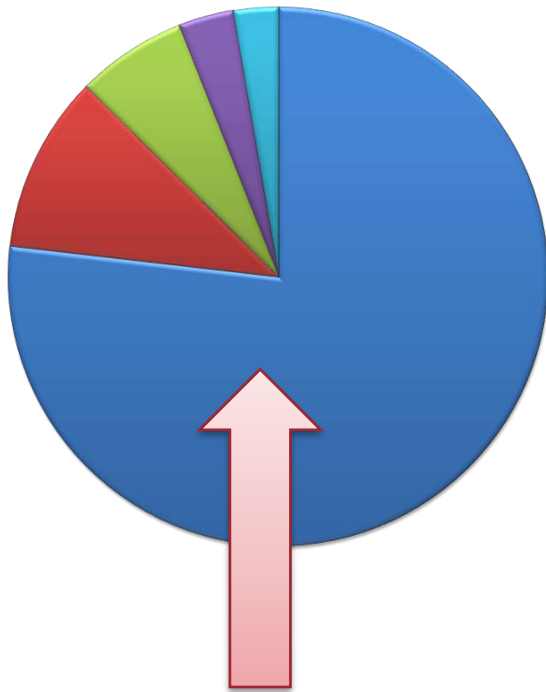


Levels of evidence (ASHA, 2004)



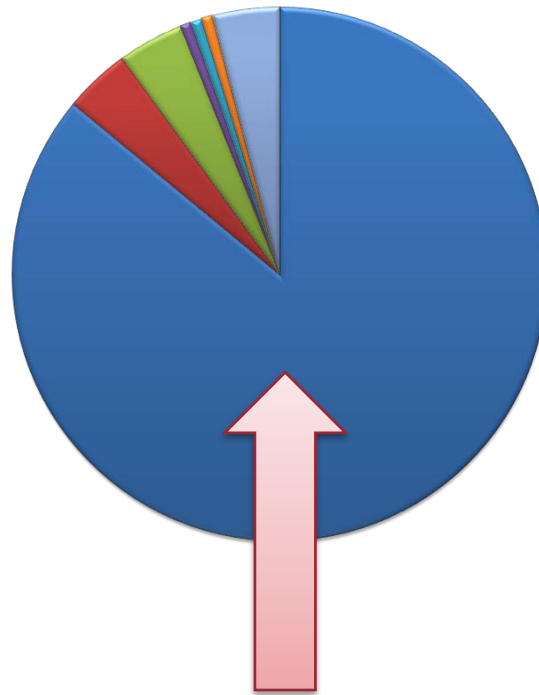
Service delivery

FORMAT?



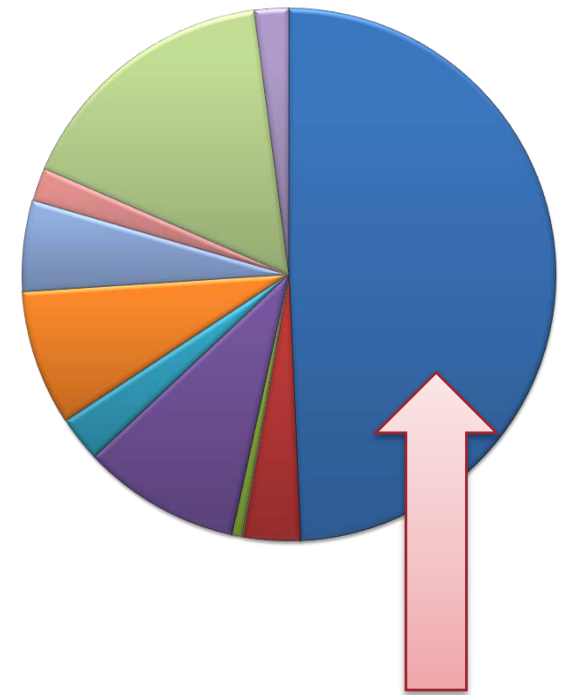
77%
individual

WHO?



86%
SLP

WHERE?



49%
university clinic

Intervention intensity across the literature

(Based on Warren, Fey and Yoder, 2007)

Dose form

Dose

Session duration

Dose frequency

**Total
intervention
duration**

**Cumulative
intervention
intensity**

1. Dose form

type of task or activity in which teaching episodes are delivered
(e.g., drill play)



- Difficult to quantify across studies
- Clear themes included:
 - **Clinician-directed drill play**, such as picture naming while playing an activity (*e.g., Cummings & Barlow, 2011*)
 - **Child-directed naturalistic play** (*e.g., Camarata, 1993*)
 - **Combination of clinician- and child-directed play** (*e.g., Tyler et al., 2011*)

1. Dose form



Client acts

Examples:

- Speech production trials
- Speech perception trials

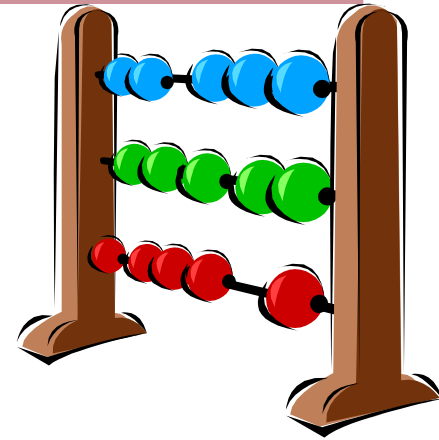
Clinician inputs

Examples:

- Conversational recast
- Auditory stimulation

2. Dose

*number of times an active ingredient or teaching episode containing a combination of active ingredients occurs per session
(e.g., 100 trials)*



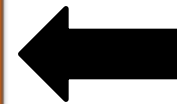
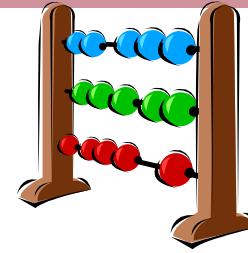
21% (30/146) of studies provided quantitative information about dose

40% (12/30) were associated with minimal pairs intervention

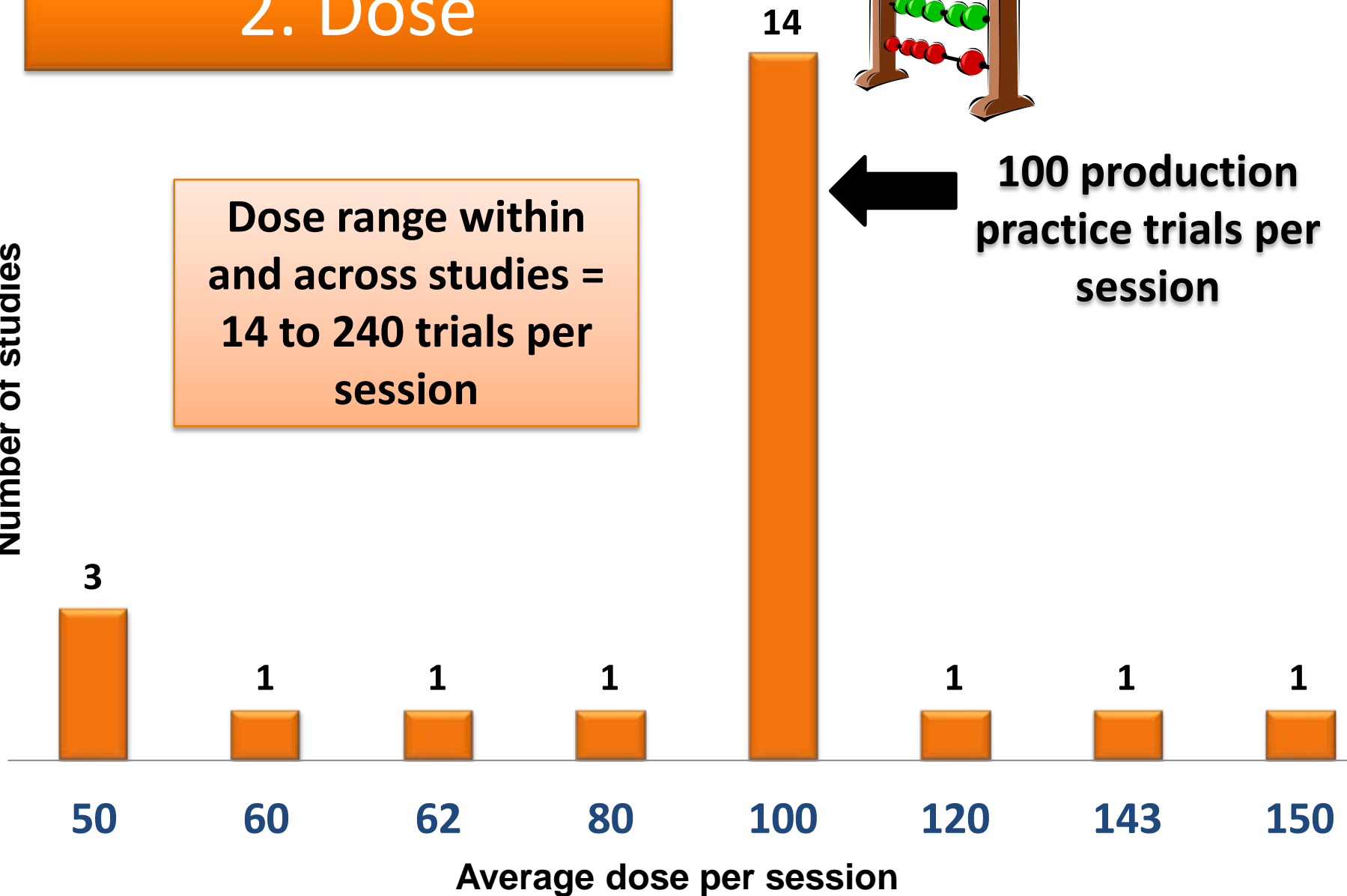
2. Dose

Number of studies

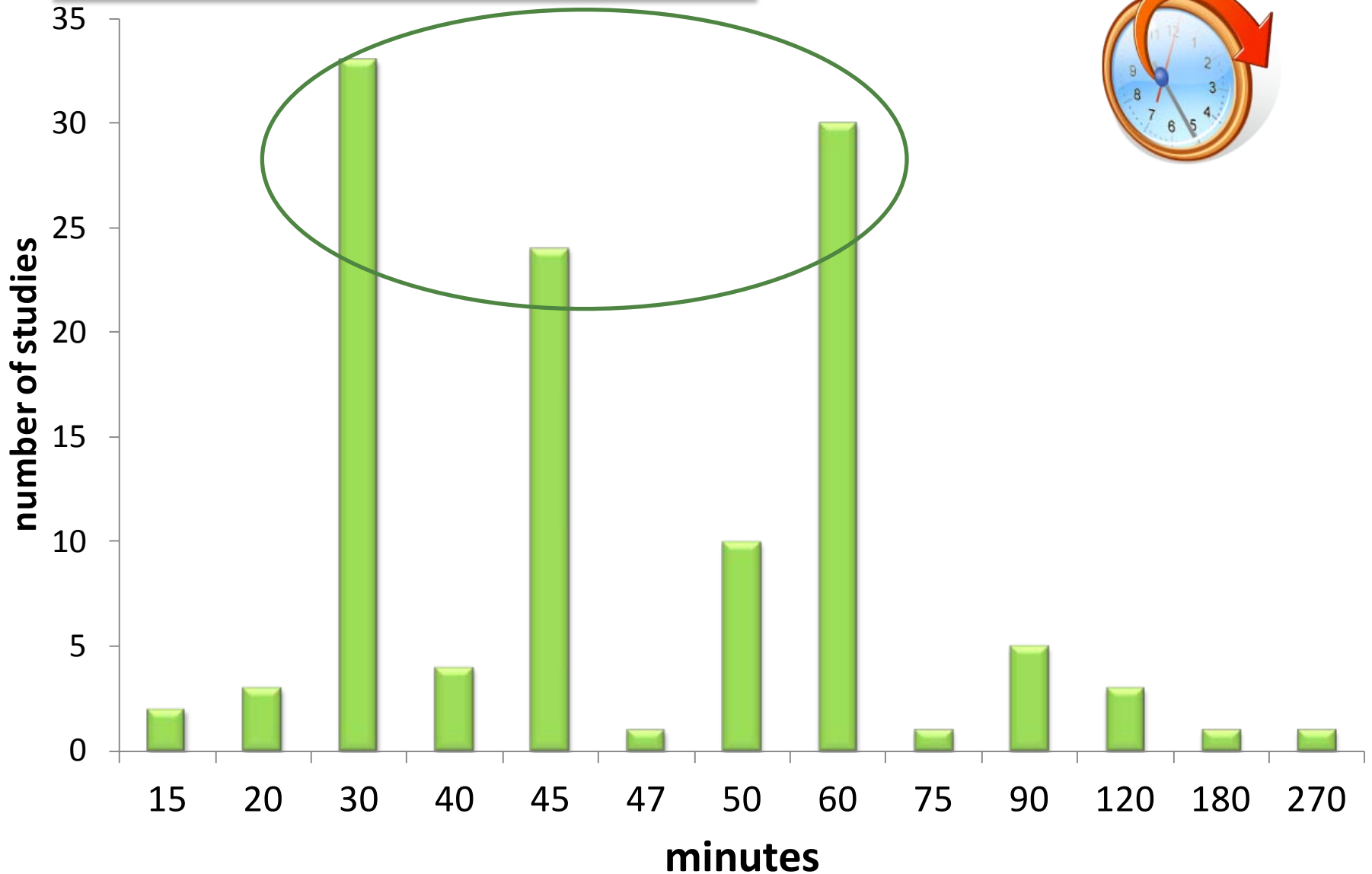
Dose range within
and across studies =
14 to 240 trials per
session



100 production
practice trials per
session



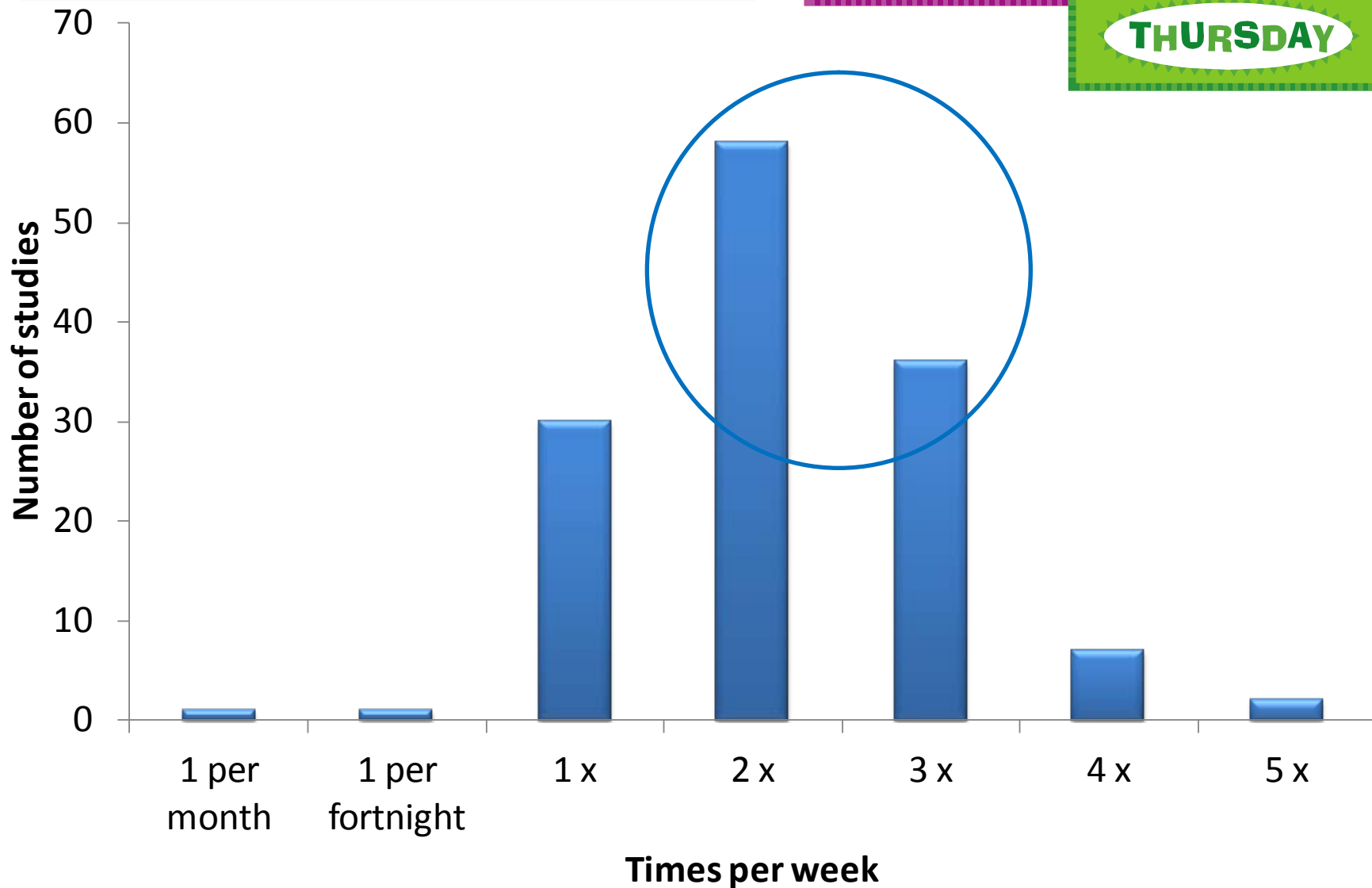
3. Session duration



4. Dose frequency

TUESDAY

THURSDAY



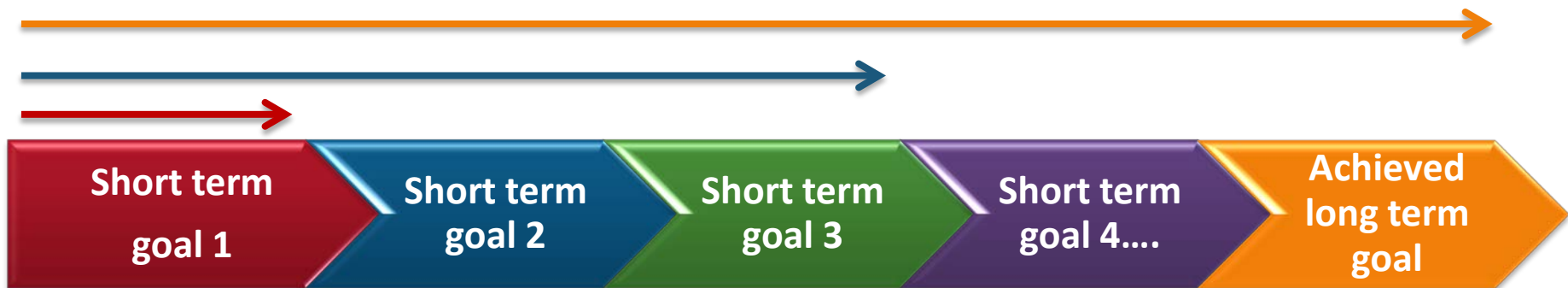
5. Total intervention duration

Total period of time in which intervention is provided
(e.g., 30 weeks)



Calculation of total intervention duration was complicated by:

- Continuous vs block schedules across research
- Restricted number of sessions vs open duration (e.g., until criterion, or until speech intelligible)



5. Total intervention duration



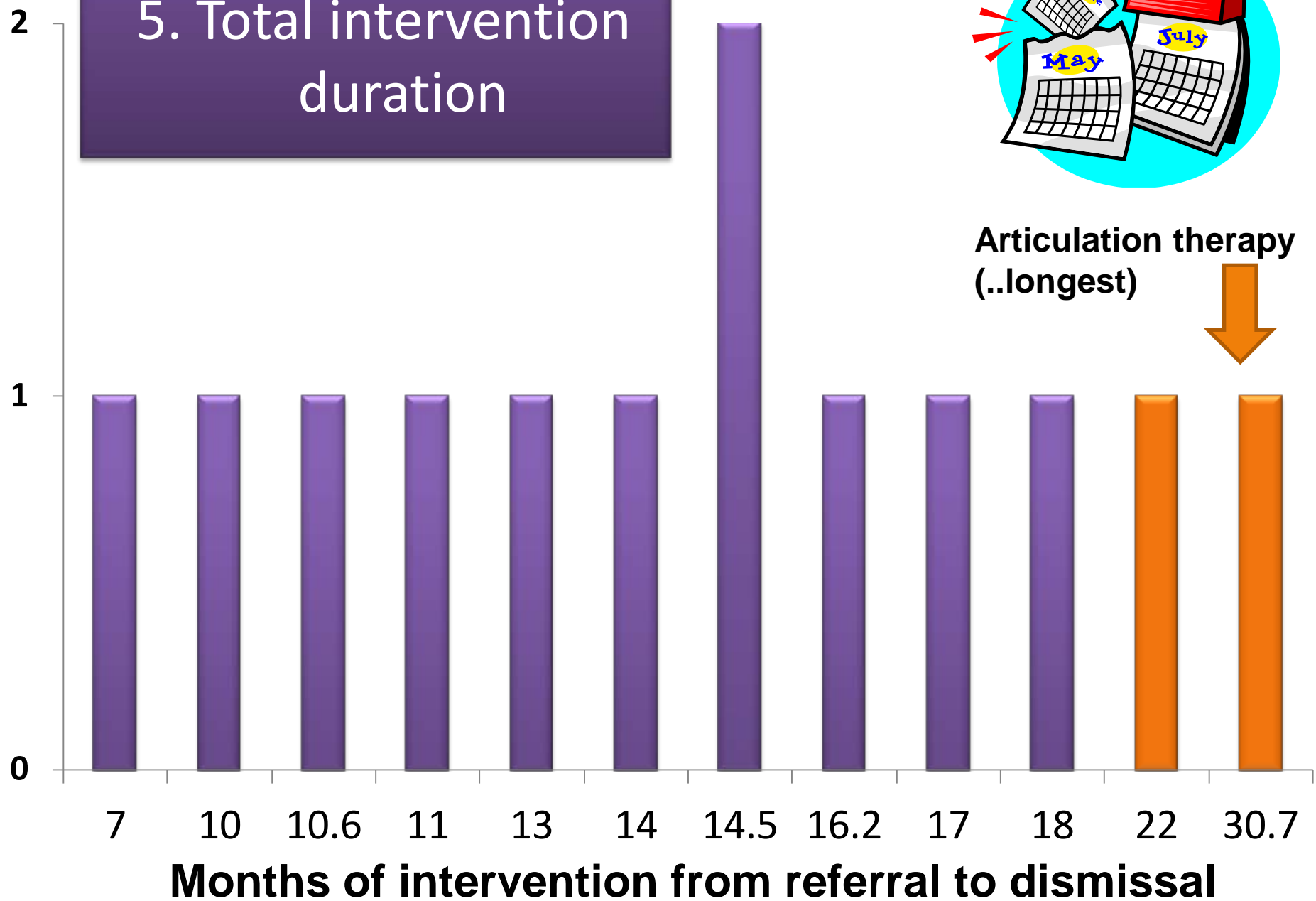
Overall

- Mean duration 17.5 weeks (*includes 'restricted' and open durations*)
- Range 1 – 184 weeks.

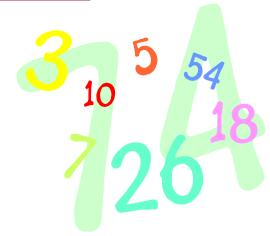
5. Total intervention duration



Articulation therapy
(..longest)



5. Cumulative intervention intensity



(e.g., 100 trials 3 x week for 30 weeks = 9000 trials over)

Only **7.5%** (11/146) of studies provided sufficient data for cumulative intervention intensity to be calculated

Across those studies:

- average minimum = 1,596.72
- average maximum = 2,135.81

No study reporting outcomes from referral to dismissal provided sufficient information to compute overall total cumulative intervention intensity

So, what do we know about intervention intensity across published peer-reviewed literature?

Dose form:
varies ??

Dose :
100 trials

Session duration:
30 - 60 minutes

Dose frequency:
2 - 3 x week

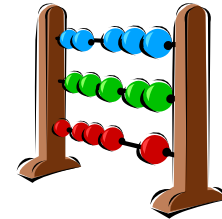
Total intervention duration:
7 - 18 mths

Cumulative intervention intensity ??

Limitations of current 'peer reviewed' knowledge base

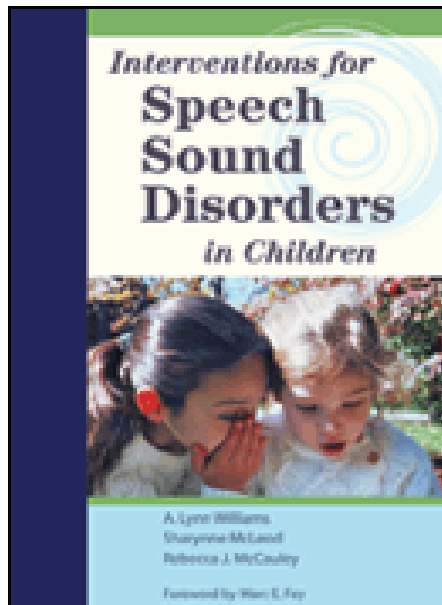
- Gaps in reporting aspects of intervention intensity, particularly:

- Dose
- Dose form
- Total intervention duration
- cumulative intervention intensity unknown



- We need to look to other sources of information

(B) Search of (non-peer reviewed) published evidence (e.g., textbooks)



Authors' recommended intervention intensity for specific approaches came from this textbook:

Williams, A. L., McLeod, S. & McCauley, R. J. (Eds.) (2010). *Interventions for speech sound disorders in children*. Baltimore, MD: Paul H. Brookes.

Interventions for phonologically-based SSD that report data on/or recommend- “How long?”

Limited phonetic inventory & large collapses of contrast

Multiple oppositions (Williams, 2010)

Limited phonetic inventory & structural phonological difficulties

Cycles (Hodson, 2007); **PACT therapy** (Bowen, 2009)

Inconsistent speech sound disorder

Core vocabulary therapy (Dodd et al., 2010)

Toddler, with limited inventory and limited stimulability

Stimulability approach (Miccio & Williams, 2010)

Multiple oppositions (Williams, 2010)

Dose Form	Dose	Session Duration	Dose Frequency	Total Intervention Duration	Cumulative Intervention Intensity
Focused stimulation (drill play)	100 trials	30-45 min individual	2x/week	21 sessions (3 months)	2400

HOW LONG?

Williams (2000) 10 case studies from referral to dismissal: 25 to 105 sessions (mean = 60 sessions) over 14 months

Cycles (Prezas & Hodson, 2010; Hodson, 2007)

Dose Form	Dose	Session Duration	Dose Freq	Total Intervention Duration	Cumulative Intervention Intensity
Experiential -play (drill play)	Time-based (60 min for each target phoneme or cluster within a pattern of a cycle)	60 min individual	1x/week	2-6 hours/cycle <i>(varies according to number of patterns to be addressed)</i>	Cycles are time-based, therefore, each phoneme receives 1-6 hours of intervention/cycle

HOW LONG? Hodson and Paden (1991) case studies in text:

- (1) Annie – 3 cycles, equivalent to 35 sessions (44 hours) over 15 months
- (2) Brad – 2 cycles, equivalent to 30 hours over a 9-month period

PACT (Parents and Children Together)

(Bowen, 2009; 2010)

Dose Form	Dose	Session Duration	Dose Frequency	Total Intervention Duration	Cumulative Intervention Intensity
Focused stimulation (drill play)	NR	50 minute individual	Blocks and breaks (10 weeks each)	2-3 blocks of intervention (30-40 weeks) 21 sessions	unknown

HOW LONG? Bowen & Cupples (1999) 22 cases involved in non-RCT from referral to dismissal: 21 sessions (equivalent to approximately 17.5 hours) over 10.6 months (range 3 – 19 months)

Core Vocabulary (Dodd, Holm, Crosbie, & McIntosh, 2010)

Dose Form	Dose	Session Duration	Dose Frequency	Total Intervention Duration	Cumulative Intervention Intensity
drill	100-170	30 individual	2x/week	16 sessions (8 weeks)	1600-2720

HOW LONG? Only used to address speech inconsistency – up to 8 weeks (16 sessions).

Stimulability Approach *(Miccio & Williams, 2010)*

Dose Form	Dose	Session Duration	Dose Frequency	Total Intervention Duration	Cumulative Intervention Intensity
Play-based (drill-play)	50-60 responses	45-50 minutes individual	2x/week	12 sessions	1200-1440

HOW LONG? Only used to address limited speech sound stimulability— up to 6 weeks (12 sessions).

Seminar Outline

- ✓ What is intervention intensity?
- ✓ What do we know about the intensity of intervention for SSD in children?
- **How might SLPs use the evidence on intervention intensity in their everyday management of SSD in children?**

How many trials do I aim for in a session?

What dose forms do I use?

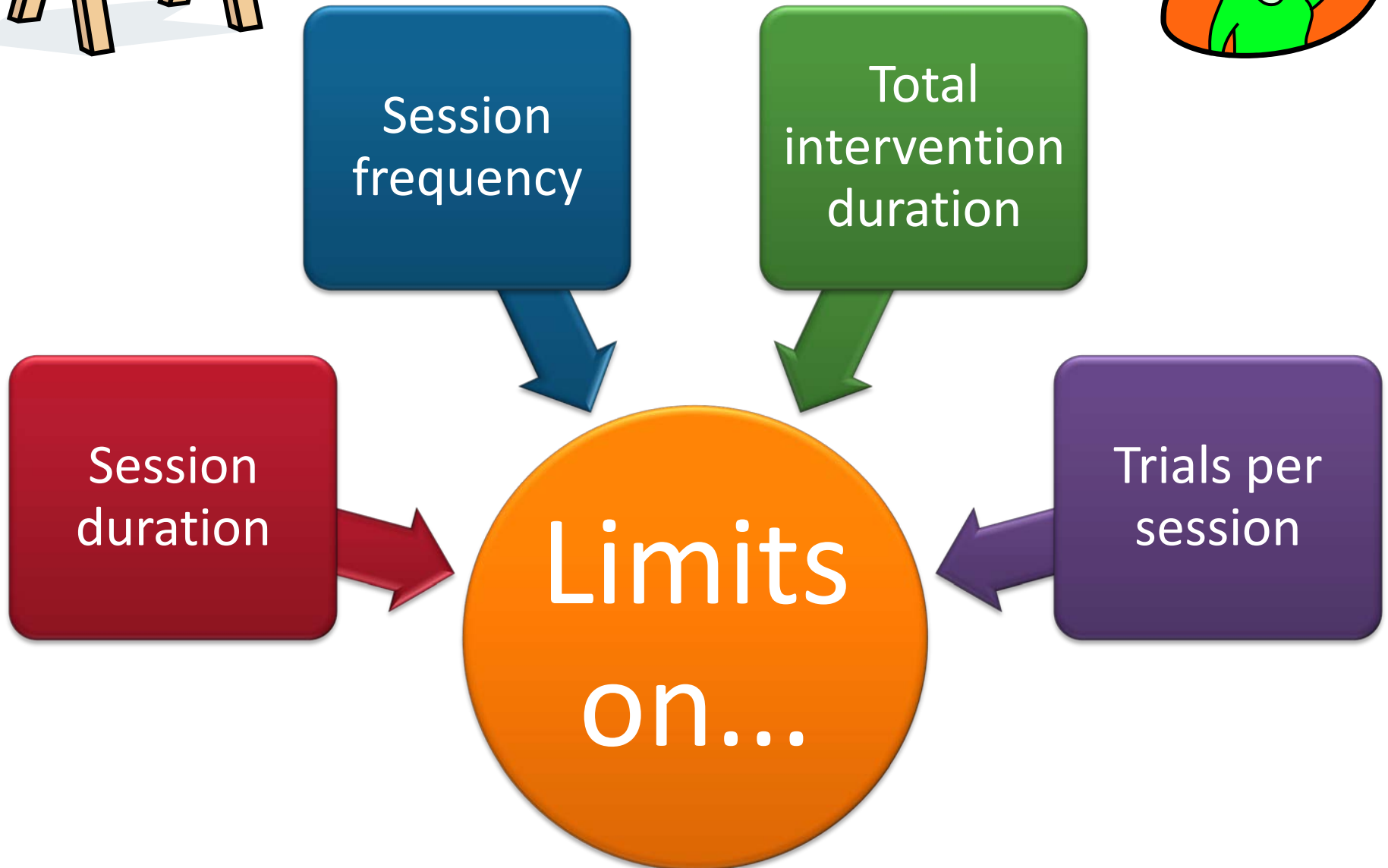
How long does it take in time to treat SSD?

How does the literature on intervention intensity compare to what I do in clinical practice?

How many sessions does it take to target a particular goal?

**What is my typical session duration and frequency?
Why?**

Barriers and Solutions



Barriers and Solutions



Re-consider
intervention
approach

Enlist the
help of child's
significant
others

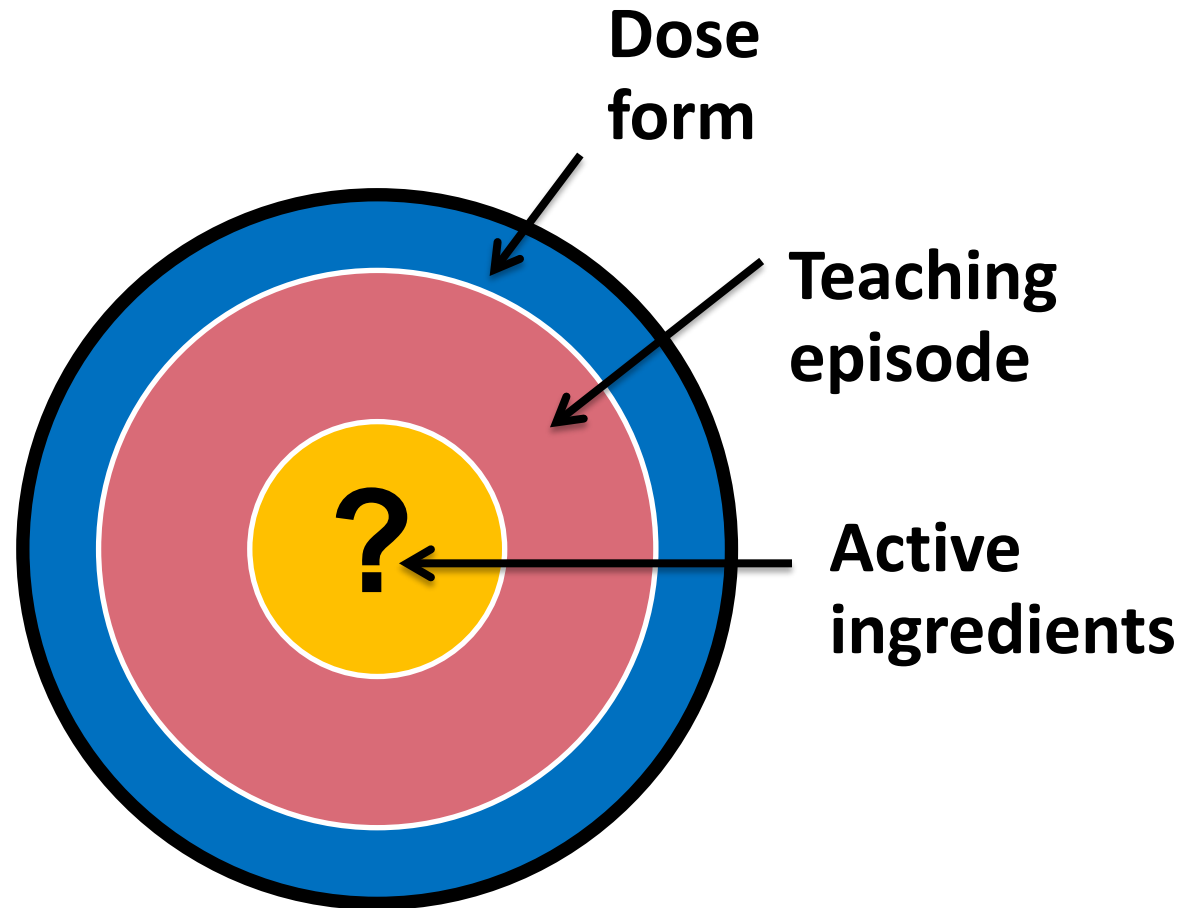
Re-consider
approach to
target
selection

Modify dose
form to
increase dose
per session

Possible
solutions

Future research needs

(1) We need to better understand the **active ingredients** of intervention, that occur during **teaching episodes**, that are provided within **dose forms**



Future research needs

(2) **Published intervention research** needs to more routinely **report intensity variables** - particularly dose, and describe how it was achieved in a session.

(3) **Experimental research manipulating different components of intervention intensity**, to answer question such as:

- *Is it better to provide 3 x week over 6 weeks OR 1 x week over 24 weeks?*
- *What is an optimal dose per session for a specific intervention approach?*

Too little
intervention

Too much
intervention



Seminar Outline

- ✓ What is intervention intensity?
- ✓ What do we know about the intensity of intervention for SSD in children?
- ✓ How SLPs might use the evidence on intervention intensity in their everyday management of SSD in children

Intervention intensity for Speech Sound Disorders: How much and for how long? QUESTIONS AND DISCUSSION

Elise Baker, PhD

The University of Sydney, Australia

A. Lynn Williams, PhD

East Tennessee State University