



That Was Intense!

Understanding and Adjusting
Intervention Intensity for
Students with Disabilities

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Agenda

- Traditional approximation of intervention intensity
- Distinctions and relationships between intervention fidelity and intervention intensity
- Intervention intensity explained
- Practical issues related to intensity
- Process of adjusting intervention intensity

Early *Intensive* Behavior Intervention for Children with ASD



Early

Usually children ages five years or less



Intensive

20-40 hours per week

Delivered in 1:1 teacher-student ratio



Behavioral

Discrete trials

- Clearly articulated antecedents
- Operationally defined responses
- Reinforcing contingencies



Intervention

Evidence-based practices & procedures that improve various outcomes

Procedural Fidelity

Substantial attention has been given to procedural fidelity over the past 30 years

- Researchers must report procedures used and evidence they were applied consistently
- Professionals must monitor their service delivery to ensure interventions are
 - Applied in ways consistent with the literature (e.g., Picture Exchange Communication System)
 - Consistently followed across people (paraprofessionals, professionals, parents)
 - Consistently applied across environments

The emphasis on procedures is not new to special education professionals

- But the adherence to this standard has given rise to specific EBPs (e.g., video modeling) as well as manualized curricula/programs (e.g., First Step to Success)

Expecting the Unexpected

When students do not respond as expected, professionals might evaluate procedural fidelity

- If low/poor, work to increase and monitor responding
- If high/good, consider social validity of intervention
- If low/poor, consider using a different intervention

Professionals may overlook whether the intervention was applied with sufficient intensity

- “Did we provide ***enough*** intervention with high fidelity?”

Intervention Intensity Defined



The amount of improvement
observed per unit of treatment



Fundamentally about the dose-
response relationship

Dimensions of Intervention Intensity

Warren, Fey, & Yoder, 2007

Pharmacological Intervention for Bacterial Infection

- **Treatment Dose**
 - The amount of a chemical
 - 5 milligrams
- **Dose Frequency**
 - Number of times the dose must be administered per unit of time
 - every 12 hours
- **Dose Duration**
 - Length of time the dose must be administered
 - Three weeks
- **Cumulative Dose**
 - 5mg, twice daily, for two weeks = $5 \times 2 \times 21$
 - 210 mg needed to treat the infection



Behavioral Intervention to Improve Manding

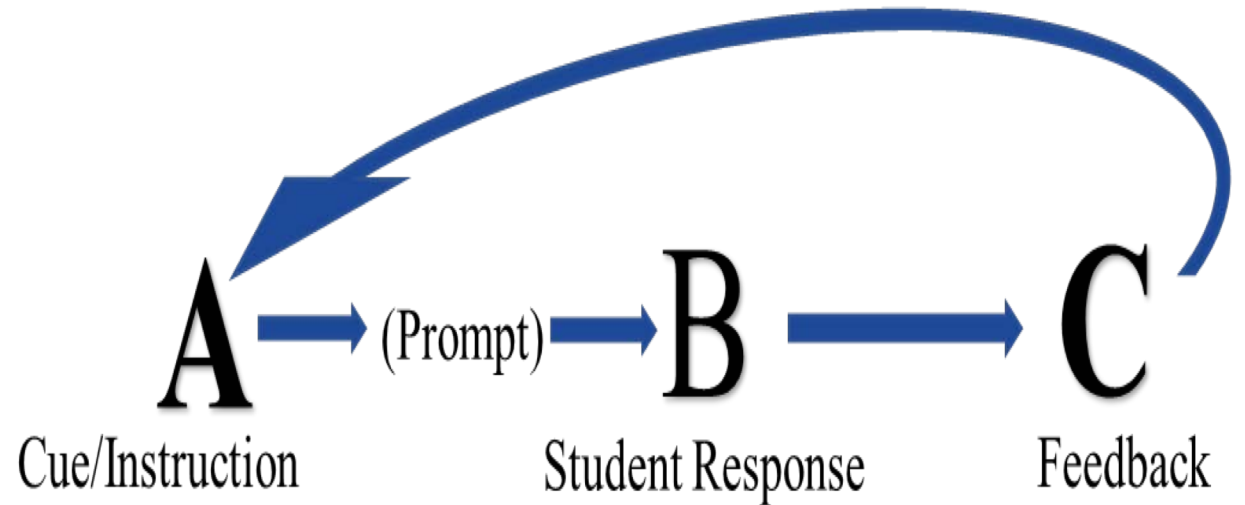
- **Intervention Dose**
 - The number of opportunities to respond per session
 - 100 OTRs
- **Intervention Dose Frequency**
 - Number of sessions per day/week
 - Five sessions per week
- **Intervention Dose Duration**
 - Number of weeks or months
 - Six months
- **Intervention Cumulative Dose**
 - 100 OTR per session, 5 sessions per week, 24 weeks
 - $100 \times 5 \times 24 = 12,000$ OTRs total needed to produce the effect

Opportunity to Respond

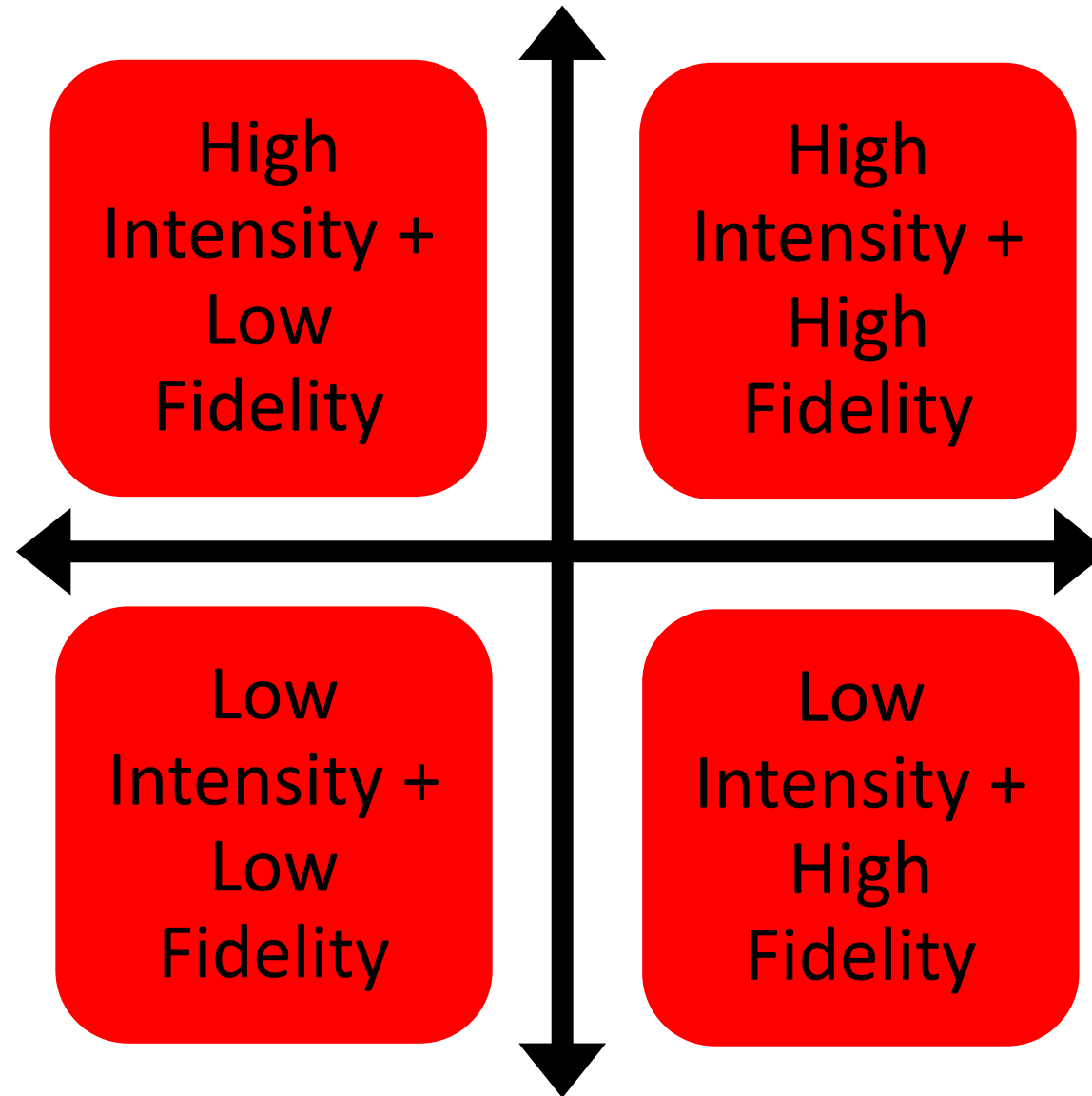
Single Dose of Medicine



Single Dose of Instruction

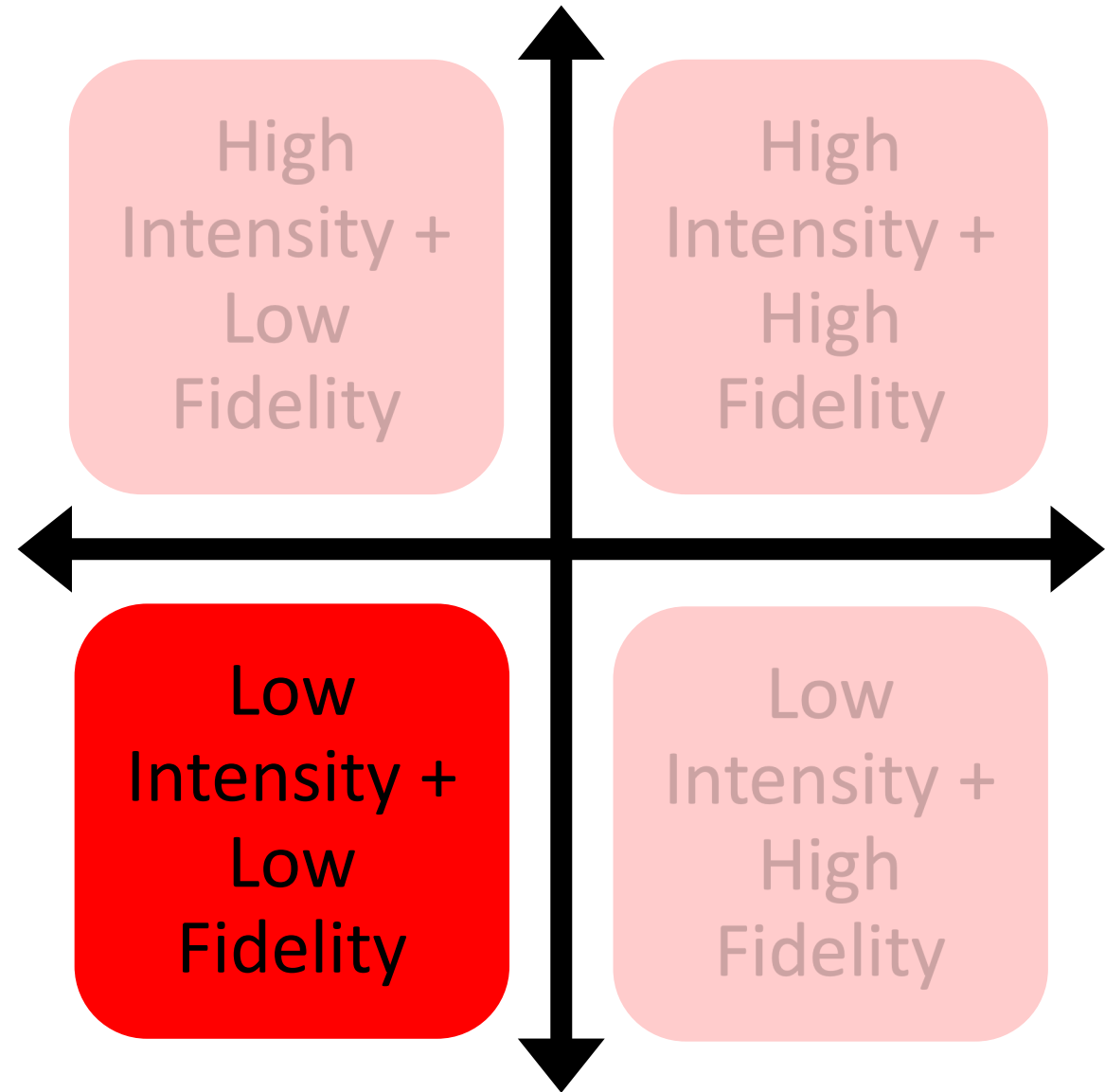


Relationship between Fidelity, Intensity & Effects



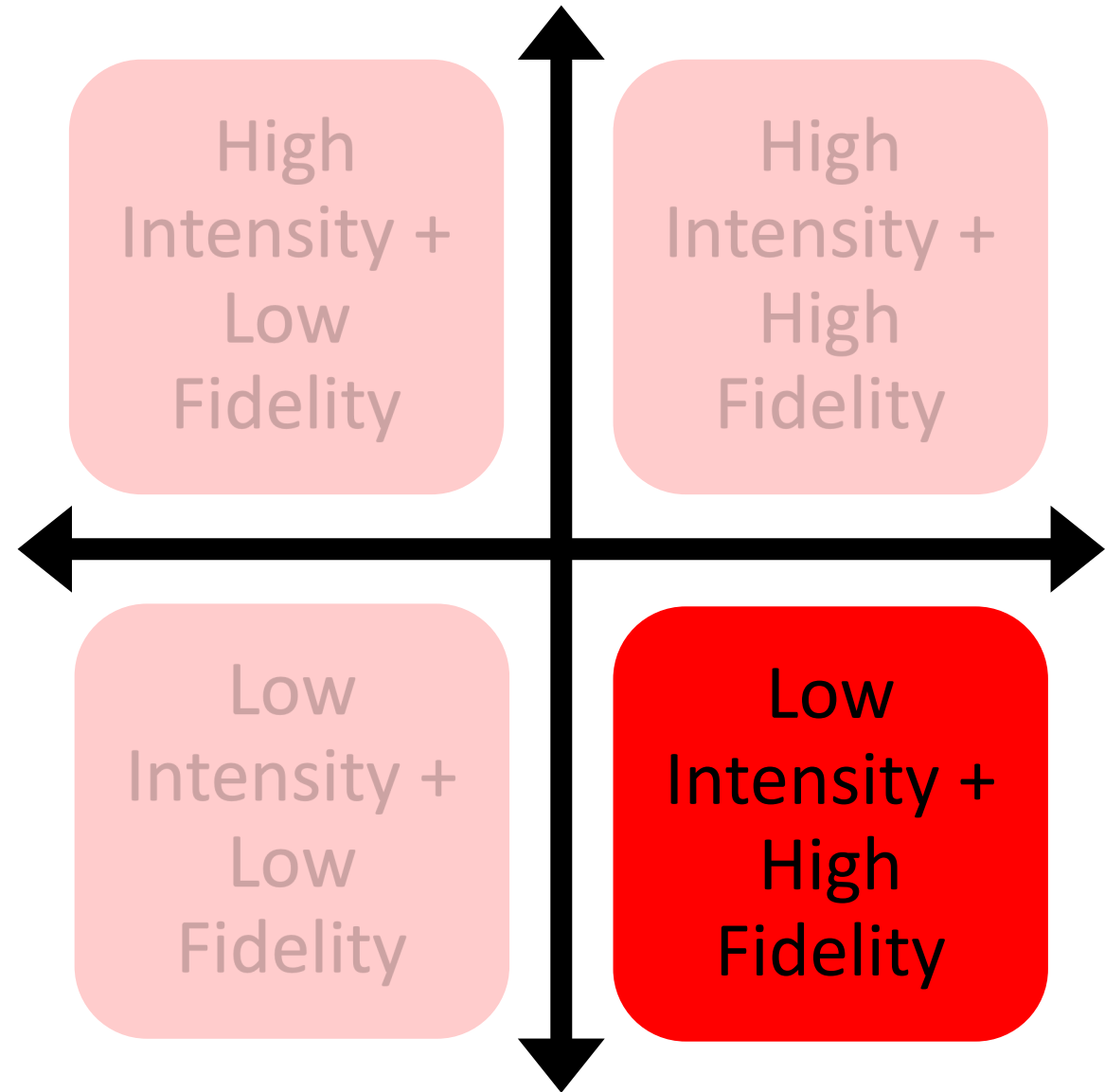
Relationship between Fidelity, Intensity & Effects

**Low Intensity
+ Low Fidelity
= Poor Effects**



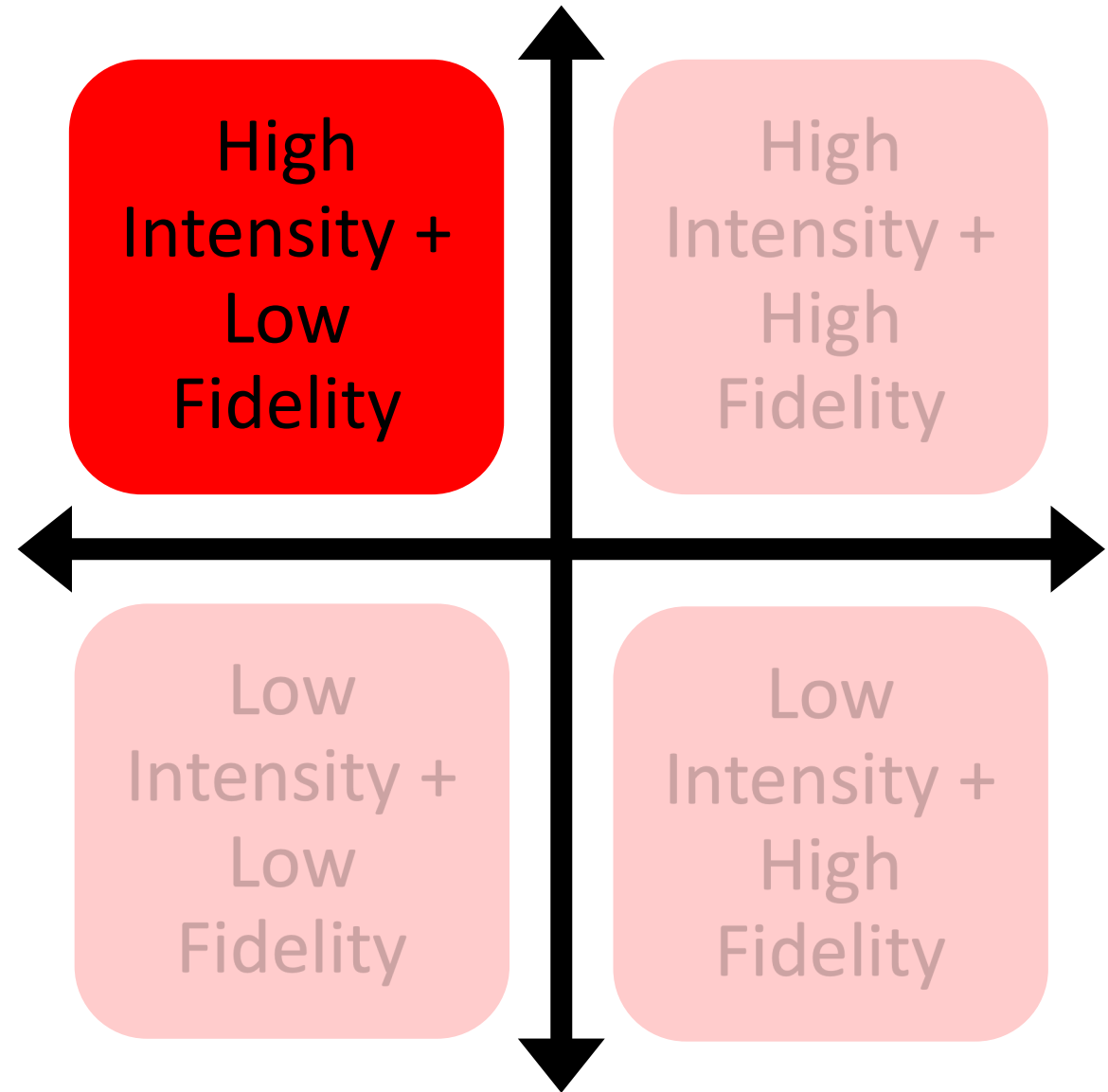
Relationship between Fidelity, Intensity & Effects

**Low Intensity +
High Fidelity =
Better Outcomes?**



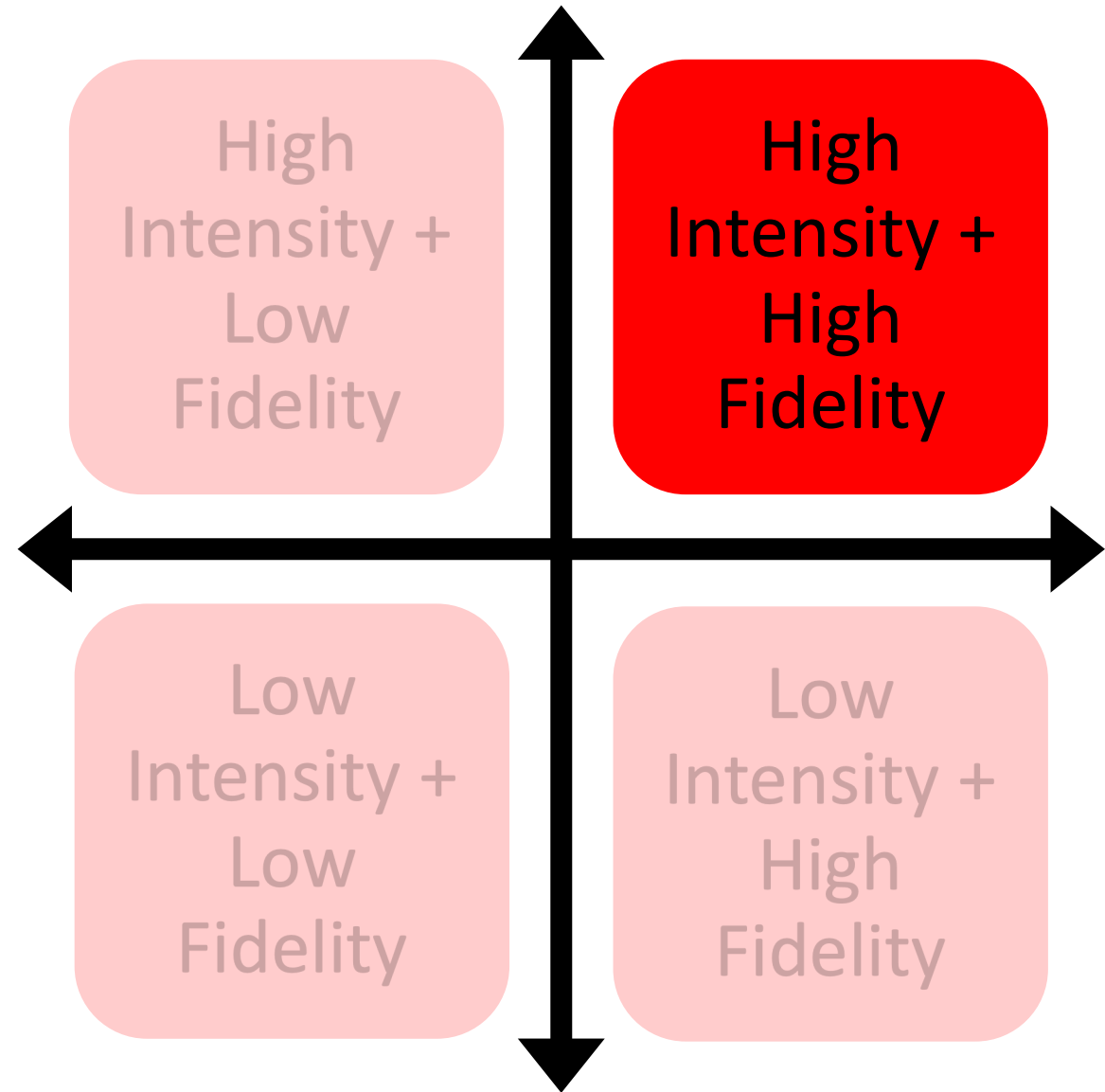
Relationship between Fidelity, Intensity & Effects

**High Intensity +
Low Fidelity =
Better
Outcomes?**



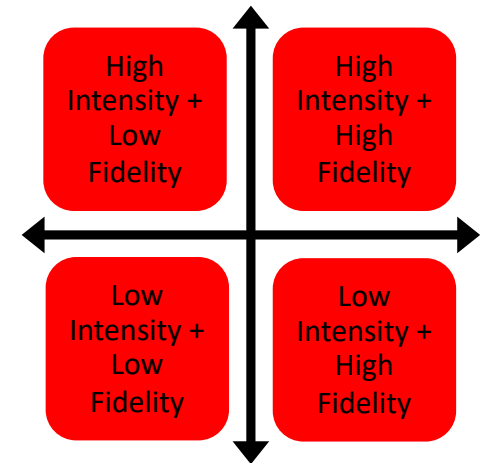
Relationship between Fidelity, Intensity & Effects

**High Intensity +
High Fidelity =
Best Outcomes**



Practical Issues Related to Intensity (Yoder et al., 2015)

- EBPs delivered with high fidelity but insufficient intensity may result in:
 - Lost resources and delayed progress
 - Teachers/schools invest time, effort, and resources on intervention
 - Expensive training, materials, equipment, TIME is wasted
 - Augmenting or substituting the intervention
 - Increased intervention complexity will may undermine fidelity
 - May require additional costly training, resources
 - Abandonment of the intervention
 - “Non-responder”; treatment too costly and ineffective; resistant (conditioned aversives)
- Professional burnout
 - Limited/no progress is not reinforcing– professionals may leave the field (Zee & Koomen, 2016)



Barriers

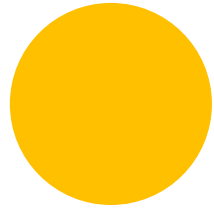
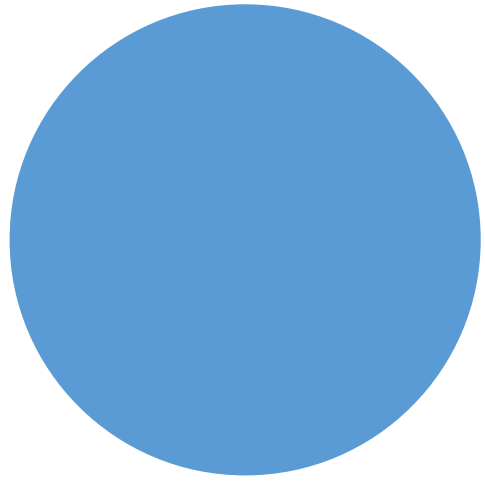


- Ideally, research would make clear all relevant details about intervention intensity
 - Dose, dose frequency, dose duration
 - Cumulative intensity
 - Such info would support various professional decisions including
 - Dose: How many OTRs may be necessary each session?
 - Dose frequency: How many sessions with __OTRs per week/month are needed?
 - Dose Duration: How many weeks or months of intervention will be required?
 - Cumulative intensity: How much resources will be needed to realistically expect the beneficial effect?



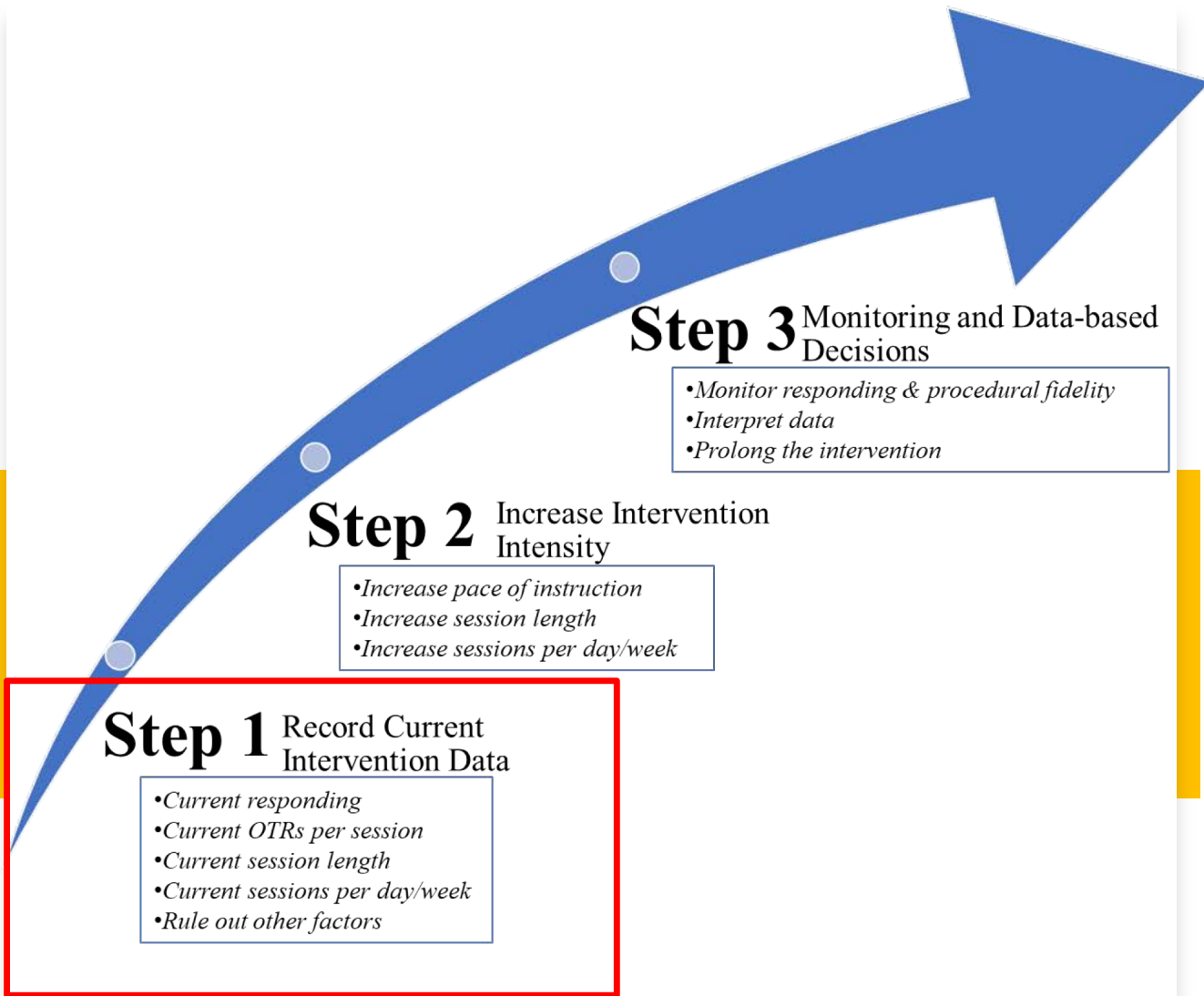
Unfortunately...

We don't have much evidence about intervention intensity for current evidence-based practices



Adjusting Intervention Intensity

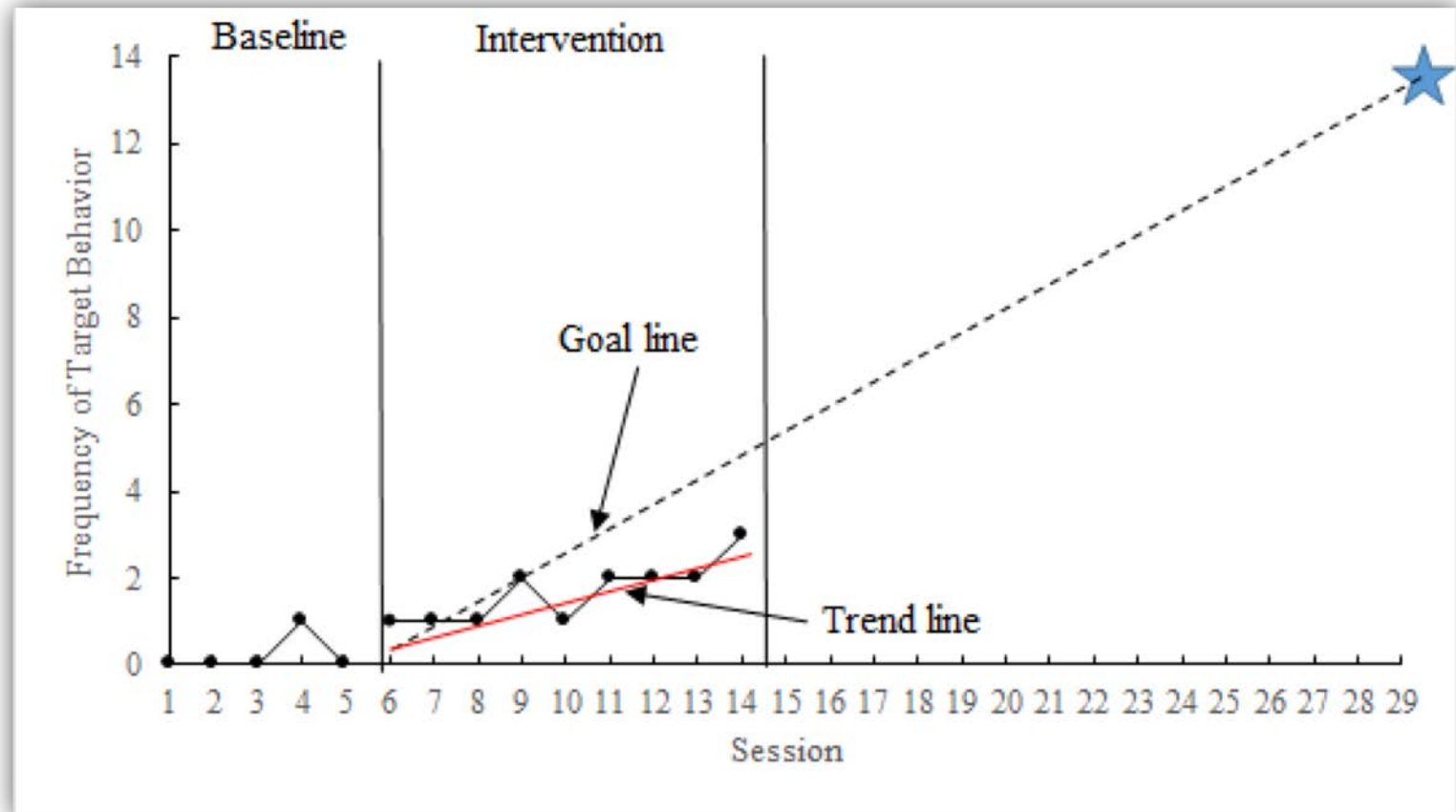


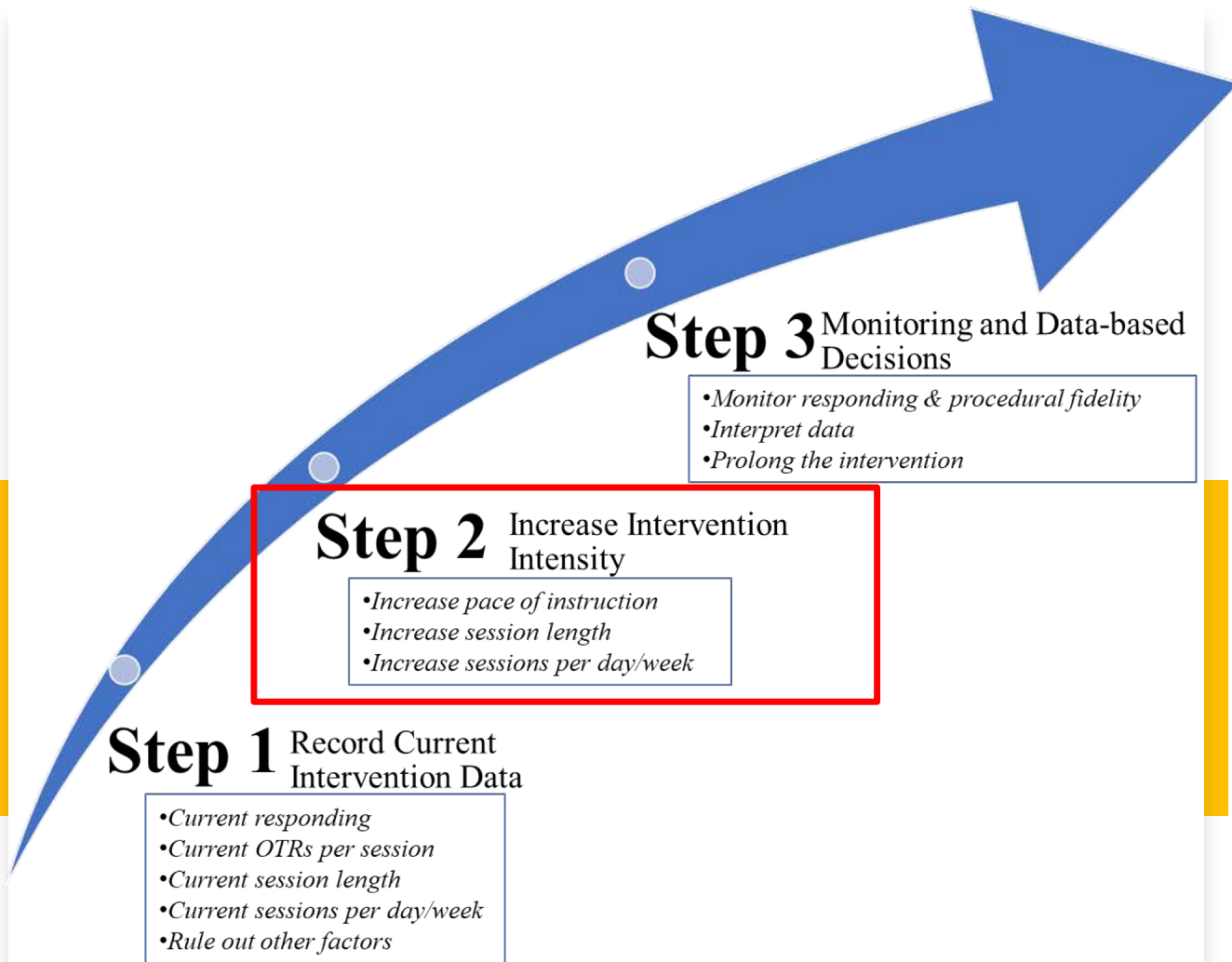


Process for Adjusting Intervention Intensity

Step One: Evaluate Responding and Determine Current Intensity

- Evaluate Performance
 - Graphed data with current trend line and goal line
 - Examine fidelity data
- Determine if other factors are interfering with responding
 - Severe behavior, frequent absences
- If high fidelity and poor responding, consider altering intensity
 - Before abandoning or supplementing the intervention
- Determine Current Intensity
 - number of OTRs per session
 - session length
 - number of sessions per week
 - date the intervention began





Process for Adjusting Intervention Intensity

Three Ways to Increase Intervention Intensity



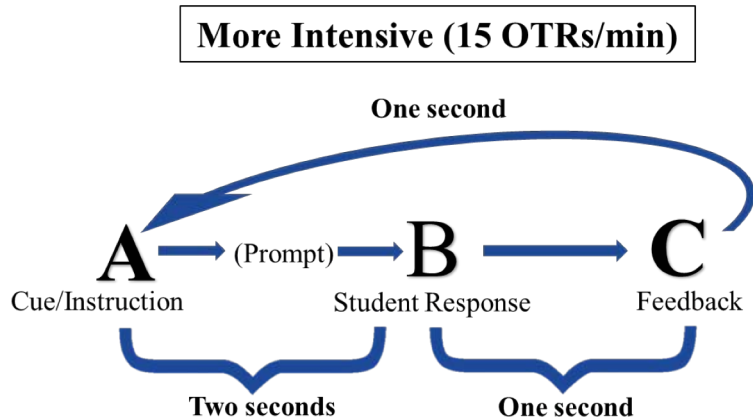
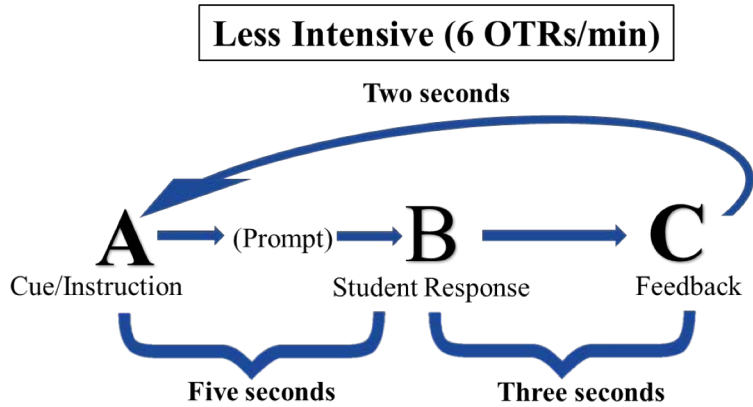
Increase instructional pace



Increase session length



Increase number of sessions per day or week



Increase Instructional Pace

- Make adjustments to rate of
 - Delivery of antecedents (S^d),
 - Prompting
 - Reinforcing or corrective feedback
 - Inter-trial intervals

Adjust Session Length

- Lengthening treatment sessions will lead to more OTRs
 - From 30 min to 60 min; doubled total OTRs
 - Focus is on measured increase of OTRs, not arbitrary increase in duration of service!
 - “10 hours per week” is less informative than “___ OTRs per day/week.”
- Considerations
 - If dispersal of OTRs affects responding, increasing session length may not be effective
 - Rate of OTRs may be more relevant for some interventions and behaviors than total OTRs
 - Consider massed trials/practice vs. distributed (i.e., embedded, naturalistic) instruction
 - Math fact recall vs. greeting peers, for example
 - Increasing session length may also increase costs, introduce logistical problems

Increase Number of Sessions Per Day or Week

- Adding sessions may be best when
 - Instructional pace cannot be increased
 - Sessions cannot be feasibly lengthened
- Focus should be on increasing OTRs!
 - Measuring OTRs, not number of hours
 - Simply adding hours may not necessarily increase OTRs in ways that improve student responding
- Goal is to maximize impact of intervention by delivering OTRs in effective ways
 - Responding may vary, so standard decisions about treatment may be affected
 - Some children will need more OTRs than others

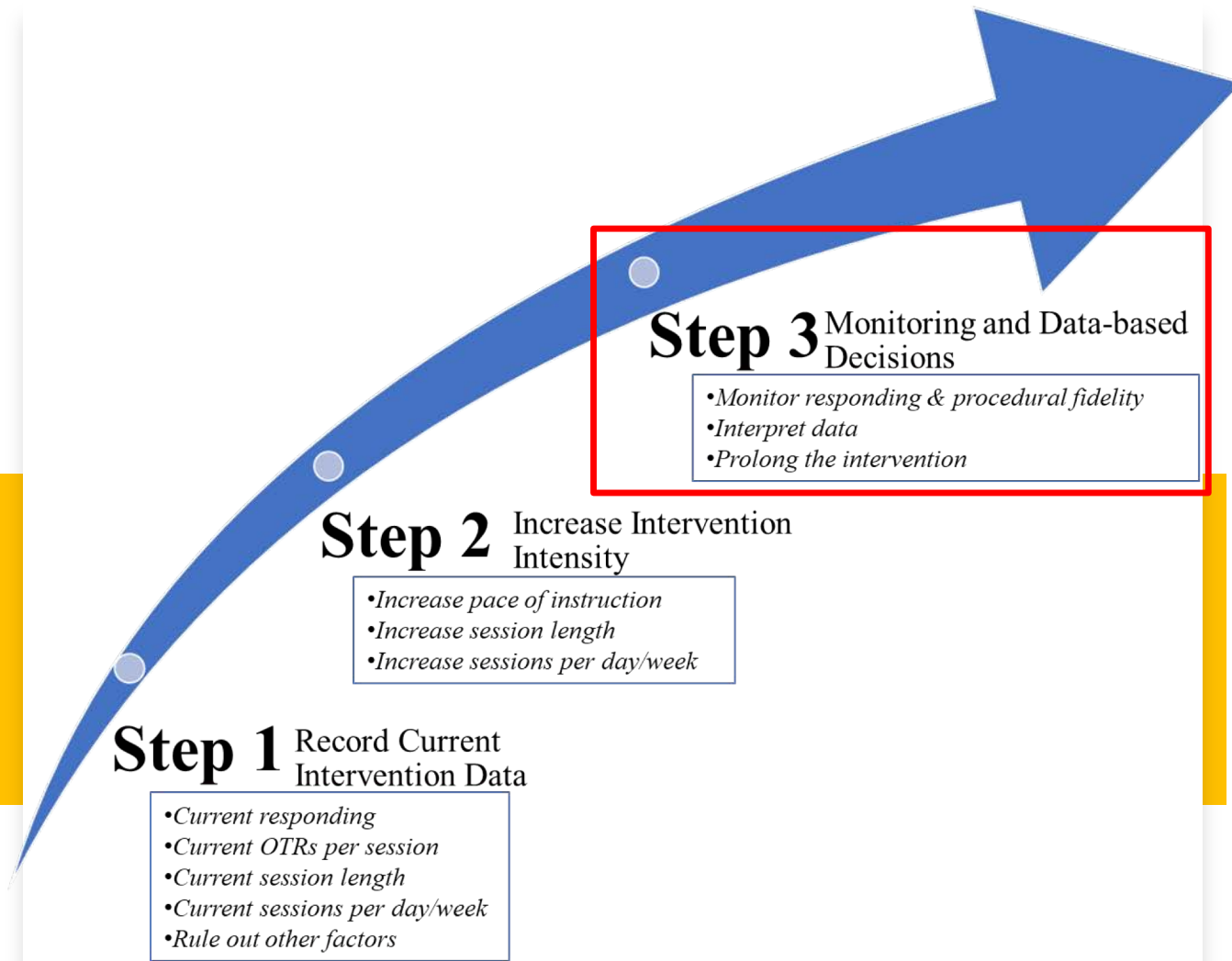
Combining Increases in Intensity

- Adjust instructional pace
 - Rate of instruction might only be slightly increased for a student
- Adjust session length
 - Adjust sessions from 15 min to 20 min; from 30 min to 45 min
- Adjust session frequency
 - Increase from 3 sessions per week to five; from five to eight, etc.
- Consideration
 - May not be feasible
 - May not be possible for some skills
 - E.g., meal preparation = once per school day

Strategic Approaches

- Consider maximizing intensity
 - To more quickly determine whether a different EBP should be used
 - Example: “Should we stop check-in/check out and use FBI instead?”
- Combine changes to increase intensity in the most feasible way
 - Increase pace of instruction to improve OTRs by 20% and/or
 - Add 15 minutes to each existing session and/or
 - Include 2-4 more sessions per month

Process for Adjusting Intervention Intensity



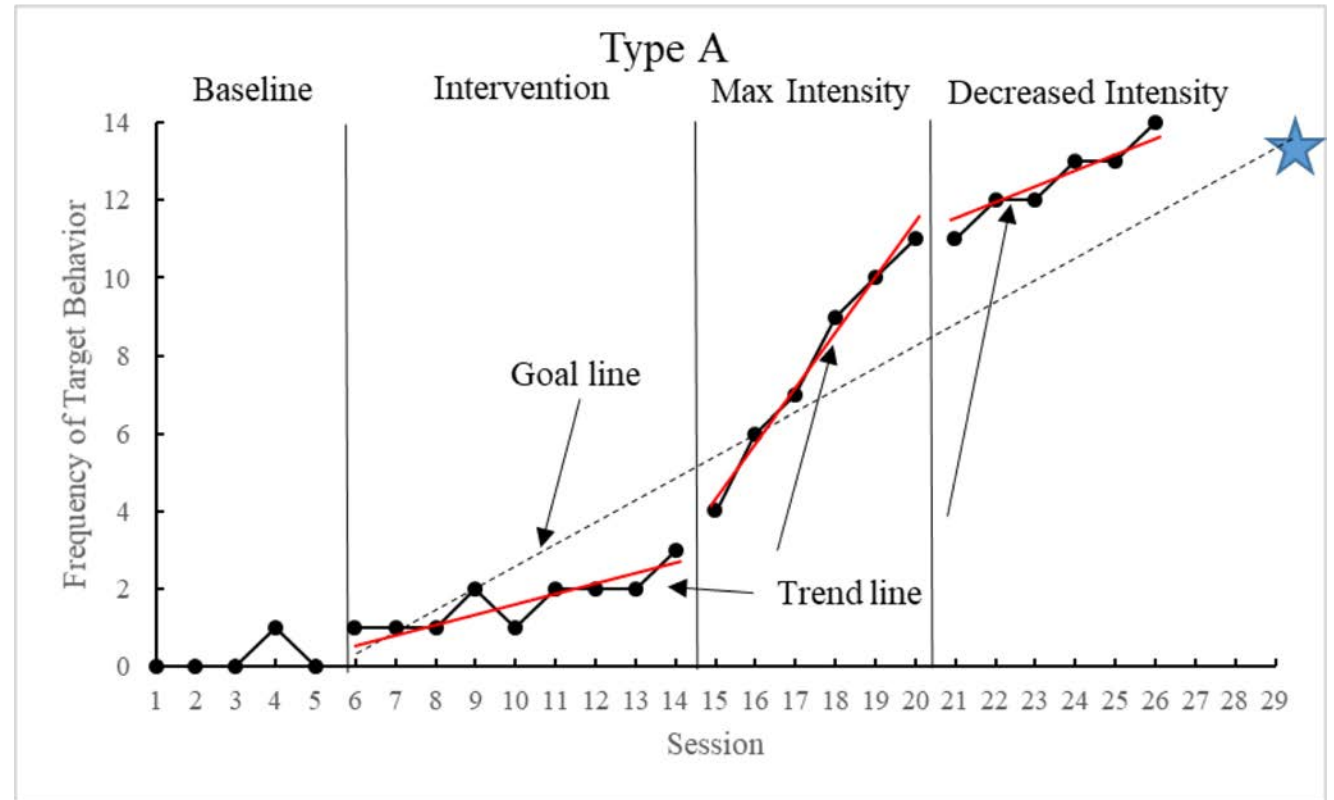
Monitor Responding and Procedural Fidelity

- Continue collecting and graphing data
- Continue monitoring procedural fidelity
 - Make sure the intensity is actually intensified
- Monitor emergence of interfering factors

Data-based Decisions

Type A

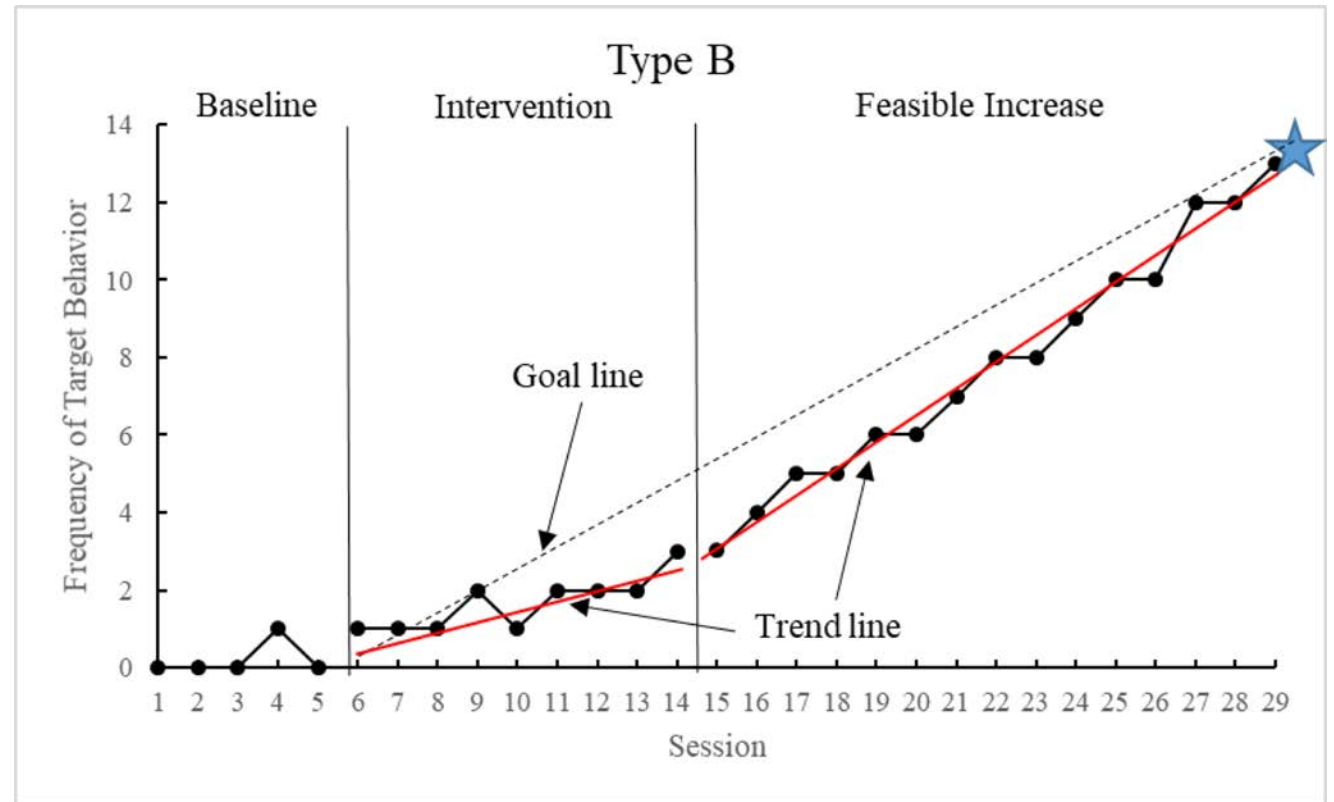
- Immediate increase
 - Steep trend
 - Intercept with goal line
- Continue with current intensity or reduce intensity to better approximate the goal line



Data-based Decisions

Type B

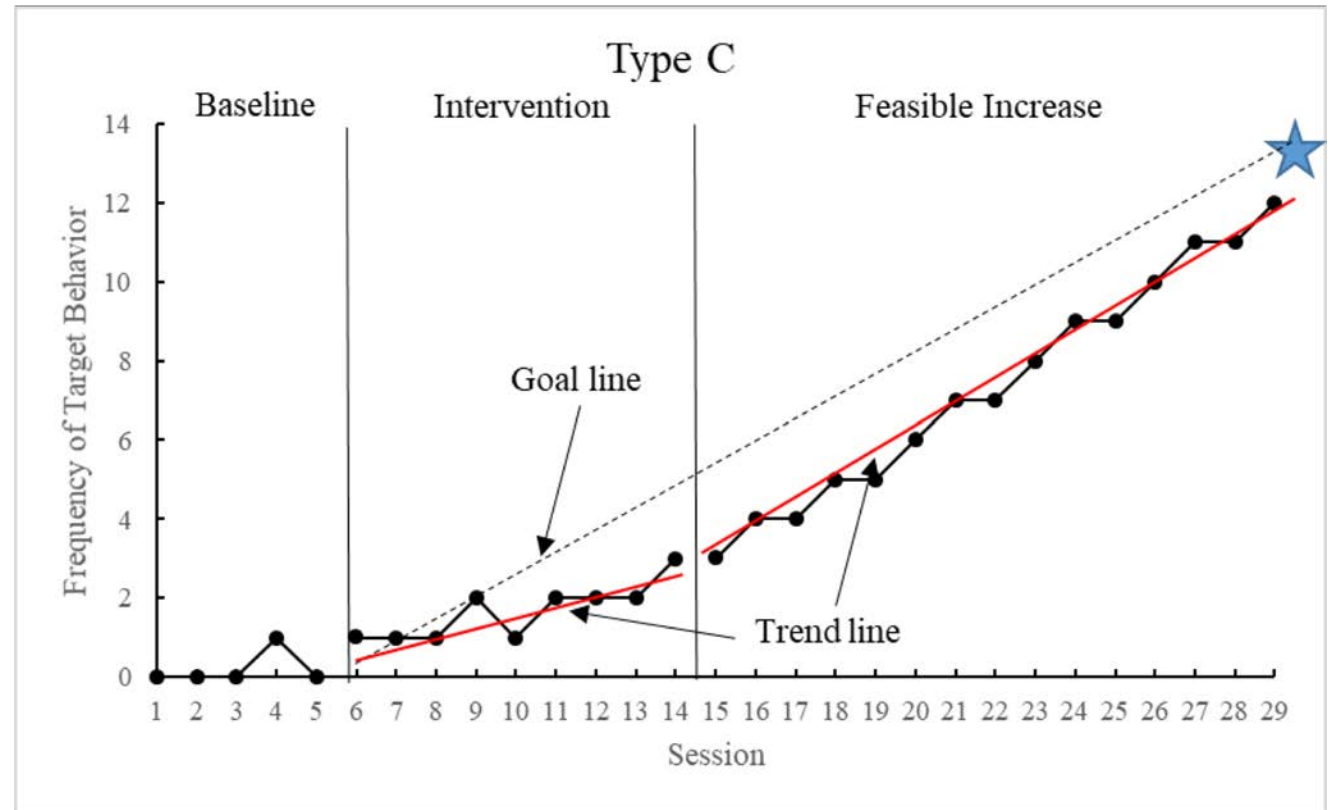
- Gradual increase
 - Less steep trend line
 - Goal attainment
- Evaluate effects of increased and decreased OTRs



Data-based Decisions

Type C

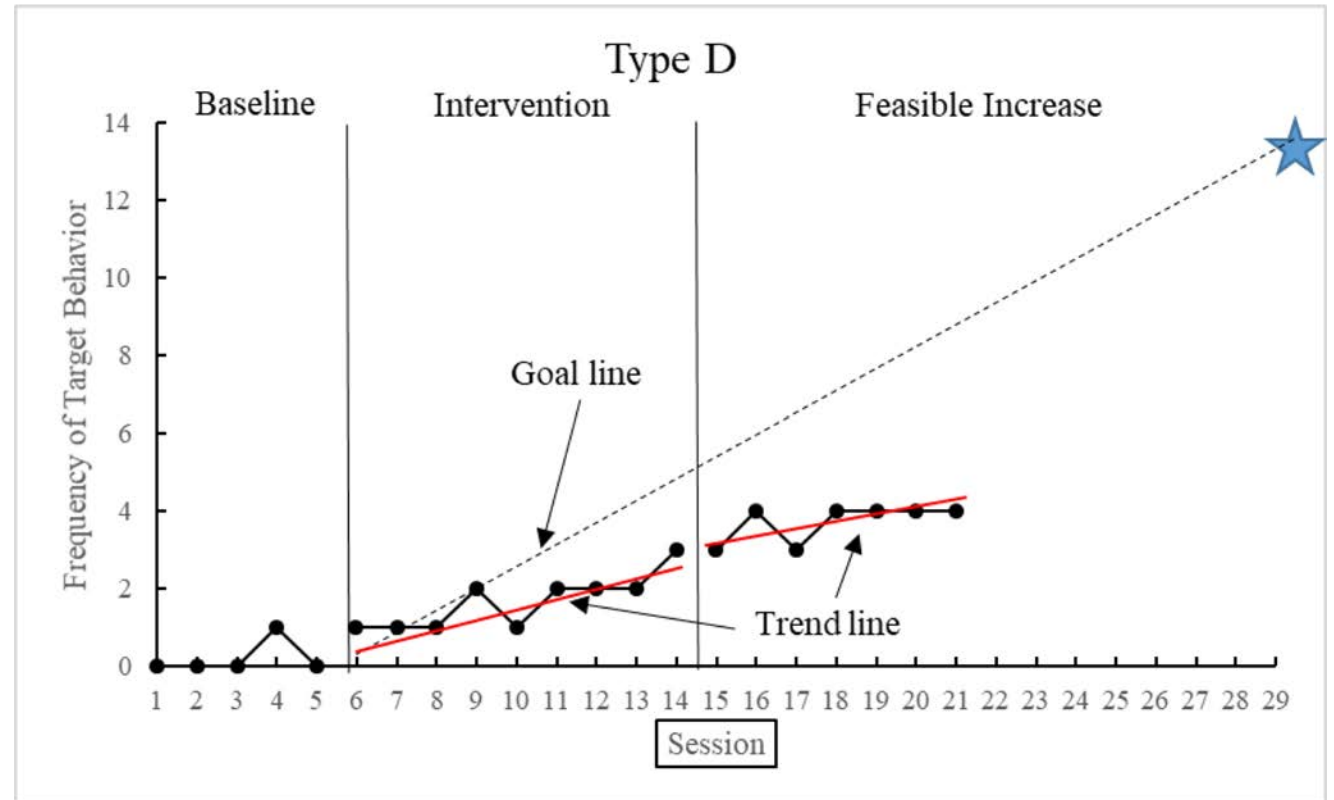
- Trend line closely approximates the goal line
- Prolong the intervention
 - Too costly to change



Data-based Decisions

Type D

- No noticeable increase in the trend of responding
 - Trend line is parallel to or flatter than that in previous session
 - Extended trend line will not approach the goal
- Poor match between learner and the EBP
- Abandon the intervention and proceed to selecting another EBP



Wrapping Up

- Intervention intensity is better measured by OTR
 - Not raw hours per week
- Understanding the role of intensity may support practical decisions
 - Persist with an intervention that is ineffective due to low intensity
 - Increase intensity before changing the intervention procedures
 - Abandon intervention that would be effective if applied with greater intensity
 - Evaluate whether high intensity applications are ineffective first
 - Identify and allocate resources based on intensity, not just treatment hours
 - Materials, equipment, settings, personnel
- Consider examining the published literature for implicit and explicit details about intensity
 - OTRs per session, session length, session frequency, length of treatment period



Thank You!

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