

Common Misconceptions about Adaptive Intervention Designs

Misconception #1: The same tailoring variable must be used for all individuals in an adaptive intervention.

- There is no requirement that the same tailoring variable be used for all individuals in an adaptive intervention.
- A tailoring variable (or a set of tailoring variables)—including how/when the measures that make up the tailoring variable are collected (e.g., monitoring schedule)—could differ by individual, including based on previous information about the individual.
- For example, a child with autism who begins with an intervention that focuses on discrete trials training might be monitored based on the number of unique words used to determine how to intervene next; whereas a child who begins with a more naturalistic, play-based intervention might be monitored based on social engagement to determine how to intervene next.
- For example, individuals at higher risk for substance use relapse, might be monitored more frequently for environmental risk than individuals with lower risk.

Misconception #2: An adaptive intervention must recommend a single intervention component at each level of a tailoring variable.

- At any one or more decision points, an adaptive intervention could recommend a *set* of interventions (components) instead of a *single* intervention (component).
- For example, for certain individuals at certain decision points, there may be no evidence that a single intervention (component) is better than another. In this case, the adaptive intervention may recommend a set of interventions (components).

Misconception #3: Adaptive interventions seek to replace clinical judgement.

- The goal of adaptive interventions is to guide, not replace, clinical or educational practice.
- Clinical judgement may play a role in the assessment or collection of tailoring variables.
- In cases where an adaptive intervention recommends a *set* of interventions (components), clinical judgement could be used to make the decision about which intervention to assign/recommend.
- For example, consider a SMART where there is no evidence of a difference between increased behavioral intervention dose (+BMOD) or adding medication (+MED) among children with ADHD identified as non-responders to initial behavioral modification. Based on these results, an adaptive intervention might recommend the set of both +BMOD or +MED for non-responders, and leave the final decision up to the child, parent, therapist, or schoolteacher.

Misconception #4: Adaptive interventions are only relevant in *treatment* domain.

- Adaptive interventions are relevant in any domain where sequential (or dynamic) intervention decision making is necessary. This include:
 - *preventive* interventions designed to reduce risky behavior,
 - *education* interventions targeting academic achievement or absenteeism,
 - *health promotion* interventions designed to encourage healthy habits, or
 - *implementation* interventions aimed at improving the uptake of evidence-based treatments.

Misconception #5: Adaptive interventions are non-standard because they involve randomization.

- Adaptive interventions are pre-specified interventions that use clearly articulated decision rules to link a value of a tailoring variable to an intervention (component) or a set of interventions (components).
- The decision rules making up an AI typically do not involve randomization.
- Randomization is used in studies that seek to develop or test adaptive interventions, such as standard randomized controlled/clinical trials, enhanced (non)responder trials, or sequential multiple assignment randomized trials.
- For example, a standard 2-arm RCT could compare an adaptive intervention versus a suitable control.