



***Implementing Evidence-Based Prevention in Communities to Promote Mental and Behavioral Health in Children***

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# “Precision-Based Preventive Interventions for Youth At High Risk for Conduct Disorder”

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# Precision Medicine (PM)

(<http://www.nih.gov/precisionmedicine>)

....is an emerging approach for disease prevention, early detection, and treatment that seeks to optimize effectiveness by taking into account individual variability in genes, environment and lifestyle (i.e. tailored healthcare)

# Advantages of Precision Prevention

- Respond to the etiological heterogeneity and intervention response variability that exists in high risk populations
- Reduce negative effects associated with interventions that are associated with burden, iatrogenic effects and ineffectiveness
- Increase client adherence with interventions
- Increase efficiency and effectiveness of interventions while reducing cost

# Prevention of Conduct Disorder

Five decades of research focused on multifaceted interventions based on eco-systemic, social learning, and social-cognitive interventions

- Modest effect sizes ( $d = 0.35-0.47$ ) (McCart et al. 2012)
- Many participants fail to respond
- Among responders questionable durability of effects over time
- Often fail to reach high risk populations
- Participation rates poor

*ADAPTIVE INTERVENTIONS*: tailoring each individual's intervention over time based on assessment of the individual's ongoing response

*PREFERENCE-BASED INTERVENTIONS*: affording each individual the opportunity to select an intervention option among those shown to be in therapeutic equipoise

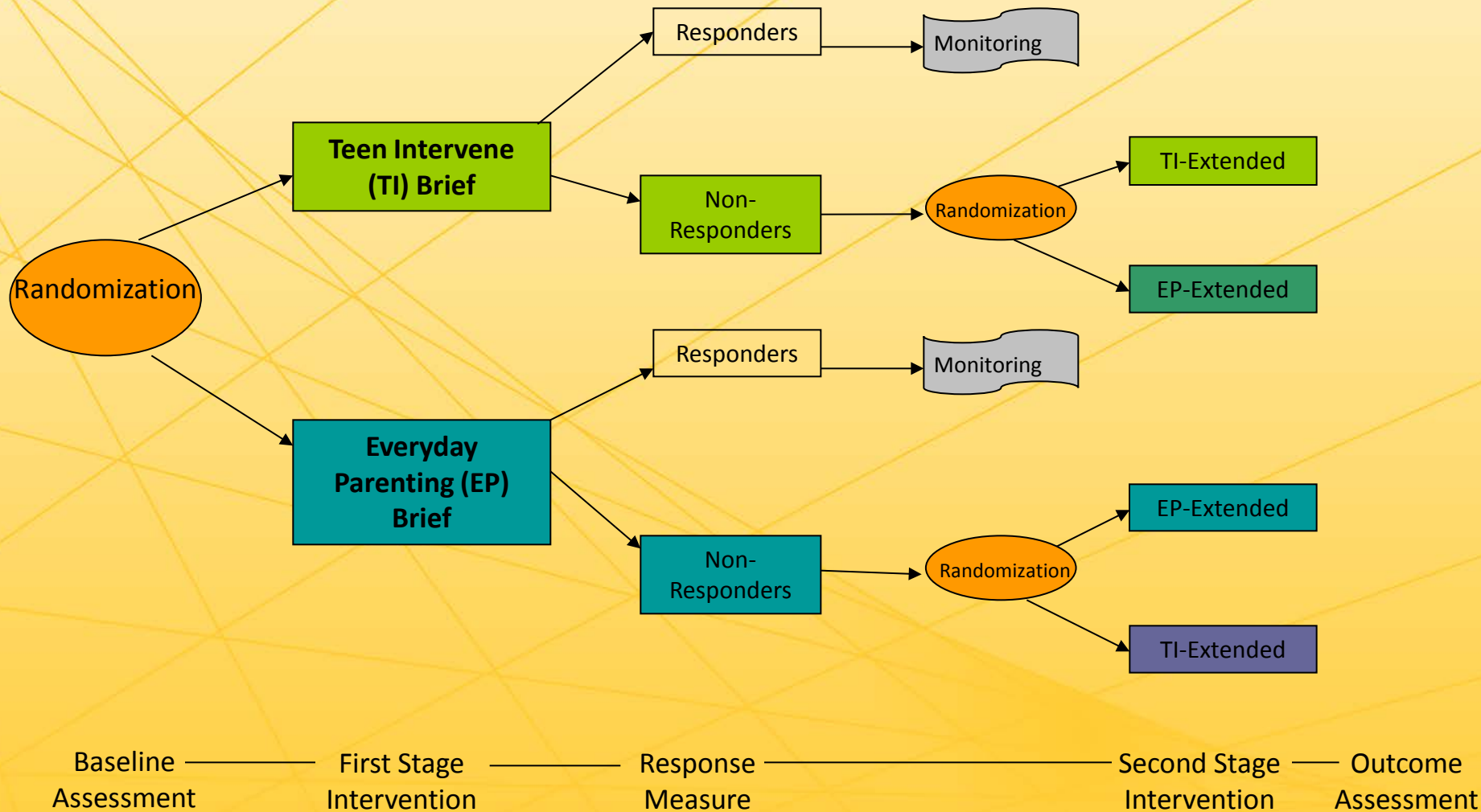
# SMART DESIGN

Sequential, Multiple, Assignment, Randomized Trial

(SMART; Lavori & Dawson, 2008; Murphy, Oslin, Rush & Zhu, 2007; Almirall, Nahum-Shani, Sherwood & Murphy, 2014).

A SMART design uses multiple randomizations to assist in the construction of powerful **adaptive treatment strategies**

# SMART Design for Adaptive Intervention Strategies in Conduct Problems Prevention



# The present SMART yields the following four ATS:

- **Youth-Only Skills ATS:** Begin with *TI-Brief*, youth exhibiting a positive response to initial *TI-Brief* are stepped-down to monitoring, youth exhibiting nonresponse are stepped up to *TI-Extended* (this is a youth-continuation ATS).
- **Youth Skills then Parent Support ATS:** Begin with *TI-Brief*, youth exhibiting a positive response to initial *TI-Brief* are stepped-down to monitoring, youth exhibiting nonresponse are stepped-up to *EP-Extended* (this is youth then switch to parent ATS).
- **Parent-Only Support ATS:** Begin with *EP-Brief*, youth exhibiting a positive response to initial *EP-Brief* are stepped-down to monitoring, youth exhibiting nonresponse are stepped-up to *EP-Extended* (this is a parent-continuation ATS).
- **Parent Support then Youth Skills ATS:** Begin with *EP-Brief*, youth exhibiting a positive response to initial *EP-Brief* are stepped-down to monitoring, youth exhibiting nonresponse are stepped up to *TI-Extended* (this is parent then switch to youth ATS).



# This SMART design permits several key tactical questions to be addressed:

1. Which Stage 1 intervention provides the best response and thus should be offered initially?
2. Which State 2 intervention provides the best second tier intervention for youth who show non-response to a Stage 1 intervention?
3. Which sequential approach provides the best overall response – one that begins with a parent/family-focused intervention?
4. “Who” responds best to which ATS?:
  - Based on individual differences in youth executive functioning – “cool” vs. “hot” EF
  - Based on individuals in family/peer environment factors – perceived stress, management practices, deviant peer affiliations

# Double Randomized Preference Trial

- *Preference effect:* with a growing trend toward client participation in health care decisions, it is likely that affording individuals the opportunity to participate in the decision process as to which intervention they receive may result in improved engagement and ultimately better outcomes
- *Autonomy:* the opportunity to choose a treatment may enhance an individual's sense of control over the learning process within the context of behavioral intervention thereby increasing self-efficacy for behavioral change and resulting in enhanced outcomes
- *Decision-Making:* Understanding how individuals make decisions about their health care may lead to intervention enhancements (decision aides), i.e., preparatory interventions that help individuals make informed choices

# Preference Design

