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Building Strong Evidence in Challenging Contexts:
Alternatives to Traditional Randomized Controlled Trials

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A Hybrid Double Randomized Client Preference Trial: Benefits & Challenges

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Precision Medicine (PM)

(http://nih.gov/precisionmedicine)

….is an 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., personalized, tailored, individualized, customized healthcare.)

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Innovations in Personalized Interventions

"Designs"

- Adaptive-Sequential
- Brief
- Targeted [mechanism based]
- Modularized
- Consumer-Controlled [Preference]

"Delivery Systems"

- Smartphone Apps [Texting]
- Just-in-Time [Stress Wearables]
- Virtual Reality & Augmented Reality Gaming
- On-line Support [Social Networking – Peer – Professional]

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Consumer-Centered Care

- ***Preference effect****:* with a growing trend toward client participation in healthcare decisions, it is likely that affording individuals the opportunity to participate in the decision-making 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 improved 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

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What is a Preference Trial?

….a 'treatment' trial in which there is at least one arm in which an enrollee is given a choice as to which intervention option s/he wishes to receive

A common problem in RCTs arises when enrollees have strong treatment preferences that they refuse to randomize. The absence of these participants may compromise external validity of the results as participation may not be representative.

A further potential source of bias exists when enrollees with strong treatment preferences are randomized. When not blind to their treatment assignment they may suffer resentful demoralization and comply poorly (Togerson & Sibbald, 1998).

On the other hand, enrollees receiving their preferred treatment may comply better than average. There may therefore be a treatment effect which results from participants' preference and not from therapeutic efficacy.

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Preference Trials

Participants may be placed in 1 of 3 groups according to preference and willingness to be randomized:

1. Participants who have no strong preferences and therefore consent to randomization
2. Participants with a preference who still consent to randomization
3. Participants who refuse to randomization and opt for their treatment of choice

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Traditional RCTs

Clients are asked to indicate their preferences before they are randomized to a treatment.

- Fail to consider that participants may drop out if they have strong preferences, which may mean that only participants with weak preferences remain in the study

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Partial Randomized Preference Design

Participants with strong preferences are offered their treatment of choice, while those who agree with randomization are randomized similar to any RCT.

No Preference

Randomized	**Preference**
A – counseling	C – counseling
B – no counseling	D – no counseling

Comparison of A vs B = value of the intervention per se

Comparison of C vs D = additional influence of motivational factors

If C>D or D>C ----- is the outcome a result of self-selection bias or does it represent a genuine treatment effect?

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Hybrid Double Randomized Preference Trial

Strength and direction of participants' preferences are elicited prior to randomization, however, all consenters are randomized – either to a *preference arm* or to a *no-preference arm*.

This approach combines the advantages of the partial randomization trial (gathering information on the effect of preference outcomes), but yet retains the full rigor of a fully randomized trial).

- Controls for cohort effects and enables researchers to examine whether providing choice to participants influences their engagement in outcomes.

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Pilot Study

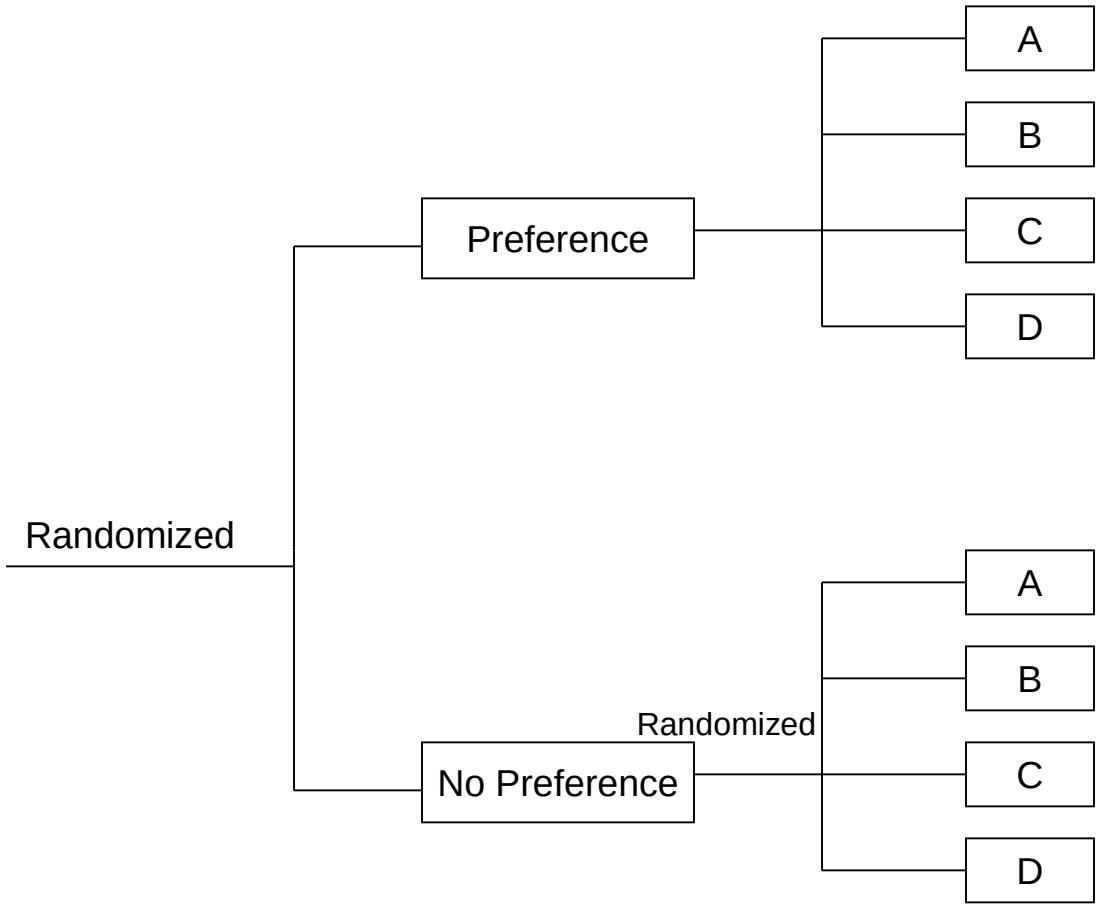
"A randomized preference trial to inform personalization of a parent training program implemented in community mental health clinics"

He, Gewirtz, Lee, Morrell, & August (2016)

Translational Behavioral Medicine

- Sample: n=129 families with 6-12 year old children with conduct problems presenting to community mental health clinics in Detroit and surrounding communities.
- Design: Parents (M age= 32.78 years, 62% African American) were randomized first to *choice* or *no choice* conditions
  - Parents in the randomized arm were again randomized to one of four different formats of the PMTO parent training intervention
  - Parents in the non-randomized arm were offered a choice of which of the four different formats of PMTO they wished to receive

Hybrid Double Randomized Client Preference Trial



A. Individual, home-based PMTO

B. Individual, clinic-based PMTO

C. Group, clinic-based PMTO

D. Treatment-as-usual (child therapy)

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Pilot Study Findings:

	Choice:	No Choice:
Group-based PMTO:	13/4	17/0
Home-based PMTO:	24/11	16/7
Clinic-based PMTO:	13/3	13/4
TAU (child therapy):	14/9	18/6

- Overall attrition was significant: 25% did not attend at all, or left prior to discharge (40%)
- Demographic variables did not predict drop out
- Parents in the group format and clinic format were more likely to drop out than TAU regardless of choice
- Families Randomized to the no-choice condition were 3x more likely to drop

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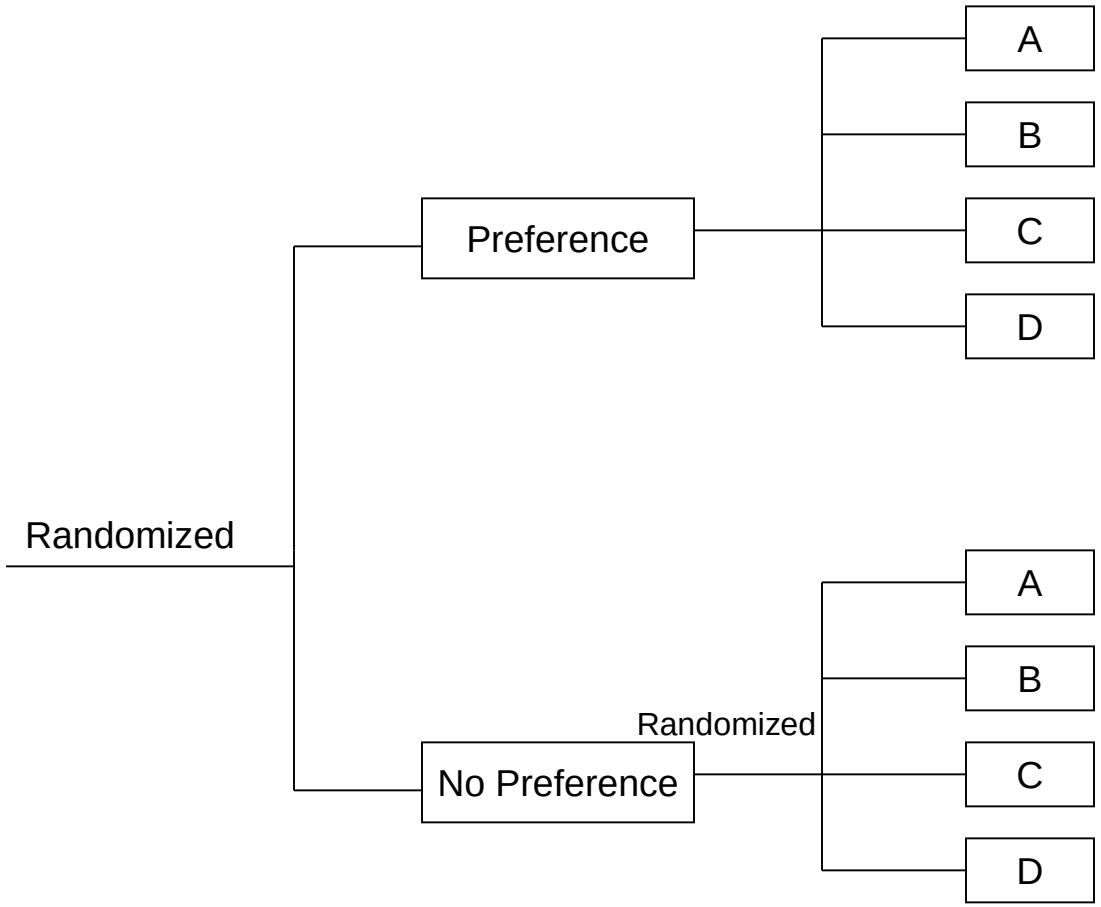
Pilot Study Findings:

- Examined what type of parents preferred which type of interventions within the choice condition:
  - Parents who scored low on the 'perceived need to improve parenting' and 'perceived child severity' (i.e. who did not perceive a strong need to improve parenting, or that their child was at risk) were more likely to select TAU than PMTO.
- Examined effect of choice on change in observed parenting and reported parenting self-efficacy 6 months following the end of treatment (controlling for baseline assessed parenting).
- Within the choice condition there was a significant modality effect for those selecting PMTO – greater effective parenting than no-choice families or choice families who selected TAU.
- Examined effect of choice on teacher-reported child externalizing behavior problems.
- In general, all children reported improving over time. However, there was a significant choice X time interaction, such that children in the choice condition showed significantly greater improvement in HYPERACTIVITY over time than those in the no-choice condition.

Hybrid Double Randomized Client Preference Trial



A. Individual, home-based PMTO

B. Individual, clinic-based PMTO

C. Group, clinic-based PMTO

D. Telehealth PMTO