Factors influencing child language growth in a DIR/Floortime intervention for preschoolers with autism

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ABSTRACT

***Purpose**: to investigate language outcomes of a parent-administered therapy for early autism (PLAY, a DIR/Floortime therapy).*
***Method:** we transcribed and analyzed pre- and post-therapy interactions from 80 parent-child pairs.*
***Results**: 1) parents changed interaction style, 2) children's language in the PLAY group improved as much if not more than children in the contrast therapy, 3) parental overlap with their child's language and addition of information was associated with language gains*
***Discussion**: DIR/Floortime does appear to work, and encourages language growth at least as well as ABA or other approaches.*

BACKGROUND

- One in 59 children are diagnosed with autism spectrum disorder (ASD; Baio et al., 2018) and there are few to no evidence-based treatments for them.
- In ASD, children's language development is often delayed/absent and impairments in certain aspects of language are one of the most critical impairments in ASD (Naigles, 2013).
- Even though language impairment is a primary clinical feature, very few evidence-based ASD treatment studies have examined language outcomes.
- Therapy for ASD can be direct, such as Applied Behavior Analysis (ABA), or indirect, such as Developmental, Individual-Differences Relationship-Based (DIR)/Floortime, in which parents are counseled on ways to engage their children in interaction and verbalization. DIR currently has less evidence-based support (Mercer, 2017).
- We looked at outcomes from a DIR/Floortime intervention, the Solomon PLAY project (Solomon, et al. , 2014).

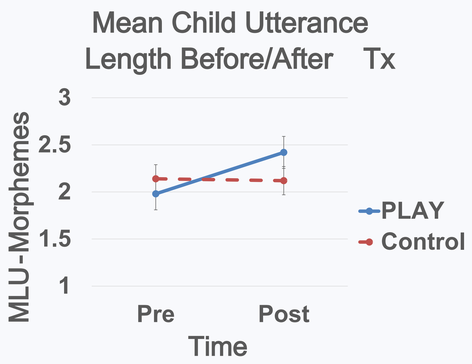
What is the Solomon PLAY Project?

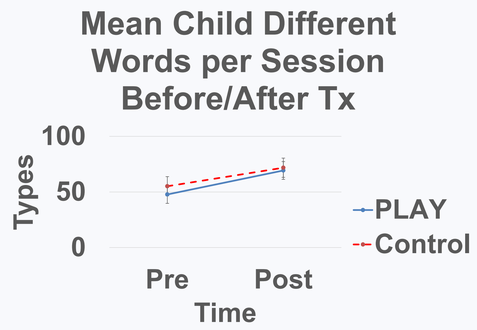
- The first Randomized Controlled Trial (RCT) of a DIR/Floortime approach called PLAY.
- PLAY was found equal to community standard care (that included speech therapy, ABA, and other services) in improving autism symptoms and child achievement scores after 1 year of therapy. However, language outcomes were only assessed on two formal tests, and only half of the children completed these tasks.
- We looked at changes in both child and parent spontaneous language from pre- to post-PLAY.
- We considered the role of parental input and how these related to child language outcomes.

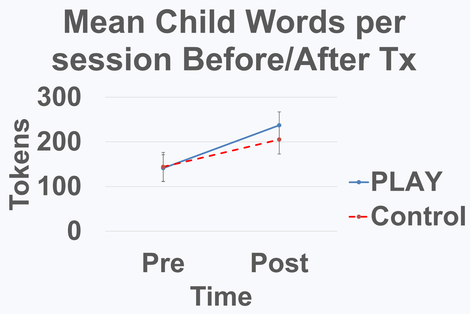
RESEARCH QUESTIONS

1. Did PLAY improve child language as much or better than did standard ASD therapy?
2. Since PLAY is a parent training program, did any features of the parent's speech drive improvements in their children's language?
3. One strategy, expansion, is a critical feature of PLAY and is known to improve child language outcomes. Expansion is when a parent adds onto a child's utterance. Did parents learn and implement expansion skills with their children?

RESULTS







Correlations between Parent Responses and Child's Speech

	Δ Child Tokens	Δ Child Types	Δ Child MLUm
Δ % Parent Add Operations	0.62* $p<0.00$	0.74* $p<0.00$	0.36* $p=0.02$
Δ % Parent Overlap	0.51* $p<0.00$	0.62* $p<0.00$	0.22 $p=0.15$

*=Significant correlation at $p<0.05$

DISCUSSION

- Despite concerns that PLAY is not as well-documented as ABA, child language outcomes were as good, if not better, in the PLAY program.
- We examined parental behaviors that might be associated with child language change:
- We expected parental expansions of child language to improve language outcomes; and this can be seen through the correlation of percent add operations with growth in vocabulary
- Parents reiterating/reinforcing (overlap) their child's speech correlates with the child's richer vocabulary use (types).
- For future research: PLAY was shown to lessen/alleviate autism symptoms but we only looked at certain factors of language (expansion). parents were taught other things with PLAY training and they were not looked at here (i.e. joint attention).

METHODS

Participants:

- After discarding participants with unusable pre - and post-treatment videos, there were 80 parent-child pairs; all children had a mean age of 50.68 months (*sd*=9.75)
- Each child had autism which was confirmed by the *Autism Diagnostic Observation Schedule* (*ADOS*; Lord, Rutter, DiLavore, & Risi, 2003), the gold standard for ASD diagnosis
- PLAY Group: n=43, 38 male and 5 female (ASD disproportionately impacts boys)
- Control Group: n=37, 33 male and 4 female
- Language skills ranged from no spontaneous language production to more verbal (although pragmatically impaired)

Procedures :

- Clinicians trained parents how to use PLAY in a four day seminar, with follow-up
- Two basic ideas were taught: Circles of Communication and Creating a Unique Child Profile (capitalizing on the child's interests and sensory experiences), creating child-led interactions (see Solomon, 2016)
- This program was a 12-month intervention administered in the home setting
- Parent-child interaction samples were video-recorded before intervention and after (follow-up assessment)
- For the control group, participants received community standard care, which included public preschool programming, speech/occupational therapy, and ABA.

Analysis :

- After video-recordings had been collected, transcriptions were created and analyzed in the Child Language Analysis (CLAN; MacWhinney, 2014) program.
- In total, we analyzed 34,346 parental utterances and 11,248 child utterances.
- Analyses were collected with the CLAN programs, Kideval and CHIP

Outcomes we are concerned with:

- Parent's responses: Overlap-% of times a child's utterance/words is repeated/reinforced and Add Operations- % of times something has been added onto a child's utterance/words
- Child's speech: Types-Number of different words/vocab and Tokens-Number of words in total, MLUm- length of utterance in morphemes (parts of words)

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References available upon request