

Parental Depression and the Longitudinal Synchrony of Parent Ratings of Children's Internalizing and Externalizing Behavior: Novel Findings from an Adoption Study

Andrew R. Dismukes¹
Leslie D. Leve²
Daniel S. Shaw³
Jody M. Ganiban⁴
David Reiss⁵
Misaki N. Natsuaki⁶
Jenae M. Neiderhiser¹

1. The Pennsylvania State University
2. The University of Oregon
3. The University of Pittsburgh
4. The George Washington University
5. Yale University
6. The University of California, Riverside



PennState

Background

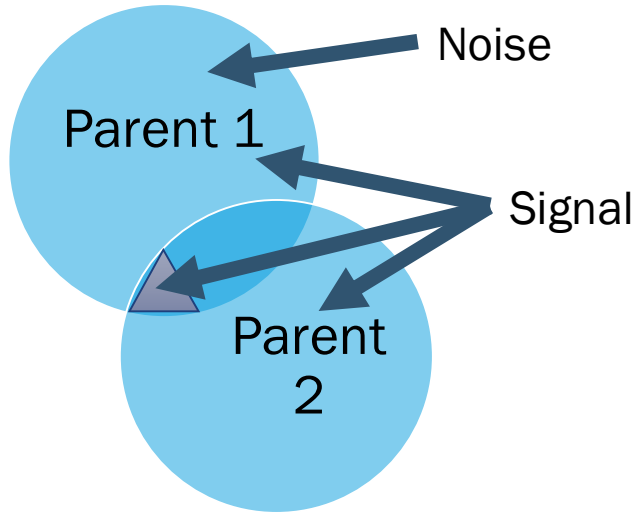
What is synchrony?

- The degree to which raters agree in their independent assessment of behavior.
 - In this case, Child Behavior Checklist ratings of internalizing and externalizing behaviors.

And longitudinal synchrony?

- The pattern of change in rater agreement over time

Why is synchrony interesting?



“...rater disagreement, not as a source of measurement error, but as an outcome that indexes important differences in subjective child appraisal between parents (Bartels et al., 2003).”

- Perception matters!
 - Parents’ perceptions ...inform emotional, cognitive and behavioral responses between parents and children (Benoit, Zeanah, Parker, Nicholson, & Coolbear, 1997)

Benoit, D., Zeanah, C. H., Parker, K. C. H., Nicholson, E., & Coolbear, J. (1997). “Working Model of the Child Interview”: Infant clinical status related to maternal perceptions. *Infant Mental Health Journal*, 18(1), 107–121.
[https://doi.org/10.1002/\(SICI\)1097-0355\(199721\)18:1<107::AID-IMHJ8>3.0.CO;2-N](https://doi.org/10.1002/(SICI)1097-0355(199721)18:1<107::AID-IMHJ8>3.0.CO;2-N)

Bartels, M., Hudziak, J. J., Boomsma, D. I., Rietveld, M. J. H., Van Beijsterveldt, T. C. E. M., & VAN den OORD, eDWIN J. C. G. (2003). A Study of Parent Ratings of Internalizing and Externalizing Problem Behavior in 12-Year-Old Twins. *Journal of the American Academy of Child & Adolescent Psychiatry*, 42(11), 1351–1359.
<https://doi.org/10.1097/01.CHI.0000085755.71002.5d>

Rater agreement of internalizing and externalizing behavior

- Rater agreement can vary based on...
 - Context
 - Development
 - Rater
 - Which behavior you are looking at



DONUTS WITH DAD



PennState

Rater agreement of internalizing and externalizing behavior

- Rater agreement can vary based on...

- Context
- Development
- Rater

A stress model
• Which behavior you are looking at

- Asynchronous caregiver-child (Youngstrom et al., 2000) and caregiver-caregiver ratings (van der Veen-Mulders, Nauta, Timmerman, van den Hoofdakker, & Hoekstra, 2017).
- Maternal depression predicts increased divergence between parents (Yuh, 2017)

Focusing on the parents:

- What might predict differences in rater agreement?
- What about genetic influence on internalizing and externalizing?

van der Veen-Mulders, L., Nauta, M. H., Timmerman, M. E., van den Hoofdakker, B. J., & Hoekstra, P. J. (2017). Predictors of discrepancies between fathers and mothers in rating behaviors of preschool children with and without ADHD. *European Child & Adolescent Psychiatry*, 26(3), 365–376.

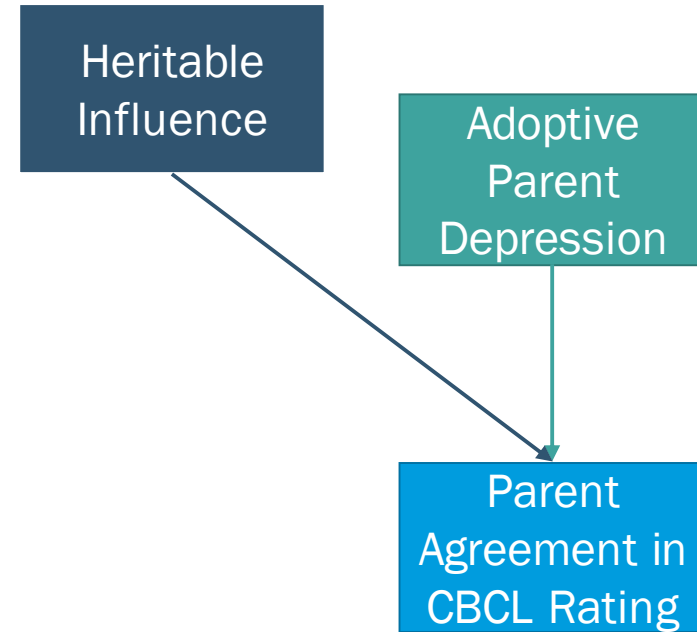
<https://doi.org/10.1007/s00787-016-0897-3>

Yuh, J. (2017). Do Mothers and Fathers Perceive Their Child's Problems and Prosocial Behaviors Differently? *Journal of Child and Family Studies*, 26(11), 3045–3054.

<https://doi.org/10.1007/s10826-017-0818-1>

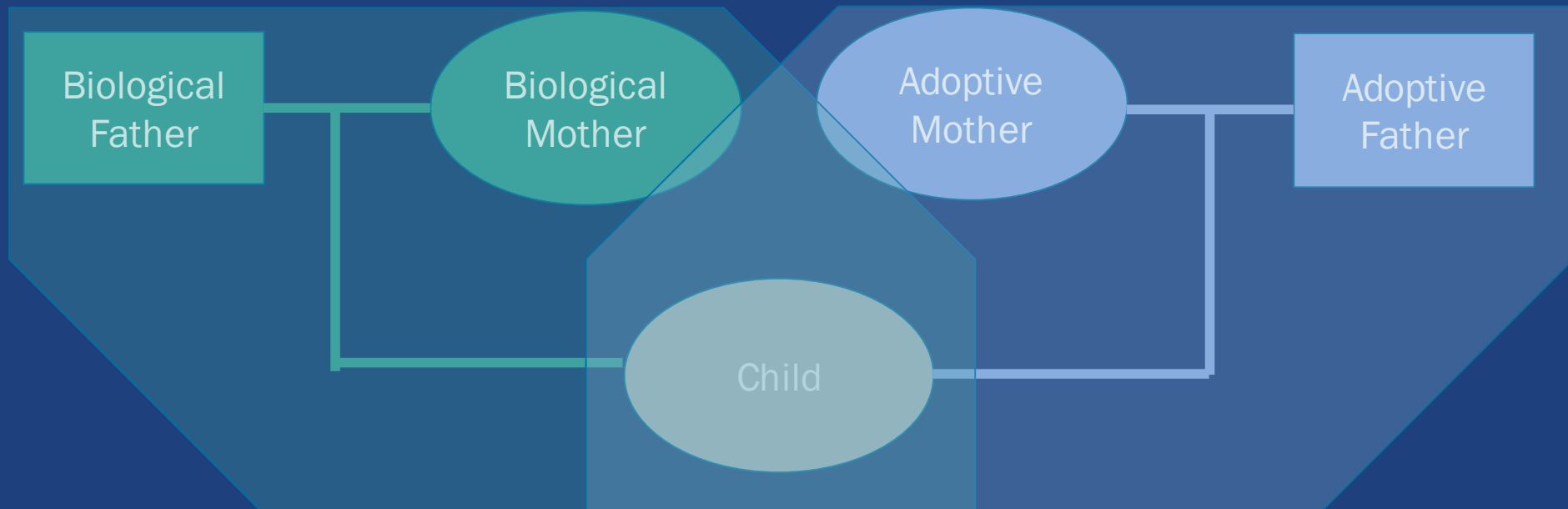
Study Goals

- Research Question 1: Are parents synchronized in ratings of child behavior over time?
- Research Question 2: Do increased parental depressive symptoms predict decreased rater agreement on child behavior?
- Research Question 3: Does controlling for heritable influence for internalizing and externalizing behavior change the relationship between adoptive parent depressive symptoms and parent agreement?



The Early Growth and Development Study

A Prospective, Longitudinal Adoption Design





Sample

- 361 domestic adoption placements to non-relative families from *cohort 1* of the Early Growth and Development Study (Leve et al., 2013)
 - Infant free of major medical problems
 - Median adoption placement age: 2 days ($M = 6.2$, $SD = 12.45$, range = 0-91)
 - 42.8% girls; 57.2% boys
 - Caucasian (55.6%), multiracial (19.3%), African American (13%), Latino (10.9%), and Asian, Native American (each < 1%)



Measures

- *Depressive symptoms* are derived from the Beck Depression Inventory at 18, 27 and 54 months (Beck, Steer, & Carbin, 1988).
- *CBCL internalizing and externalizing* scores are used at ages 18, 27, 54, 72, 84 and 96 months (Achenbach & Edelbrock, 1983).
- *Genetic influence on internalizing and externalizing* utilizes factor scores created in Marceau et al (2019).



Analytic Strategy

Base Model

- RQ 1: Are parents synchronized in ratings of child behavior over time?
 - $P1\ CBCL = B_0 + B_1 * P2\ CBCL + error$
 - $P1\ CBCL = B_0 + B_1 * P2\ CBCL + B_2 * Age + B_2 * Age\ squared + error$
 - $P1\ CBCL = B_0 + B_1 * P2\ CBCL\ residual + B_2 * Age + B_2 * Age\ squared + error$
- RQ 2 and 3 are assessed by adding moderation by depressive symptoms and heritable influences on Level 2.

Results

Research Question 1: Are parents synchronized in ratings of child behavior over time?

- Parents are synchronized overall
 - internalizing ($B=0.351, p<0.001$)
 - externalizing ($B=0.457, p<.001$)
 - *Significantly greater for girls for internalizing*
- Dads who rate children higher on CBCL predict greater deviations of mother ratings from predicted slopes.
 - internalizing ($B=0.320, p<0.001$)
 - externalizing ($B=0.366, p<0.001$)
 - *Significantly greater for girls for internalizing*
- When dads are higher or lower than their predicted slope in rating of child and behavior, so too are mothers.
 - internalizing ($0.049, p<0.001$)
 - externalizing ($0.036, p<0.001$)
 - *Significantly greater for boys for externalizing*

Research Question 2: Does increased parental depression predict decreased rater agreement on child behavior?

Research Question 3: Does controlling for heritable influence of internalizing and externalizing behavior change the relationship between adoptive parent depression and parent agreement?

Discussion

- Maternal Depressive symptoms predict increased rater agreement
- Paternal Depressive symptoms predicts decreased rater agreement, but only at baseline
- These effects persist when controlling for heritable influences for internalizing and externalizing.



ECHO

Environmental influences
on Child Health Outcomes

A program supported by the NIH

Acknowledgements

- Over 30 participating adoption agencies across the US
- The families participating in EGDS
- Recruiters, interviewers & coders
- Funding:
 - R01HD042608
 - R01DA020585
 - R01 MH092118
 - UG3 & UH3 OD023389

Special thanks to Dr. Jenae Neiderhiser and
The Gene Environment Interplay Lab at Penn
State



PennState