

Concept Paper Form

Provisional Paper Title: Are there enduring effects of parenting in childhood on early-adult personality? Evidence from a monozygotic-twin differences study
Proposing Author: Jasmin Wertz
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P.I. Sponsor: Terrie E Moffitt, Avshalom Caspi (if the proposing author is a student or colleague of an original PI)
Today's Date: 2/23/2021

Please describe your proposal in 2-3 pages with sufficient detail for helpful review.

Objective of the study:

To test whether parenting in childhood (up to and including age 10) is associated with personality traits at age 18 within monozygotic twins.

Data analysis methods:

To measure parenting, we will construct a global summary measure that combines across constructs (maternal warmth and maternal dissatisfaction, both coded from mothers' 5-minute speech samples) and ages (ages 5 and 10 years). To measure personality traits, we will use interviewer ratings of the Big 5 at age 18.

We will run a series of models to test and probe associations between parenting and personality:

- 0 – Does parenting predict personality phenotypically in the whole E-Risk sample?
 - 1a – Does parenting predict personality within all twins?
 - 1b – Does parenting predict personality within DZ twins?
 - 1c – Does parenting predict personality within MZ twins?
 - 2 – Is that the case even for very early parenting (age 5)?
 - 3 – Is this the case even if skills are rated by co-informants instead of interviewers?
 - 4a – Is this even for normal variations of parenting (i.e., adjusting for maltreatment)
 - 4b - Is this even for normal variations of parenting (i.e., excluding those with maltreatment)
 - 5a – Is this a child effect (adjusting for early temperament)
- For tests in the whole sample (model 0) we will use linear regression models adjusted for sex and nonindependence of the clustered twin data; for tests within-twins (i.e. models 1-5)

we will use fixed effects/twin differences models.

Variables needed at which ages:

Phase	Variable name	Variable label
Cross-phase		
	Familyid	
	Atwinid	
	Sampsex	
	Zygotity_2018	
Phase 5		
	warme5	
	disse5	
	unce5	
	appe5	
	slue5	
	harm3em5	
Phase 10		
	warme10	
	disse10	
Phase 18		
	bfioe18	
	bfice18	
	bfiee18	
	bfiae18	
	bfine18	
	bfico1e18	
	bficco1e18	
	bfieco1e18	
	bfiaeo1e18	
	bfinco1e18	
	bfico2e18	
	bficco2e18	
	bfieco2e18	
	bfiaeo2e18	
	bfinco2e18	

Significance of the Study (for theory, research methods or clinical practice):

The question of whether parenting has effects on child development that go beyond early childhood is contentious. There are two contrasting hypotheses: the first hypothesis is that parenting has enduring effects on child outcomes. This hypothesis is based on interpretations of studies that report large associations between parenting and child outcomes even as children reach adolescence and adulthood.¹⁻³ The second hypothesis is that parenting has no effects on child outcomes beyond childhood, especially not within normative ranges of parenting.⁴ This hypothesis is based on interpretations of twin studies,

which show that the variance component capturing children's shared environment accounts for little to no variability in outcomes measured beyond childhood.⁵

A difficulty with discerning between these two hypotheses is that both types of studies have limitations. Association studies of parenting and child outcomes may be confounded by genetic influences shared between parent and child.⁶ If the same genetics that shape parental behavior in the parent are passed on from parent to child and affect child outcomes, then an apparent association between parental behavior and child outcomes may be due to shared genetics rather than an effect of parenting on child outcomes. These studies may therefore overestimate effects of parenting on child development. In twin studies on the other hand, parenting effects may be captured not by the shared environment variance component that captures environments shared by children in the same family, but by the non-shared environment variance component that captures environments uniquely experienced by each child in a family. Twin studies can quantify this non-shared environmental component, but without further analysis they do not reveal whether specific measures of parenting act as a non-shared environmental influence on child outcomes.

Both of these issues can be addressed by studying differences between monozygotic twins. Monozygotic twins share all of their genes, but they differ in their child outcomes as well as in the parenting they receive. Because monozygotic twins are perfectly matched on genetic background, studying them can rule out genetic confounding of associations between parenting and child outcomes. Because it is possible to measure parenting differences between monozygotic twins, it is possible to directly test whether parenting predicts outcomes within twins, providing a stringent test of the hypothesis that parenting is associated with child outcomes.

Previous work, including in E-Risk, shows that mothers differential treatment of their children has implications for child outcomes, reporting that a twin who received more warmth and less dissatisfaction from their mother went on to display fewer behavioural and emotional problems compared to their co-twin.⁷ However, these and many other studies have mostly examined child outcomes during childhood or early adolescence. It is not clear whether parenting has more enduring effects on child outcomes beyond this early time period. Here we propose to test this hypothesis, using E-Risk data from age-18. Specifically, we will test whether differences in parenting at ages 5 and 10 are associated with differences in personality between twins at age 18. We propose to examine personality as the outcome, because personality traits are powerful predictors of important long-term life outcomes.⁸

If there are associations between parenting and personality traits at age 18, we will probe these associations further by conducting two sensitivity tests: (a) whether even very early parenting (at age 5) predicts personality traits at age 18, and (b) whether the association is robust against using different informants (co-informants versus interviewer ratings of personality). We will also test two alternative explanations for these associations: (c) that parenting only matters when it is 'extreme' (we will test this by accounting for parental maltreatment of children), and (d) that associations are a product of child effects, whereby child behavior elicits differences parenting, rather than differences in parenting eliciting differences in child behavior (we will test this by accounting for measures of early-childhood

temperament).

References cited:

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- ² Simpson, J. A., Collins, W. A., Tran, S., Haydon, K. C. (2007). Attachment and the experience and expression of emotions in adult romantic relationships: A developmental perspective. *Journal of Personality and Social Psychology*, 92, 355–367. doi:[10.1037/0022-3514.92.2.355](https://doi.org/10.1037/0022-3514.92.2.355)
- ³ Raudino, A., Fergusson, D. M., & Horwood, L. J. (2013). The quality of parent/child relationships in adolescence is associated with poor adult psychosocial adjustment. *Journal of adolescence*, 36(2), 331-340.
- ⁴ Wilson, C., & Plomin, R. (2019). Why parenting matters less than you think. *New Scientist*, 242(3231), 39-41.
- ⁵ Polderman, T. J., Benyamin, B., De Leeuw, C. A., Sullivan, P. F., Van Bochoven, A., Visscher, P. M., & Posthuma, D. (2015). Meta-analysis of the heritability of human traits based on fifty years of twin studies. *Nature genetics*, 47(7), 702-709.
- ⁶ Sherlock, J. M., & Zietsch, B. P. (2018). Longitudinal relationships between parents' and children's behavior need not implicate the influence of parental behavior and may reflect genetics: Comment on Waldinger and Schulz (2016). *Psychological Science*, 29(1), 154-157.
- ⁷ Caspi, A., Moffitt, T. E., Morgan, J., Rutter, M., Taylor, A., Arseneault, L., ... & Polo-Tomas, M. (2004). Maternal expressed emotion predicts children's antisocial behavior problems: using monozygotic-twin differences to identify environmental effects on behavioral development. *Developmental psychology*, 40(2), 149.
- ⁸ Roberts, B. W., Kuncel, N. R., Shiner, R., Caspi, A., & Goldberg, L. R. (2007). The power of personality: The comparative validity of personality traits, socioeconomic status, and cognitive ability for predicting important life outcomes. *Perspectives on Psychological science*, 2(4), 313-345.

Data Security Agreement

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x	I am current on Human Subjects Training (CITI (www.citiprogram.org) or equivalent)
x	My project is covered by the Duke ethics committee OR I have /will obtain ethical approval from my home institution.
x	I will treat all data as "restricted" and store in a secure fashion. My computer or laptop is: a) encrypted (recommended programs are FileVault2 for Macs, and Bitlocker for Windows machines) b) password-protected c) configured to lock-out after 15 minutes of inactivity AND d) has an antivirus client installed as well as being patched regularly.
x	I will not "sync" the data to a mobile device.
x	In the event that my laptop with data on it is lost, stolen or hacked, I will immediately contact Moffitt or Caspi.
x	I will not share the data with anyone, including my students or other collaborators not specifically listed on this concept paper.
x	I will not post data online or submit the data file to a journal for them to post. <i>Some journals are now requesting the data file as part of the manuscript submission process. Study participants have not given informed consent for unrestricted open access, so we have a managed-access process. Speak to Temi or Avshalom for strategies for achieving compliance with data-sharing policies of journals.</i>
x	I will delete all data files from my computer after the project is complete. Collaborators and trainees may not take a data file away from the office. This data remains the property of the Study and cannot be used for further analyses without an approved concept paper for new analyses.
x	I have read the Data Use Guidelines and agree to follow the instructions.

Signature: Jasmin Wertz