

Cogs 209 Mini-Project Proposal

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**Title: Assessing the bidirectional relationship between maternal depression/anxiety and infant anxiety/attachment patterns**

### **Research question**

Infancy is a critical stage of development, where negative or positive interactions with primary caregivers can have behavioral and developmental ramifications into adulthood. In particular, mental health challenges parents experience can influence a child's development and the relationship between the parent and child (Dekel et al. 2019, Handelzalts et al. 2021). The distinct influence of different, but comorbid, maternal mental health difficulties, such as postpartum depression, anxiety, and/or childbirth-related posttraumatic stress disorder (CB-PTSD) on infant attachment and infant anxiety is not well understood. A combination of several standardized maternal-report questionnaires that simultaneously and comprehensively assess maternal mental health and infant attachment can be useful tools for understanding the relationship between the two.

**The bidirectional associations between baseline maternal anxiety and depression and future infant anxiety and attachment and duration of associations may be of significant consequence.** We plan to use linear mixed models to leverage the longitudinal aspect of the found dataset and to analyze the answers from 410 participants of a battery of standardized maternal-report questionnaires. We hypothesize that there will be a bidirectional relationship whereby increased maternal anxiety and depression will lead to increased infant anxiety and attachment issues and vice versa. These analyses will not only uncover important dynamics between maternal mental health and infant attachment and anxiety, but also provide insight into additional factors that may be important for assessing and intervening with such relationships. Such analyses are crucial for informing modifications in existing standardized questionnaires and data collection methods in order to perform more comprehensive and inclusive studies in the future.

### **Data/materials**

We will use data on mental health (i.e., CB-PTSD, depression, anxiety) from people (n = 410) who have recently given birth with infants aged between 3-12 months. Standardized maternal-report questionnaires collected by (City BiTS, EPDS, HADS, BISQ, and IBQ-R very short form) will be included in our analyses. Sociodemographic data such as maternal age, marital status, educational level, infant age, and week of gestation are additionally reported. The dataset is available on [Zenodo](#). While the primary data collectors focused on infant sleep (Sandoz et al. 2022), we will focus on infant temperament and attachment. The data is formatted as follows:

File name	Format	Description
Codebook_CBTS-F_mother_validation.xlsx	Excel file (xlsx)	Includes description of and information about the variables for the dataset
Dataset_CBTS-F_mother_validation.csv	Comma separated values (CSV)	<p>Data table with 542 rows (participants) and 80 columns (variables)</p> <p>The first row outlines the variable labels. Each row after that corresponds to a participant with a participant # (first column) and the associated values for all variables. The information for the variables is listed in the “Codebook_CBTS-F_mother_validation.xlsx” file.</p>
Dataset_CBTS-F_mother_validation.xlsx	Excel file (xlsx)	<p>Excel version of the “Dataset_CBTS-F_mother_validation.csv” file.</p> <p>Data table with 542 rows (participants) and 80 columns (variables)</p> <p>The first row outlines the variable labels. Each row after that corresponds to a participant with a participant # (first column)</p>

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SANDOZ_CBTS-F_mother_validation_Readme.txt	Text file (txt)	Provides general information about the authors, data collection, datasets and files.

**Course impact/relevance.** This dataset includes categorical (e.g. marital status), ordinal (e.g. responses to the questionnaires), as well as continuous (e.g. age, duration of infant night sleep, etc) variables. Therefore, the methods we will use to assess the contribution of each variable in predicting the maternal/infant health state would lie within the umbrella of classification, as well as regression. Regression models would allow us to link different measures of anxiety and depression between the infant and the parents. This also falls in the umbrella of classification, given that many of the outcomes of interest - such as anxiety and depression - are categorical. Because linear models can be used to test specific questions and test their significance, this project connects with the topics of regression and hypothesis testing. The data could also be used to explore longitudinal models, basic linear associations, as well as interaction and mediation models.

**Outcome(s).** We expect to find a bidirectional effect between maternal and infant anxiety levels through the analyses of this dataset. We expect that increased maternal anxiety and depression will lead to increased anxiety and increased maternal-infant attachment challenges in the infant. In addition, we hypothesize that increased infant anxiety will lead to increased maternal anxiety and depression, and increased maternal-infant attachment challenges on the mother. We expect that baseline infant and maternal anxiety will be associated with increased anxiety and these effects will still be present many months into the future.

## References

Dekel, S., Thiel, F., Dishy, G., & Ashenfarb, A. L. (2019). Is childbirth-induced PTSD associated with low maternal attachment?. *Archives of women's mental health*, 22, 119-122.

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Handelzalts, J. E., Levy, S., Molmen-Lichter, M., Ayers, S., Krissi, H., Wiznitzer, A., & Peled, Y. (2021). The association of attachment style, postpartum PTSD and depression with bonding-A longitudinal path analysis model, from childbirth to six months. *Journal of Affective Disorders*, 280, 17-25. <https://doi.org/10.1016/j.jad.2020.10.068>

Sandoz, V.; Lacroix, A.; Stuijzand, S.; Bickle Graz, M.; Horsch, A. Maternal Mental Health Symptom Profiles and Infant Sleep: A Cross-Sectional Survey. *Diagnostics* 2022, 12, 1625. <https://doi.org/10.3390/diagnostics12071625>