

Large-scale collaborations: ManyBabies

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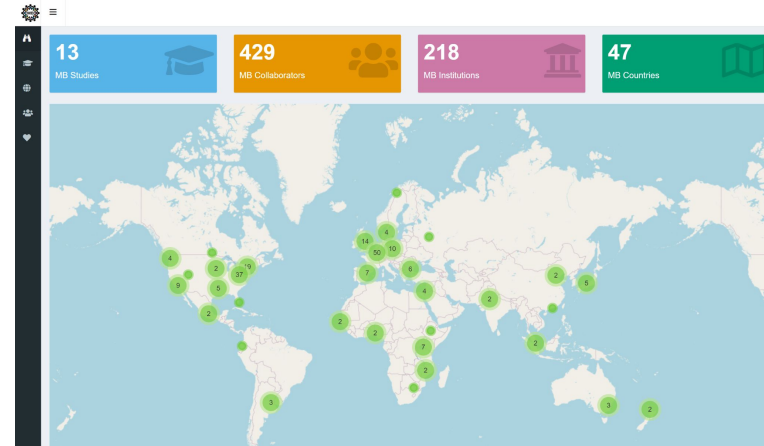
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What is ManyBabies?

Common theme: Early development

- ❖ Large-scale collaboration / network of developmental scientists
 - ❖ Promote open science, best practices
 - ❖ Consensus-based replications to address
 - Theoretical and
 - Methodological open questions
- Sources of variability?

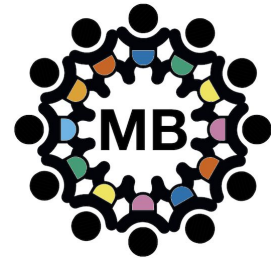


manybabies.stanford.edu

The ManyBabies approach

Ultimately built on trust, collaborativeness

- Sign up to support the "big" project
- Commit to core values
- Get support for involvement at the level that works
- Learning and growth opportunities



Open science opportunities (with a safety net)

- ★ Which OS tools to pick?
 - Others will help / make the choice
- ★ Try out OS tools (R, OSF, Github)
 - With guidance and documentation
 - With others in the same boat
- ★ Watch others how it's done
 - And see them struggle as well!
- ★ Leading teams (analysis, materials...) or whole projects

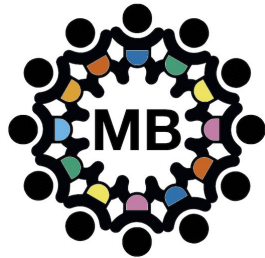
ManyBabies projects

Small group of leads

→ Propose question to the governing board

Benefit from existing community, infrastructure, standards (CoC, agreements on data use, etc), and experience

Open call for contribution at all levels (next slide), commitment to openness (i.e. open to input from all who want to contribute), transparency



ManyBabies projects

Empirical

MB1: Infant-Directed Speech Preference

- Completed

MB2: Theory of Mind in Infancy

- Piloting

MB3: Rule Learning

- Planning Design

MB4: Social Evaluation

- Piloting

MB5: The Hunter & Ames model

- Planning

Methodological

MB-AtHome: Online Infant Data Collection

- Soon piloting

ManyBabies 1 - Timeline

| | | |
|-----------------------|---------------|-------------|
| Idea | 2015-03-19/21 | (SRCD 2015) |
| Vote results | 2016-01-22 | |
| Pilot | 2016-09-01 | |
| Submission Stage 1 RR | 2016-12-12 | |
| Acceptance Stage 1 RR | 2017-04-27 | |
| Data collection start | 2017-05-01 | |
| Data collection end | 2018-06-15 | |
| Analysis (first pass) | 2018-07-12 | |
| Submission Stage 2 RR | 2019-03-07 | |
| Acceptance Stage 2 RR | 2019-09-23 | |

ManyBabies 1 - Timeline

| | | | |
|-----------------------|---------------|-------------------------|------------|
| Idea | 2015-03-19/21 | (SRCD 2015) | |
| Vote results | 2016-01-22 | | |
| Pilot | 2016-09-01 | "Theory paper" preprint | 2016-09-13 |
| Submission Stage 1 RR | 2016-12-12 | "Theory paper" pub. | 2017-03-09 |
| Acceptance Stage 1 RR | 2017-04-27 | MB1 preprint posted | 2017-04-14 |
| Data collection start | 2017-05-01 | | |
| Data collection end | 2018-06-15 | | |
| Analysis (first pass) | 2018-07-12 | | |
| Submission Stage 2 RR | 2019-03-07 | | |
| Acceptance Stage 2 RR | 2019-09-23 | MB1 paper published | 2020-03-16 |

Spin-off projects

Derived from "main" projects, like MB1

Spin-off projects

| | | | |
|-----------------------|---------------|---------------------|------------|
| Idea | 2015-03-19/21 | (SRCD 2015) | |
| Vote results | 2016-01-22 | | |
| Pilot | 2016-09-01 | | |
| Submission Stage 1 RR | 2016-12-12 | Bilingual infants | 2016-09-12 |
| Acceptance Stage 1 RR | 2017-04-27 | Test-Retest | 2017-10-10 |
| Data collection start | 2017-05-01 | CDI at 18/24 months | 2017-11-22 |
| Data collection end | 2018-06-15 | | |
| Analysis (first pass) | 2018-07-12 | | |
| Submission Stage 2 RR | 2019-03-07 | Meta-analysis comp. | 2019-05-03 |
| Acceptance Stage 2 RR | 2019-09-23 | | |

My ManyBabies Timeline

- 2015 (PostDoc in Paris) Join early discussions via mailing list
- 2016 Participate in MB1 design (stimuli, procedure...)
Co-author "Theory Paper" - specifically ECR section
- 2017 (New job in NL) Data processing, analysis, checking...
Join MB Governing Board
- 2019 (Leave) Write up MB1 paper
Start MB1-Meta Spin-off project
Join MB5 as co-lead
- 2020 Start MB-AtHome

What kinds of contributions are there?

- Leadership Team
- Planning
 - Stimulus creation
 - Procedure
 - Background information
 - Adaptation to different languages / cultures
- Writing
 - Registered Reports
- Data Processing and Analysis
- Management
- ...

What level of involvement is needed?

- ★ Fluctuation over time ok
 - Coming in late not a problem
- ★ Any level of initiative, from helping out as instructed to leading teams (e.g. analysis)

Contribution tracking!

Author Contributions

The order in which authors are listed here reflects the authorship order, rather than the order of their contribution to each of the individual elements. M. C. Frank, E. Bergelson, C. Bergmann, K. Byers-Heinlein, B. Ferguson, J. Gervain, J. K. Hamlin, M. Kline, C. Levelt, C. Lew-Williams, C. Marino, T. Nazzi, R. Panneton, H. Rabagliati, A. Seidl, and M. Soderstrom contributed to the study concept. M. C. Frank, C. Bergmann, K. Byers-Heinlein, C. Floccia, J. Gervain, N. Gonzalez-Gomez, J. K. Hamlin, E. E. Hannon, M. Kline, C. Lew-Williams, T. Nazzi, R. Panneton, H. Rabagliati, J. L. Rennels, S. Waxman, D. Yurovsky, and M. Soderstrom contributed to the study's design. M. C. Frank, R. Cusack, C. Floccia, D. J. Kellier, K. Klassen, C. Lew-Williams, R. Panneton, M. Shukla, and M. Soderstrom contributed to the creation of the stimuli. N. Gonzalez-Gomez, J. K. Hamlin, and D. J. Kellier contributed to pilot testing. M. C. Frank, C. Bergmann, R. Blything, K. Byers-Heinlein, C. Delle Luche, L. de Ruiter, B. Ferguson, I. Jackson, M. Kline, J. F. Kominsky, M. Mastroberardino, K. Twomey, and D. Yurovsky contributed to the final protocol. M. C. Frank, C. Bergmann, K. Byers-Heinlein, J. Gervain, M. Kline, C. Lew-Williams, M. Mastroberardino, and M. Soderstrom contributed to the documentation of the study. M. C. Frank, C. Bergmann, K. Byers-Heinlein, R. L. A. Frost, J. K. Hamlin, M. Kline, C. Lew-Williams, K. Twomey, and M. Soderstrom contributed to study management. K. J. Alcock, N. Arias-Trejo, G. Aschersleben, D. Baldwin, S. Barbu, A. K. Black, M. P. Böhland, P. Bolitho, A. Borovsky, S. M. Brady, B. Braun, A. Brown, K. Byers-Heinlein, L. E. Campbell, C. Cashon, M. Choi, J. Christodoulou, L. K. Cirelli, S. Conte, S. Cordes, C. Cox, A. Cristia, C. Davies, M. de Klerk, C. Delle Luche, L. de Ruiter, D. Dinakar, K. C. Dixon, V. Durier, S. Durrant, C. Fennell, A. Ferry, P. Fikkert, T. Flanagan, C. Floccia, M. Foley, T. Fritzsche,

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Contribution tracking!

- Early Concept
- Study Design
- IDS/ADS Stimuli
- Ran Pilot
- Protocol Code/Script
- Documentation
- Study Management
- Data Collection
- Data Analysis
- Stage 1 Manuscript
- Stage 2 Manuscript
- Other (briefly describe)

| Author Last Name | Affiliation | labid | Grant acknowledgment(s) | INDICATOR (REPRESENTATIVE OF STUDY RESULTS) | | | | | | | | | | | | | |
|-------------------|---|-----------------------|---|---|--------------|-----------------|-----------|----------------------|---------------|------------------|-----------------|---------------|--------------------|--------------------|---|--|---|
| | | | | Early Concept | Study Design | IDS/ADS Stimuli | Ran Pilot | Protocol Code/Script | Documentation | Study Management | Data Collection | Data Analysis | Stage 1 Manuscript | Stage 2 Manuscript | | | |
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| Quitt | Lund University | biolublund | | Y | | | | | | | | | | | | | S |
| Lindell | Lund University | biolublund | | Y | | | | | | | | | | | | | S |
| Nazzi | University Paris Descartes | biolubparisdescartes1 | | Y | | M | | | | | | | | | | | M |
| Van Hoozen | University Paris Descartes | biolubparisdescartes1 | | Y | | M | | M | | | | | | | | | S |
| Prinzke | University of Potsdam | biolubpotsdam | | Y | | | | | | | | | | | | | S |
| Helm | University of Potsdam | biolubpotsdam | | Y | | | | | | | | | | | | | S |
| Lee-Williams | Princeton University | biolubprinceton | NH R03 HD075779 | Y | | S | S | S | S | | | | M | S | | | M |
| Pfister | Princeton University | biolubprinceton | | Y | | | | | | | | | | | | | S |
| Sale | Princeton University | biolubprinceton | | Y | | | | | | | | | | | | | S |
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| Christakou | UCLA | biolub-ucla_johnson | | Y | | | | | | | | | | | | | S |
| Johnson | UCLA | biolub-ucla_johnson | | Y | | | | | | | | | | | | | S |
| Orici | University of Massachusetts Boston | biolubumassb | | Y | | | | | | | | | | | | | S |
| Spaulo | University of Massachusetts Boston | biolubumassb | | Y | | | | | | | | | | | | | S |
| de Klerk | Utrecht University | biolubutrecht | | Y | | | | M | | | | | | | | | S |
| de Klerk | Utrecht University | biolubutrecht | | Y | | | | | | | | | | | | | S |
| Jung | Utrecht University | biolubutrecht | | Y | | | | | | | | | | | | | S |
| Borloo | Victoria University of Wellington | biolubvuw | | Y | | | | | | | | | | | | | M |
| Martin | Victoria University of Wellington | biolubvuw | | Y | | | | | | | | | | | | | M |
| Chen | University of York | biolub-york | | Y | | | | | | | | | | | | | S |
| Karen-Pondry | University of York | biolub-york | | Y | | | | | | | | | | | | | S |
| Bluth | University of Bristol | biolubbristol | | Y | | | | | | | | S | | | | | S |
| Datta-Laha | University of Bristol | biolubbristol | | Y | | | | | | | | S | | | | | S |
| Proenca | University of Plymouth | biolubplymouth | | Y | | | | | M | M | | | | | | | M |
| Kanathra | University of Ohio | biolubohio | | Y | | | | | | | | | | | | | S |
| Meyer | University of Ohio | biolubohio | | Y | | | | | | | | | | | | | S |
| Tsao | University of Ohio | biolubohio | | Y | | | | | | | | | | | | | S |
| Baldwin | University of Oregon | biolubuorregon | | Y | | | | | | | | | | | | | M |
| Koese | University of Oregon | biolubuorregon | | Y | | | | | | | | | | | S | | S |
| Houston | The Ohio State University | biolubosu | | Y | | | | | | | | | | | | | S |
| Kilane | The Ohio State University | biolubosu | | Y | | | | | | | | | | | | | S |
| Wang | The Ohio State University | biolubosu | | Y | | | | | | | | | | | | | S |
| Klassen | University of Montreal | biolubmontreal | | Y | | | | | | S | | | | | | | S |
| Spiegelman | University of Montreal | biolubmontreal | Research Montreal, University of Montreal, Children's Hospital Research Institute of Montreal | Y | | S | S | M | | | | S | S | S | | | S |
| Konrad | Bogazici University | biolub-bog | The Science Academy, Turkey Young Scientist Award Program (BAGBIP) | Y | | | | | | | | | | | | | S |
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| Wolcott | University of Newcastle, Australia | biolubunsw | | Y | | | | | | | | | | | | | S |
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| Perry | University of Manchester | biolubmanchester | ESPC ES/L00955/1 | Y | | | | | | | | S | | | | | S |
| Waller | University of Manchester | biolubmanchester | ESPC ES/L00955/1 | Y | | | | | | | | S | | | | | S |
| Theissen | University of Manchester | biolubmanchester | ESPC ES/L00955/1 | Y | | | | | | | | S | | | | | M |
| Ko | Chonnam University | biolubchonnam | NSF grant1431243 | Y | | | | | | | | | | | | | S |
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| Lundvall | Bingham Young University | biolubbyu | | Y | | | | | | | | | | | | | M |
| Reynolds | University of Tennessee, Knoxville | biolubutknox | | Y | | | | | | | | | | | | | S |
| Ryan | University of Tennessee, Knoxville | biolubutknox | | Y | | | | | | | | | | | | | S |
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| Howard | Princeton & Marshall College | biolubprinceton | | Y | | | | | | | | | | | | | S |
| Bhatnagar | Technische Universität Dresden | biolubtu-dresden | | Y | | | | | | | | | | | | | S |
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| Lambert | University of Rennes 1 - CNRS | biolubrennes1 | | Y | | | | | | | | | | | | | S |
| Chen | Boston College | biolubbc | | Y | | | | | | | | | | | | | S |
| Savelkoul | Boston College | biolubbc | | Y | | | | | | | | | | | | | S |

Open Science outputs of ManyBabies1

1. Data standard / codebooks (see also psych-DS and ACLEW)
2. Data peeking agreement (honor system, in the process of formalization)
3. Centralized analysis scripts (re-usable with the data standard)
4. Introduction to OSF
5. Population documentation (participant questionnaires)
6. Setup and documentation instructions

What did ManyBabies teach me (so far)

Preregistration and Registered Reports:

How to deal with deviations, unexpected events

Lessons learned - Preregistration

psyarxiv.com/es2gx

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Preregistration in infant research - a primer

AUTHORS
Naomi Havron, Christina Bergmann, Sho Tsuji

DOI: 10.1111/infa.12353

RESEARCH ARTICLE

IN FANCY THE JOURNAL OF THE INTERNATIONAL CONSORTIUM OF INFANT STUDIES WILEY

Downloads: 313

ella Paul has endorsed this work.

Abstract
Preregistration, the act of specifying a research plan in advance, is becoming more common in scientific research. Infant researchers contend with unique problems that might make preregistration particularly challenging. Infants are a hard-to-reach population, usually yielding small sample sizes, they can only complete a limited number of trials, and they can be excluded based on hard-to-predict complications (e.g., parental interference, fussiness). In addition, as effects themselves potentially change with age and population, it is hard to calculate an a priori effect size. At the same time, these very factors make preregistration in infant studies a valuable tool. A priori examination of the planned study, including the hypotheses, sample size, and resulting statistical power, increases the credibility of single studies and adds value to the field. Preregistration might also improve explicit decision making to create better studies. We present an in-depth discussion of the issues uniquely relevant to infant researchers, and ways to contend with them in preregistration and study planning. We provide recommendations to researchers interested in following current best practices.

Preregistration in infant research
Naomi Havron, Christina Bergmann, Sho Tsuji

This is the preprint of an article accepted for publication in *Infancy*. Retrieved from <https://psyarxiv.com/es2>.

Please cite as:
Havron, N., Bergmann, C., & Tsuji, S. (in press). Preregistration in infant research. *Infancy*. Retrieved from <https://psyarxiv.com/es2>.

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Keywords: Open Science, Preregistration, Best Practice

Acknowledgments: This work was partially funded by ANR-11-0001-02 PSL, and ANR-12-DSSA-0005-01

The authors declare no conflicts of interest with regard to the publication of this preprint.

Funding information
Agence Nationale de la Recherche, Grant/Award Number: ANR-11-0001-02, ANR-12-DSSA-0005-01 and ANR-17-EURE-0017

Behavioral Sciences | Developmental Psychology

Social Development | Infancy | Cognitive Development | Toddlerhood/Preschool Period | Language Acquisition | Perceptual Development

For PsyArxiv.docx
Created: December 12, 2019 | Last edited: May 21, 2020



An infant research preregistration checklist

Infant Preregistration Checklist

This checklist corresponds to [Citation of article]

Checklist

Hypothesis

See section 2.1 of article

- Included rationale for research hypothesis
- Specified hypothesis or hypotheses as clear statements about outcomes, including directionality where applicable
 - For instance: Infants will increase their looks to target after hearing X /Only infants in X condition will look longer at the screen in the test trials, but not infants from Y condition.
- Made sure that the analysis you selected enables you to evaluate your expected outcomes and hypotheses

Sample size

See section 2.2.1 of article

- Specified sample size
- Specified sample size rationale
 - You can mention a power analysis, technical constraints, simulations or other motivations. Consider preregistering a sequential analysis

Common problems and proposed solutions

- Prediction allows several patterns of results
 - Clearly state these different possible patterns
- End of data collection is constrained by practical constraints
 - Specify these practical constraints (e.g., end date, budget limit, parental consent)
- No adequate literature to base power analyses on
 - Lean on studies that are as close as possible and consider the outcome of power analysis as an approximation of your desired sample size
- Effect size is small and required sample size is not feasible

What did ManyBabies teach me (so far)

Preregistration and Registered Reports:

How to deal with deviations, unexpected events

Data processing and analysis

Anonymization is key

Document, document, document

Levels of access

Practical infant data sharing

Levels of access



Practical infant data sharing

Levels of access



→ Share de-personalized data when possible



Example:

`raw_data.csv`

`codebook.csv`

`mock_data.csv`

`preprocessing.R`

`derived_data.csv`

`analysis.R`



Practical infant data sharing

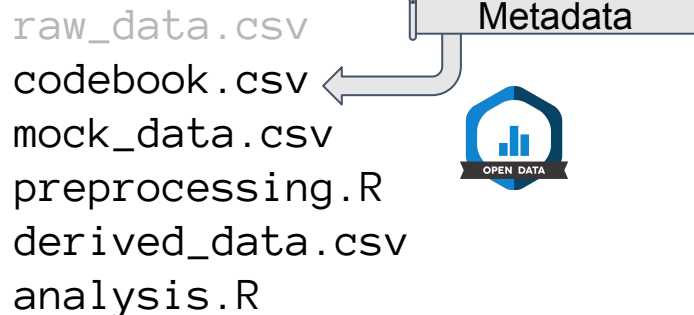
Levels of access



→ Share de-personalized data when possible



Example:



What did ManyBabies teach me (so far)

Preregistration and Registered Reports:

How to deal with deviations, unexpected events

Data processing and analysis

Anonymization is key

Document, document, document

Levels of access

Best coding practices

Validation

Co-piloting or independent review

Gains beyond tangible open science practices

- ❖ Appreciation for unexpected variation in experimenting
 - We need to document much more
 - Walkthrough videos

Gains beyond tangible open science practices

- ❖ Appreciation for unexpected variation in experimenting
 - We need to document much more
 - Walkthrough videos
- ❖ Collaborative mindset in everyday research

How can a collaborative mindset help in day-to-day lab life?

- ❖ "Replication buddies"
- ❖ Cross-lab mentorship and training opportunities
- ❖ Turn conceptual discussions into fruitful collaborations

Gains beyond tangible open science practices

- ❖ Appreciation for unexpected variation in experimenting
 - We need to document much more
 - Walkthrough videos
- ❖ Collaborative mindset in everyday research
- ❖ International network, lower hurdles to contacting MB team members
- ❖ Openness means open to everyone

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