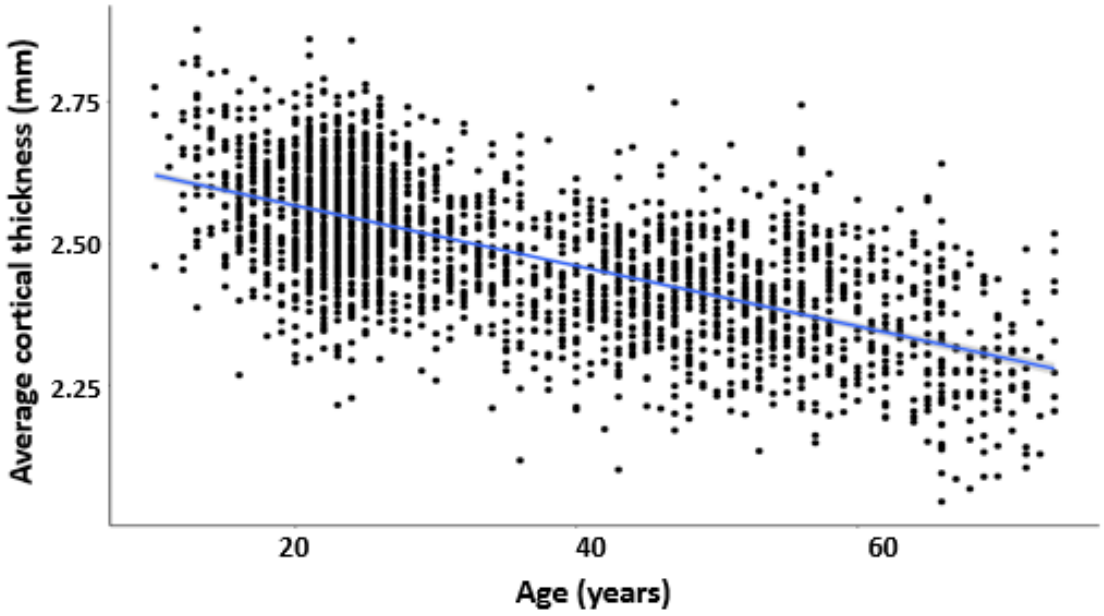
SITE EFFECT CORRECTION USING NORMATIVE MODELLING

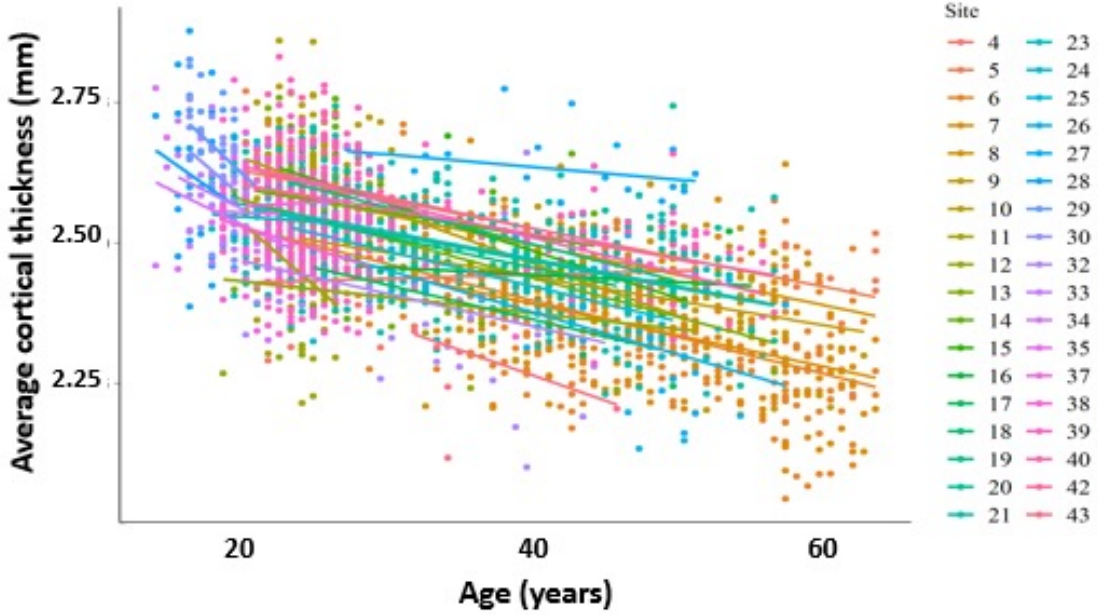
Normative modelling educational course

OHBM 2024, Seoul

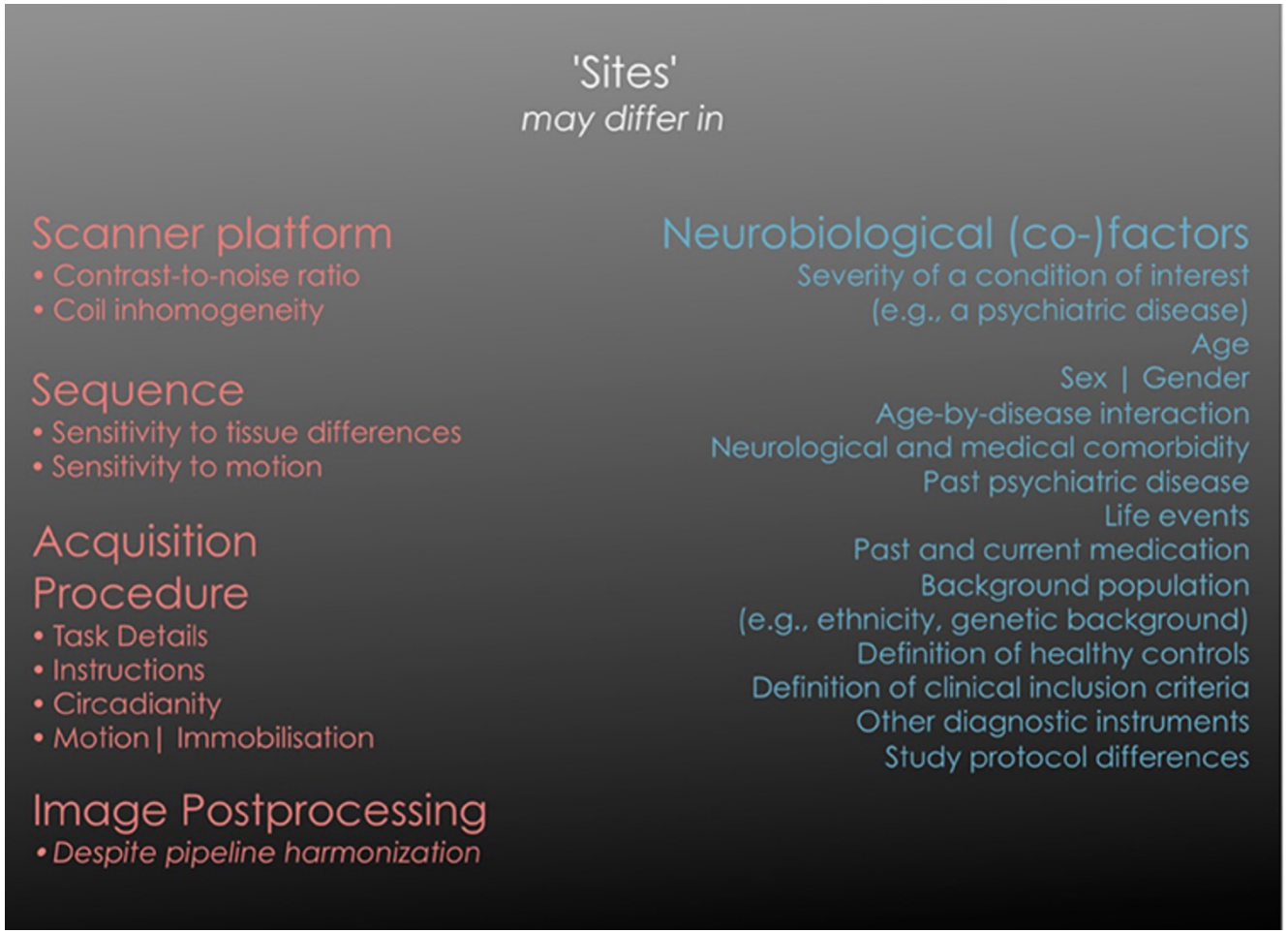
Radboud University

THE SITE EFFECT PROBLEM





ORIGINS OF SITE EFFECTS



Bayer et al. 2022

METHODS TO CORRECT FOR SITE EFFETCS

OPEN ACCESS

EDITED BY
Maxime Descoteaux,
Université de Sherbrooke, Canada

REVIEWED BY
Paul Gerson Unschuld,
Université de Genève, Switzerland
Muhamed Barakovic,
University of Basel, Switzerland

*CORRESPONDENCE
Johanna M. M. Bayer
bayerj@student.unimelb.edu.au

†These authors share last autl

SPECIALTY SECTION
This article was submitted to

Site effects how-to and when: An overview of retrospective techniques to accommodate site effects in multi-site neuroimaging analyses

Johanna M. M. Bayer[1,2]*, Paul M. Thompson[3],

Review

Image harmonization: A review of statistical and deep learning methods for removing batch effects and evaluation metrics for effective harmonization

Fengling Hu[a,*], Andrew A. Chen[a], Hannah Horng[a], Vishnu Bashyam[b], Christos Davatzikos[b], Aaron Alexander-Bloch[c,d,e], Mingyao Li[f], Haochang Shou[a,b], Theodore D. Satterthwaite[c,d,g], Meichen Yu[h,#], Russell T. Shinohara[a,b,#]

[a] *Penn Statistics in Imaging and Visualization Endeavor (PennSIVE), Department of Biostatistics, Epidemiology, and Informatics, Perelman School of Medicine, University*

NOMRATIVE MODELLING FOR SITE EFFECT CORRECTION

Accommodating site variation in neuroimaging data using normative and hierarchical Bayesian models

Johanna M M Bayer
Thomas Wolfers [4],

Affiliations + expa

PMID: 36272672 F

RESEARCH ARTICLE | Open Access

Estimating cortical thickness trajectories in children across different scanners using transfer learning from normative models

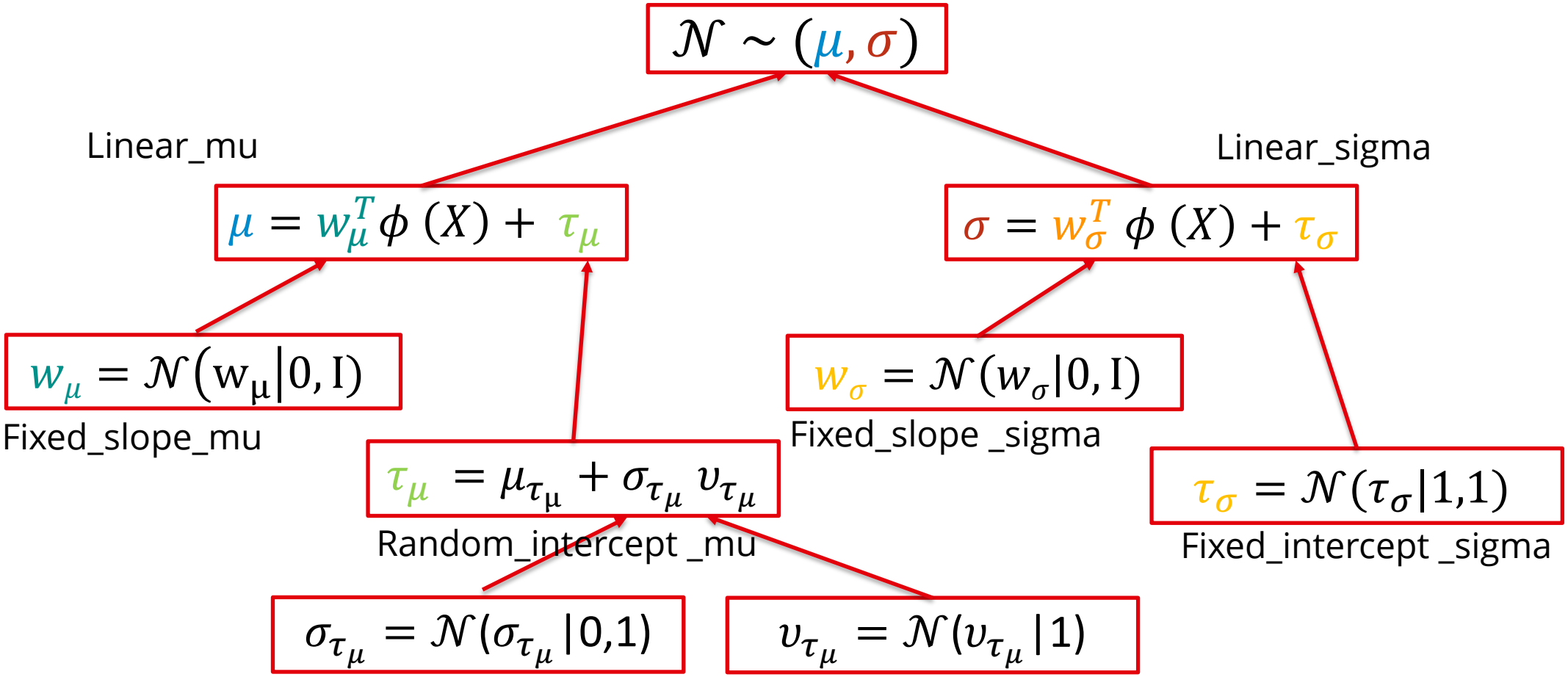
C. Gaiser, P. Berthet, S. M. Kia, M. A. Frens, C. F. Beckmann, R. L. Muetzel, Andre F. Marquand

First published: 05 February 2024 | https://doi.org/10.1002/hbm.26565

USE CASES FOR NORMATIVE MODELLING FOR SITE EFFECT CORRECTION

- 1. Making predictions for a site that is already in the training set.
- 2. “Translating” values between sites.
- 3. Adjusting the site effect difference to data (sites) that are not in the training set.
  - Posterior of fitted data set will be used as priors for fitting new (unseen) sites.

HIERARCHICAL BAYESIAN MODEL



Spoiler: linear_delta and linear_epsilon for skewness and kurtosis also possible