GMIA R21 Phase Statistical Analysis Plan

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Inclusion Criteria:

Study: Full term, vaginal delivery, exclusively breastfed to first visit

Microbiome: providing adequate fecal samples at 0 or 1 years

MRI: useable brain volumes at either 0 or 1 years

Behavior: useable video at 1 year

Exclusion Criteria:

Study: Antibiotics to first visit, NICU time

MRI: incidental pathological findings at either 0 or 1

Subjects in Total (having useable microbiome data at neo or 1): 34

MA001, MA004, MA006, MA007, MA008, MA011, MA012, MA013, MA014, MA015, MA016, MA018, MA019, MA020, MA022, MA023, MA024, MA025, MA026, MA027, MA028, MA029, MA030, MA032, MA033, MA036, MA037, MA038, MA039, MA040, MA043, MA044, MA045, MA046

Subjects with useable neo microbiome: 32

MA001.NEO, MA004.NEO, MA006.NEO, MA007.NEO, MA008.NEO, MA011.NEO, MA012.NEO, MA013.NEO, MA014.NEO, MA015.NEO, MA016.NEO, MA020.NEO, MA022.NEO, MA023.NEO, MA024.NEO, MA025.NEO, MA026.NEO, MA027.NEO, MA028.NEO, MA029.NEO, MA030.NEO, MA032.NEO, MA033.NEO, MA036.NEO, MA037.NEO, MA038.NEO, MA039.NEO, MA040.NEO, MA043.NEO, MA044.NEO, MA045.NEO, MA046.NEO

Subjects with useable 1yr microbiome: 21

MA001.1yr, MA004.1yr, MA006.1yr, MA007.1yr, MA008.1yr, MA012.1yr, MA014.1yr, MA018.1yr, MA019.1yr, MA020.1yr, MA022.1yr, MA023.1yr, MA024.1yr, MA025.1yr, MA026.1yr, MA027.1yr, MA028.1yr, MA029.1yr, MA030.1yr, MA032.1yr, MA036.1yr

Subjects with longitudinal microbiome: 19

MA001, MA004, MA006, MA007, MA008, MA012, MA014, MA020, MA022, MA023, MA024, MA025, MA026, MA027, MA028, MA029, MA030, MA032, MA036

Subjects with useable neo brain volumes: 28

MA004, MA006, MA007, MA008, MA011, MA012, MA013, MA014, MA016, MA019, MA020, MA022, MA023, MA024, MA025, MA026, MA027, MA028, MA029, MA032, MA033, MA036, MA037, MA038, MA039, MA043, MA044, MA045

Subjects with useable 1yr brain volumes: 15

MA001, MA004, MA006, MA008, MA012, MA016, MA019, MA020, MA022, MA025, MA026, MA028, MA029, MA033, MA036

Subjects with useable mask behavior: 20

MA001, MA006, MA007, MA008, MA012, MA013, MA014, MA016, MA019, MA023, MA024, MA026, MA029, MA030, MA032, MA036, MA037, MA038, MA039, MA045

Subjects with useable strange situation behavior: 30

MA001, MA004, MA006, MA007, MA008, MA012, MA013, MA014, MA016, MA018, MA019, MA020, MA022, MA023, MA024, MA025, MA026, MA027, MA028, MA029, MA030, MA032, MA036, MA037, MA038, MA039, MA043, MA044, MA045, MA046

Subjects with useable IBQ-R: 27

MA001, MA004, MA006, MA007, MA008, MA012, MA016, MA018, MA020, MA022, MA023, MA024, MA025, MA026, MA027, MA028, MA029, MA030, MA032, MA033, MA036, MA037, MA038, MA039, MA043, MA044, MA045

Predictors: Neonate Alpha Diversity (Shannon, pd.whole, chao1, observed species), 1yr Alpha Diversity (Shannon, pd.whole, chao1, observed species), Neonate Beta Diversity (Weighted Unifrac PC1 and PC2), 1yr Beta Diversity (Weighted Unifrac PC1 and PC2)

Outcomes: Neonate Brain Volumes (amygdala, hippocampus, mPFC), 1yr Brain Volumes (amygdala, hippocampus, mPFC), Mask Task, Strange Situation, IBQ-R

**Remaining Analysis Needed as of 12/10/18:**

1. **Covariates ~ Microbiome + FDR correction for number of covariates at each age**
   1. **Neonate Covariates to be tested with neo microbiome (see item 1 below, FDR correction for 16 items):**

categorical: income.code, maternalpsych, sex, METHNIC, PETHNIC, older.sibling, prepregBMI, maternalinfection, vitamindneo; continuous: gestagebirth, BW, MAGE, MEDUY, PAGE, PEDUY, AGEVISITNEO

* 1. **1 Yr Covariates to be tested with 1 yr Microbiome (see item 2 below, FDR correction for 32 items):**

categorical: income.code, OLDERSIBLINGS, SEX, MaternalInfection, MPSYCH, VITAMINDNEO, PrePregBMI, Antibiotic\_1yr, FEVER\_1yr, DAYCARE, CURBRFEED\_1yr, FORMULA\_1yr, MILKS\_1yr, FrenchFries\_1yr, SweetFoodsDrinks\_1yr, PeanutButter\_1yr, FORMULA\_6mo, VITAMIND\_6mo, Cereals\_6mo; continuous: BW, gestagebirth, AgeAt1yrVisit, MAGE, PAGE, MEDUY, PEDUY, WHSTOTHER, Negative Life Events (LES\_17NOV18), Positive Life Events (LES\_17NOV18), Total Life Events (LES\_17NOV18), State Anxiety (STAI\_17NOV18), Trait Anxiety (STAI\_17NOV18).

1. **Covariates ~ SS (item 3 below)/Mask Task (item 4 below) or IBQ-R (item 5 below) + FDR correction for number of covariates at each age**
   1. **Covariates to be tested with SS (FDR correction for 33 items):**

categorical: income.code, maternalpsych, sex, older.sibling, prepregBMI, maternalinfection, vitamindneo, Antibiotic\_1yr, FEVER\_1yr, DAYCARE, CURBRFEED\_1yr, FORMULA\_1yr, MILKS\_1yr, FrenchFries\_1yr, SweetFoodsDrinks\_1yr, PeanutButter\_1yr, FORMULA\_6mo, VITAMIND\_6mo, Cereals\_6mo, Stranger (alex or jared); continuous: gestagebirth, BW, MAGE, MEDUY, PAGE, PEDUY, AgeAt1yrVisit, WHSTOTHER, Negative Life Events (LES\_17NOV18), Positive Life Events (LES\_17NOV18), Total Life Events (LES\_17NOV18), State Anxiety (STAI\_17NOV18), Trait Anxiety (STAI\_17NOV18).

* 1. **Covariates to be tested with Mask Task (FDR correction for 32 items):**

categorical: income.code, maternalpsych, sex, older.sibling, prepregBMI, maternalinfection, vitamindneo, Antibiotic\_1yr, FEVER\_1yr, DAYCARE, CURBRFEED\_1yr, FORMULA\_1yr, FrenchFries\_1yr, SweetFoodsDrinks\_1yr, PeanutButter\_1yr, FORMULA\_6mo, VITAMIND\_6mo, Cereals\_6mo, Stranger (alex or jared); continuous: gestagebirth, BW, MAGE, MEDUY, PAGE, PEDUY, AgeAt1yrVisit, WHSTOTHER, Negative Life Events (LES\_17NOV18), Positive Life Events (LES\_17NOV18), Total Life Events (LES\_17NOV18), State Anxiety (STAI\_17NOV18), Trait Anxiety (STAI\_17NOV18).

* 1. **Covariates to be tested with IBQ-R (FDR correction for 32 items):**

categorical: income.code, maternalpsych, sex, older.sibling, prepregBMI, maternalinfection, vitamindneo, Antibiotic\_1yr, FEVER\_1yr, DAYCARE, CURBRFEED\_1yr, FORMULA\_1yr, MILKS\_1yr, FrenchFries\_1yr, SweetFoodsDrinks\_1yr, PeanutButter\_1yr, FORMULA\_6mo, VITAMIND\_6mo, Cereals\_6mo; continuous: gestagebirth, BW, MAGE, MEDUY, PAGE, PEDUY, AgeAt1yrVisit, WHSTOTHER, Negative Life Events (LES\_17NOV18), Positive Life Events (LES\_17NOV18), Total Life Events (LES\_17NOV18), State Anxiety (STAI\_17NOV18), Trait Anxiety (STAI\_17NOV18).

**Remaining Analysis Needed as of 12/10/18:**

1. **MA021 should be removed from all analyses**
2. **MA042 should be removed from all analyses as that subject does not have useable microbiome data – do not include in covariate analyses.**
3. **Change in Alpha Diversity from neo to 1yr ~ Mask, SS, and IBQ-R**
   1. **See items 16,17,18,18 below**
4. **Note that all global tissue volume analyses have been removed from data analysis plan**
5. **2x2 Correlation Table between Neonate WUnifrac PC1, Neonate WUnifrac PC2, 1yr WUnifrac PC1, and 1yr WUnifrac PC2.** 
   1. **See item 6 below**
6. **Correlation between RM Strange Situation Outcomes, RM Mask Task Outcomes (facial fear, bodily fear, vocal distress, escape behavior, startle response), and IBQ-R** 
   1. **See item 7 below**
7. **Please note that alpha diversity ~ PICRUSt analyses have been removed – we will only examine beta diversity ~ PICRUSt. Each PICRUSt level (L1, L2, L3) should be FDR corrected for that level. L1 for 8 items, L2 for 41 items, L3 for 328 items**
8. **R2 has been added as needed output in items below. Nature Communications requires: “**For null hypothesis testing, the test statistic (e.g. F, t, r) with confidence intervals, effect sizes, degrees of freedom and P value noted Give P values as exact values whenever suitable.” Along with: “Estimates of effect sizes (e.g. Cohen's d, Pearson's r), indicating how they were calculated”
9. **After reviewing FDR significant covariates as a group, I will update data analysis plan to include sensitivity analyses where we will run appropriate sensitivity analyses with 1 covariate added to model at a time.**
10. **Neonate Alpha Diversity/Beta Diversity Covariate Identification**

Predictor:

categorical: income.code, maternalpsych, sex, METHNIC, PETHNIC, older.sibling, prepregBMI, maternalinfection, vitamindneo; continuous: gestagebirth, BW, MAGE, MEDUY, PAGE, PEDUY, AGEVISITNEO

Outcome:

alpha diversity indices (Pd.whole, Shannon, observed.species, chao1),

beta diversity (weighted Unifrac PC 1, PC2)

# of subjects: 32

Predictor Covariates: none

Outcome Covariates: none

Output:

* Estimate
* Pvalue
* Qvalue (16 items)

1. **1yr Alpha Diversity/Beta Diversity Covariate Identification**

Predictor:

categorical: income.code, OLDERSIBLINGS, SEX, MaternalInfection, MPSYCH, VITAMINDNEO, PrePregBMI, Antibiotic\_1yr, FEVER\_1yr, DAYCARE, CURBRFEED\_1yr, FORMULA\_1yr, MILKS\_1yr, FrenchFries\_1yr, SweetFoodsDrinks\_1yr, PeanutButter\_1yr, FORMULA\_6mo, VITAMIND\_6mo, Cereals\_6mo; continuous: BW, gestagebirth, AgeAt1yrVisit, MAGE, PAGE, MEDUY, PEDUY, WHSTOTHER, Negative Life Events (LES\_17NOV18), Positive Life Events (LES\_17NOV18), Total Life Events (LES\_17NOV18), State Anxiety (STAI\_17NOV18), Trait Anxiety (STAI\_17NOV18).

Outcome:

alpha diversity indices (Pd.whole, Shannon, observed.species, chao1)

beta diversity (weighted Unifrac PC 1, PC2)

# of subjects: 21

Predictor Covariates: none

Outcome Covariates: none

Output:

* Estimate
* Pvalue
* Qvalue (FDR correction for 32 items)

1. **Covariates ~ Mask Task Outcomes**

Predictor:

categorical: income.code, maternalpsych, sex, older.sibling, prepregBMI, maternalinfection, vitamindneo, Antibiotic\_1yr, FEVER\_1yr, DAYCARE, CURBRFEED\_1yr, FORMULA\_1yr, FrenchFries\_1yr, SweetFoodsDrinks\_1yr, PeanutButter\_1yr, FORMULA\_6mo, VITAMIND\_6mo, Cereals\_6mo, Stranger (alex or jared); continuous: gestagebirth, BW, MAGE, MEDUY, PAGE, PEDUY, AgeAt1yrVisit, WHSTOTHER, Negative Life Events (LES\_17NOV18), Positive Life Events (LES\_17NOV18), Total Life Events (LES\_17NOV18), State Anxiety (STAI\_17NOV18), Trait Anxiety (STAI\_17NOV18).

Outcome:

**latency to fear response**, Repeated measure of **facial fear, bodily fear, vocal distress, escape behavior, startle response.**

# of subjects: 20 (subjects with useable mask task data listed on page 1)

Predictor Covariates: none

Outcome Covariates: none

Output:

* Estimate
* Pvalue
* Qvalue (FDR correction for 32 items)

1. **Covariates ~ Strange Situation Outcomes**

Predictor:

categorical: income.code, maternalpsych, sex, older.sibling, prepregBMI, maternalinfection, vitamindneo, Antibiotic\_1yr, FEVER\_1yr, DAYCARE, CURBRFEED\_1yr, FORMULA\_1yr, MILKS\_1yr, FrenchFries\_1yr, SweetFoodsDrinks\_1yr, PeanutButter\_1yr, FORMULA\_6mo, VITAMIND\_6mo, Cereals\_6mo, Stranger (alex or jared); continuous: gestagebirth, BW, MAGE, MEDUY, PAGE, PEDUY, AgeAt1yrVisit, WHSTOTHER, Negative Life Events (LES\_17NOV18), Positive Life Events (LES\_17NOV18), Total Life Events (LES\_17NOV18), State Anxiety (STAI\_17NOV18), Trait Anxiety (STAI\_17NOV18).

Outcome:

1. Repeated measure of strange situation wariness over 3 episodes
2. Episode 3.1
3. Episode 3.2
4. Episode 3.3

# of subjects: 30 (subjects that have useable SS data listed on page 2)

Predictor Covariates: none

Outcome Covariates: none

Output:

* Estimate
* Pvalue
* Qvalue (FDR correction for 33 items)

1. **Covariates ~ IBQ-R Outcome**

Predictor:

categorical: income.code, maternalpsych, sex, older.sibling, prepregBMI, maternalinfection, vitamindneo, Antibiotic\_1yr, FEVER\_1yr, DAYCARE, CURBRFEED\_1yr, FORMULA\_1yr, MILKS\_1yr, FrenchFries\_1yr, SweetFoodsDrinks\_1yr, PeanutButter\_1yr, FORMULA\_6mo, VITAMIND\_6mo, Cereals\_6mo; continuous: gestagebirth, BW, MAGE, MEDUY, PAGE, PEDUY, AgeAt1yrVisit, WHSTOTHER, Negative Life Events (LES\_17NOV18), Positive Life Events (LES\_17NOV18), Total Life Events (LES\_17NOV18), State Anxiety (STAI\_17NOV18), Trait Anxiety (STAI\_17NOV18).

Outcome:

IBQ-r fear score

# of subjects: 27 (subjects with useable IBQ-r data listed on page 2)

Predictor Covariates: none

Outcome Covariates: none

Output:

* Estimate
* Pvalue
* Qvalue (FDR for 32 items)

1. **Correlation Matrix - 2x2 Correlation Table between Neonate WUnifrac PC1, Neonate WUnifrac PC2, 1yr WUnifrac PC1, and 1yr WUnifrac PC2**
2. **Correlation between RM Strange Situation Outcomes, RM Mask Task Outcomes (facial fear, bodily fear, vocal distress, escape behavior, startle response), and IBQ-R**
3. **Neonatal Beta Diversity - Neonatal PICRUSt**

Predictor: **neonatal** beta diversity (Weighted Unifrac PC1 and PC2)

Outcome: **neonatal** PICRUSt KEGG output (L1, L2, L3)

# of subjects: 32

Predictor Covariates: none

Outcome Covariates: none

Output:

* Estimate
* Pvalue
* Qvalue for L1 (FDR correction for 8 items)
* Qvalue for L2 (FDR correction for 41 items)
* Qvalue for L3 (FDR correction for 328 items)

1. **1yr Beta Diversity - 1yr PICRUSt**

Predictor: **1yr** beta diversity (Weighted Unifrac PC1 and PC2)

Outcome: **1yr** PICRUSt KEGG output (L1, L2, L3)

# of subjects: 21

Predictor Covariates: none

Outcome Covariates: none

Output:

* Estimate
* Pvalue
* Qvalue for L1 (FDR correction for 8 items)
* Qvalue for L2 (FDR correction for 41 items)
* Qvalue for L3 (FDR correction for 328 items)

1. **Neonatal Alpha Diversity – Neonatal Regional Grey Matter Volumes**

Predictor: **neonatal** alpha diversity indices (Pd.whole, Shannon, observed.species, chao1)

Outcome: **neonatal** imperial grey matter volumes (hippocampus\_LR, amygdala\_LR, mPFC)

# of subjects: 27

Predictor Covariates: none

Outcome Covariates: none

Output:

* Estimate
* R2
* Pvalue

1. **Neonatal Alpha Diversity – 1yr Regional Grey Matter Volumes**

Predictor: **neonatal** alpha diversity indices (Pd.whole, Shannon, observed.species, chao1)

Outcome: **1yr** imperial grey matter volumes (hippocampus\_LR, amygdala\_LR, mPFC)

# of subjects: 14

Predictor Covariates: none

Outcome Covariates: none

Output:

* Estimate
* R2
* Pvalue

1. **Neonatal Alpha Diversity – Mask Task Outcomes**

Predictor: **neonatal** alpha diversity indices (Pd.whole, Shannon, observed.species, chao1)

Outcome: **1yr** mask task behavior repeated measures model across masks (facial fear, vocal distress, bodily fear, startle response, escape behavior)

# of subjects: 19

Predictor Covariates: none

Outcome Covariates: none

Output:

* Estimate
* R2
* Pvalue

1. **Neonatal Alpha Diversity – Strange Situation Outcomes**

Predictor: **neonatal** alpha diversity indices (Pd.whole, Shannon, observed.species, chao1)

Outcome: **1yr** strange situation behavior repeated measures model across episodes 3.1,3.2,3.3

# of subjects: 28

Predictor Covariates: none

Outcome Covariates: none

Output:

* Estimate
* R2
* Pvalue

1. **Neonatal Alpha Diversity – Infant Behavior Questionnaire Fear Index**

Predictor: **neonatal** alpha diversity indices (Pd.whole, Shannon, observed.species, chao1)

Outcome: **1yr** IBQ-R Fear Score

# of subjects: 26

Predictor Covariates: none

Outcome Covariates: none

Output:

* Estimate
* R2
* Pvalue

1. **1yr Alpha Diversity – 1yr Regional Grey Matter Volumes**

Predictor: **1yr** alpha diversity indices (Pd.whole, Shannon, observed.species, chao1)

Outcome: **1yr** imperial grey matter volumes (hippocampus\_LR, amygdala\_LR, mPFC)

# of subjects: 13

Predictor Covariates: none

Outcome Covariates: none

Output:

* Estimate
* R2
* Pvalue

1. **1yr Alpha Diversity – 1yr Mask Task Outcomes**

Predictor: **1yr** alpha diversity indices (Pd.whole, Shannon, observed.species, chao1)

Outcome: **1yr** mask task behavior repeated measures model across masks (facial fear, vocal distress, bodily fear, startle response, escape behavior)

# of subjects: 14

Predictor Covariates: none

Outcome Covariates: none

Output:

* Estimate
* R2
* Pvalue

1. **1yr Alpha Diversity – 1yr Strange Situation Outcomes**

Predictor: **1yr** alpha diversity indices (Pd.whole, Shannon, observed.species, chao1)

Outcome: **1yr** strange situation behavior repeated measures model across episodes 3.1,3.2,3.3

# of subjects: 21

Predictor Covariates: none

Outcome Covariates: none

Output:

* Estimate
* R2
* Pvalue

1. **1yr Alpha Diversity – Infant Behavior Questionnaire Fear Index**

Predictor: **1yr** alpha diversity indices (Pd.whole, Shannon, observed.species, chao1)

Outcome: **1yr** IBQ-R Fear Score

# of subjects: 19

Predictor Covariates: none

Outcome Covariates: none

Output:

* Estimate
* R2
* Pvalue

1. Δ **Alpha Diversity – 1yr Regional Grey Matter Volumes**

Predictor: **Δ alpha diversity indices** from neo to 1yr (Pd.whole, Shannon, observed.species, chao1)

Outcome: **1yr** imperial grey matter volumes (hippocampus\_LR, amygdala\_LR, mPFC)

# of subjects: 12

Predictor Covariates: none

Outcome Covariates: none

Output:

* Estimate
* R2
* Pvalue

1. Δ **Alpha Diversity – 1yr Mask Task Outcomes**

Predictor: Δalpha diversity indices from neo to 1yr (Pd.whole, Shannon, observed.species, chao1)

Outcome: **1yr** mask task behavior repeated measures model across masks (facial fear, vocal distress, bodily fear, startle response, escape behavior)

# of subjects: 13

Predictor Covariates: none

Outcome Covariates: none

Output:

* Estimate
* R2
* Pvalue

1. Δ **Alpha Diversity – 1yr Strange Situation Outcomes**

Predictor: **Δ alpha diversity indices from neo to 1yr** (Pd.whole, Shannon, observed.species, chao1)

Outcome: **1yr** strange situation behavior repeated measures model across episodes 3.1,3.2,3.3

# of subjects: 19

Predictor Covariates: none

Outcome Covariates: none

Output:

* Estimate
* R2
* Pvalue

1. Δ **Alpha Diversity – Infant Behavior Questionnaire Fear Index**

Predictor: **Δ alpha diversity indices from neo to 1yr** (Pd.whole, Shannon, observed.species, chao1)

Outcome: **1yr** IBQ-R Fear Score

# of subjects: 18

Predictor Covariates: none

Outcome Covariates: none

Output:

* Estimate
* R2
* Pvalue

1. **Neonatal Beta Diversity – Neonatal Regional Grey Matter Volumes**

Predictor: **neonatal** beta diversity (weighted Unifrac PC1, PC2)

Outcome: **neonatal** imperial grey matter volumes (hippocampus\_LR, amygdala\_LR, mPFC)

# of subjects: 27

Predictor Covariates: none

Outcome Covariates: none

Output:

* Estimate
* R2
* Pvalue

1. **Neonatal Beta Diversity – 1yr Regional Grey Matter Volumes**

Predictor: **neonatal** beta diversity (weighted Unifrac PC1, PC2)

Outcome: **1yr** imperial grey matter volumes (hippocampus\_LR, amygdala\_LR, mPFC)

# of subjects: 14

Predictor Covariates: none

Outcome Covariates: none

Output:

* Estimate
* R2
* Pvalue

1. **Neonatal Beta Diversity – Mask Task Outcomes**

Predictor: **neonatal** beta diversity (weighted Unifrac PC1, PC2)

Outcome: **1yr** mask task behavior repeated measures model across masks (facial fear, vocal distress, bodily fear, startle response, escape behavior)

# of subjects: 19

Predictor Covariates: none

Outcome Covariates: none

Output:

* Estimate
* R2
* Pvalue

1. **Neonatal Beta Diversity – Strange Situation Outcomes**

Predictor: **neonatal** beta diversity (weighted Unifrac PC1, PC2)

Outcome: **1yr** strange situation behavior repeated measures model across episodes 3.1,3.2,3.3

# of subjects: 28

Predictor Covariates: none

Outcome Covariates: none

Output:

* Estimate
* R2
* Pvalue

1. **Neonatal Beta Diversity – Infant Behavior Questionnaire Fear Index**

Predictor: **neo** beta diversity (weighted Unifrac PC1, PC2)

Outcome: **1yr** IBQ-R Fear Score

# of subjects: 26

Predictor Covariates: none

Outcome Covariates: none

Output:

* Estimate
* R2
* Pvalue

1. **1yr Beta Diversity – 1yr Regional Grey Matter Volumes**

Predictor: **1yr** beta diversity (weighted Unifrac – PC1, PC2)

Outcome: **1yr** imperial grey matter volumes (hippocampus\_LR, amygdala\_LR, mPFC)

# of subjects: 13

Predictor Covariates: none

Outcome Covariates: none

Output:

* Estimate
* R2
* Pvalue

1. **1yr Beta Diversity – 1yr Mask Task Outcomes**

Predictor: **1yr** beta diversity (weighted Unifrac PC1, PC2)

Outcome: **1yr** mask task behavior repeated measures model across masks (facial fear, vocal distress, bodily fear, startle response, escape behavior)

# of subjects: 14

Predictor Covariates: none

Outcome Covariates: none

Output:

* Estimate
* R2
* Pvalue

1. **1yr Beta Diversity – 1yr Strange Situation Outcomes**

Predictor: **1yr** beta diversity (weighted Unifrac PC1, PC2)

Outcome: **1yr** strange situation behavior repeated measures model across episodes 3.1,3.2,3.3

# of subjects: 21

Predictor Covariates: none

Outcome Covariates: none

Output:

* Estimate
* R2
* Pvalue

1. **1yr Beta Diversity – Infant Behavior Questionnaire Fear Index**

Predictor: **1yr** beta diversity (weighted Unifrac PC1, PC2)

Outcome: **1yr** IBQ-R Fear Score

# of subjects: 19

Predictor Covariates: none

Outcome Covariates: none

Output:

* Estimate
* R2
* Pvalue