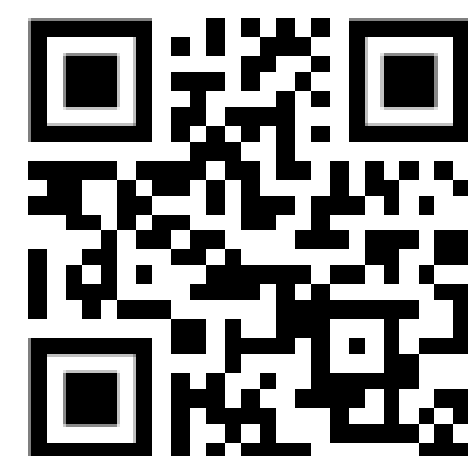


Early Adversity Is Associated With Altered Oral Microbiome Composition And a Blunted Correlation Between Cortisol and Microbiome Richness in Youth



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Introduction

- Early adversity increases risk for poor mental health outcomes¹
- Dysregulation of the oral microbiome could be one mechanism for adversity-induced health risk
- Prior adversity exposure may also moderate the effect of cortisol, a marker of recent stress, on the oral microbiome.^{2,3}
- While the oral microbiome has been examined in adults with early adversity exposure,⁴ it has not been examined in childhood, a period when the microbiome is stabilizing⁵

Aims

- **Aim 1:** Examine association between early adversity and the oral microbiome in youth
- **Aim 2:** Test whether adversity moderates the relationship between hair cortisol (a marker of recent physiological stress levels) and the microbiome
- **Aim 3:** Test whether the oral microbiome mediates the relationship between adversity and internalizing

Methods

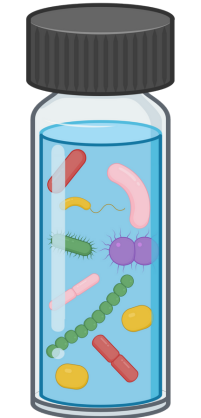
- Early adversity group: history of adoption/foster care
- Comparison group: low adversity
- Ages 6-16
- Internalizing: Child Behavior Checklist⁶
- Amplicon sequence variants (ASVs) formed with DADA2⁷
- Alpha diversity, beta diversity, & abundance analyses
- Distance-based mediation analysis⁸

N=88
Comparison

N=66
Adversity

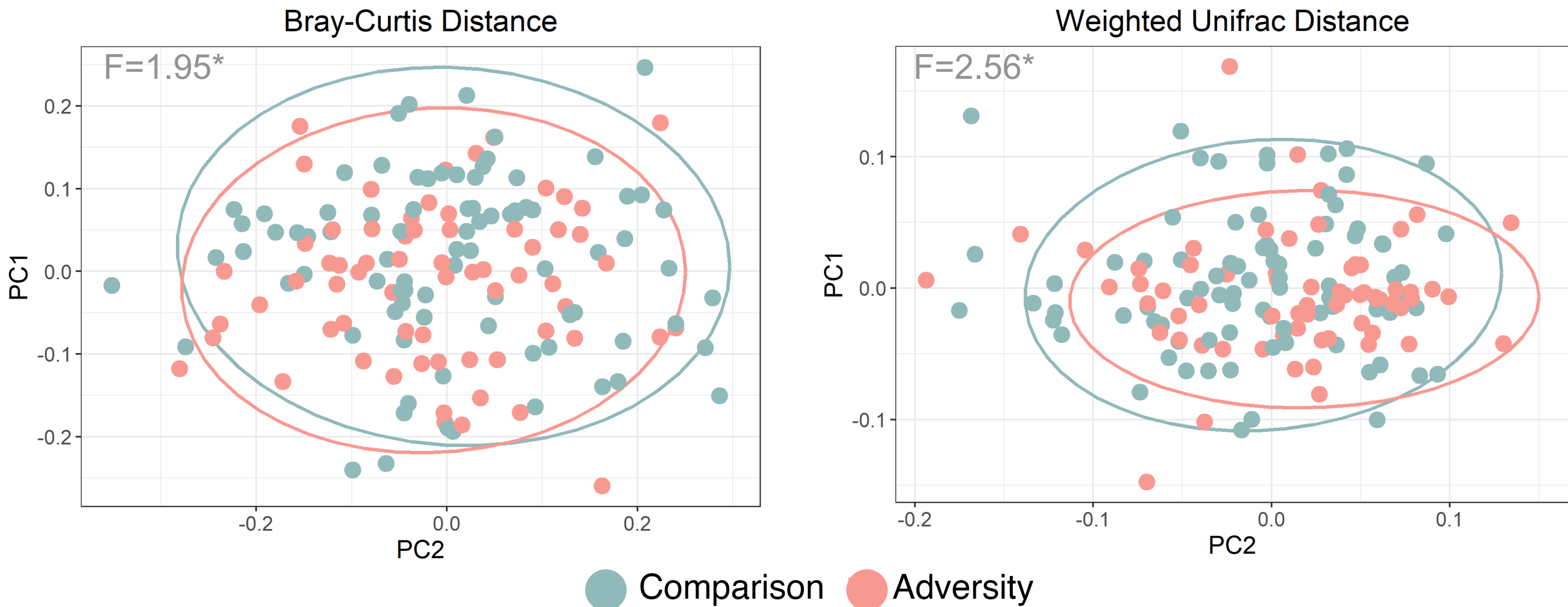
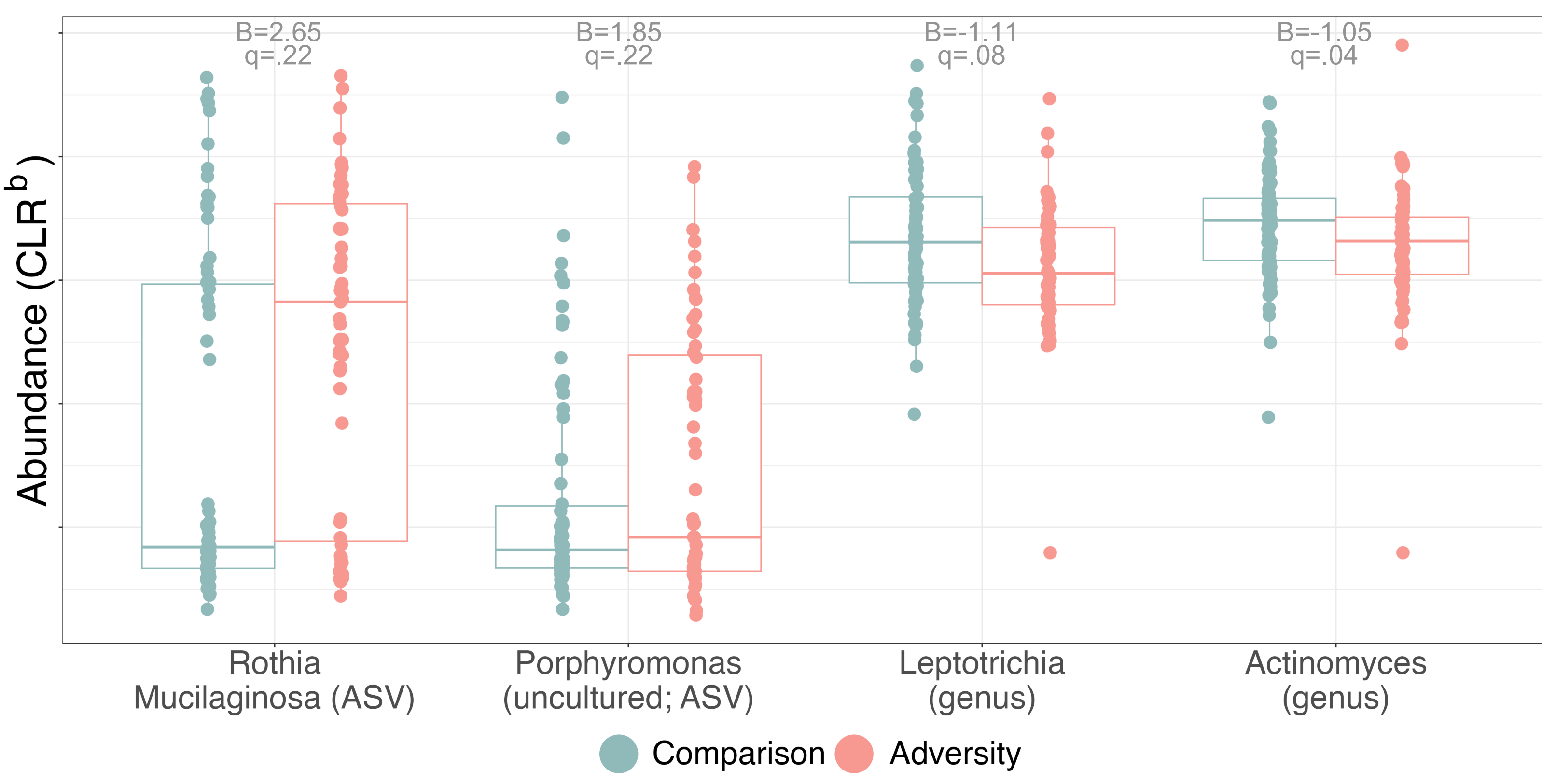


Hair cortisol

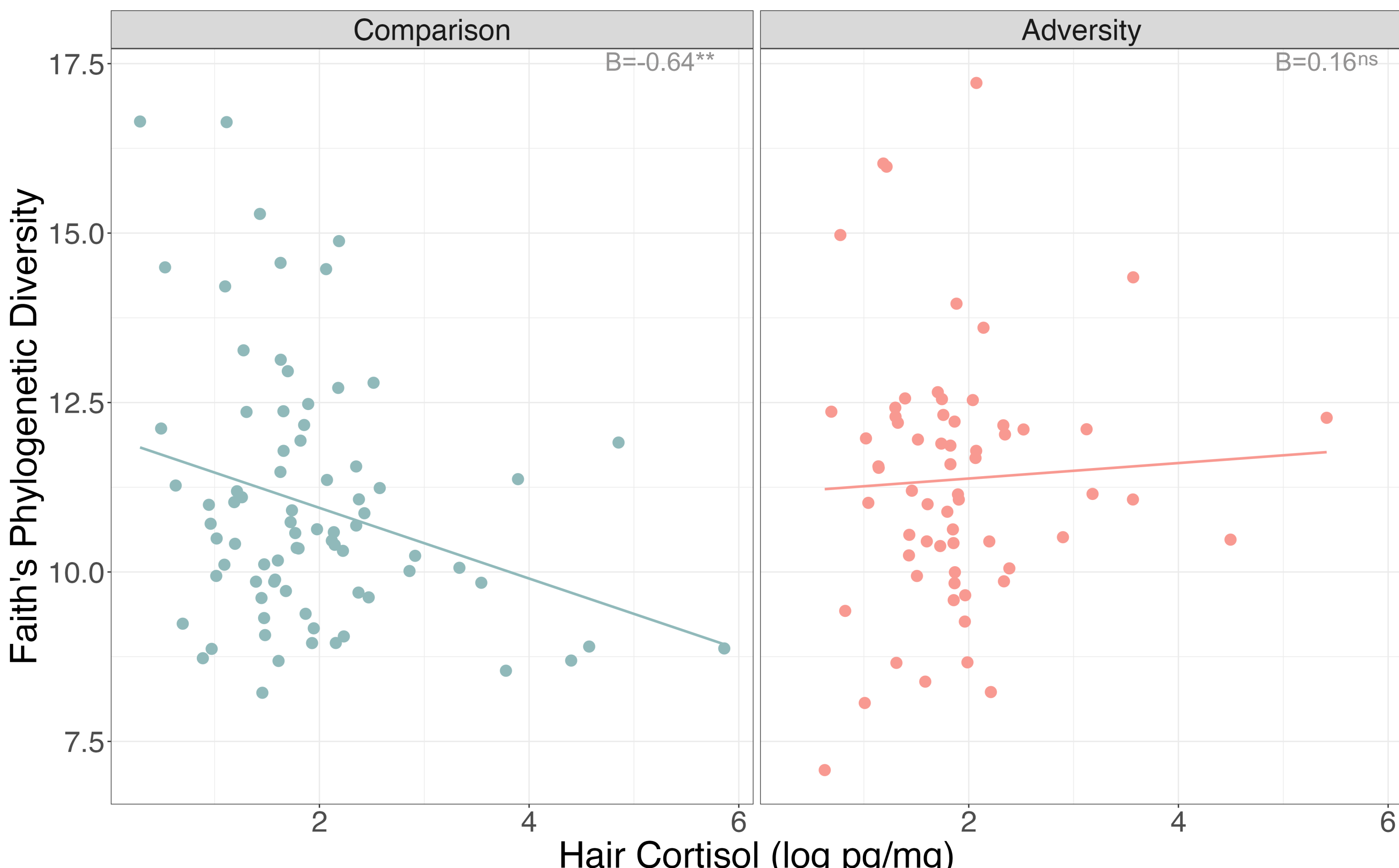


Saliva microbiome (16S)

Aim 1 Results: Adversity is associated with altered oral microbiome composition^a



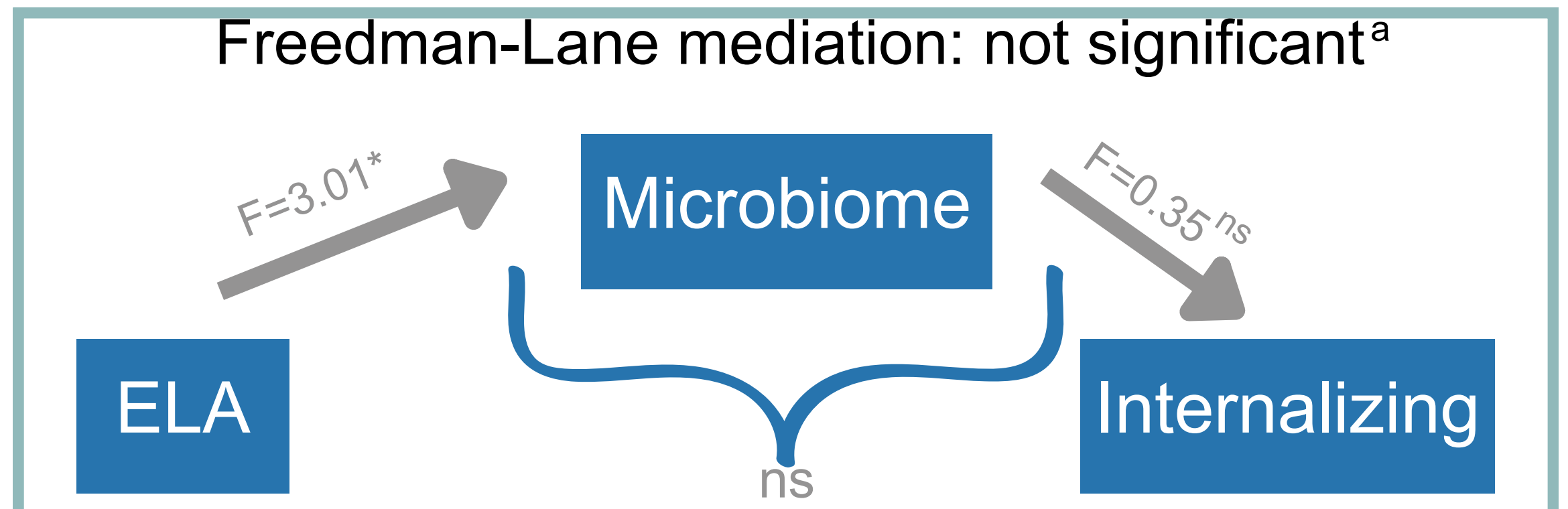
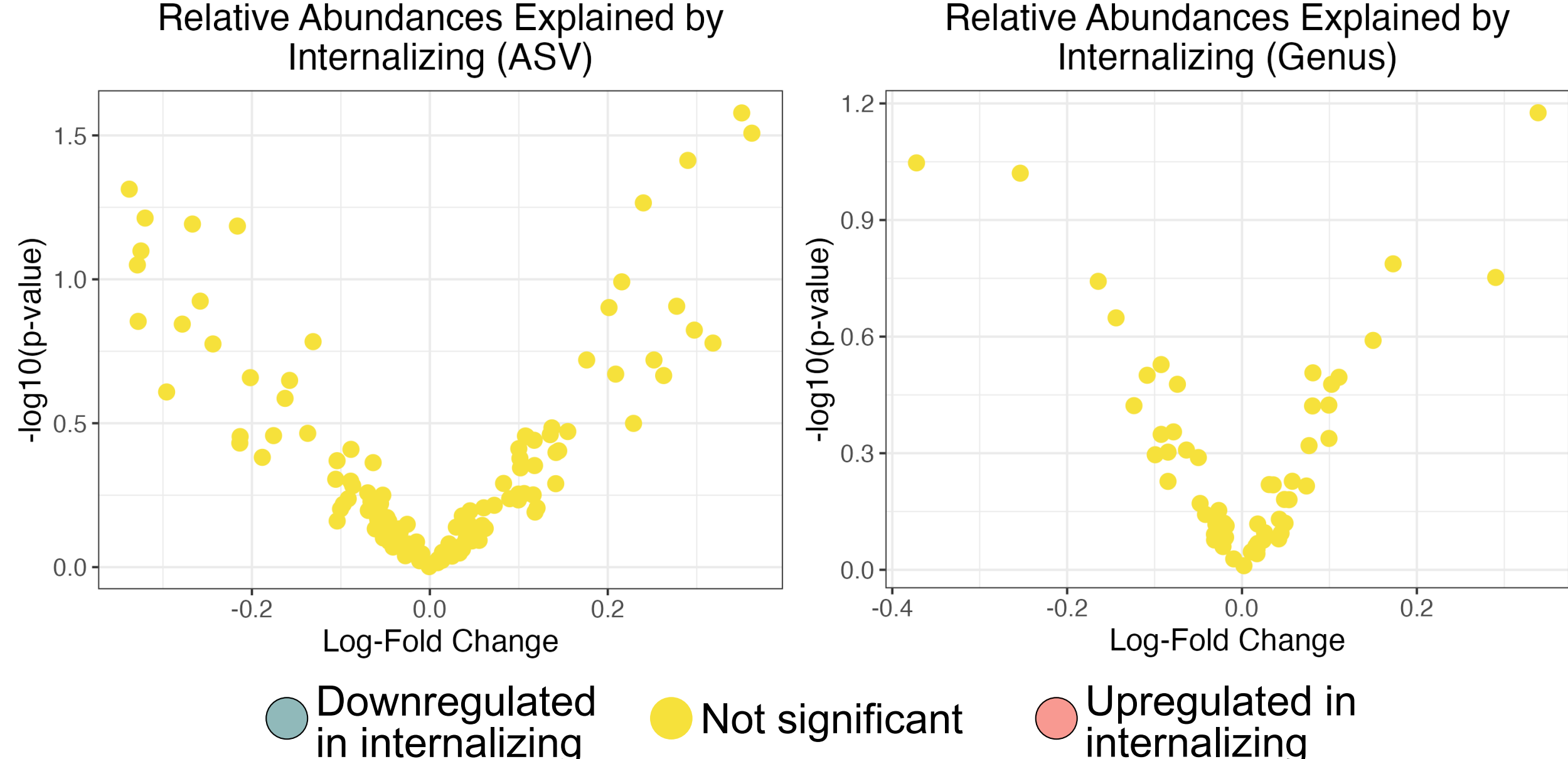
Aim 2 Results: Adversity moderates the association between cortisol and microbiome richness^c



^aControlling for adversity*cortisol interaction, age, sex, birth method, perinatal antibiotics, & breastfeeding

^cControlling for age, sex, birth method, perinatal antibiotics, & breastfeeding

Aim 3 Results: The microbiome is not significantly associated with internalizing^a



Conclusions

- Early adversity is associated with altered microbiome composition; effects are small, but significant across several distance-based and abundance-based metrics
- The negative association between cortisol and richness is blunted in the adversity group. More research is needed to examine the causes of this effect and implications for health
- Microbiome characteristics are not significantly associated with internalizing.
- Longitudinal study of this cohort and the incorporation of additional biomarkers, such as pro-inflammatory gene expression, will reveal more about the implications of the effects of adversity on the oral microbiome.

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ns: p>.05 | *: p<.05 | **: p<.01