

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



Gancz, N.N, Chan, E.M., Querdasi, F.R., Chu, K.A., Towner, E., Taylor, E., Callaghan, B.L.

Introduction

- Caregiving adversity (CA) increases risk for poor mental health outcomes (1). Dysregulation of the oral microbiome could explain a portion of CA-induced health risk
- Prior CA exposure may also reduce the sensitivity of the oral microbiome to cortisol, similarly to CA-induced cortisol insensitivity in neural/immune tissue (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 stabilizing (5)

Aims

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

Methods

- CA: history of caregiving transition
- Comparison group: low adversity
- Ages 6-16
- Internalizing: Child Behavior Checklist (6)
- 16S Saliva sequencing
- Alpha diversity, beta diversity, & taxonomic abundance analyses



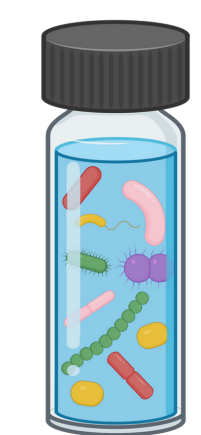
N=88
Comparison



N=66
Adversity

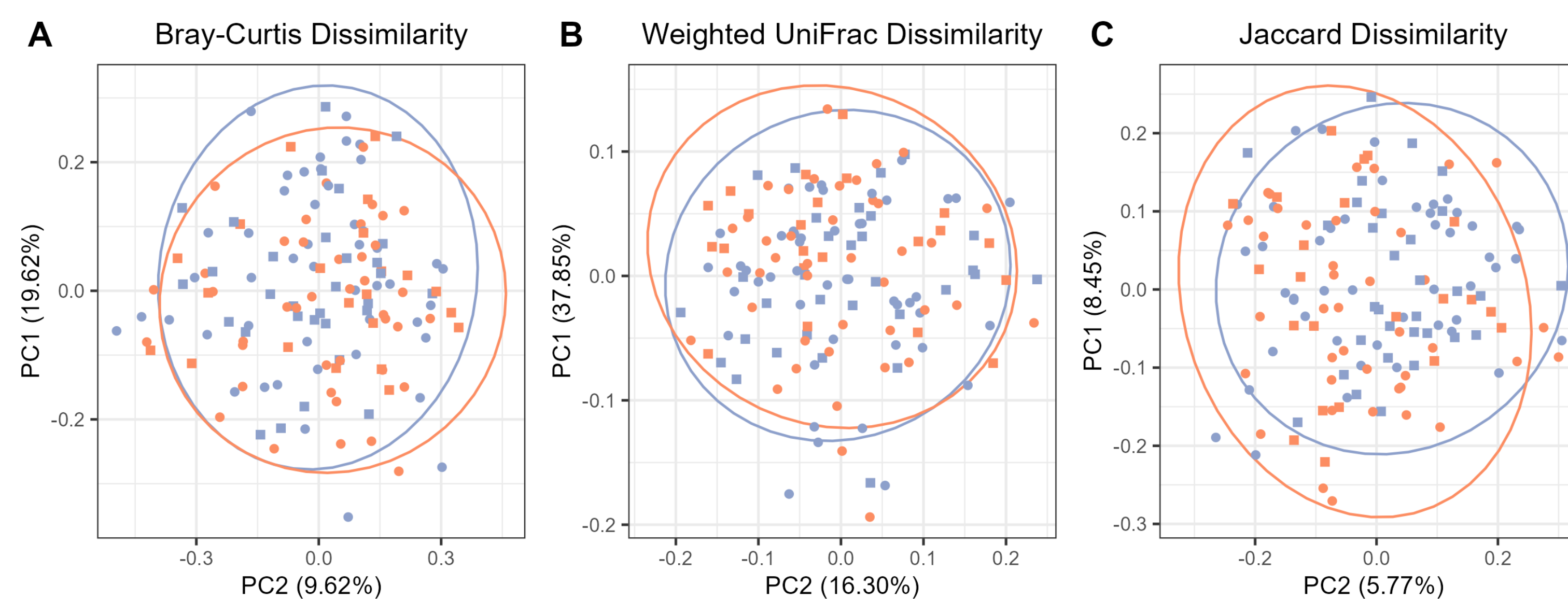
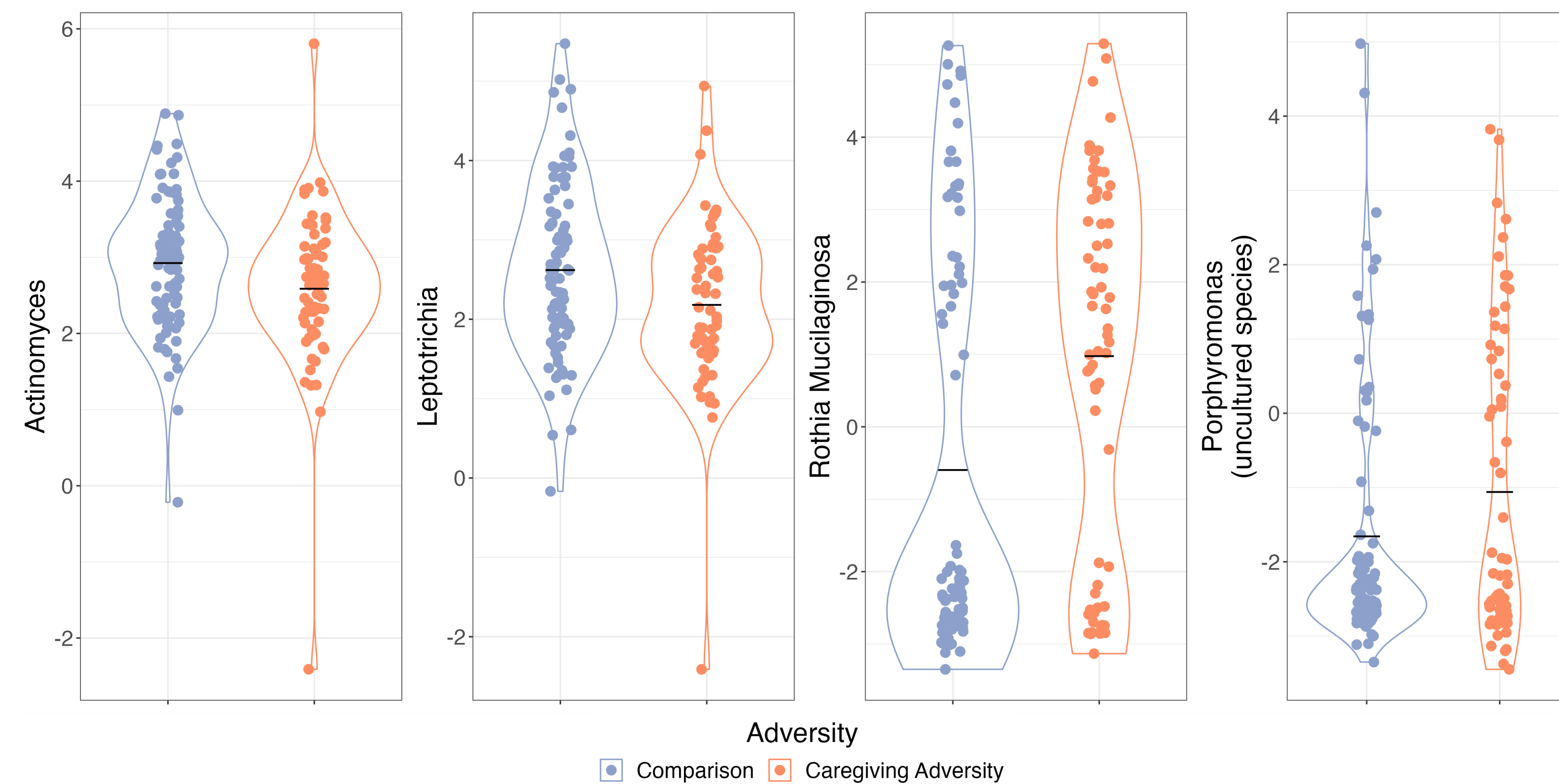


Hair cortisol

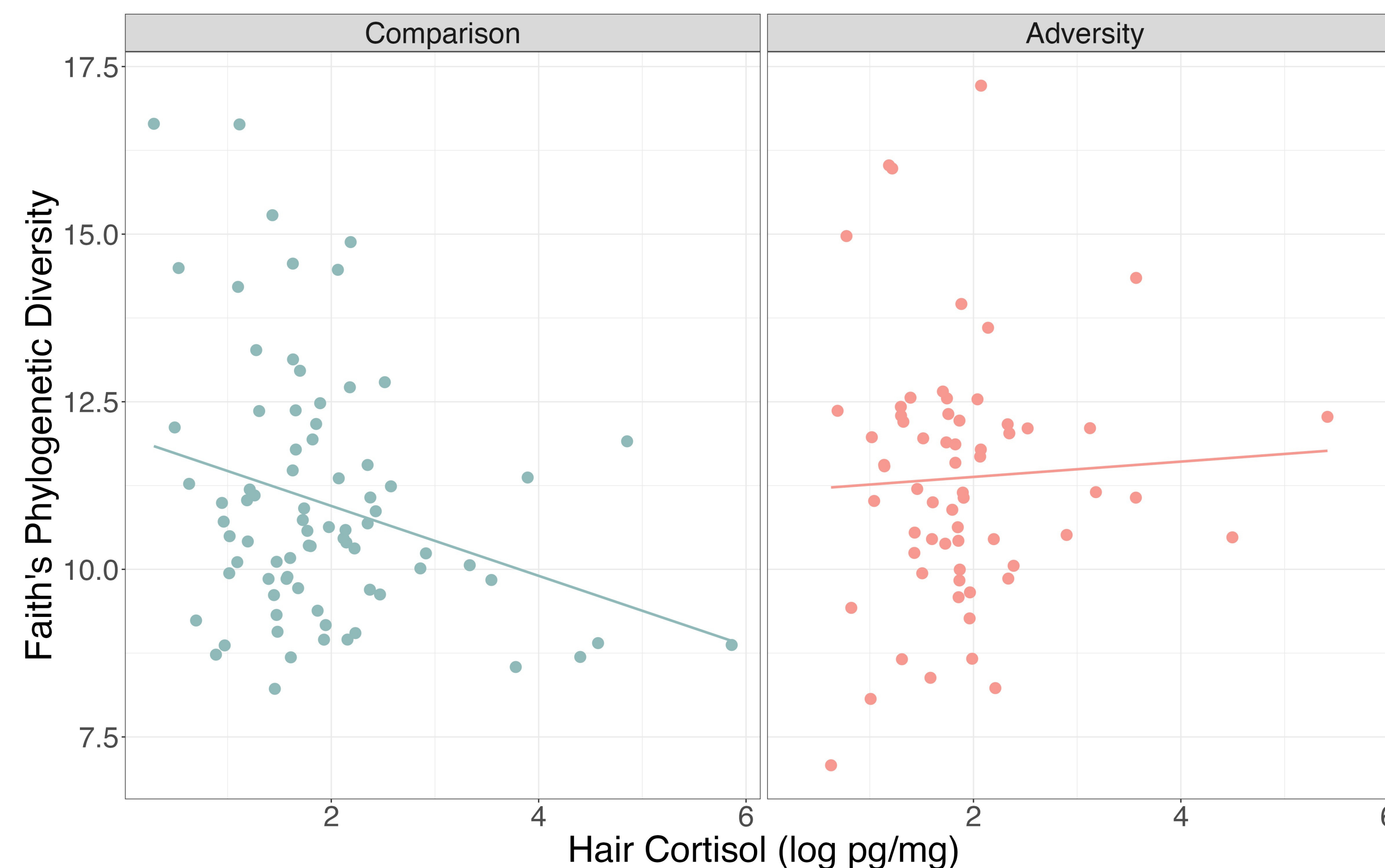


Saliva microbiome (16S)

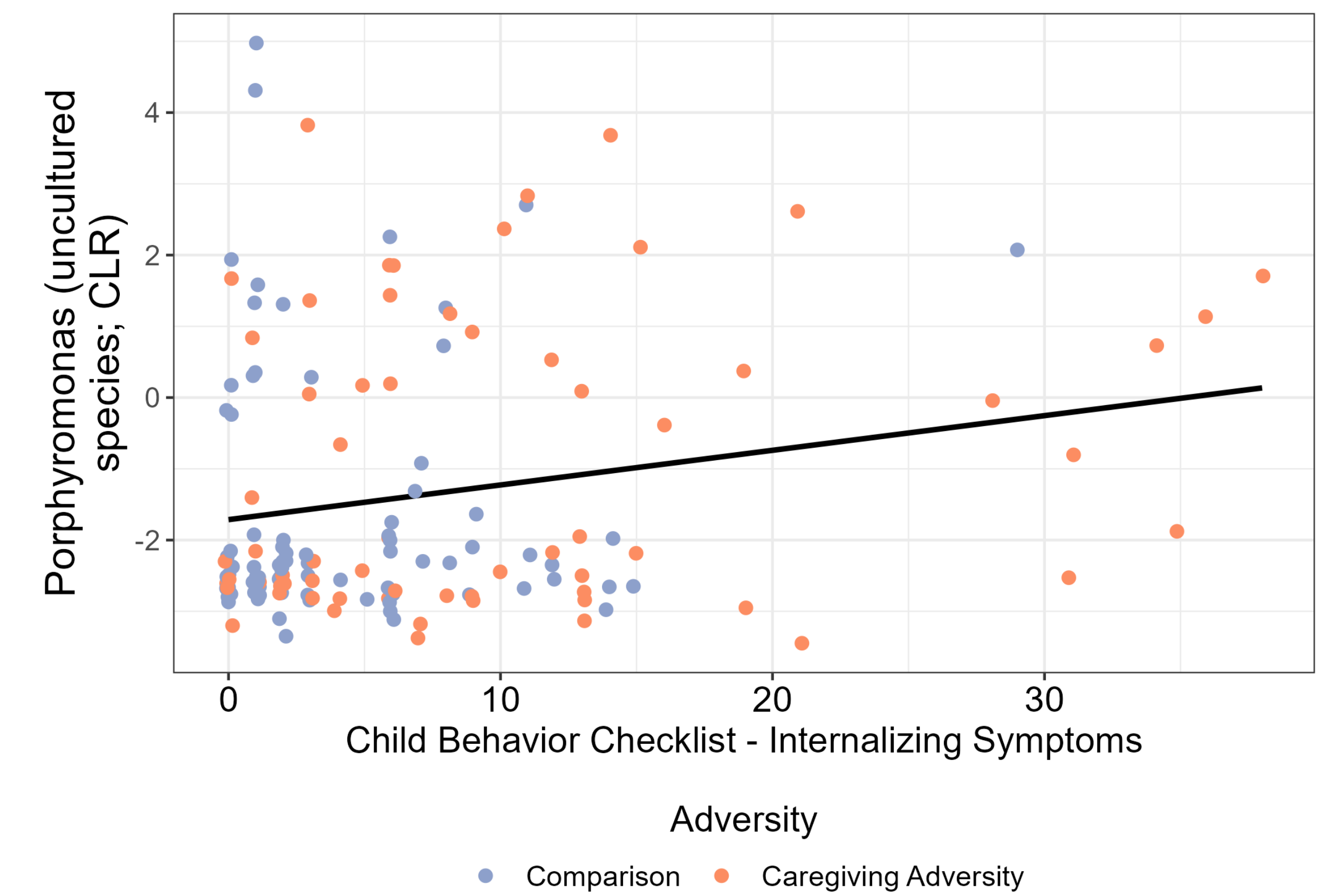
Aim 1 Results: Adversity is associated with altered oral microbiome composition^a



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



Aim 3 Results: Associations between the oral microbiome and internalizing symptoms are limited^b



Conclusions

- CA is associated with altered microbiome composition with modest effect sizes
- The negative association between cortisol and richness is blunted in the adversity group
- The CA group has lower abundance of taxa documented in other literature to be transcriptomically responsive to cortisol
- Associations with internalizing symptoms are limited
- 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.

References

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^a Controlling for age, sex, birth method, perinatal antibiotics, & breastfeeding

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