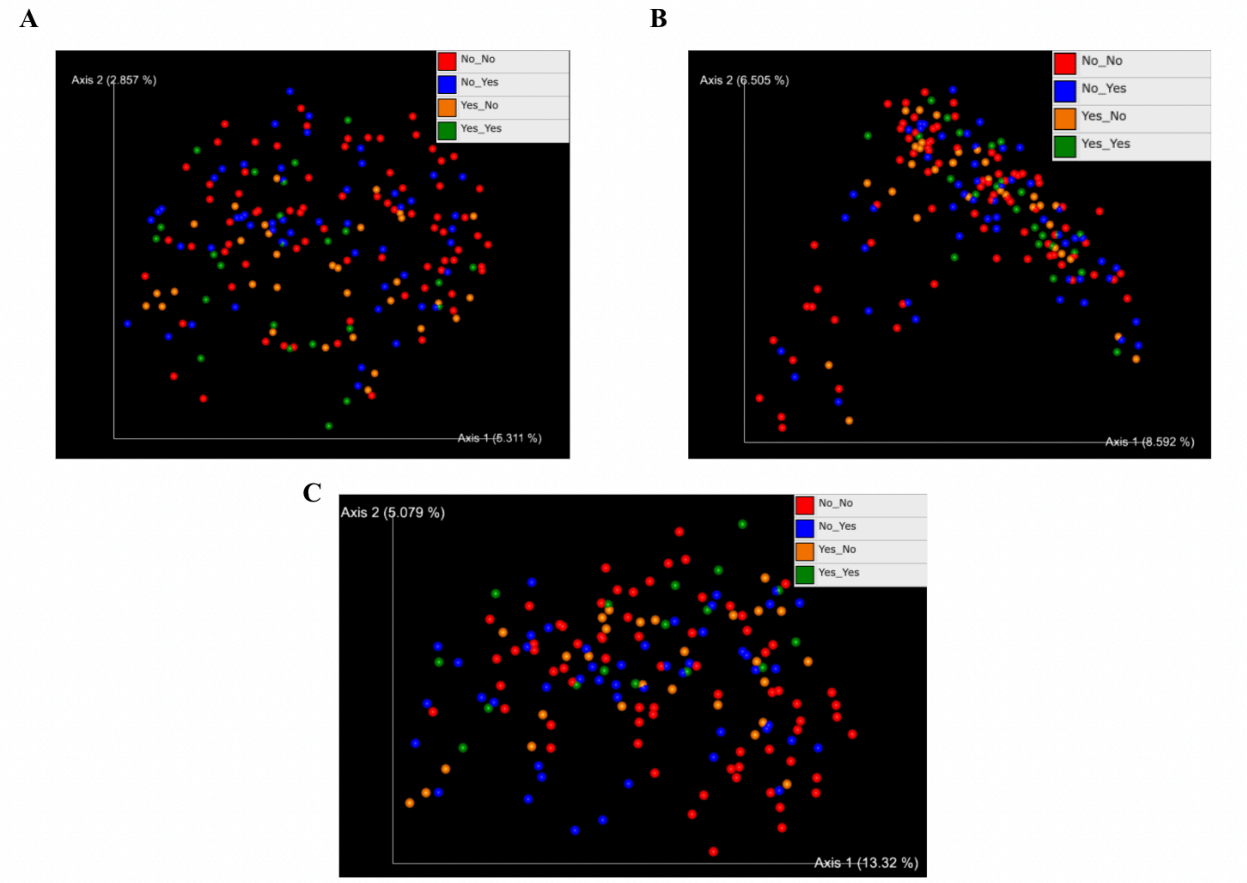
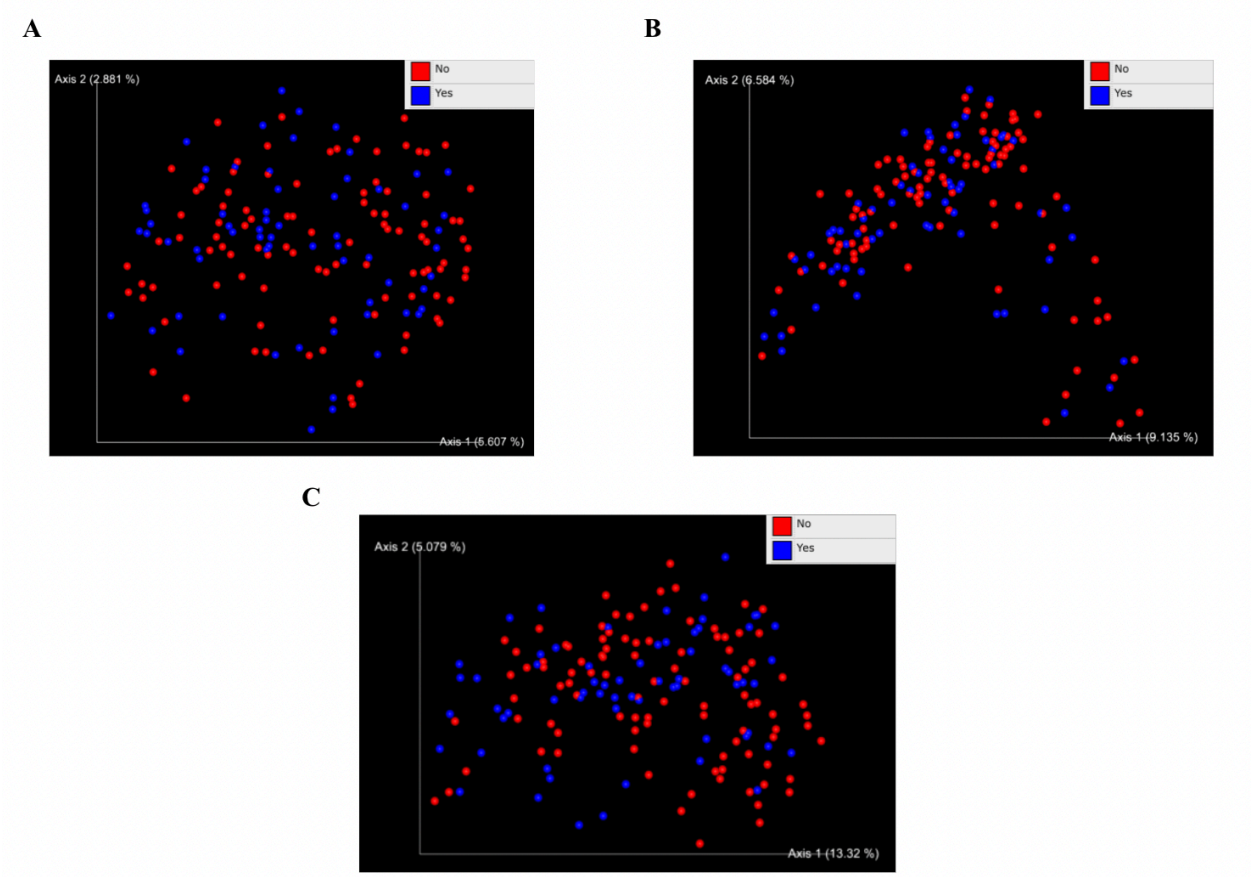
SUPPLEMENTAL FIGURES



Supplemental Figure 1. Sleep problems and antidepressant use combined do not display clustering. Samples are grouped based on either having both sleep problems and AD use ("Yes_Yes"), sleep problems only ("Yes_No"), AD use only ("No_Yes"), or neither ("No_No"). **A)** Jaccard PCoA plot **B)** Bray Curtis PCoA plot **C)** Unweighted UniFrac PCoA plot



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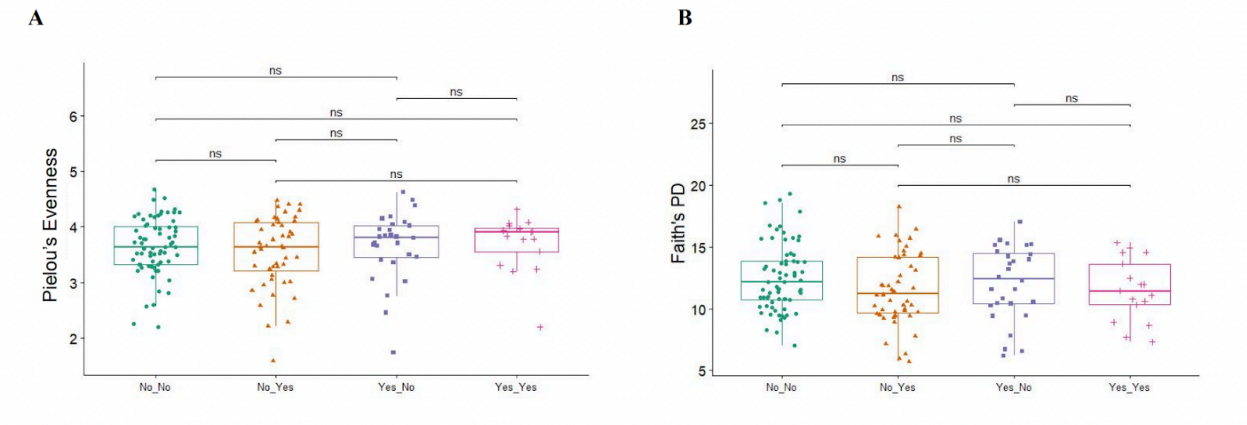
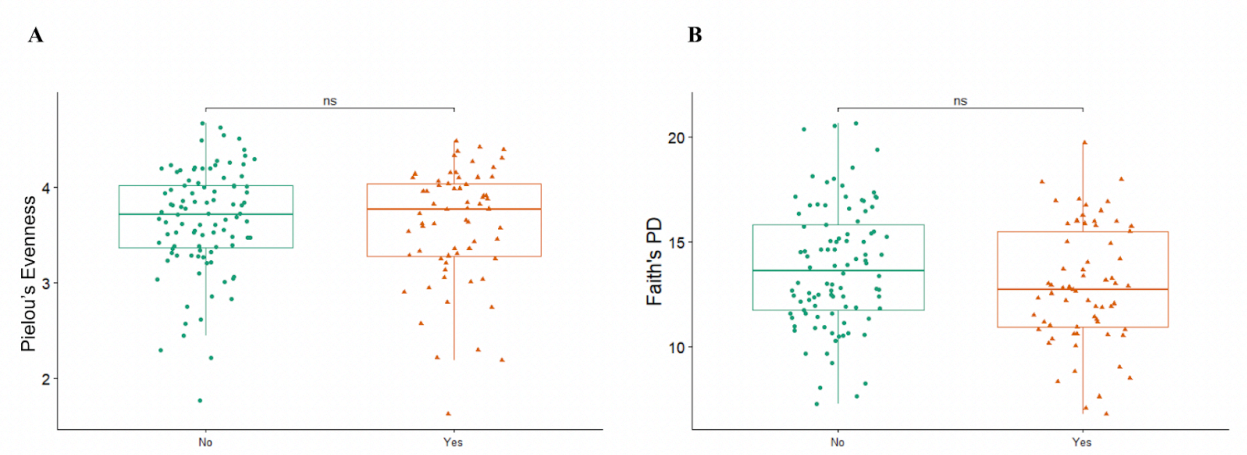
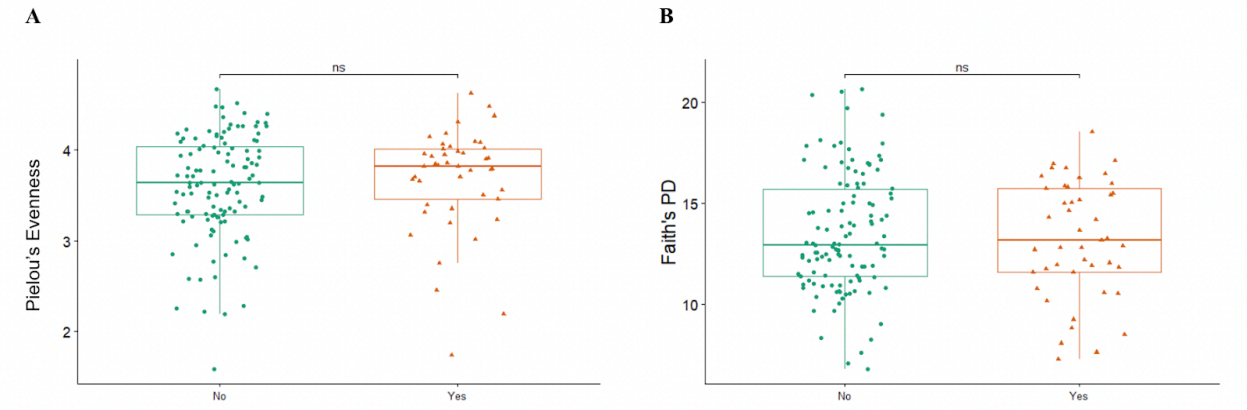


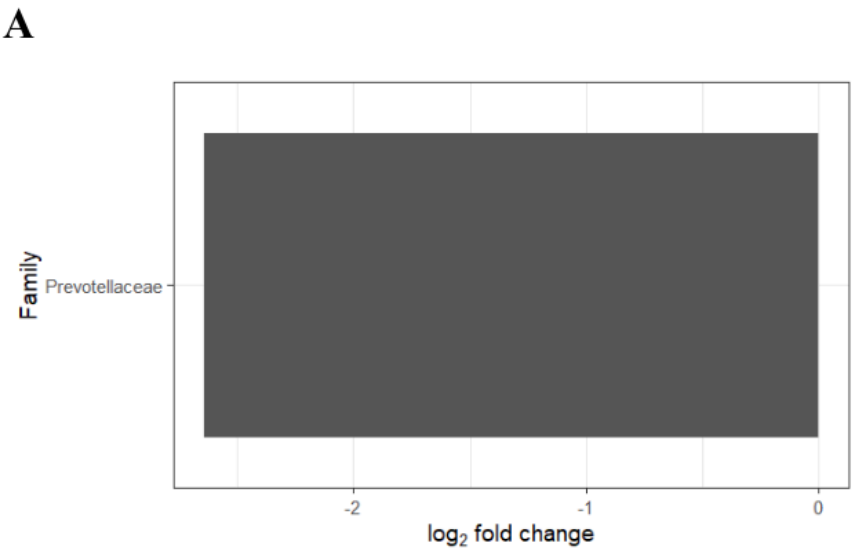
Supplemental Figure 3. Sleep problems and antidepressant use combined are not significantly different in alpha diversity. A) Pielou's evenness distance from all four groups display no significant differences between each other using Kruskal-Wallis pairwise test ($p > 0.05$). **B)** Faith's Phylogenetic Distance displays no significant differences between each other using Kruskal-Wallis pairwise test ($p > 0.05$).



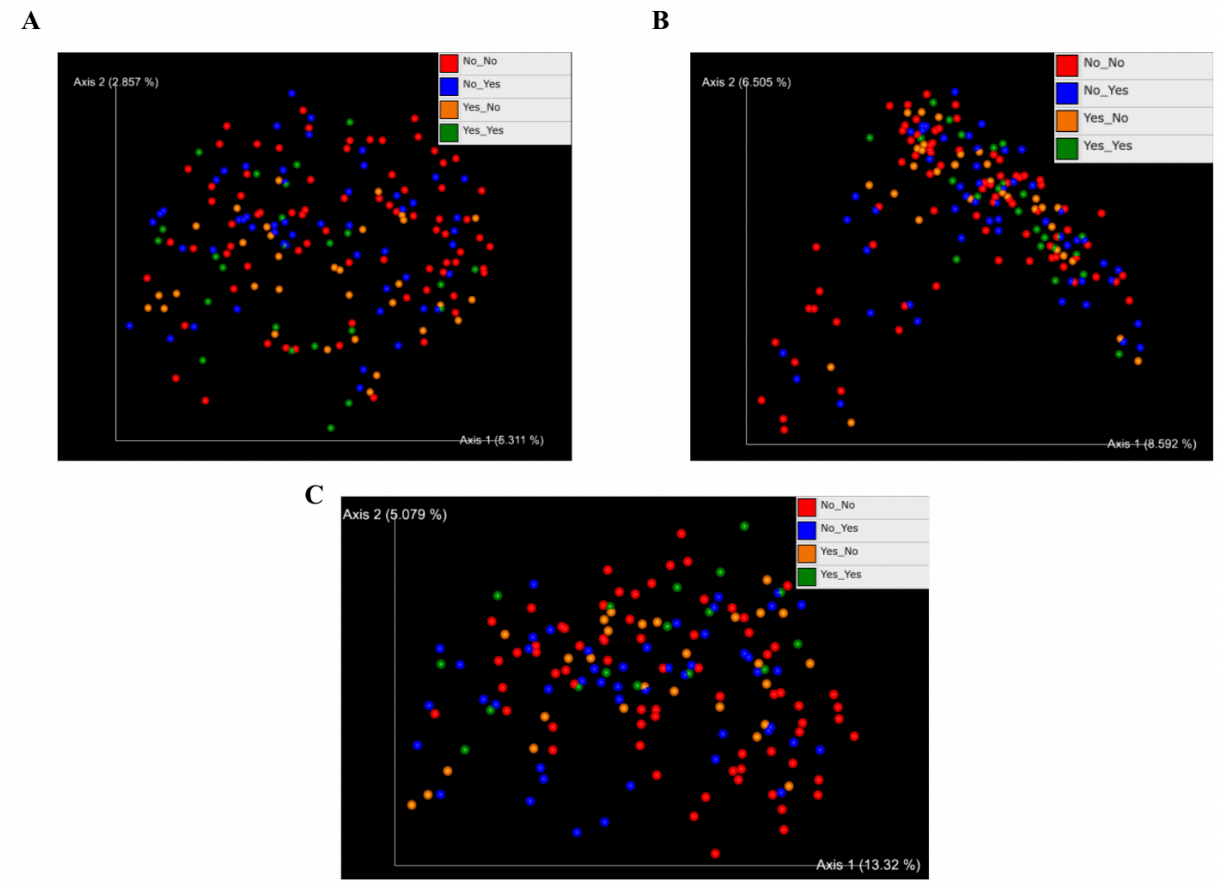
Supplemental Figure 4. Sleep problems alpha diversity are not significantly different based on abundance or phylogenetic distance. A) Pielou's evenness distance from "Yes" and "No" categories of sleep problems display no significant differences between each other using Kruskal-Wallis pairwise test ($p > 0.05$). **B)** Faith's Phylogenetic Distance displays no significant differences between each other using Kruskal-Wallis pairwise test ($p > 0.05$).



Supplemental Figure 5. Antidepressant use alpha diversity is not significantly different based on abundance or phylogenetic distance. **A)** Pielou's evenness distance from "Yes" and "No" categories of antidepressant use display no significant differences between each other using Kruskal-Wallis pairwise test ($p > 0.05$). **B)** Faith's Phylogenetic Distance displays no significant differences between each other using Kruskal-Wallis pairwise test ($p > 0.05$).



Supplemental Figure 6. Differential abundance analysis demonstrates a decrease in *Prevotellaceae*. **A)** Differential analysis examining differences in abundance of bacterial families between Parkinson's patients with antidepressant use and those without. Negative Log2 Fold-change displays lower abundance in Parkinson's patients with Antidepressant use higher lower abundance in the No category. FDR adjusted p-values display ($p < 0.05$).



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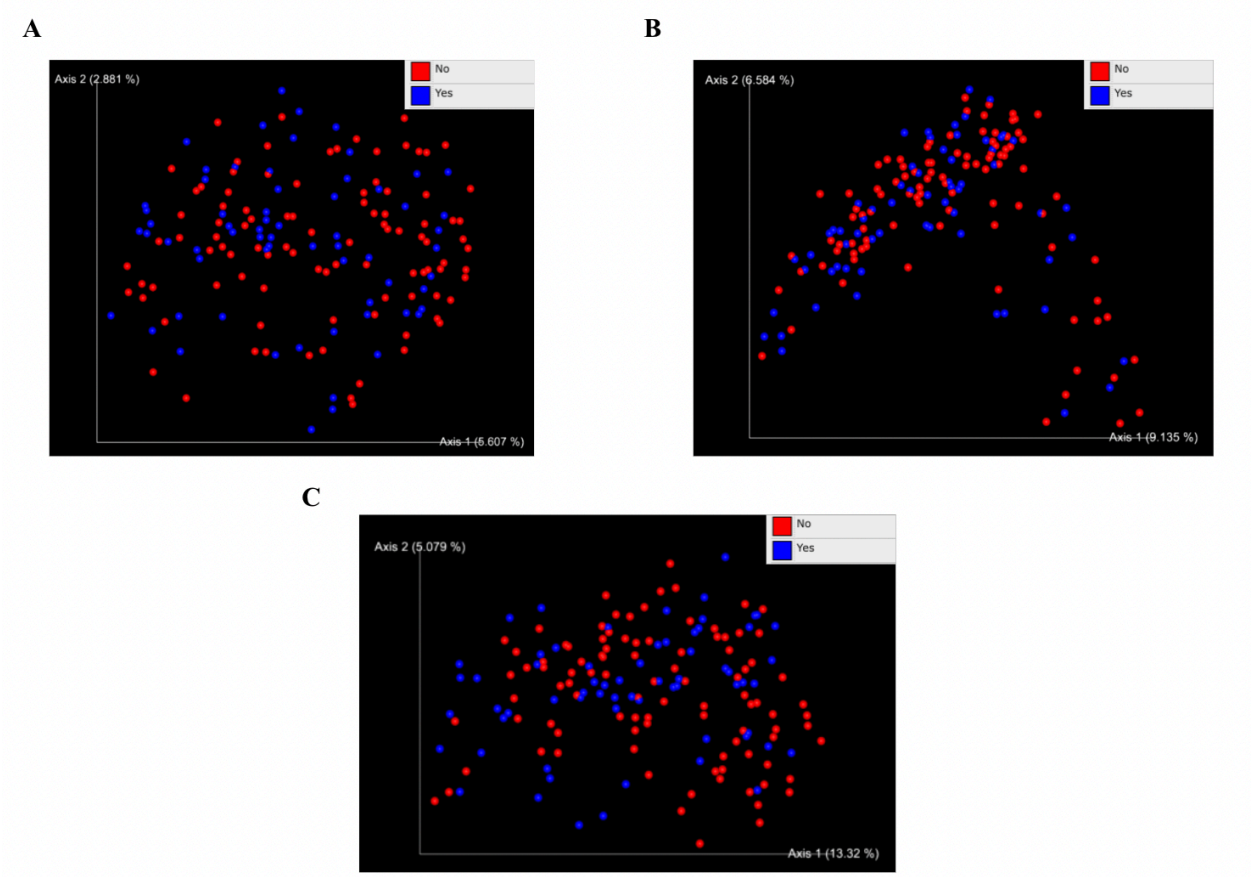

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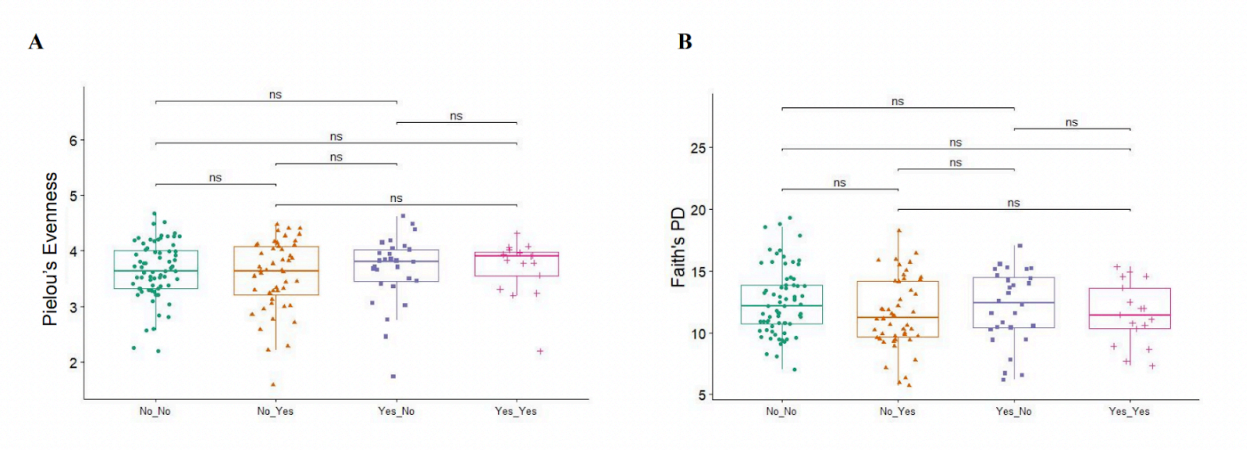

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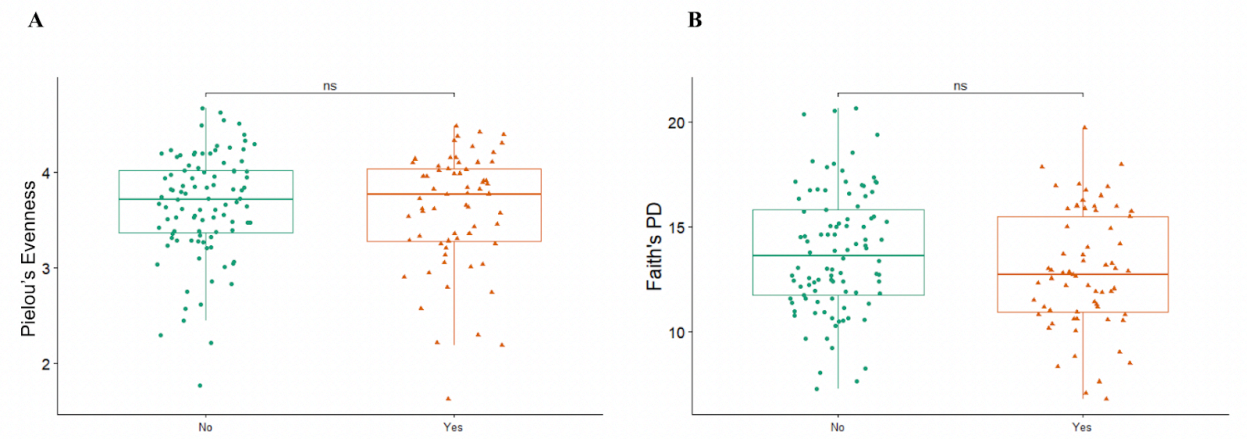

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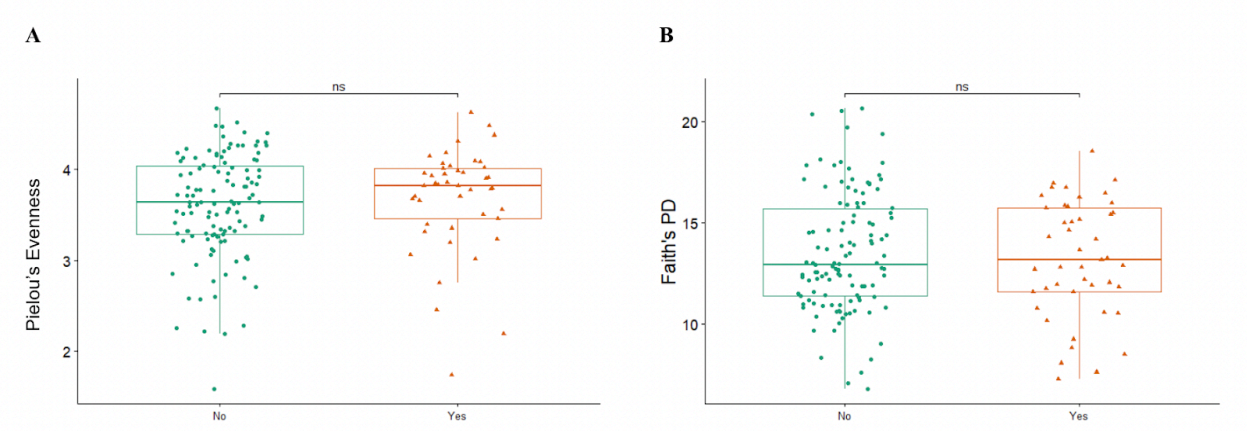

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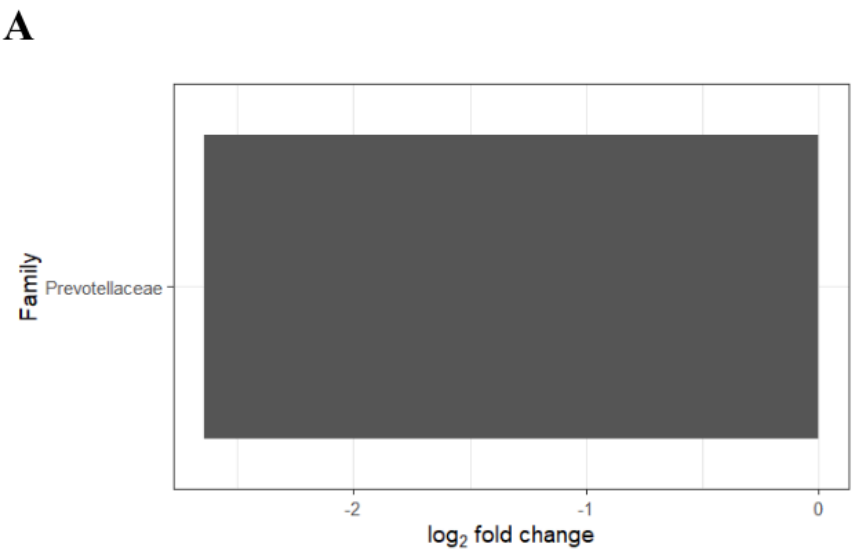

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