Guajatacas water reservoir and Cabo Rojos Saltern microbial mats were cultivated on the appropriate M9NC, M-9G and M-9H, supplemented with Leucine and Thiamine for 48 hours at 37 Celsius. RESULTS/ANTICIPATED RESULTS: The culture-dependent approach showed a total of 6 potential bioprospects capable of growing on hormones as a sole carbon source on M9H at 25 and 37 Celsius and no-growth on the M-9 media used. Currently, we are in the process of determining the identities of the cultivable isolates genetically, any preference on hormone metabolization, monitoring a larger number of metagenomic clones and optimizing the selection conditions. DISCUSSION/SIGNIFICANCE: The identification of bioprospects capable of metabolizing hormones could potentially lead to the generation of new water treatments that could help remove unwanted chemicals, such as high concentrations of estrogens.

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Gender Differences in the Association of Impulsive Behavior and Susceptibility to E-cigarette Use among Adolescents with Congenital Heart Defects

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OBJECTIVES/GOALS: Adolescents with congenital heart defects (CHD) have an elevated risk for future cardiovascular events, but information about their risk for e-cigarette use ("vaping") is unknown. This study aims to present preliminary findings on gender differences in the association of impulsive behavior and vaping susceptibility from an ongoing investigation. METHODS/STUDY POPULATION: Adolescents with CHD (12-18 years; N=63) reported their vaping susceptibility and completed subjective (UPPS-P)/objective (Iowa Gambling Task; IGT) assessments of impulsive behavior previously associated with tobacco use. The UPPS-P includes 5 facets: 1) negative urgency (impulsivity under negative emotions), 2) positive urgency (impulsivity under positive emotions), 3) lack of premeditation (acting without thinking), 4) lack of perseverance (inability to focus), and 5) sensation seeking (seeking thrilling experiences). The IGT is a computerized task that creates conflict between immediate reward and delayed punishment via selections from advantageous/disadvantageous card decks. Linear regressions stratified by gender determined associations between vaping susceptibility and impulsivity. RESULTS/ANTICIPATED RESULTS: Nearly 30% (29.7%) of adolescents with CHD were susceptible to vaping. Negative urgency was associated with vaping susceptibility among females ($\hat{I}^2 = 0.44$, $p = .035$) but not males ($\hat{I}^2 = 0.25$, $p = .128$). Positive urgency was associated with vaping susceptibility among males ($\hat{I}^2 = 0.37$, $p = .021$) and trended toward significance among females ($\hat{I}^2 = 0.40$, $p = .058$). Lack of premeditation was associated with vaping susceptibility among males ($\hat{I}^2 = 0.36$, $p = .025$) but not females ($\hat{I}^2 = 0.15$, $p = .490$). The association between lack of perseverance and vaping susceptibility trended toward significance among males ($\hat{I}^2 = 0.30$, $p = .064$) but not females ($\hat{I}^2 = -0.18$, $p = .413$). IGT performance was not associated with susceptibility to vaping among either gender. UPPS-P facets and IGT performance were not significantly correlated. DISCUSSION/SIGNIFICANCE: The association of impulsivity and vaping susceptibility appears to be characterized by emotion-based rash action (positive/negative urgency) for females and by decreased conscientiousness (lack of premeditation/perseverance) for males. If replicated, the findings have implications for assessment of vaping risk and tailored intervention.

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Unique Gray Matter Volume Differences in Bilingual Children with Reading Disability*

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OBJECTIVES/GOALS: Developmental dyslexia is a common reading disability (RD) which negatively impacts academic success. To address the role of early language experience on RD, we tested if the reported differences in gray matter volume (GMV) in RD also manifests in poor readers with a bilingual language background. METHODS/STUDY POPULATION: We studied 54 Spanish-English Bilingual Typical Readers with Oral Reading Recognition Test (ORRT) scores above 100 (avg. =113 Â± 10), 51 Spanish-English Bilinguals with RD with ORRT scores below 92 (avg. =84 Â± 7), 54 English Monolingual Typical Readers with ORRT scores above 100 (avg. =113 Â± 10) and 51 English Monolinguals with RD with ORRT scores below 92 (avg. =84 Â± 7) from the Adolescent Brain & Cognitive Development Study. All groups had an average age of 12 Â± 0.7 years and were matched for sex and self-ratings of English ability. Structural magnetic resonance images were analyzed using Voxel-Based Morphometry and the bilingual and monolingual groups were separately compared in two-sample t-tests ($p < 0.05$). RESULTS/ANTICIPATED RESULTS: Monolinguals with RD had less GMV than the Monolingual Typical Readers in the right supramarginal gyrus (Brodmanns Area (BA) 40; MNI Coordinates: 69, -27, 39) ($p=0.011$) similar to the right superior temporal finding reported in the existing literature. However, a comparison of Bilinguals with RD and Bilingual Typical Readers did not show any GMV differences in superior temporal regions. Instead, our Bilinguals with RD had less GMV compared to the Spanish-English Bilingual Typical Readers in the right superior frontal gyrus (BA 11; MNI Coordinates: 21, 44, -24) extending to the middle frontal gyrus (BA 10) ($p = 0.014$). DISCUSSION/SIGNIFICANCE: Our findings suggest that the neuroanatomical bases of RD in Spanish-English Bilingual children are not the same as those observed for monolinguals, and biological models developed in monolinguals cannot be generalized. This has implications for diagnoses and treatment of RD in bilinguals.

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An Intrinsic Pathway in the Brain Underlying the Relationship Between Pain Catastrophizing and Chronic Pain in Temporomandibular Disorders

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OBJECTIVES/GOALS: Pain Catastrophizing is a negative coping mechanism involving rumination, magnification, and helplessness and is associated with worse chronic pain. The neurobiological mechanisms underlying this relationship are poorly understood.

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