The AAP California Chapter 2 sent out a call for abstracts on scholarly projects by pediatric residents and medicine-pediatric residents from CHLA, Harbor-UCLA, Kaiser LA, Loma Linda, UCLA and USC; and medical students from the Southern California counties of Kern, Los Angeles, Riverside, San Bernardino, San Luis Obispo, Santa Barbara and Ventura. The accepted abstracts were showcased at the 2022 Virtual Advances in Pediatrics Virtual Symposium. We are thrilled to share with you the authors and their abstract each month.

Poster Presenter:

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Research Abstract: Variation in Longitudinal Incidence of Behavioral Health Problems in Young Adults Exposed to Adverse Childhood Experiences Alone and In Combination

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(Please scroll to view the abstract below)

Variation in Longitudinal Incidence of Behavioral Health Problems in Young Adults Exposed to Adverse Childhood Experiences Alone and In Combination

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Background: Adverse Childhood Experiences (ACEs) are stressful, potentially traumatic events between ages 0-17 associated with worsened health outcomes in a dose-response fashion. The ACE score – a sum of exposures to different ACEs – is often used to capture overall health risk conveyed by ACEs, but it may mask variation in health risk by type and combination of ACE exposures. Variation in estimated longitudinal risk of these outcomes after exposure to specific ACEs and their combinations has not been explored in a nationally-representative sample during young adulthood, an understudied time when many mental health disorders emerge.

Objective: To assess mental illness diagnosis, psychological distress, and drug use in young adulthood based on differences in exposure to ACEs alone or in combination.

Methods: We performed longitudinal analyses of ACEs and behavioral health outcomes using data from the 2007-2017 Transition to Adulthood Supplements (TAS) of the Panel Study of Income Dynamics, a nationally-representative survey of young adults. ACEs were assessed numerically (ACE score), individually, and in pair-wise combinations. TAS ACEs measures included indicators of 9 ACEs derived from 32 measures of component survey items. Outcomes were mental illness diagnosis, Kessler K6 Psychological Distress, and drug use in the last 12 months, derived from 12 measures of component survey items. Covariates were gender, race, age, income, education, parent education, insurance, and healthcare access. Longitudinal logistic regression models measured associations between ACEs (categorical score, individual, and combination) and outcomes (xtlogit, Stata). Absolute outcome incidence risks were estimated for individual ACEs and combinations using the delta method (margins, Stata). Outcome risk ratios were calculated for individual ACEs.

Results: The 2017 TAS had 1833 participants (ages 17-28, 52.5% male, 47.5% female). 42% had exposure to 1-2 ACEs and 30.7% had exposure to 3+ ACEs. The estimated incidence of each outcome increased as time passed after the ACE exposure and as ACE score increased, but much of the incidence accrued within 2 years. ACEs with the highest risk ratios for mental illness diagnosis at 2- and 4-year follow up were parent mental illness (5.0 [95% CI 4.6-5.4], 4.5 [4.2-5.0], 5.1 [4.6-5.7]) and emotional neglect (6.3 [5.3-7.3], 2.4 [1.9-3.0], 4.7 [3.7-6.0]). ACEs with the highest risk ratios for psychological distress at 2- and 4-year follow up were parent mental illness (3.8 [3.4-4.2], 5.0 [4.3-5.7], 4.0 [3.2-4.9]) and parent incarceration (1.6 [1.3-1.9], 5.0 [4.1-6.0], 3.9 [2.9-5.3]). The combinations of divorce/single parent and emotional neglect (0.798 [0.726-0.87]) and parent mental illness and emotional neglect (0.589 [0.517-0.661]) conferred the greatest risk of 2-year mental illness diagnosis. Parent mental illness and sexual abuse (0.097

[0.08-0.115]) and parent mental illness and parent incarceration (0.087 [0.07-0.103]) conferred the greatest risk of 2-year psychological distress incidence.

Conclusion: Behavioral health problem risk varies after exposure to different ACEs over time in young adulthood, and combinations of ACEs carry different risks of mental illness diagnosis and psychological distress incidence. Clinicians should consider risk from specific ACEs and their combinations, rather than relying solely on an ACE score, in terms of influencing behavioral health problem risk development in young adults.

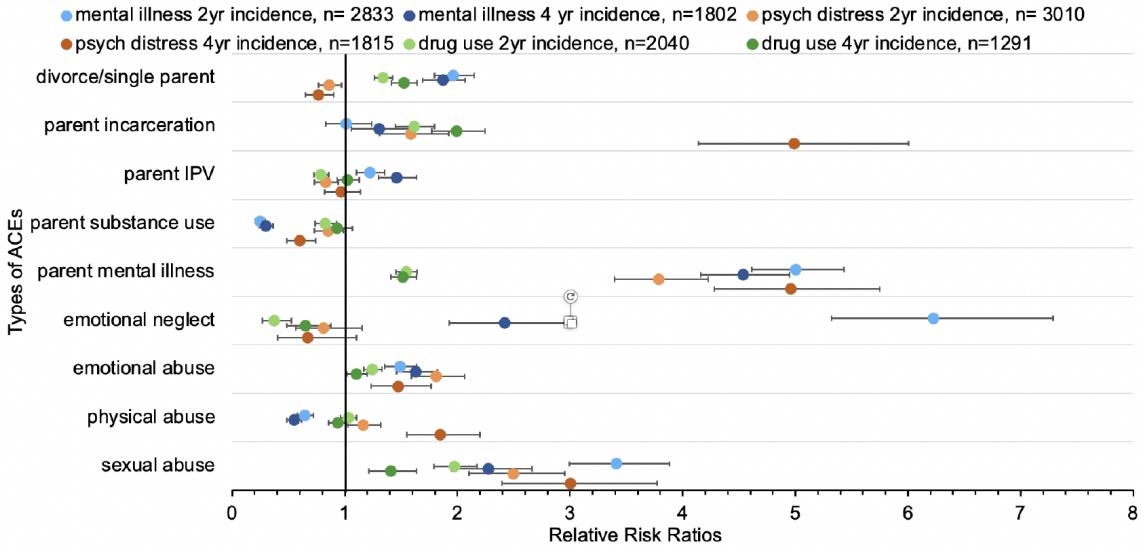

Figure 1: Relative risk ratios of longitudinal incidence of behavioral health outcomes for individual ACEs. Outcomes are 2- and 4-year incidence of mental illness diagnoses, psychological distress, and 12-month drug use. Individual ACEs are sexual abuse, physical abuse, emotional abuse, emotional neglect, parent mental illness diagnosis, parent with substance use disorder, parent household violence, parent incarceration, and divorce/single parent.

Figure 2: Heatmap of 2-year incidences of mental illness diagnosis and psychological distress when 2 individual ACEs are interacted

	mental illness diagnosis, absence of ACE	sexual abuse	physical abuse	emotional abuse	emotional neglect	parent mental illness	parent substance use	parent household violence	parent incarceration	divorce/single parent	
psychological distress, absence of ACE		0.018 [0.017-0.019]	0.017 [0.016-0.019]	0.013 [0.012-0.015]	0.018 [0.017-0.02]	0.012 [0.011-0.013]	0.019 [0.017-0.02]	0.019 [0.018-0.02]	0.018 [0.017-0.019]	0.019 [0.012-0.02]	
sexual abuse	0.049 [0.046-0.051]	0.158 [0.137-0.18]	0.152 [0.124-0.18]	0.186 [0.155-0.217]	na	0.45 [0.405-0.494]	0.025 [0.011-0.039]	0.05 [0.029-0.072]	na	0.336 [0.287-0.385]	
physical abuse	0.059 [0.056-0.063]	0.047 [0.039-0.056]	0.039 [0.035-0.043]	0.045 [0.041-0.049]	0.128 [0.093-0.163]	0.125 [0.115-0.136]	0.005 [0.004-0.006]	0.042 [0.037-0.048]	0.013 [0.008-0.018]	0.076 [0.067-0.085]	
emotional abuse	0.044 [0.041-0.048]	0.041 [0.032-0.05]	0.031 [0.028-0.034]	0.019 [0.017-0.021]	0.352 [0.303-0.4]	0.183 [0.17-0.196]	0.013 [0.01-0.016]	0.067 [0.059-0.074]	0.056 [0.043-0.069]	0.117 [0.106-0.127]	
emotional neglect	0.05 [0.047-0.052]	na	0.008 [0.004-0.012]	0.021 [0.013-0.028]	0.363 [0.308-0.418]	0.589 [0.517-0.661]	0.059 [0.025-0.094]	0.201 [0.145-0.257]	na	0.798 [0.726-0.87]	
parent mental illness	0.032 [0.03-0.034]	0.097 [0.08-0.115]	0.047 [0.042-0.052]	0.053 [0.047-0.059]	0.05 [0.032-0.067]	0.159 [0.151-0.168]	0.058 [0.048-0.067]	0.19 [0.175-0.206]	0.153 [0.124-0.182]	0.204 [0.186-0.222]	
parent substance use	0.057 [0.054-0.06]	0.018 [0.008-0.028]	0.014 [0.012-0.017]	0.018 [0.015-0.021]	0.039 [0.018-0.061]	0.043 [0.036-0.049]	0.016 [0.012-0.019]	0.009 [0.006-0.011]	0.035 [0.025-0.044]	0.021 [0.016-0.026]	
parent household violence	0.049 [0.047-0.052]	0.009 [0.005-0.013]	0.02 [0.017-0.023]	0.023 [0.02-0.026]	na	0.038 [0.033-0.042]	0.015 [0.012-0.019]	0.062 [0.056-0.069]	0.027 [0.018-0.035]	0.088 [0.076-0.101]	
parent incarceration	0.051 [0.048-0.053]	na	0.02 [0.015-0.026]	0.022 [0.016-0.027]	na	0.087 [0.07-0.103]	0.043 [0.033-0.053]	0.017 [0.013-0.022]	0.056 [0.044-0.069]	0.123 [0.09-0.155]	
divorce/single parent	0.043 [0.04-0.046]	0.027 [0.018-0.035]	0.019 [0.016-0.022]	0.02 [0.017-0.023]	na	0.055 [0.048-0.062]	0.017 [0.013-0.021]	0.024 [0.02-0.028]	0.03 [0.023-0.036]	0.084 [0.078-0.09]	
										0.016 [0.014-0.018]	

mental illness diagnosis

psychological distress

Note: Cells display 2-year outcome incidences and 95% confidence intervals for combinations of ACEs in rows and ACEs in columns. Outcomes are mental illness diagnosis (blue) and psychological distress (orange). Top row and top column display outcome incidences in the absence of each ACE. Outlined cells going across the heatmap display mental illness diagnosis (blue) and psychological distress (orange) outcomes for each individual ACE. "na" indicates that the regression models did not converge for these analyses.