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Trajectories of parental harshness and exposure to community violence differentially predict externalizing and internalizing mental health problems in legal system-involved youth

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Abstract

Youth with legal system involvement are especially likely to experience parental harshness (PH) and exposure to community violence (ETV), two common forms of life stress. However, most studies examine these stressors separately or collapse across them in ways that preclude examination of their co-occurrence. Consequently, it is unclear 1) how PH and ETV simultaneously fluctuate across development and 2) how these fluctuations predict future mental health problems in legal system-involved youth. We used group-based multi-trajectory modeling to estimate simultaneous trajectories of PH and ETV in 1027 legal system-involved youth and regression analyses to understand how trajectory membership predicted mental health problems three years later. Four trajectories of co-occurrence were identified (1: *Low*; 2: *Moderate and Decreasing*; 3: *Moderate PH/High ETV*; 4: *High PH/Moderate ETV*). Compared to the *Low* trajectory, all trajectories with PH/ETV elevations predicted violent crime and substance problems; trajectory 3 (*Moderate PH/High ETV*) predicted nonviolent crime and depression/anxiety symptoms; trajectory 4 (*High PH/Moderate ETV)* predicted depression diagnosis. These results elucidate *how* PH and ETV typically co-occur across adolescence for legal system-involved youth. They also reveal important commonalities and dissociations among types of mental health problems.

Keywords: exposure to community violence; life stress; mental health; parental harshness

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Introduction

Rates of mental health problems are increasing dramatically among adolescents and young adults (Lipson et al., 2019; Mojtabai & Olfson, 2020; Theriault et al., 2020). Mental health problems can profoundly affect young people by eliciting psychological distress, poor physical health, and interpersonal trouble (e.g., Goldstein et al., 2012; Rohde et al., 2007; Thornicroft, 2011). Rates of mental health problems are particularly high among youth who have contact with the legal system, with some studies estimating that 50–75% of youth with legal system contact have a diagnosable mental health disorder (Underwood & Washington, 2016). Foundational studies that examine the factors influencing mental health problems among young people emphasize the importance of stressful life experiences (e.g., Felitti et al., 1998; Kessler et al., 2010). Legal system contact itself is a significant life stressor (Sugie & Turney, 2017) and is often only one of many life stressors that youth with legal system involvement experience (Becker & Kerig, 2011; Charak et al., 2019). Two common life stressors that legal system-involved youth experience, that also are associated with the developmental of mental health problems, are parental harshness (PH) and exposure to community violence (ETV) (Abram et al., 2004; Becker & Kerig, 2011; Dierkhising et al., 2013; Pane Seifert et al., 2021).

PH is defined by critical, demeaning, hostile, and maltreating (e.g., physical/emotional abuse) parenting that includes verbally and physically aggressive behaviors (Kim et al., 2010). In general population and at-risk samples, PH predicts mental health problems, including frequent antisocial behavior (Doom et al., 2022; Kingsbury et al., 2020), high levels of depression (Calhoun et al., 2019), and suicidal ideation (Doom et al., 2022). In legal system-involved samples, studies show that PH predicts antisocial behavior (Vaughan et al., 2021) as well as elevated rates of substance use disorders (Bosk et al., 2021). Furthermore, the trajectory of exposure to PH, not just whether the exposure occurred, impacts mental health. For example, Wiggins et al. (2015) examined trajectories of PH across early/middle childhood in at-risk youth and found that a trajectory characterized by higher and steeper increases in PH associated with consistently high externalizing and internalizing symptoms whereas a trajectory characterized by high but stable levels of PH associated with high but decreasing externalizing and internalizing symptoms. These results suggest that changes over time in PH have implications for how youth experience mental health problems.

ETV is defined by witnessing or being a victim of violent acts (e.g., shootings, stabbings, robberies) in one's community, outside the home (DeCou & Lynch, 2017). In both general population and

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legal system-involved samples, ETV relates to greater mental health problems, such as posttraumatic stress disorder (PTSD; Ford et al., 2008; Fowler et al., 2009), externalizing symptoms (Affrunti et al., 2018; Phan & Gaylord-Harden, 2022), and frequent and problematic substance use (Löfving-Gupta et al., 2018; Udell et al., 2017). Further, ETV is a well-documented risk factor for future violent/aggressive behavior in youth with legal system involvement (Baskin & Sommers, 2014; Myers et al., 2018). For youth with legal system involvement, trajectories of ETV, estimated across late adolescence/emerging adulthood, that were characterized by high and increasing or high and stable ETV associated with more mental health problems compared to trajectories with low and stable or decreasing ETV (Baskin & Sommers, 2015). Thus, levels of ETV are not static over time, and changes in these levels over time differentially predict mental health problems.

Across studies and samples, PH and ETV appear to separately confer risk for a host of mental health problems at single points in time and across time. However, exposure to multiple stressful life experiences is relatively common (Green et al., 2000; Kilpatrick et al., 2013; Pane Seifert et al., 2021). Therefore, the co-occurrence of PH and ETV elevates risk for mental health problems beyond any one stressor alone. In particular, youth with legal system contact are likely to experience multiple life stressors that increase the likelihood of future mental health problems across externalizing and internalizing spectrums. Repeated experience of multiple life stressors across late adolescence may represent snares that trap youth in legal system involvement and promote poor mental health in emerging adulthood (McGee et al., 2015; Moffitt, 1993). However, it is unclear how these youth experience multiple life stressors simultaneously across late adolescence and how their experience of multiple stressors impacts future mental health functioning.

In both general population and legal system-involved samples, existing research on the co-occurrence of PH and ETV predominately estimates stressful life experiences by collapsing across subtypes. Commonly, researchers create a binary exposure metric (e.g., exposed versus not exposed) for each experience that indicates whether individuals have some form of exposure to each subtype (Lynch & Cicchetti, 1998; Stevens & Mennen, 2018; Valentino et al., 2012). However, this binary approach does not account for any features of the experience (e.g., frequency, change over time; see Lacey & Minnis, 2020 for a review). Second, some researchers measure cumulative frequency of exposure to stressful life experiences and collapse across experiences (Huesmann et al., 2021; McGinnis et al., 2022; Schafer et al., 2011). Cumulative life stressor metrics provide more detailed assessment in that they reflect the number of exposures. However, these cumulative scores frequently are not disaggregated by subtype, making it unclear how specific subtypes combine to increase mental health problems. Finally, in some instances, researchers examine change in one stressor while controlling for another. For example, one recent longitudinal study of trajectories of ETV in at-risk youth also measured PH and examined whether PH was a risk factor for membership in a given trajectory of ETV (Zhao et al., 2022). Thus, the extant literature shows that individuals are often exposed to both PH and ETV and, when measured separately, each experience impacts mental health. However, methodological limitations leave questions regarding 1) how PH and ETV simultaneously change over time in youth with legal system involvement and 2) how simultaneous change over time impacts mental health.

To characterize joint trajectories of PH and ETV and clarify their associations with mental health problems in youth with legal system involvement, first we examined simultaneous fluctuations in the co-occurrence of PH and ETV across middle and late adolescence in a sample of legal system-involved youth. Then, we determined how trajectories of co-occurrence predicted externalizing and internalizing mental health problems three years later during emerging adulthood. For all analyses, we examined the robustness of any relationships by considering additional factors (i.e., demographics, broader environmental factors, individual difference factors) that also relate to PH, ETV, and/or mental health. Based on prior work (Cecil et al., 2014; Estrada et al., 2021; Stevens & Mennen, 2018), we hypothesized that trajectories characterized by low levels of both subtypes, high levels of one subtype, and high levels of both subtypes would emerge. We further hypothesized that trajectories primarily characterized by higher levels of PH relative to ETV would predict greater dysfunction in internalizing outcomes; trajectories primarily characterized by higher levels of ETV relative to PH would predict more antisocial behavior; and trajectories characterized by high levels of one or both subtypes would promote dysfunction across outcomes.

Method

Participants and procedure

The present study utilized data from the Pathways to Desistance study,[1] a longitudinal study of serious juvenile offenders located in Phoenix, AZ and Philadelphia, PA (Mulvey et al., 2004; Schubert et al., 2004; see also: https://www.pathwaysstudy.pitt.edu/index.html). Participants completed a 4-hour baseline assessment during which they provided information on a wide range of individual and social background factors. Six follow-up assessments were conducted every six months for the three years following the baseline interview; after three years, participants were reinterviewed annually for four years.

Participants were included in the present study[2] if they completed baseline and at least four of six 6-month follow-up assessments of PH and ETV ($n = 1027$; see Supplemental Method Sections 3a and 3b for information on missingness). The six 6-month follow-up assessments were chosen for analysis because a) PH was no longer assessed when participants turned 20 years old and b) uneven amounts of time between assessments would yield uneven opportunities for ETV. All outcomes were assessed three years following the final timepoint that was included in trajectory analyses (i.e., third annual follow-up, six years after baseline). On average, participants were 15.91 years old at baseline (SD = 1.15) and 21.92 years old at the three-year follow-up timepoint (SD = 1.16). Most of our sample identified as Black (42.2%) or Hispanic (32.6%), with the remaining participants identifying as white (21.3%) or another racial group (3.9%; see Table 1 for sample characteristics and descriptive statistics [mean, standard deviation, range]). Cronbach's alphas for all measures can be accessed at https://www.pathwaysstudy.pitt.edu/codebook/measures.html.

Measures

Trajectories

PH (Conger, et al., 1994). The Maternal and Paternal Hostility subscales contained 12 items each that documented the frequency of harsh behavior perpetrated by each parent/primary caregiver (e.g.,

[1]We confirm that no other studies to date have performed the same analyses using the Pathways to Desistance data set.

[2]The secondary data analytic protocol used in the present study was approved by the Yale University Human Investigation Committee.

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Table 1. Sample characteristics and descriptive statistics for key study variables

Variable	*n*	Mean	SD	Min	Max	Range
Demographics						
Age (Baseline)	1027	15.91	1.15	14	18	14-18
Racial Group	1027					
White	219					
Black	433					
Hispanic	335					
Other	40					
Biological Sex	1027					
Male	880					
Female	147					
Socioeconomic Status[a]	1023	51.11	12.01	11	77	1-77
Neighborhood Conditions	1027	2.33	0.74	1	4	1-4
Early Behavioral Problems	1027	1.47	1.14	0	5	0-5
Trajectory Analyses						
Parental Harshness						
Baseline	1027	1.58	0.42	1	3.92	1-4
Timepoint 1	970	1.39	0.32	1	3.00	1-4
Timepoint 2	962	1.40	0.35	1	3.67	1-4
Timepoint 3	953	1.37	0.32	1	3.25	1-4
Timepoint 4	946	1.38	0.33	1	4.00	1-4
Timepoint 5	927	1.36	0.32	1	3.08	1-4
Timepoint 6	819	1.36	0.33	1	3.33	1-4
Exposure to Community Violence						
Baseline	1027	5.17	2.95	0	13	0-18
Timepoint 1	996	1.43	1.87	0	10	0-18
Timepoint 2	1002	1.27	1.78	0	11	0-18
Timepoint 3	1000	1.18	1.79	0	11	0-18
Timepoint 4	995	0.95	1.60	0	9	0-18
Timepoint 5	998	0.91	1.51	0	10	0-18
Timepoint 6	989	0.89	1.53	0	10	0-18
Mental Health Outcomes						
Age	927	21.92	1.16	20	24	20-24
Externalizing						
Nonviolent Crime Frequency[b]	920	40.14	146.62	0	1991	
Violent Crime Frequency[b]	921	15.01	67.20	0	998	
Substance Use	921	0.61	0.94	0	6	0-10
Substance Dependency[c]	927	0.43	1.42	0	10	0-10
Internalizing						
Depression Symptoms	644	0.41	0.63	0	3.83	0-4
Anxiety Symptoms	644	0.33	0.53	0	3.83	0-4
MDD Diagnosis	39					
PTSD Diagnosis	36					

Note. MDD = major depressive disorder. PTSD = posttraumatic stress disorder.
[a] Socioeconomic status was assessed using the Index of Social Position (Hollingshead, 1957), where higher values indicate lower socioeconomic status. [b] Values refer to the mean number of crimes committed by participants in the sample. [c] Substance dependency terminology is used because participants were assessed using DSM-IV substance use disorder criteria. Min and Max refer to observed scores. Range refers to total possible scores.

"How often did your mother threaten to hurt you physically?"; "How often did your father push, grab, hit, or shove you?"). Participants rated each item on a 1–4 Likert-type scale (1 = "Always", 4 = "Never"), where higher scores indicated harsher behavior[3]. A PH score (PH score) was calculated using the average (i.e., mean) of the Maternal and Paternal Hostility subscale scores. If participants only had one subscale score, that one score was used as the PH score. Rates of PH in this sample were comparable to those found in other legal system-involved youth samples (e.g., Vaughan et al., 2021).

ETV (Selner-O'Hagan et al., 1998). Items documented seven witnessed (e.g., "Have you ever seen someone else get killed as a result of violence, like being shot, stabbed, or beaten to death?"), six victimization (e.g., "Have you ever been beaten up, mugged, or seriously threatened by another person?"), and four exposure to death (e.g., "Have you found a dead body?") experiences. Participants responded to each item based on a dichotomous choice (yes/no), and a total score was calculated using the sum of all items (ETV score). Higher scores indicated a greater number of exposures to community violence. Rates of ETV in this sample were comparable to rates of ETV in other legal system-involved and psychiatrically hospitalized youth samples (Muller et al., 2000; Myers et al., 2018).

Trajectory covariates. Baseline scores for PH, ETV, and biological sex (male/female) were included as covariates in trajectory analyses to account for exposure to PH and ETV prior to trajectory estimation (VanderWeele et al., 2020; see Supplemental Method Section 8). Biological sex was included to account for the disproportionate number of male participants in the study (Table 1).

Mental health outcomes

Externalizing: antisocial behavior. The Self-Reported Offending[4] (Huizinga et al., 1991) scale was used to measure 13 nonviolent (e.g., destroying property, entering buildings to steal, selling drugs) and nine violent (e.g., carjacking someone, shooting someone, being in a fight) crimes. Participants were asked if they had committed any of these crimes and, if yes, reported how many times they engaged in the crime during in the past year. Total frequency scores for nonviolent and violent crimes were calculated based on how many times participants engaged in each crime. Higher scores indicated more frequent nonviolent/violent crime.

Externalizing: substance use. The Substance Use/Abuse Inventory (Chassin et al., 1991) was used to measure participants' substance use and dependence. Data were collected when substance use disorders were classified into substance abuse and substance dependence using DSM-IV criteria (First et al., 1997). The Substance Use subscale had participants report how many of 10 different types of illegal substances they used in the past year. Higher scores indicated more substances tried. The Substance Dependency subscale assessed past-year dependency symptoms for drug and/or alcohol use (e.g., "Have you had any problems or arguments with family or friends because of your alcohol or drug use?"). Higher scores indicated greater dependency on substances. Substance use and substance dependency were moderately correlated ($r = 0.52$, $p < .001$).

Internalizing: symptoms. The Brief Symptom Inventory (Derogatis & Melisaratos, 1983) was used to assess depression

[3]Items were reverse coded.
[4]We chose self-report offending, as opposed to future legal system contact, as our measure of antisocial behavior because 1) individuals can engage in antisocial behavior without being arrested and 2) likelihood of arrest relates to a host of inequitable structural factors (e.g., racial group, neighborhood factors; Gase et al., 2016; Huff, 2021).

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and anxiety symptoms. The Depression subscale consisted of six items assessing the extent to which participants were bothered by symptoms of depression in the past week (e.g., "Feeling no interest in things"). The Anxiety subscale consisted of six items measuring the extent to which participants were bothered by physiological symptoms of anxiety in the past week (e.g., "Feeling tense or keyed up"). For both subscales, participants responded using a 0–4 Likert-type scale (0 = "Not at all", 4 = "Extremely"), where higher scores indicated greater depression/anxiety symptoms. For both subscales, scores consisted of the mean of each of the six items in that subscale.

Internalizing: diagnoses. The Composite International Diagnostic Interview (World Health Organization, 1990), a structured clinical interview designed to assess mental disorders based on DSM-IV criteria, was used to assess past-year major depressive disorder (MDD) and PTSD. For PTSD, it is notable that at the time of data collection PTSD was considered an anxiety disorder under DSM-IV, and the anxiety symptoms measure overlapped with the PTSD reexperiencing (e.g., intrusive, distressing thoughts) and hyperarousal symptom (e.g., hypervigilance) clusters.

Mental health outcome model covariates. Baseline scores for age, biological sex, racial group membership, parental socioeconomic status (Index of Social Position; Hollingshead, 1957), neighborhood conditions (Neighborhood Conditions Measure; Sampson & Raudenbush, 1999), early behavioral problems (Early Behavioral Problems before age 11), the baseline level of the mental health problem of interest, and study site location (Philadelphia, PA or Phoenix, AZ) were included as covariates in all regression analyses (see Supplemental Method for more details on covariate measures and selection).

Data analysis

Trajectories

Group-based multi-trajectory modeling (GBTM) was used to identify joint trajectories of PH and ETV. GBTM is a form of latent class growth analysis that identifies subgroups of individuals who show similar patterns of change over time on multiple variables simultaneously (Nagin et al., 2018). Unlike the dual trajectory approach, which estimates the association between two variables by measuring probability of a trajectory for one variable given membership in a specific trajectory for the second variable, GBTM examines the association between two variables by defining trajectory groups based on patterns of change for both variables simultaneously. Analyses were conducted using SAS software, version 9.4 using the PROC TRAJ procedure with MULTGROUPS option (Jones et al., 2001; Nagin et al., 2018). Models simultaneously considered PH and ETV scores for the six 6-month follow-up assessments. We followed guidelines for reporting on latent trajectory modeling (Supplemental Method).

Following recommendations from Nagin et al. (2018), first we estimated trajectories for each indicator (i.e., PH and ETV scores) separately (see Supplemental Method Section 4 for information on PH and ETV distributions). Model solutions found in the individually estimated trajectories were used to inform subsequent GBTM analyses using both indicators. We evaluated 1- through 6-trajectory models, and intercept, linear, quadratic, and cubic trajectory shapes were considered. Model fit was compared using the Bayesian Information Criterion, where smaller values indicated a greater model fit; log likelihood, where smaller values indicated a greater model fit; average posterior probability, where values above .7 were considered adequate; odds of correct classification, where values above 5 were considered adequate; and the ratio of the probability of trajectory membership to the proportion of participants assigned to that trajectory, where values closer to 1 indicated a better fit (Nagin, 2005). Trajectory size (i.e., greater than 5%) and theoretical coherence of the trajectories also were considered.

Mental health outcomes

Three separate negative binomial regression analyses[5] were used to determine if trajectory membership predicted nonviolent crime frequency, violent crime frequency, and substance dependency three years after the last assessment used in trajectory analyses. One Poisson regression analysis was used to determine if trajectory membership predicted substance use three years after the last assessment used in trajectory analyses. Two separate linear regression analyses were used to determine if trajectory membership predicted depression and anxiety symptoms three years after the last assessment used in trajectory analyses. Two separate binomial logistic regression analyses were used to determine if trajectory membership predicted MDD and PTSD diagnostic status three years after the last assessment used in trajectory analyses. Casewise deletion was used to address missingness (see Table 1 for sample size by mental health outcome). For all regression analyses, the group with the lowest PH and ETV scores served as the reference group. Then, post hoc simple contrasts were conducted to compare trajectories that significantly differed from the reference group to each other. Analyses were conducted using the MASS and emmeans packages in R (Lenth & Lenth, 2018; Ripley et al., 2013). Bonferroni correction based on the number of variables in each mental health subdomain (i.e., antisocial behavior, substance use, internalizing symptoms, internalizing diagnoses) was applied.

Supplemental analyses

To understand how sociodemographic, environmental, and individual difference factors impacted the likelihood of trajectory membership, we used multinomial logistic regression analyses to determine how baseline age, racial group membership, biological sex, socioeconomic status, neighborhood conditions, and early behavioral problems predicted trajectory membership. Full analytic methods and results are presented in the Supplemental Material.

Results

Trajectories

Model fit indices suggested that a four-trajectory solution optimally characterized the sample (Figure 1, Table 2). Further supporting selection of this solution, the four-trajectory solution yielded trajectories that were theoretically coherent and conceptually distinct (see Supplemental Figure 2). The first trajectory was characterized by *low* and *stable* levels of PH and ETV (trajectory 1 [*Low*]; 26.2% of the sample). For the first trajectory, both PH and ETV were best fit using an intercept model, reflecting stability over time.[6] The second trajectory was characterized by *moderate* and *decreasing* levels of PH and ETV (trajectory 2 [*Moderate and Decreasing*]; 44.1% of the sample). Both PH and ETV were best

[5]Negative binomial regression analyses were used because each variable was based on count data and the deviance statistic for a Poisson model indicated overdispersion (i.e., the true variance is bigger than the mean).

[6]For ease of review, trajectory labels only indicate when the trajectory shape was not stable over time.

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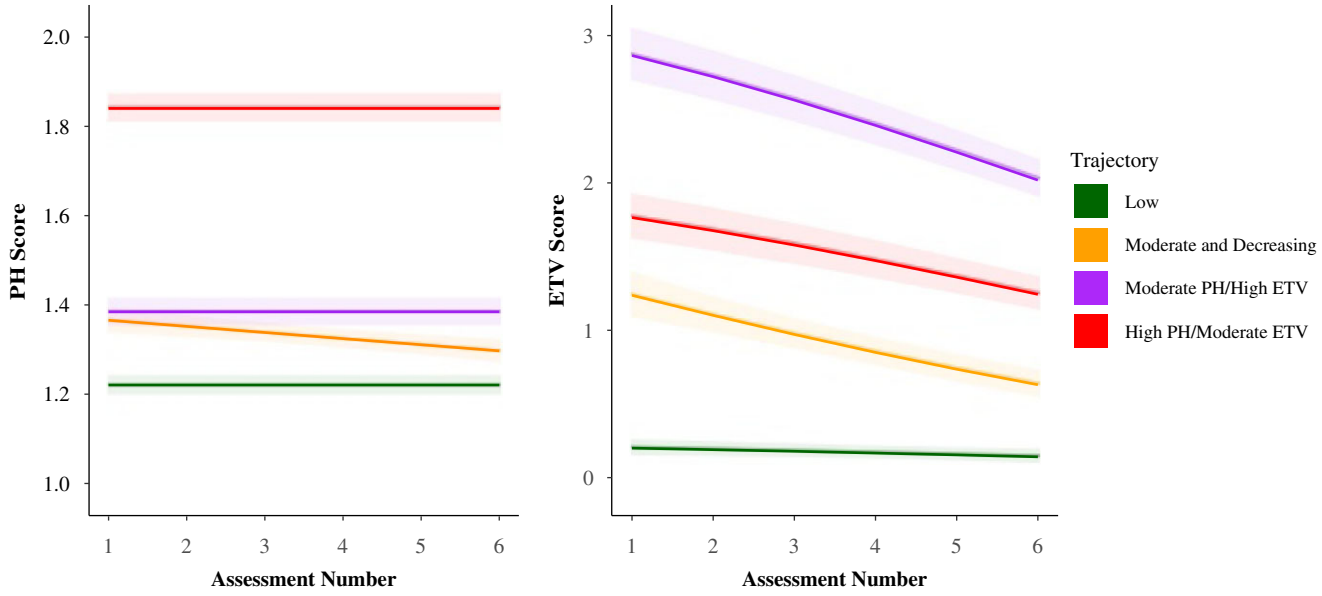

Figure 1. Group trajectory estimates for the optimal model solution. A four-trajectory model optimally characterized the data. The first trajectory (green) represented *low* and *stable* levels of both parental harshness and exposure to community violence. The second trajectory (orange) displayed *moderate* and *decreasing* parental harshness and exposure to community violence. The third (purple) showed *moderate* and *stable* levels of parental harshness but *high* and *stable* exposure to community violence. The fourth trajectory (red) was characterized by *high* and *stable* parental harshness but *moderate* and *stable* exposure to community violence. Error bands represent 95% confidence intervals.

fit using linear models, reflecting linear change over time. The third trajectory was marked by *moderate* and *stable* levels of PH but *high* and *stable* levels of ETV (trajectory 3 [*Moderate PH/High ETV*]; 16.6% of the sample), and both PH and ETV were best fit with an intercept model. The fourth trajectory reflected *high* and *stable* levels of PH but *moderate* and *stable* levels of ETV (trajectory 4 [*High PH/Moderate ETV*]; 13.1% of the sample), with both experiences best characterized by an intercept model. See Supplemental Table 5 for model parameter estimates.

Mental health outcomes

Membership in trajectory 3 (*Moderate PH/High ETV*) predicted greater nonviolent crime frequency three years later compared to trajectory 1 (*Low*) and was the only trajectory that differed from the *Low* reference group. Membership in trajectories 2 (*Moderate and Decreasing*), 3 (*Moderate PH/High ETV*), and 4 (*High PH/Moderate ETV*) predicted greater violent crime frequency, substance use, and substance dependency three years later compared to trajectory 1. No post hoc simple contrast comparisons, which compared trajectories that significantly differed from the reference group to each other, were significant for any variable. Membership in trajectories 3 (*Moderate PH/High ETV*) and 4 (*High PH/Moderate ETV*) each predicted greater depression symptoms. Only membership in trajectory 4 (*High PH/Moderate ETV*) predicted a higher likelihood of having an MDD diagnosis compared to trajectory 1 and was the only trajectory that differed from the *Low* reference group. Membership in trajectory 3 (*Moderate PH/High ETV*) predicted greater anxiety symptoms compared to trajectory 1 and was the only trajectory that differed from the *Low* reference group. PTSD diagnostic status was not significantly predicted by membership in any trajectory with PH/ETV elevations relative to trajectory 1 (Table 2, Figure 2).[7,8]

[7]Results were largely consistent when covariates were not included in the model, although there was less differentiation in the relationships among trajectory membership and mental health outcomes. Controlling for covariates likely allowed for nuance to emerge in the relationships among trajectory membership and mental health.

[8]Results were consistent when biological sex was not included as a covariate in the model.

Discussion

The present study characterized joint trajectories of PH and ETV in a legal system-involved sample across late adolescence and used trajectory membership to predict mental health outcomes in emerging adulthood. Four trajectories with varying combinations of PH and ETV were identified. Most trajectories were characterized primarily by stability of exposure across time, with one trajectory showing decreases in both PH and ETV across late adolescence. Further, trajectory membership predicted some common and some distinct mental health problems three years later in emerging adulthood. For externalizing outcomes, all trajectories with elevations in PH or ETV predicted more violent crime, substance use, and substance dependency relative to the *Low* reference group. The *Moderate PH/High ETV* trajectory predicted more nonviolent crime compared to, and was the only trajectory to significantly differ from, the *Low* reference group. For internalizing outcomes, distinct associations between trajectories and specific symptom clusters were identified. Both the *Moderate PH/High ETV* and *High PH/Moderate ETV* groups predicted greater depression symptoms. However, only the *High PH/Moderate ETV* group predicted greater likelihood of having MDD and significantly differed from the *Low* group, and only the *Moderate PH/High ETV* group predicted higher anxiety symptoms and significantly differed from the *Low* group. These results suggest that meaningful variation in trajectories of PH and ETV exists and that this variation designates greater risk for some, but not all, mental health problems.

Characteristics of joint trajectories

Our results indicate that features of exposure to stressful life experiences capture important variability in the lived experience.

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Table 2. Regression analysis results

Variable	Trajectory	Estimate	Std. Error	*z*-value	*p*-value	Bonferroni corrected *p*-value
Externalizing						
Nonviolent Crime Frequency	1: Low	−1.28	1.65	−0.78	.438	.875
	2: Moderate and Decreasing	1.85	1.01	1.83	.068	.135
	3: Moderate PH/High ETV	*2.84*	*1.12*	*2.53*	*.011*	*.023*
	4: High PH/Moderate ETV	2.17	1.25	1.73	.083	.166
Violent Crime Frequency	1: Low	−2.42	0.50	−4.82	< .001	< .001
	2: Moderate and Decreasing	*1.66*	*0.32*	*5.16*	*< .001*	*< .001*
	3: Moderate PH/High ETV	*1.98*	*0.42*	*4.69*	*< .001*	*< .001*
	4: High PH/Moderate ETV	*1.87*	*0.44*	*4.26*	*< .001*	*< .001*
Substance Use	1: Low	−1.05	0.18	−5.75	< .001	< .001
	2: Moderate and Decreasing	*0.51*	*0.13*	*3.89*	*< .001*	*< .001*
	3: Moderate PH/High ETV	*0.78*	*0.15*	*5.18*	*< .001*	*< .001*
	4: High PH/Moderate ETV	*0.77*	*0.15*	*4.98*	*< .001*	*< .001*
Substance Dependency	1: Low	−1.08	0.41	−2.60	.009	.019
	2: Moderate and Decreasing	*0.67*	*0.29*	*2.30*	*.021*	*.042*
	3: Moderate PH/High ETV	*1.14*	*0.36*	*3.16*	*.002*	*.003*
	4: High PH/Moderate ETV	*1.12*	*0.38*	*2.97*	*.003*	*.006*
Internalizing						
Depression Symptoms	1: Low	0.29	0.09	3.16	.002	.003
	2: Moderate and Decreasing	0.05	0.07	0.81	.419	.837
	3: Moderate PH/High ETV	*0.19*	*0.09*	*2.26*	*.024*	*.048*
	4: High PH/Moderate ETV	*0.25*	*0.09*	*2.89*	*.004*	*.008*
Anxiety Symptoms	1: Low	0.30	0.08	3.97	< .001	< .001
	2: Moderate and Decreasing	0.01	0.06	0.19	.851	1.00
	3: Moderate PH/High ETV	*0.18*	*0.07*	*2.55*	*.011*	*.022*
	4: High PH/Moderate ETV	0.12	0.07	1.62	.106	.213
MDD Diagnosis	1: Low	−3.30	0.61	−5.41	< .001	< .001
	2: Moderate and Decreasing	0.08	0.46	0.17	.867	1.00
	3: Moderate PH/High ETV	−0.28	0.70	−0.40	.692	1.00
	4: High PH/Moderate ETV	*1.22*	*0.51*	*2.39*	*.017*	*.033*
PTSD Diagnosis	1: Low	−2.48	0.57	−4.33	< .001	< .001
	2: Moderate and Decreasing	0.27	0.45	0.59	.555	1.00
	3: Moderate PH/High ETV	0.29	0.58	0.50	.617	1.00
	4: High PH/Moderate ETV	−0.40	0.71	−0.56	.573	1.00

Note: Italics denote that trajectory membership significantly predicted the outcome of interest compared to trajectory 1 (*Low*). MDD = major depressive disorder. PTSD = posttraumatic stress disorder.

Specifically, the amount of exposure to PH and ETV in late adolescence differed across trajectories. Differences in the amount of exposure across "exposed" groups reinforces the importance of assessment methods that account for amount of exposure.

Another relevant feature of exposure to stressful life experiences includes the pattern of exposure over time. Most trajectories were characterized by stability in one or both experiences across late adolescence. It is possible that the stability of stressful life experiences in this study reflects the inequitable social structures in the United States that limit upward mobility and prevent people from leaving environments that are rife with family and community violence (Chetty et al., 2018). On average, youth in the Pathways to Desistence study resided in environments characterized by moderate to high levels of disadvantage. People who live in environments characterized by disadvantage have limited opportunities to relocate to places where resources may be higher and community violence less prevalent (Warner & Fowler, 2003). Remaining in a disadvantaged neighborhood likely results in continued, chronic ETV. Moreover, the hardship of living in these neighborhoods may strain parents' ability to engage skillfully with their children (Barajas-Gonzalez & Brooks-Gunn, 2014), contributing to the maintenance of PH. Ultimately, limited abilities to

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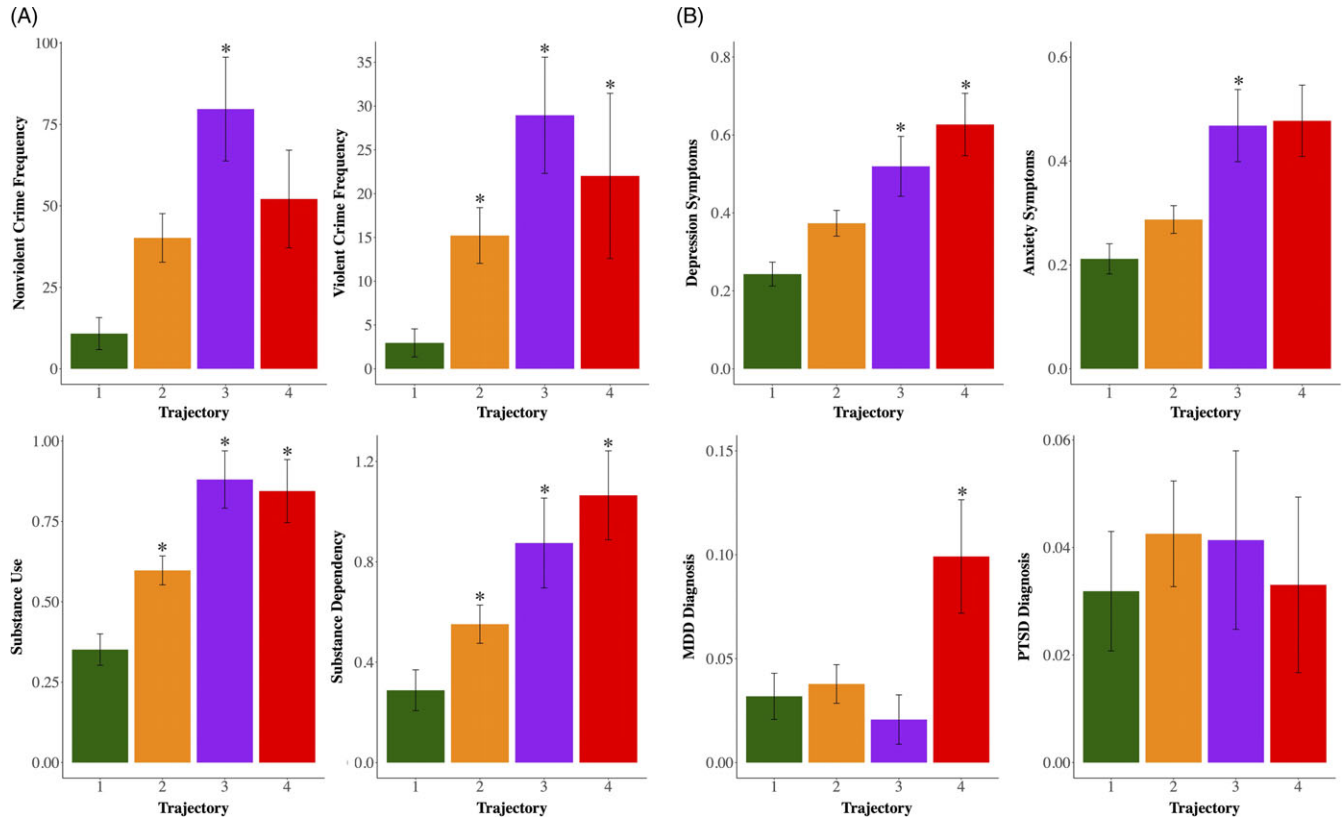

Figure 2. Mental health problems three years later by trajectory. Membership in trajectories with PH/ETV elevations significantly predicted (A) externalizing and (B) internalizing mental health problems three years later compared to the *Low* reference group. Trajectory 2 (*Moderate and Decreasing*; orange) membership predicted violent crime, substance use, and substance dependency. Trajectory 3 (*Moderate PH/High ETV*; purple) membership predicted nonviolent and violent crime, substance use, substance dependency, depression symptoms, and anxiety symptoms. Trajectory 4 (*High PH/Moderate ETV*; red) membership predicted violent crime, substance use, substance dependency, depression symptoms, and MDD diagnosis. Error bars represent standard errors. Asterisk denotes that trajectory membership significantly predicted the outcome compared to trajectory 1 (*Low*).

change one's context may account for the stability in both experiences of stressful life experiences across trajectories.

Further, certain individuals, namely those who identify as Black, are disproportionately burdened by inequitable social structures (e.g., neighborhood disadvantage, legal system contact) that limit social mobility (Brunson & Weitzer, 2009; Swisher et al., 2013). This is reflected in the present sample such that Black (and Hispanic) youth are overrepresented in the sample as compared to the general population. However, racial group membership did not differentially predict trajectory membership. More research is needed to explore the ways in which structural and cultural inequalities influence the amount and pattern of change over time in exposure to stressful life experiences (Neblett, 2019; Rucker & Richeson, 2021).

That said, one group, the *Moderate and Decreasing* trajectory, was characterized by decreasing levels of both subtypes of stressful life experiences. Compared to trajectories characterized by stability, this trajectory demonstrated significantly lower amounts of initial ETV. Though youth in this trajectory also are likely to reside in disadvantaged neighborhoods, their qualitative experience of that neighborhood may differ in terms of their ETV. Lower community violence exposure may allow youth greater cognitive capacity to process their current living situation (Sharkey, 2010). Alternatively, lower community violence exposure may reflect the presence of neighborhood-level protective factors that buffer against violence (e.g., higher collective efficacy, more neighborhood organizations; Gardner & Brooks-Gunn, 2009; Sampson et al., 1997) and increase ability to mitigate exposure to stressful life experiences over time.

Mental health outcomes predicted by joint trajectory membership

Investigation into relative amounts and patterns of change over time in stressful life experiences also revealed that *how* youth experienced this stress meaningfully predicted future mental health problems. Our results add to a small body of literature suggesting that specific combinations of stressful life experiences are especially potent predictors of negative mental health outcomes (e.g., Briggs et al., 2021). Further, the present study contributes to evidence suggesting that nuance in the relationships between combinations of stressful life experiences and mental health emerges when the relative amount of each stressful life experience is considered. Though some studies suggest that there is a dose-response relationship between the experience of multiple stressful life events and negative mental health outcomes (e.g., Chapman et al., 2004), results from the present study indicate that subgroups characterized by high levels of exposure to one stressful life event, in the context of moderate exposure to another, often show the strongest relationships to severe mental health outcomes (Estrada et al., 2021). Our results underscore the importance of understanding the subtype(s) and amount of exposure to multiple stressful life experiences when characterizing the relationships among life stressors and mental health outcomes.

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For example, in terms of antisocial behavior, we found that only membership in one trajectory, *Moderate PH/High ETV,* predicted higher nonviolent crime three years later relative to the *Low* reference group. As hypothesized, our findings are consistent with previous studies documenting that moderate amounts of family stress in the context of high ETV is an especially potent combination for promoting nonviolent crime (Estrada et al., 2021). Nonviolent crime, which consists of behaviors including theft, selling drugs, and destroying property, can be motivated by a host of factors including one's ability to regulate behavior or a desire to gain resources (Gardner et al., 2008). In fact, PH, even at moderate levels, is linked to lower self-regulation (Hay et al., 2017), and ETV is common in neighborhoods with the fewest resources (Gibson et al., 2009). Therefore, it is possible that, for youth in the *Moderate PH/High ETV* trajectory, their experience of PH contributed to issues in self-regulation that, in the context of a chronically disadvantaged environment, promoted nonviolent crime as means of resource acquisition. In contrast, violent crime was common across all three trajectories with elevations in stressful life experiences. Our findings suggest that the experience of violence across multiple contexts, in addition to the amount of exposure to violence within each context, may be especially relevant to the promotion of future violent behavior (Turner et al., 2016). It is possible that youth see violence in one context that is replicated and extended to another, and consequently, they reenact these exemplars of violence in their own behavior. Taken together, these findings reinforce the notion that nonviolent and violent crimes may have different etiologies and therefore interventions should be tailored directly to the type of crime (Kalvin & Bierman, 2017).

For substance use, membership in all trajectories with elevations in stressful life experiences predicted future substance use and problematic substance use compared to the *Low* group. Our results add to a body of literature documenting the robust associations among various subtypes of life stress and substance use (Bosk et al., 2021; Leza et al., 2021). Experience of life stressors, regardless of subtype and/or amount of exposure, may elevate psychological distress (e.g., Wilson & Rosenthal, 2003), which youth may seek to alleviate via substances. Therefore, substance use may serve as a form of self-medication that temporarily quells psychological distress but, over time, worsens mental health functioning (Garland et al., 2013).

In terms of internalizing, specific outcomes were differentially predicted by trajectory membership. Though trajectories with high levels of PH or ETV predicted greater depression symptoms, only the trajectory predominated by high levels of PH predicted MDD compared to the *Low* group. However, the trajectory predominated by high levels of ETV predicted anxiety symptoms when compared to the *Low* reference group. As hypothesized, the family/caregiving environment appears particularly important for promoting depression that is severe enough to reach diagnostic threshold (LeMoult et al., 2020). Youth whose caregivers are chronically harsh, demeaning, and abusive may feel shame/guilt because they think that their caregivers perceive them as worthy of this harsh behavior (Sekowski et al., 2020). Youth who experience chronic PH, especially in the context of moderate amounts of strain resulting from community violence, may internalize shame/guilt that ultimately produces low positive affect and higher rates of MDD (Clark & Watson, 1991).

In contrast, and contrary to hypotheses, the trajectory characterized by the highest levels of community violence predicted greater (physiological) anxiety symptoms compared to the *Low* group. In the context of high levels of ETV, it is possible that youth are unsure of when they may experience community violence and whether they were the intended target of community violence, and consequently, constantly fear for their own safety and that of loved ones (Rosen et al., 2018). Chronic experience of community violence has been linked to physiological hyperarousal (Estrada et al., 2020) and somatic symptoms of anxiety (Lopez-Tamayo et al., 2022). Conversely, other symptoms of anxiety (e.g., worry, heightened self-monitoring, which were not measured in the present study) may be more strongly associated with PH (Brooker & Buss, 2014; Gallagher & Cartwright-Hatton, 2008). Critical, demeaning, and punitive parenting may cause youth to monitor and worry about their own behavior in order to avoid future harsh parenting (Brooker & Buss, 2014). Consequently, PH may manifest in greater cognitive symptoms of anxiety. Researchers may consider incorporating measures of anxiety that capture multiple symptom clusters to refine understanding of the relationships among subtypes of stressful life experiences and anxiety. Additionally, given the high levels of overlap between depression and anxiety (e.g., Kaufman & Charney, 2000), researchers can consider examining how stressful life experiences contribute to comorbid depression and anxiety symptoms.

Limitations, future directions, and clinical implications

Several limitations should be noted. First, PH and ETV were only assessed between the ages of 16–19. It is presumed that family systems are more important earlier in life and community systems are more important as youth age into adolescence and emerging adulthood. However, family and community systems are both likely important to some degree across all stages of development (Finan et al., 2018; Schaefer et al., 2022). Our results reinforce the need for comprehensive measurement of PH and ETV in the same individuals across multiple periods of development to understand not only how fluctuations in stressful life experiences shape future mental health but also how the timing of those fluctuations impacts mental health.

Second, the variables provided did not differentiate in terms of type or severity of PH or ETV. Additionally, our included sample significantly differed from the overall Pathways to Desistance data set such that the included sample showed significantly lower levels of ETV. Trajectories of co-occurrence may differ when accounting for experiences that are more severe in nature. Further, we were unable to examine additional subtypes (e.g., other Adverse Childhood Experiences [ACEs], structural environmental stressors; Felitti et al., 1998) or dimensions (e.g., threat/deprivation; McLaughlin et al., 2014) of stressful life experiences that may be important for understanding trajectories of co-occurrence and their consequences. Moreover, our community violence measure did not specify who the perpetrator was or how frequently exposures occurred. Future work should consider examining multiple types and dimensions of stressful life experiences to clarify which subtypes and/or dimensions of life stressors are most relevant for understanding how life stress promotes future dysfunction.

Third, trajectory analyses inherently simplify the amount of individual variability captured to identify common amounts of change over time on multiple variables. While this approach is beneficial for designating homogenous groups, there can be variability within groups that is unexamined. Future work can consider alternative methods of trajectory specification to model greater individual variability (e.g., latent growth mixture modeling; see Supplemental Method sections 6a and 6b for more information). Future work also can consider alternate ways of modeling

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externalizing and internalizing problems (e.g., latent variable modeling; Muthén & Asparouhov, 2002).

Finally, our sample was limited to youth with legal system contact. Because these youth often experience higher rates of some stressful environmental experiences, it is possible that trajectories of stressful life experiences in this sample may differ compared to those found in samples without legal system contact. Relatedly, our sample included a relatively small number of female participants. Researchers may consider examining joint trajectories of multiple stressful life experiences in non-legal system-involved youth and in samples with a greater proportion of female youth to understand how these findings generalize to other individuals.

Despite these limitations, the present findings have implications for clinical practice with youth who have legal system involvement. Clinicians working with this population will likely benefit from comprehensive assessment that includes documentation of 1) the subtypes and amounts of life stressors experienced and 2) contextual factors that may influence clients' functioning. For clinicians to accurately understand their clients' life experiences and conceptualize the causes of the distress that bring them into care, an approach that includes robust assessment of multiple subtypes of stressful life experiences is needed in day-to-day practice (Forkey et al., 2021). Clinical assessments that use binary metrics to code exposure to stressful life experiences may fail to accurately capture nuance in the lived experience that has implications for the types of mental health distress that youth are likely to experience. Further, assessment of youths' family and neighborhood characteristics will help clinicians situate them in the structures that may influence their functioning and the applicability of certain interventions (Berkes & Ross, 2013; Naeem, 2019). Ultimately, comprehensive assessment will allow clinicians to tailor interventions to youths' lived experience (Baskin-Sommers et al., 2022).

In conclusion, we show that *how* individuals experience multiple forms of life stressors, specifically PH and ETV, varies across adolescence. Further, this variability in trajectories of stressful life experiences in adolescence predicts externalizing and internalizing mental health problems such that not all trajectories with elevations equally predicted dysfunction across mental health domains. Ultimately, measurement of various stressful life experiences simultaneously across multiple developmental time periods is needed to draw accurate conclusions about the driver of mental health problems and promote the creation of precise interventions tailored to an individual's lived experience with life stressors.

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