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Exploring Pathways to Desistance and Adjustment in Adulthood Among Juvenile Justice-Involved Females

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SUMMARY OF THE PROJECT

Major Goals and Objectives

Almost one million females are under the supervision of the criminal justice system in the United States, making them the fastest growing population in the justice system (Bureau of Justice Statistics, 2023). Yet, relatively little is known about the longitudinal trajectories of female offending, the potential negative outcomes of these trajectories, and the protective and risk processes for females. What has become clear is that girls and women in the juvenile and criminal justice systems have extensive histories of trauma and victimization, particularly experiences of sexual violence (Johansson & Kempf-Leonard, 2009; Kerig et al., 2010). Given this knowledge, the recent reauthorization of the Juvenile Justice and Delinquency Prevention Act (JJDP) explicitly calls for a focus on the unique needs of justice-involved girls as well as the need of juvenile-serving systems to acknowledge and address the traumatic experiences of justice involved youth (P.L. 115-385), which disproportionately affect females (Baglivio & Epps, 2016; Baglivio et al., 2015; Harner et al., 2015). This study builds on an existing longitudinal study to further our understanding of the trajectories of female justice involvement across adolescence and adulthood, with a focus on trajectories of trauma exposure and its sequelae, in order to identify salient points for prevention and intervention efforts.

The relationship between age and crime shows that delinquent behavior increases from childhood to adolescence, peaks in mid-adolescence, then shows a marked decline in late adolescence and early adulthood (Farrington, 2006; Moffitt, 1993). While it is important to explain who persists and why they continue to engage in delinquent behavior, persistent offending is in fact *rarer* than limited or non-persistent offending (Moffitt, 1993). According to Sampson and Laub (1993), with age, individuals are increasingly bound by informal social control, social ties or

bonds to societal institutions, which function as the mechanisms for desistance from crime in adulthood. However, the age-crime curve, though well researched, has been minimally replicated in samples of women and explored over few developmental periods, leaving unanswered questions regarding the divergent pathways of offending for women (Block et al., 2010; Piquero, 2008). Thus, the proposed study uses life course theory and the concept of turning points (Elder, 1998; Laub & Sampson, 2008) as guiding theoretical frameworks to understand women's pathways to desistance or persistence in offending.

Considerable research has documented that persons who have experienced incarceration and system involvement also demonstrate significantly poorer mental health and physical health outcomes (Dumont et al., 2012; Massoglia & Pridemore, 2015). For example, women who are involved with the criminal legal system experience a greater number of chronic health conditions relative to women in the larger community who are not involved with the legal system (Binswanger et al., 2009). Studies consistently document that women involved with the legal system have high rates of co-occurring mental health challenges, significant trauma, and substance use disorders, with prevalence estimates showing that rates of co-occurring psychiatric conditions and substance use are at or above 75% for women involved with the criminal legal system (Staton-Tindall et al., 2007; Winkelman et al., 2018cites). A limited number of studies have examined these associations across development in samples of females specifically.

Even fewer studies have explored the cost of legal system involvement and incarceration on biological indicators of health. The concept of allostatic load (McEwen & Stellar, 1993) has been widely applied as a framework to understand how stressful life experiences, such as systems involvement or offending, may be biologically costly, affecting poor health outcomes in adulthood (Friedman et al., 2015; Massoglia & Pridemore, 2015). Allostatic load represents the biological

cost of *chronic or repeated* physiological reactions, which are employed to mobilize the body when faced with stressful stimulus (McEwen & Stellar, 1993). Accumulating evidence suggests that elevated indices of allostatic load (i.e., significant “wear and tear” on the metabolic, cardiovascular, and immune systems; McEwen, 1998) are predictive of chronic disease (e.g., cardiovascular disease; Beckie, 2012; Juster et al., 2010, diabetes; Steptoe et al., 2014) and greater all-cause mortality risk (Karlamanla et al., 2002; Seeman et al., 2001). Aspects of system involvement (e.g., child maltreatment; Widom et al., 2015) in adolescence are also associated with higher levels of allostatic load (i.e., elevated blood pressure, poor metabolic functioning, greater systemic inflammation) (Schwartz et al., 2020) and mental health challenges (Dierkhising, Lane, Natsuaki, 2014) in adulthood. Thus, in the current study we seek to describe the mental and physical health in a sample of women with extensive juvenile and adult legal system involvement and to further quantify the cumulative biological burden of such experiences by also assessing allostatic load.

Despite the increase in justice involvement among females, there are few evidence-based interventions tailored specifically to females, and we know little about the differential effectiveness of the few programs available (Kerig et al., 2024). However, Treatment Foster Care Oregon (TFCO), previously known as Multidimensional Treatment Foster Care, is one evidence-based intervention shown to be particularly effective for girls with deep end system involvement (Chamberlain, 2003; Chamberlain et al., 2007; Leve et al., 2005). TFCO was designed as an alternative to residential care or incarceration for juvenile justice-involved adolescents, and through rigorous testing in two randomized clinical trials (RCTs), has been found to be effective in reducing delinquency, deviant peer affiliation, and adolescent pregnancy (Chamberlain et al., 2007; Kerr et al., 2009; Leve et al., 2005), with findings also demonstrating effects on long-term

outcomes such as young adult criminal involvement and depression, suicidality, and substance use problems (Harold et al., 2013; Kerr et al., 2014; Leve et al., 2022; Rhoades et al., 2014). The current study leverages this unique RCT to identify potential targets for subsequent intervention with female populations, with the goal of informing efforts to prevent persistent delinquency and multiple-systems involvement among females.

Research Aims

The four main aims of the current study are to:

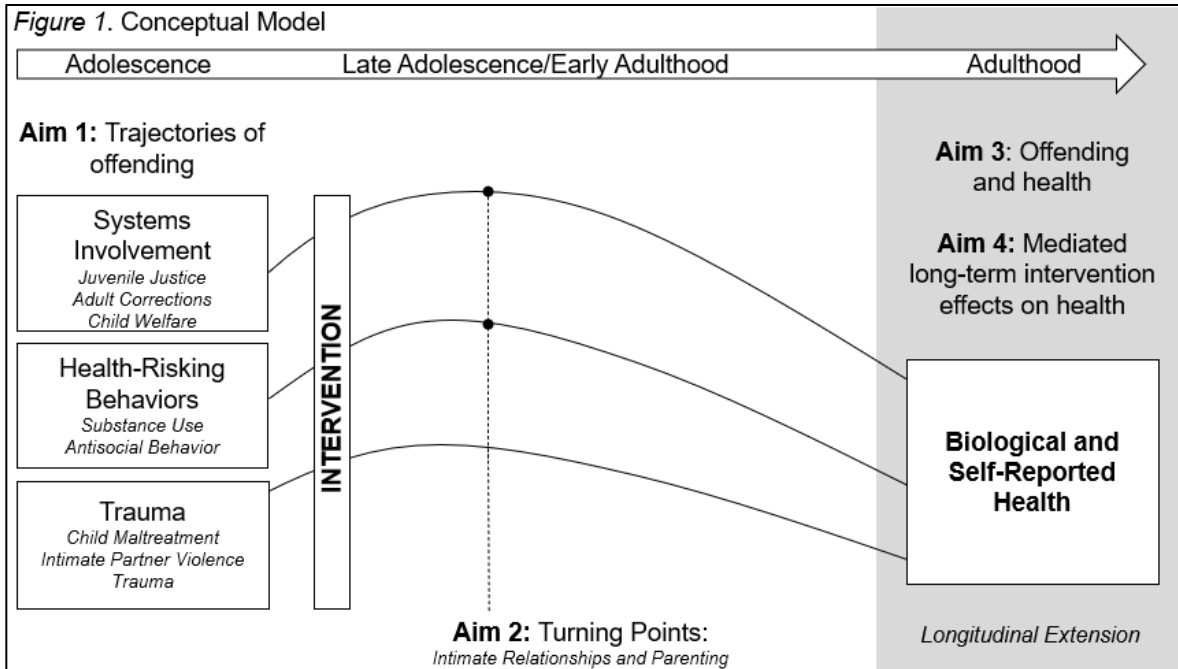
Aim 1: To specify developmental trajectories of delinquency and crime from adolescence into adulthood among a sample of justice-involved females, and to understand how risk and protective factors influence these trajectories across time.

Aim 2: To examine the function of key turning points (i.e., intimate relationships and parenthood) in the persistence and/or desistance process for adult females.

Aim 3: To examine whether desistance or persistence in delinquency and crime predict biological and self-reported health outcomes.

Aim 4: To examine the long-term effects of the Treatment Foster Care Oregon intervention on adult offending and crime, and biological and self-reported health, including indicators of endocrine, cardiovascular, and metabolic health through an index of allostatic load.

The conceptual model of the study is provided in Figure 1 on the next page.



Research Design, Methods, Analytical and Data Analysis Techniques

The Prior Study. This study is a longitudinal extension which aims to further our understanding of trajectories of adult offending in a sample of 158 ($n = 8$ participants are now deceased) women who participated in a randomized intervention trial aimed at reducing conduct problems and delinquency during adolescence. The study was originally supported and funded through the Oregon Youth Authority and by Grant R01 DA015208 (P.I., Patricia Chamberlain, Ph.D.) from the National Institute on Drug Abuse, and by Grant R01 MH054257 (P.I., Patricia Chamberlain, Ph.D.) from the National Institute of Mental Health. In the original study, juvenile justice involved girls ages 13 – 17 who had been referred for out-of-home placement due to chronic delinquency were randomly assigned to participate in services as usual (group care; GC) or in TFCO (Chamberlain, 2003).

In our prior work with this sample, the efficacy of the TFCO intervention was shown at 12- and 24-month follow-ups: compared to the control condition, the TFCO group showed greater reductions in criminal referrals, days spent in locked settings, and deviant peer associations (Chamberlain, Leve, & DeGarmo, 2007; Leve & Chamberlain, 2005, 2007; Leve, Chamberlain, & Reid, 2005). In the first extension of this longitudinal study funded by Grant R01 DA024672 (P.I., Leslie Leve, Ph.D.), we examined the developmental pathways of risk for juvenile justice involved girls into young adulthood with the original participants (ages 16-29, T6-T12): the TFCO intervention demonstrated long-term effects on young adult delinquency, which were mediated by reductions in juvenile offenses prior to age 18 (Leve et al., 2022) and TFCO resulted in improved mental health and reduced substance use relative to treatment as usual (e.g., suicidal ideation, Kerr et al., 2014; substance use, Rhoades et al., 2014). Data from prior studies were collected between the years 1997 and 2015. High retention was achieved for all waves of assessment (see Table 1). Retention rates for the current study are described below.

Data Collection. Several data collection activities

were involved in the present study. First, one telephone interview was conducted when the participant was, on average, 35 years old. This interview lasted approximately 2 hours and included an assessment of the following constructs: parenting, partner characteristics, health-risking behaviors, mental health and trauma/victimization experiences, and public system involvement. Participants were provided with a digital file of answer cards to aid in selecting their multiple-choice answer for longer questionnaires. Given the length of the telephone interview, participants were offered breaks throughout and the ability to schedule multiple sessions to complete the

Table 1. Sample Participation Rates			
	Follow-up Interviews (months)	Interviews Completed	Percent Retention
Adolescent	6 (T2)	154	93%
	12 (T3)	160	96%
	24 (T4)	151	91%
	36 (T5)	125	75%
Young Adult	*84 (T6)	136	82%
	*90 (T7)	136	82%
	*96 (T8)	133	80%
	*102 (T9)	133	80%
	*108 (T10)	140	84%
	*114 (T11)	134	81%
	*120 (T12)	131	79%
	*Any young-adult interview	154	93%

entirety of the assessment if needed. The second part of the assessment was a 1-hour biological and physical health assessment. While prior waves collected limited information on self-reported health, this longitudinal extension also included a more robust battery of chronic health conditions and an assessment battery of 12 biomarkers, used to assess allostatic load, including cardiovascular, metabolic, and immune system function. This biological assessment was conducted either in person or virtually due to COVID-19 restrictions and participant location. Video camera access for remote biological assessments was required to ensure the participant properly collected all health measurements. Additionally, trained assessors demonstrated proper data collection during the remote assessment for body measurements and spirometry. Biological assessments were recorded for reliability checks and all biological measurements were recorded on video, for example, participants held up the spirometer or blood pressure cuff monitors to the camera for recording values.

Last, information on arrests, charges, dispositions, and incarceration were sought from the adult criminal legal system in each state/county where the participant had reported residing since the last assessment wave. For each participant, all identified offenses (charges) were collated, the offense date and arrest status for each offense were coded. When available, disposition(s) for each offense were also coded. When a fine, jail, prison, or probation were sentenced and the information was provided, the amount/ length of the sentence was recorded. Offenses were also coded according to the type of offense and severity of the offense (e.g., status, misdemeanor, felony) according to methods that have been used in the history of this longitudinal study (Arrest Codes; OSLC unpublished coding scheme). We computed the age at last known offense, number of new offenses since the last assessment wave (approximately 2015), a summed severity of offenses, number of new felony offenses, and the number of times a participant was given an incarceration

sentence since the last assessment wave and archived these data in aggregate to preserve participant confidentiality. We also collected self-reported arrest and criminal offense information.

We obtained permission from the state-level Department of Corrections to conduct our telephone assessment with participants who were incarcerated ($n = 4$). At the time of the study, which occurred largely during COVID-19, prison systems were not permitting in person data collection, thus all data collection activities within prison systems occurred only through the telephone. Assessments for participants who were incarcerated were revised to eliminate all potentially self-incriminating information and all biological measurements that needed to be taken with equipment. The revised assessment lasted approximately 2 hours and was conducted exclusively over the phone. Due to phone appointment limits at the facility, most assessments needed to be completed over multiple pre-scheduled one-hour sessions. The other difference in the assessment for participants who were incarcerated was that they were not permitted to have the paper or digital file of answer cards to aid in selecting their multiple-choice answer for longer questionnaires. Thus, assessors were trained to provide frequent reminders of multiple-choice answer options.

Financial compensation was provided to participants for their participation: \$200 for the telephone assessment and an additional \$100 for the bio assessment. Participants who were incarcerated at the time of the assessment were paid \$200 for their single telephone assessment. This pay schedule mirrors that used in the original study protocols, and the assessment burden is comparable to that experienced by participants in prior waves.

Recruitment and Retention. The subjects included in this research project were made aware at each assessment that they might be contacted in the future for new research opportunities and provided informed consent for staff members to contact them or their identified close contacts

(relatives, close friends). Given the longitudinal nature of this project and six or more years having passed since we last contacted this sample, research staff started with internet searches to locate participants in preparation for recruitment. These searches aided recruitment efforts by revealing if participants had moved out of state, were incarcerated, or deceased. When recruitment began, participants were initially contacted using the contact information previously provided. Phone calls, texts, emails, and mailed letters went out to explain the new research opportunity they were invited to take part in. If we were unable to reach a participant using these methods, we then turned to social media (Facebook) as a point of contact. During prior waves of this longitudinal study, participants provided contact information for family and friends that could help research staff stay in touch with the participant if their listed information changed. These alternative contacts were utilized when contact could not be made using the previously collected information and online searches.

Once a participant was located, a recruitment call was scheduled to explain the new research opportunity. If the participant verbally agreed to take part, the recruiter would schedule the telephone and biological assessments. While it was preferred to complete the entire 2-hour phone assessment in one appointment followed by the biological assessment immediately thereafter, if participants expressed assessment fatigue or a desire to schedule the assessments in parts, we worked to accommodate them. Both the phone and biological assessments were offered in person or remotely, depending on participant preference and convenience. If the participant was within the state where the study was conducted, the participant had a choice between driving to our lab and being reimbursed for their driving mileage or having an assessor drive to their location to complete the assessments in the participant's home or another community location. Participants who lived outside of convenient driving distance were mailed a biological assessment kit and

scheduled for a virtual biological assessment. Participants were also offered childcare reimbursement should they need childcare to engage in the study, regardless of whether they were coming into the lab or completing the assessment from their home.

After getting approval from the state Department of Corrections, we mailed a letter to notify each participant who was incarcerated at the time of assessment about the study opportunity available to them. In addition to the mailed recruitment letters, we also left a voicemail for each participant through the corrections institution to inform them of the study and let them know how to get in contact with us. While we were able to schedule professional phone call appointments with each participant at our own discretion, we wanted to avoid any possible coercion by waiting for the participant to reach out with their agreement before moving forward. In order for participants who were incarcerated to make outgoing calls, they needed money in their phone accounts (separate from their commissary account). We deposited 30 minutes worth of money (about \$2.70) to each participant's account. If the participant did not want to engage in our study or had time left over after calling us, they could keep that money and make other phone calls. All participants who were incarcerated responded to our recruitment efforts within one week and agreed to participate.

In this longitudinal follow-up, we consented 133 participants of the 158 original participants who are living (84% retention). Of those, 130 participants completed the telephone portion of the assessment and 123 completed the biological assessment. Two of the four participants who were incarcerated also completed a small portion of the self-report measures from the biological assessment, thus our total analytic file for the biological assessment is $n = 125$.

Analytic Plan. Analyses for each specific aim are specified in more detail throughout this report. In Aim 1, we use latent growth curve modeling to specify longitudinal trajectories of

offending in this sample using criminal records data. Next, in Aim 2, we explore potential correlates of desistance and persistence using the discrete offending groups from Aim 3 and hypothesized turning points operationalized as relational and parenting factors. We use analysis of variance or Fisher's exact tests, as appropriate, to explore these associations.¹ In Aim 3, we further specify discrete offending groups using criminal records data that map offenses to participant age. To investigate our main hypotheses in Aim 3, we used discrete offending groups as independent variables in (1) analysis of covariance to predict self-reported health and (2) Poisson regression to predict biological health measured through a robust allostatic load assessment. Finally, in Aim 4, we investigate the long-term effects of TFCO on incarceration and desistance using zero inflated negative binomial regression, logistic regression, and multiple linear regression, depending on the outcome distribution. Last, we use latent growth curve modeling to investigate whether participation in the TFCO program delivered in adolescence predicts trajectories of offending from baseline into adulthood. Further, we use an application of structural equation modeling and latent growth curve modeling to specify a mediation model that examines whether TFCO is linked with allostatic load through intervention-driven reductions in trajectories of offending. This final technical report also uses descriptive statistics to provide additional detail on each Aim and associated goals.

Expected Applicability

Examining the trajectories of offending across adolescence and adulthood as well as identifying potential turning points in the lives of females that predict desistance or persistence will inform the selection of malleable intervention targets for evidence-based and trauma-informed

¹ This modified analytic approach was employed because we were not able to successfully model a piecewise growth curve model in Aim 1 due to convergence issues. Thus, following other empirical studies on desistance and persistence studies (e.g., Gunnison, 2014), we explored the correlates of membership in a discrete persistence or desistance group.

intervention development for girls involved with the juvenile justice system. These findings have high practice and policy utility because many interventions and programs have not yet been adapted for the unique pathways to delinquency or adult offending for women. In addition, less is known about the long-term collateral consequences of juvenile justice involvement among females or *desistance* processes for women *into adulthood*. In this study we address both of these gaps by describing the long-term mental and physical health outcomes for adult women with histories of extensive involvement in the juvenile and criminal legal systems and by describing the desistance and persistence of offending for these women now over 26 years after their entry to the original study. These findings can therefore be leveraged to address the mandate from the Juvenile Justice Reform Act of 2018 to use trauma-informed practices and programs for youths, and in particular females, involved with the juvenile justice system.

Further, few interventions and programs exist for females involved in or at-risk for juvenile justice contact. Characterizing the long-term effects of TFCO on female adult offending and health will provide key stakeholders in juvenile justice, including policymakers, with knowledge about the extent to which the gains documented in adolescence are stable or the extent to which further investments are needed to sustain impacts. This knowledge can provide a clear rationale for how future service investments should be made to support girls who are involved with juvenile justice and at which point those investments should be made, to mitigate the physical health and the economic costs of persistence in female offending.

Importantly, the data collected and all associated materials, including the data collection surveys, a codebook, and all syntax for data cleaning and variable recoding and computation are archived with National Archive on Criminal Justice Data (NACJD). This allows researchers, policymakers, and others to continue to analyze the incredibly robust data collected throughout

this project. The development of these products was conducted in accordance with ICPSR social science data archival guidelines. Finally, the project uses Open Science Framework (<https://osf.io/a27nd/>) where any future preregistrations and preprints will be available to ensure swift and open access to study findings.

PARTICIPANTS AND OTHER COLLABORATING ORGANIZATIONS

The investigative team is comprised of a multidisciplinary core of researchers with specific and complementary expertise relevant to the proposed study aims. The project was led by the University of Oregon (PI Maria Schweer-Collins, Co-PI Leslie Leve, Prevention Science Institute) in collaboration with Cal State LA (Subcontract PI Carly Dierkhising, School of Criminal Justice and Criminalistics). Consultation has been provided by Patricia Kerig, University of Utah, and Lindsay Huffines, Alpert Medical School at Brown University. Project Coordinators were Kaylee Nelson and Jenna Kunimume. Numerous graduate and undergraduate students assisted in the study by searching for participants, assisting with study recruitment, interviewing participants, collecting biospecimens, coding and cleaning data, and collaborating on disseminating preliminary findings from the study. We partnered with our state-level Department of Corrections and Department of Human Services to develop our human subjects protections for participants who were incarcerated and to recruit and assess participants who were incarcerated at the time of the study. We also partnered with the University of Washington, Alan Potter and Elizabeth Kerschner, for assay services to obtain biomarkers derived from our dried blood spot samples

CHANGES IN APPROACH FROM ORIGINAL DESIGN

Due to safety precautions and local, state, and federal guidelines surrounding the COVID-19 pandemic, we elected to shift from one 4-hour in-person assessment to a hybrid phone/video assessment. Assessors completed the majority of data collection through phone interviews. The

biological data collection occurred in-person with appropriate PPE and social distancing or through a video-assisted hybrid assessment, depending on participant preference. Of note, these shifts did not change any of the proposed aims or data collection. Our participant sample successfully participated in each of the different hybrid assessment options. The majority of our biological data was collected in person with 94 participants choosing that method while 29 participants chose to complete the assessment virtually.

Also due to COVID-19, our local IRB experienced significant lag time from time of IRB modification submission to approval. Due to those delays, we filed and were approved for a no cost extension to ensure that we were able to recruit and assess this important subsample of participants, including participants who were incarcerated in prison systems. Our project end date was moved to December 31st, 2023.

OUTCOMES

Activities/Accomplishments

One of the most notable outcomes from the current study was the excellent retention that was maintained in this longitudinal follow-up occurring in adulthood: 133 participants were successfully recontacted and recruited for participation in the study (84% of the 158 original 166 participants who are living). Of those, 130 completed one of both of the assessments (82%). This retention rate mirrors those in prior waves of the study in adolescence and young adulthood (ranges from 75% - 96%; see Table 1). It is noteworthy that participants had not been previously contacted for over six years, and yet, the study team was able to locate and recruit this sample of participants who are highly mobile and heavily involved in the legal system. Additionally, we were able to partner with the state department of corrections and interview all participants who were currently

incarcerated in prison systems ($n = 4$). We believe this reduces the bias that could be present in this sample had we otherwise not been able to access all participants who were incarcerated. Of note, although four participants were incarcerated at the time of their actual assessment, two were released from prison before the study closure at the end of December, 2023.

Below we provide other activities and accomplishments from each reporting period of the grant award.

Reporting Period 1. In the first 6 months of year 1 (January – June 2021), we conducted five major activities: (1) completed regulatory tasks including amending existing IRB protocols and submitting human subjects paperwork to DOJ for approval; (2) hired key study staff and team of assessors; (3) conducted launch meeting with all study staff and consultants; (4) developed and revised training, recruitment, and assessment materials; and (5) discussed and planned manuscripts and analysis activities among the investigative team.

Reporting Period 2. In the second 6 months of year 1 (July – December 2021), we conducted five major activities: (1) trained a 6-person assessment team; (2) trained recruitment team and launched recruitment; (3) began telephone and biological assessments; (4) began regular monthly data checks and data processing; (5) executed subcontract with Cal State LA.

Reporting Period 3. In the first 6-months of year 2 (January – June 2022), we conducted six major activities: (1) continued training our assessment team and assessing reliability among assessors; (2) continued recruiting participants (3) conducted telephone and biological assessments; (4) continued regular data checks and data processing; (5) submitted materials to IRB to seek approval for protocols to assess participants who are currently incarcerated; (6) disseminated preliminary findings at a national conference.

Reporting Period 4. In the second 6 months of year 2 (July-December 2022), we continued six major activities: (1) continued training our assessment team and assessing reliability among assessors; (2) continued recruiting participants (3) conducted telephone and biological assessments; (4) continued regular data checks and data processing. We also began two additional activities: (5) sought external Department of Corrections IRB approval for our UO-approved IRB for assessing participants who were incarcerated (6) disseminated preliminary findings through conference paper proposals, a honor's thesis, and peer-reviewed publication.

Reporting Period 5. In the first 6-month of year 3 (Jan – June 2023; approved NCE), we continued five major activities: (1) continued training our assessment team and assessing reliability among assessors; (2) continued recruiting participants (3) conducted telephone and biological assessments; (4) continued regular data checks and data processing, and (5) continued dissemination of preliminary findings. We also began three additional activities: (1) secured contract with the University of Washington to process our complete dried blood spot samples and received analyzed dried blood spot data; (2) obtained DOC IRB approval to assess participants who were incarcerated in Oregon prisons and completed all assessment of these participants; (3) began to collect and code official adult criminal records including offenses, offense severity, arrests, dispositions, time sentenced to jail or prison.

Reporting Period 6. In the second 6-months of year 3 (July – December 2023; approved NCE), we completed five major activities: (1) continued preparation for data archival through cleaning data, scoring data as needed, and developing data documentation and codebooks; (2) finalized the collection of adult criminal records and coded these records to be consistent with the longitudinal data; (3) prepared analyzed dried blood spot data for archival, including preparing

documentation and datafiles (4) continued dissemination of preliminary findings; (5) prepared final technical report.

Results and Findings

Below we present findings from each of the four main Aims of this study. Please see the ‘Artifacts’ section for information on the dissemination of findings generated from data associated with the study.

Aim 1: To specify developmental trajectories of delinquency and crime from adolescence into adulthood among a sample of justice-involved females, and to understand how risk and protective factors influence these trajectories across time.

We first begin by describing the demographic characteristics and risk and protective factors of this sample.

Demographics Characteristics

The participants in this study are 130 females who were followed for the past 18–26 years, beginning in either 1997 (Cohort 1) or 2003 (Cohort 2) beginning when participants were 13–17 years ($M = 15.31$, $SD = 1.17$). At this current wave of data collection, participants were 28–41 years old, ($M = 35.0$, $SD = 2.93$). A nearly equal number of participants in the original randomization groups participated in this longitudinal follow-up (TFCO; $n = 64$, 50.2%; TAU Group Care, $n = 66$, 50.8%). The self-reported racial and ethnic breakdown of the full (i.e., original) sample is closely mirrored in the current wave of data collection 68.46% non-Hispanic White, 1.54% African American, 10.77% Hispanic, 0.77% Native American, 0.77% Asian, 17.69% multi-ethnic/racial heritage.² At this assessment wave, participants all self-identified as

² The original sample demographic composition was 68.1% non-Hispanic White, 1.8% African American, 11.4% Hispanic, 0.6% Native American, 0.6% Asian, 16.9% multi-ethnic/racial.

women ($n = 130$) and the majority identified as heterosexual (65.4%), followed by bisexual (24.6%), lesbian (4%), pansexual (2.3%), and 2% declined to answer. Participants who were incarcerated at the time of the assessment were not administered the sexual history survey where this question was asked because this survey contained items about sexual behaviors that could potentially be incriminating for individuals in prison settings.

Socioeconomic Outcomes

The average income of participants in the sample ranged from \$0 - \$180,000 annually with the median income at \$30,000 (IQR = \$39,431). The average number of people this annual income supported was 3.09 individuals ($SD = 1.85$). When participants were asked how they viewed their socioeconomic status as rated through the MacArthur Scale of Subjective Social Status – Adult Version (Adler et al., 1994), participants rated themselves, on average, at a 3.67 ($SD = 1.70$) on a scale of 1 (lowest socioeconomic status relative to society) to 10 (highest socioeconomic status relative to society). When reporting socioeconomic status in relation to participants' respective communities, the average rating of subjective socioeconomic status was slightly higher ($M = 4.21$, $SD = 1.78$). Approximately one-fifth of the sample (25 participants, 19.2%) had not yet obtained a high school degree or GED, 44 participants (33.8%) had obtained a GED or high school degree, whereas 12 participants (9%) had obtained an Associate's Degree or vocational training, 42 participants (32.3%) had attended some two- or four-year college training, and last, 6 participants (< 1%) had completed a 4-year college degree or post-college degree. One individual declined to report their education level, and no historical data from the prior wave was available on education status. The participants also reported employment status: 60 (46.2%) of the sample reported full- or part-time employment; 55 (42.3%) reported being unemployed, looking for work, or on a temporary work restriction. Eight participants reported an 'other' employment status, however one

participant was reclassified as employed due to reporting being a “business owner,” and reporting annual income, but not otherwise stating they were employed.

COVID-19 Risk Factors

As described in the ‘Changes in Approach from Original Design’ section of this report, the data collection for this wave of the longitudinal study was unique from all prior waves in that it occurred during the middle of the COVID-19 pandemic where our institution, local and state governments, had placed restrictions that necessitated a shift in assessment procedures. Because of the potential confound of the COVID-19 impact on the outcomes of interest in this assessment, we incorporated measures regarding the psychological impact of the COVID-19 pandemic and follow-up questions to clarify if certain outcomes (e.g., service utilization, socioeconomic variables, family and relational stressors) were due in whole or part to the COVID-19 pandemic and the ripple effect it had, particularly among the most vulnerable populations (Kantamneni, 2020).

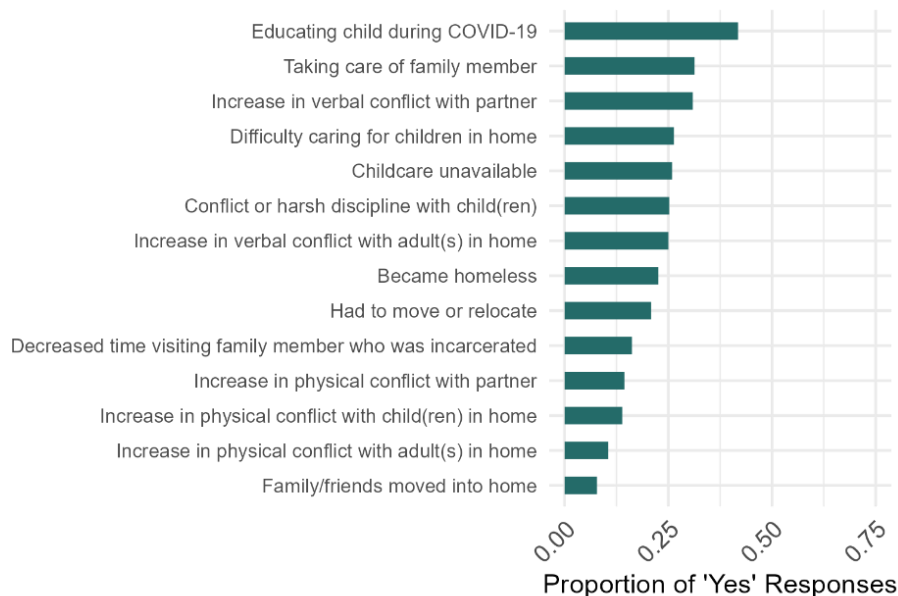
Here we summarize the psychological impacts and psychosocial stressors participants experienced due to the COVID-19 pandemic. We administered the Coronavirus Impacts Questionnaire psychological impacts subscale (Conway III et al., 2020). Participants reported on three items that assessed the impact of the COVID-19 pandemic on their psychological health. On average, participants rated the psychological impact of the COVID-19 pandemic at 3.26 (*SD* 1.81, range = 1-7); 28 participants (21.5%) reported that it was somewhat true for them (i.e., a mean score of 5 or greater on the subscale) that the COVID-19 had a negative psychological impact.

We also asked participants about the specific impacts of the COVID-19 pandemic by administering the Epidemic-Pandemic Impacts Inventory (EPII; Grasso et al., 2020). The results from this measure are presented in Figure 2 below, which shows the impacts participants endorsed

as affecting them directly. The impacts that were endorsed by 25% or more of the sample³ were: educating a child in one’s home (41.8%), needing to take care of a family member (31.3%), increase in verbal conflict with partner (30.9%), difficulty caring for children in the home (26.4%), childcare being unavailable (25.9%); conflict or harsh discipline with children (25.2%), and increases in verbal conflict with adults(s) in the home (25%). Also striking is that 22.6% of participants in the sample endorsed losing housing because of the COVID-19 pandemic.

Figure 2.

The proportion of the sample that endorsed each COVID-19 stressor



Substance Use Risk

The sample also reported high rates of substance use (unpublished measure; Rhoades et al., 2014) including that over 50% of the sample used alcohol in the past 6 months, approximately

³ This is the proportion who endorsed each impact for participants for whom each stressor was applicable (not necessarily the proportion among the total sample of 130).

45% of the sample used cannabis in the past six months, and 16.2% of the sample reported use of opioids in the past six months. See Table 2 for additional information on the substance use rates of the sample. We asked participants if they had ever been treated for a substance use disorder and 73 participants (57% of the assessed sample) reported having been treated for or diagnosed with a substance use disorder. Of the sample, 38 (29%) reported that their treatment or diagnosis for substance use disorder was ongoing at the time of the assessment.

Table 2

Substance Use Rates

Substance Use Variable	Yes <i>n</i> (%)	<i>M</i> (<i>SD</i>)
Any alcohol use – past 6 months	72 (55.8%)	-
Days drinking alcohol – past 6 months	-	37.59 (51.44)
Any cannabis use – past 6 months	59 (45.4%)	-
Days using cannabis – past 6 months	-	118.73 (75.81)
Any opioid use – past 6 months	21 (16.2%)	-
Days using opioids – past 6 months	-	65.43 (79.18)

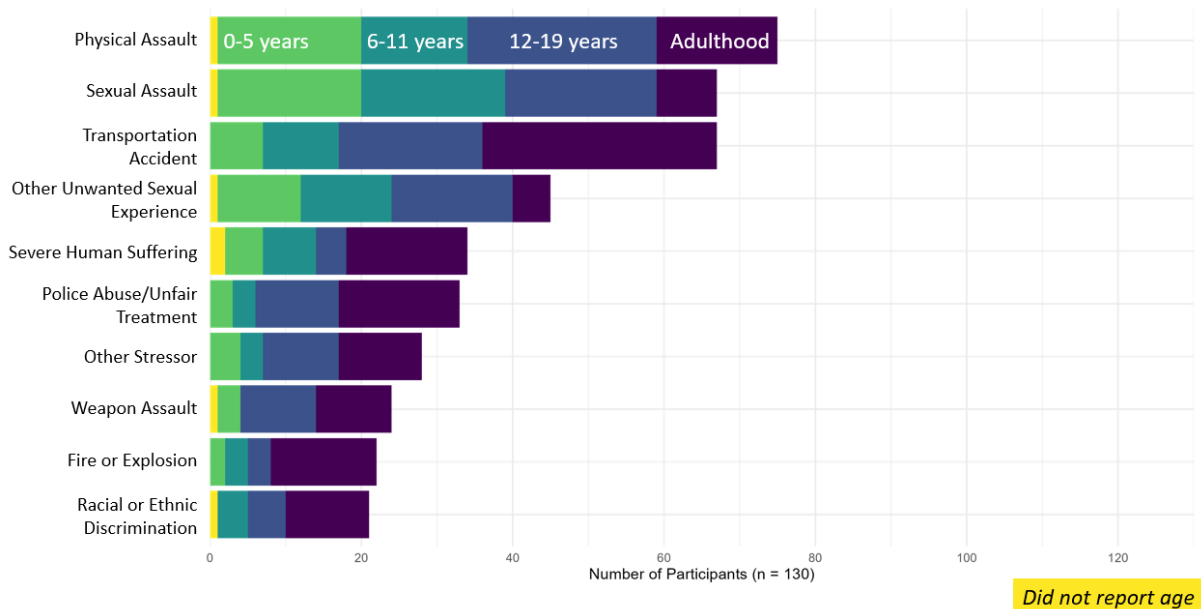
Traumatic Experiences

In this new assessment wave, we wanted to understand the onset of and continuity of traumatic experiences in the sample, thus in this current assessment wave we introduced the Life Events Checklist (*LEC-5*; Gray et al., 2004) and asked participants whether they had experienced each of the 18 traumatic events, including the addition of being unfairly treated or discriminated because of race, ethnicity, or culture, and being unfairly stopped, searched, questioned, or physically threatened or abused by the police. For each traumatic experience that participants endorsed, we asked additional questions about the developmental timing and chronicity of that

trauma experience and the relationship of the participant to the person involved in the trauma. The top five most frequently experienced traumas endorsed by the sample as having happened to them directly in their lifetimes (versus witnessing or learning about the trauma), included: physical assault (57.7%), sexual assault (51.5%), transportation accident (51.5%), unwanted or uncomfortable sexual experience (34.6%), and severe human suffering ‘a person being in severe physical or emotional pain’ (26.2%). The trauma experiences of the sample are being further described in a paper in progress exploring longitudinal linkages between trauma exposure type, developmental timing of and persistence of trauma exposures, and posttraumatic stress. Findings from this paper are briefly summarized here. Figure 3 shows the developmental timing of when a participant *first* experienced a traumatic event. Physical and sexual assault were both the most common traumatic exposures. Physical and sexual assault were also reported at the highest frequency in early and middle childhood (0-5 and 6-11 years).

Figure 3

Participant age of first experience of each trauma exposure.

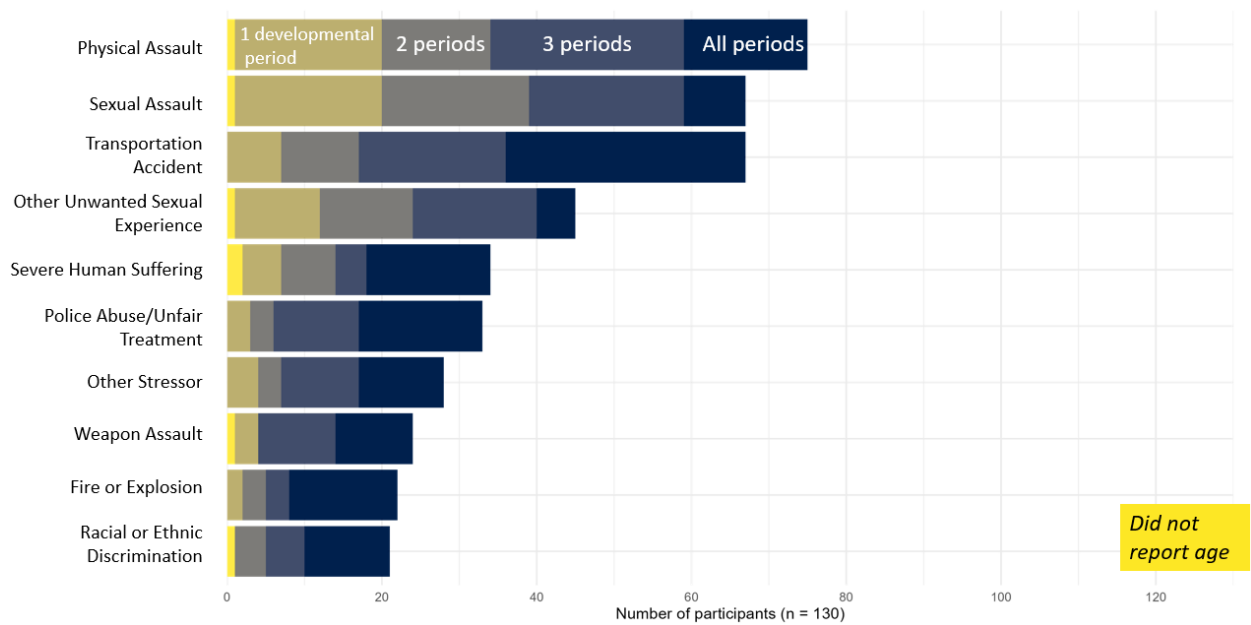


In Figure 4, we present visual information on the level of persistence of each trauma

exposure across four developmental periods. Specifically, we categorize participants into whether they had endorsed experiencing a trauma in only one developmental period (for example, only early childhood or only adulthood) or whether that trauma was more persistent, having been experienced in 2, 3, or all developmental periods. When considering trauma exposures that were experienced by participants in three or four (i.e., all) developmental periods, one can visually see that for nearly all trauma exposures, this level of persistence was much more common than experiencing a given trauma exposure during only one or two developmental periods. These results suggest that persistence in trauma across early childhood and into adulthood in this sample of women with significant juvenile justice backgrounds was common.

Figure 4

A depiction of the persistence of trauma experiences across development.



We now turn to modeling trajectories of offending in this longitudinal sample. Specifically, we modeled the number (count) of unique criminal offenses (i.e., those that occur on different

dates) at each key developmental period. Unique offenses are modeled to represent the number of distinct contacts with the legal system. The developmental periods under study include early adolescence (ages 10-13; *T1*), middle adolescence (ages 14-17; *T2*), late adolescence (ages 18-21; *T3*), the transition to emerging adulthood (ages 22-25; *T4*), young adulthood (ages 26-29; *T5*), and adulthood (ages 30-33; *T6*).⁴

We used latent growth curve analysis to model the number of criminal offenses across T1-T6 using Mplus software (v. 8.11; Muthén, & Muthén, 1998-2024) and maximum likelihood estimation with robust standard errors, which adjust for non-normality in data. In our model-building process, we examined the distributions of our offense data and determined that a negative binomial (NB) or zero-inflated negative binomial (ZINB) data was likely to demonstrate the best fit. We therefore tested each of these models and compared model fit using statistics appropriate for growth modelling for count outcomes (log likelihood, AIC, BIC; Seddig, 2023). Next, we compared an unconditional model that included a latent intercept and latent linear slope, and a second unconditional model specifying both a latent linear and quadratic slope. A likelihood ratio test was conducted to compare the fit of these two nested negative binomial models. The unconditional model including the linear and quadratic slope provided a significantly better fit than the model without the quadratic slope, $\chi^2(4) = 19.06, p < .001$. See Table 3 for model fit indices used for model selection.

⁴ We modeled data through age 33 because the proportion of missing data at age 34 due to participants not yet being age 34 surpassed 50% of the sample (54%). We were not able to model each age as a distinct, observed indicator due to model convergence issues.

Table 3*Comparison of Fit for Unconditional Latent Growth Curve Models*

Model Type	Free parameters	Log-likelihood	Correction factor	AIC	BIC	ABIC
NB	11	-1391.902	0.8968	2805.804	2837.346	2802.556
NB (quadratic slope)	15	-1382.372	0.7022	2794.744	2837.757	2790.315
NB (quadratic slope, conditional)	17	-1379.638	0.7767	2793.256	2843.004	2788.237
ZINB	13	-1389.866	0.8747	2805.732	2843.010	2801.894

Note. NB = negative binomial; ZINB = zero-inflated negative binomial; AIC = Akaike information criterion; BIC = Bayesian information criterion; ABIC sample size adjusted Bayesian information criterion.

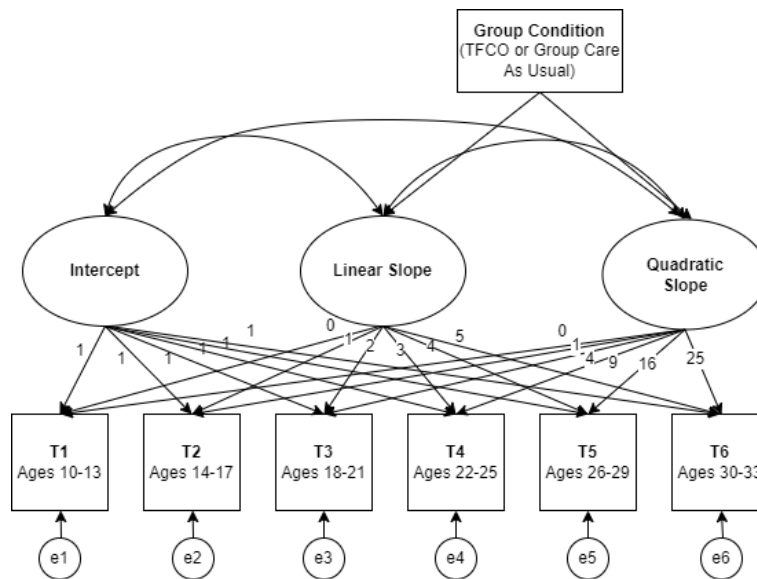
We then specified a conditional model that included the treatment condition (TFCO or treatment as usual) as a covariate given that this study originated as a randomized controlled trial testing the effectiveness of TFCO in reducing delinquency; however, subsequent aims focus on the long-term effectiveness of TFCO. Because most participants were randomized during the T2 period, we did not specify the group condition as a predictor of the intercept, which was centered at T1. The final specified model that demonstrated the best fit is shown in Figure 3.

The intercept, centered at T1 (ages 10-13), showed that the sample showed a pattern of early offending ($b = 1.686$, $SE = .10$, $p < .001$). The estimate represents the value of the log-count at T1, which is different from growth models of continuous data. We exponentiated this estimate to facilitate interpretation and also computed the confidence intervals; when exponentiated, the intercept value was 5.37 (95% CI [4.41, 6.53]), meaning that women in the sample had, on average,

5 offenses at T1 (ages 10-13). Next, the linear slope was not statistically significant ($b = -.001$, SE .15, $p < .05$). This suggests that there were no consistent linear increases or decreases in offending patterns, on average, across development. This could be due to the TFCO intervention which may have interrupted offending patterns for individuals in the TFCO treatment condition. Finally, the quadratic slope exploring the curvature of trajectories of offending was significant and negative ($b = -.14$, SE .04, $p < .001$). This suggests that patterns of offending from adolescence into adulthood in the sample showed initial increases followed by decreases across development. When this estimate is exponentiated, it represents the incident rate ratio (IRR) of 0.87 (95% CI [0.80, 0.94]), meaning that for each one unit increase in the predictor (e.g., from T2 to T3), the rate of change (i.e., decreases) in offending slows (decelerates) by 13%. Put another way, women in the sample showed initial steeper declines in earlier developmental periods, followed by slower declines in offending as they transitioned into adulthood. Overall, findings from the latent growth curve model suggest a pattern of offending in this sample of women from adolescence to adulthood that is consistent with findings on the classic unimodal age-crime curve (Block et al., 2010; Piquero, 2008). This study importantly adds to the limited longitudinal research on the age-crime curve in samples of women. Additionally, it demonstrates that age-crime research generalizes to samples of women with histories of substantial involvement with juvenile justice beginning in early adolescence.

Figure 3

Representation of the Final Conditional Latent Growth Curve Model



Aim 2: To examine the function of key turning points (i.e., intimate relationships and parenthood) in the persistence and/or desistance process for adult females.

Romantic Relationships as Potential Turning Points.

Under this aim, our first research question was ‘what are the types of intimate relationships the women in the sample experienced and the quality of those relationships?’. Participants have reported prospectively on their relationship status and relationship experiences throughout this longitudinal study. Here we focus on data reported on the most recent wave. Current relationship status was assessed by three questions asking if participants were currently in a relationship, cohabitating with their current partner, and currently married. At the current assessment, 94 participants (72.3%) reported being in a current relationship; 67 participants (51.5%) reported cohabitating with their partner at the time of the assessment; and 26 participants (20%) reported being currently married. For those participants who reported being currently in a partnership, the average number of years they had been with their partner was 5.49 years ($SD = 4.82$; range 30 days

– 21.75 years). Notably, when asked about relationship status in the past six months, 33 participants reported being married (1 reported being married but separated). These data suggest that some participants may have experienced recent divorce within the past six months, or the differing responses may be indicative of some relational instability in the sample.

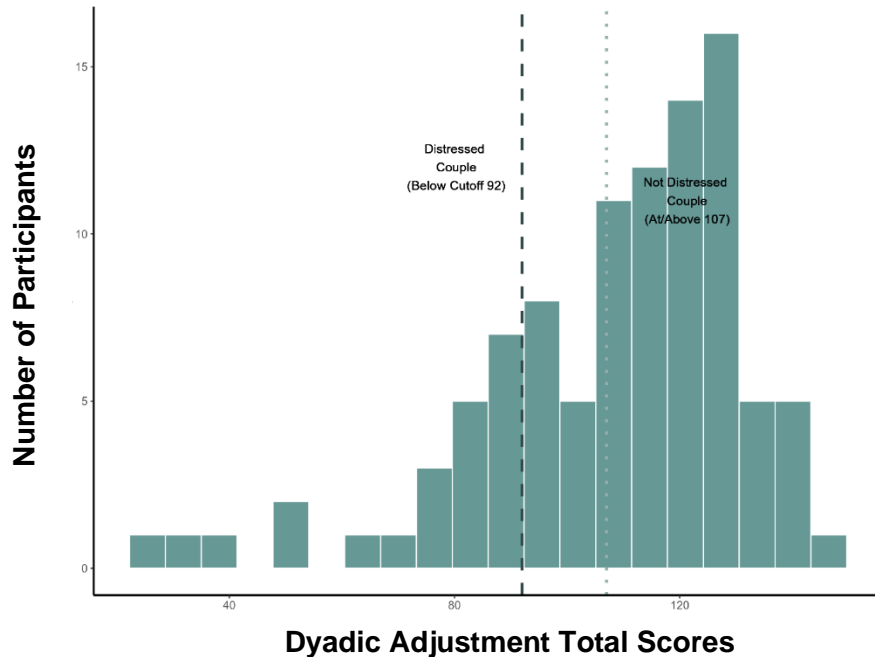
We also wanted to explore whether the influences present in participant’s partnerships might also contribute to desistance or persistence processes, thus we asked participants about their partner’s arrest history and involvement with the police. Of the 114 participants who reported on their most serious romantic partner in the past 6 months,⁵ 80 (70.2%) reported having a relationship in the past six months with a partner who had a history of being arrested *at any point in their life*, and fewer, 31 participants (27.2%) reported having a relationship with a partner who had been in trouble with the police *in the past 6 months*. Together these statistics could suggest that although participants report being in partnership with individuals largely with histories of legal system involvement, their reports of partner’s recent six-month encounters with law enforcement are notably lower compared to their partner’s lifetime involvement. This discrepancy may suggest that partners of this adult sample also exhibit some degree of desistance from offending.

Couple adjustment, including satisfaction of partnerships, was also assessed in this study using the Dyadic Adjustment Scale (DAS; Spanier, 1976). The full-scale score was used in the present study, and higher scores reflect better dyadic adjustment and scores above 107 reflecting better adjustment and a happier couple. Conversely, participants in this study were indicated to be in a distressed relationship if they were at or below the cut-score of 92.

⁵ The no. of participants reporting relationship status is asking about features of the most serious relationship the participant had been part of in the past 6 months, which could have ranged from casual dating to marriage. Thus, this number is different from the 94 participants who reported their *current* relationship status as being partnered.

Figure 3

Dyadic Adjustment Total Score Distribution with Cutoffs for Distressed and Non-Distressed Relationships



As shown in Figure 3, approximately 22% of participants ($n = 22$) in the 99 participants in the sample who reported being in a romantic relationship in the past six months,⁶ reported levels of dyadic adjustment reflective of a distressed couple relationship using the empirically derived cutoff of 92 (Sabourin et al., 2005; Graham et al., 2006). Conversely, 62% ($n = 61$) of participants who responded to the questionnaire reported dyadic adjustment at levels that reflect a happy, satisfied couple (cutoff of at or above 107; Sabourin et al., 2005). An important finding was that the average level of dyadic adjustment in the sample was that of a satisfied or happy couple relationship ($M = 107.97$, $SD = 23.77$).

As a second metric on the protective nature of romantic relationships, participants were

⁶ This number reflects those who reported being in a romantic relationship and those with valid total scores on the DAS measure.

asked “How emotionally supportive is/was your partner of you in the last 6 months?” Participants responded to this question on a scale from 1 (“not at all supportive”) to 10 (“very supportive”). The average level of support participants reported from their partners was 7.23 ($SD = 2.88$) demonstrating that participants perceived relatively high support from their partnerships, on average, as this final time point.

To explore whether these indices of intimate relationships may have functioned as turning points in processes of persistence and desistance among women in the sample, we explored group differences in the variables described above using analysis of variance or Fisher’s exact test, based on the variable distribution. In cases where significant group differences were observed among the discrete offending groups (i.e., early [adolescent] desisters, late [young adult] desisters; adult desisters, and persisters; see Aim 3, pp. 42), pairwise comparisons were performed and a Bonferroni correction was applied to control for inflated Type I error. Full results are reported in Table 4. All relational variables were associated with participant desistance group status, with the exception of partner lifetime criminal history (1 = yes, 0 = no). Specifically, the ‘early desistance’ group, comprised women who had desisted from offending in adolescence before age 18, had a higher proportion of married individuals and a lower proportion of individuals who were partnered with someone with a recent (past 6-month) arrest history, relative to women in the persistence offending group. Women in this group endorsed higher relationship adjustment and relational support from their current partner, also relative to the persistence offending group. The women in the late desistance group who showed desistance from offending in early adulthood displayed similar patterns, albeit some did not remain statistically significant following the application of the Bonferroni correction. These findings are important because much of the research on desistance from crime has focused on marriage alone or relationship factors in samples of men. These results

suggest that more nuanced positive relational experiences, such as greater relationship adjustment, stability in the structure of or length of the relationship, and support garnered through intimate relationships may differentiate women who desist from offending. These findings also point to the need for gender-informed interventions that consider the relational context as one factor that can support women in transitioning out of legal system involvement.

Table 4

Associations among intimate partner relational variables and offending group status

Relational Variables	Early	Late	Adult	Persister	Test of Group Differences
	Desister	Desister	Desister		
	<i>M (SD) / %</i>	<i>M (SD) / %</i>	<i>M (SD) / %</i>	<i>M (SD) / %</i>	
Married (yes)	8%	8%	2%	2%	Fisher's exact $p = .03$
Length of partnership, years (any current relationship)	6.33 (5.76)	7.16 (5.10) ^{1,2}	3.77 (2.41) ¹	4.07 (3.93) ²	$F(3, 89) = 2.83$, $p = .04$, partial $\eta^2 = .09$
<i>Protective Relational Factors</i>					
Relationship adjustment*	116.14 (18.09) ^a	113.62 (19.84) ^b	103.81 (25.88)	97.31 (26.97) ^{a,b}	$F(3, 95) = 4.05$, $p = .009$, partial $\eta^2 = .11$
Relational support from partner	8.71 (1.94) ^{a,1,2}	7.17 (3.09) ¹	6.63 (2.60) ²	6.32 (3.08) ^a	$F(3, 111) = 4.65$, $p = .004$, partial $\eta^2 = .11$
<i>Partner Criminal Involvement</i>					
Current partner in trouble with police, past 6 months, yes	4%	5%	5%	14%	Fisher's exact $p = 0.04$
Current partner lifetime history of arrest, yes	17%	18%	9%	28%	Fisher's exact $p = 0.41$

Note. Letter subscripts that correspond in each row represent group differences statistically significant with a Bonferroni adjustment for pairwise comparisons. Numerical subscripts that correspond in each row represent statistically significant differences that are significant prior to Bonferroni adjustment. Relationship adjustment is measured through the Dyadic Adjustment Scale total score.

Parenting as a Potential Turning Point

Prior research has shown that the transition to parenthood, and parenting can serve as a protective factor in the developmental trajectories of crime and offending. The function of parenting as a turning point may operate differently for women with significant histories in the juvenile justice and adult criminal legal system, given that research has documented consistent intergenerational involvement in the child welfare system for youth with histories in juvenile justice (Putnam-Hornstein et al., 2015). Thus, in the current study, we continued to interview participants about all new pregnancies since the last assessment, the outcomes from those pregnancies, and their roles in parenting their offspring, both on newly reported children and children who were born prior to other assessment waves. This rich data is described below.

Participants reported 148 new pregnancies⁷ since the last assessment wave, resulting in 90 new children being born to the sample, and 51 pregnancy losses (including miscarriage, stillbirth, and abortion). Thus, in total, the 130 participants assessed in this wave had birthed a total of 346 children, including the 256 children who participants reported on in prior waves. There were also eight women who reported still being pregnant at the time of their assessment. We also asked each participant to report on whether they had contact with child welfare services since their last interview (Service Utilization Survey, [SUS], OSLC unpublished measure) and 46.2% ($n = 60$) of participants reported involvement with child welfare (55.6% of the 108 participants who responded to this question), with one or more of their children. In total participants reported 201 contacts with child welfare resulting from new (not prior) investigations about child abuse and neglect, with the average number of contacts with child welfare related to new investigations being 3.41 ($SD = 5.82$). Further data were collected on whether the participant had custody of each child.

⁷ One pregnancy resulted in two children being born (twins).

We next explored whether these indices of parenting functioned as turning points for women in the sample. We explored group differences in the variables described above using analysis of variance or Fisher's exact test, based on the variable distribution. In cases where significant group differences were observed among the discrete offending groups, pairwise comparisons were performed and a Bonferroni correction was applied to control for inflated Type I error. See Table 5 for the full results. First, there were no group differences in age of first pregnancy or first childbirth among women in the sample, however, it is noteworthy that the average age of first pregnancy for all groups ranged from 16-17 years of age and the average age of first childbirth ranged from age 19-20, demonstrating that most women in the sample experienced pregnancy and parenting at early ages. Group differences were observed between women who desisted during adolescence and adult desisters in terms of the number of children, with early desisters having fewer children, on average. A similar pattern was observed for late desisters (those who desisted in early adulthood), however, this difference did not remain statistically significant following the Bonferroni correction. One last notable finding in the parenting domain, was that women in all three desistance groups differed from women in the persistence group in terms of the extent of child welfare involvement, with women who had persisted in offending having a greater number of child welfare contacts ($M = 9.32$), on average, two to four times higher than women in the three desistance groups. This finding highlights broader systemic issues that have been identified in empirical research showing that justice-involved women, who more often serve as the primary or sole caregivers of their minor children relative to their male counterparts, are disproportionately involved with and investigated by child welfare (Berger et al., 2016). However, the extent to which such dual system involvement in adulthood is bidirectionally (and causally) linked with ongoing offending and legal system involvement is still

poorly understood. Future research should examine these linkages and the protective parenting factors that may serve as turning points and promote desistance from crime.

Table 5

Associations among parenting variables and offending group status

Parenting Variables	Early	Late	Adult	Persister	Test of Group Differences
	Desister	Desister	Desister		
	<i>M (SD) / %</i>	<i>M (SD) / %</i>	<i>M (SD) / %</i>	<i>M (SD) / %</i>	
Age of first pregnancy*	16.74 (2.76)	16.37 (3.54)	16.61 (4.15)	17.05 (2.78)	$F(3,117) = 0.28$, $p = .84$, partial $\eta^2 = .01$
Age of first childbirth*	20.16 (2.29)	20.15 (2.19)	19.86 (4.54)	19.60 (2.27)	$F(3, 103) = 0.31$, $p = .82$, partial $\eta^2 = .01$
Number of children	2.00 (1.85) ^{a,1}	2.88 (1.98) ¹	3.44 (1.98) ^a	2.72 (1.42)	$F(3, 126) = 3.02$, $p = .03$, partial $\eta^2 = .07$
Currently pregnant (yes)	0%	1.5%	2%	2%	Fisher's exact $p = 0.09$
<i>System Involvement</i>					
Number of interactions with child welfare*	2.20 (4.64) ¹	3.40 (9.02) ²	1.47 (2.45) ³	9.21 (16.28) ¹⁻³	$F(3, 104) = 3.16$, $p = .03$, partial $\eta^2 = .08$
Open child welfare case (yes)*	5%	3%	0	14%	Fisher's exact $p = 0.17$

Note. Letter subscripts that correspond in each row represent group differences statistically significant with a Bonferroni adjustment for pairwise comparisons. Numerical subscripts that correspond in each row represents statistically significant differences that are significant prior to Bonferroni adjustment. Some proportions or degrees of freedom are greater than expected as only subgroups of participants responded to questions with * based on interview decision rules or parenting status.

Aim 3: To examine whether desistance or persistence in delinquency and crime predict biological and self-reported health outcomes.

Mental and Physical Health Assessed Through Self-Report

Given the extensive trauma histories and adversities experienced by this sample in adolescence and young adulthood, we continued to assess mental health symptoms in adulthood. Thus, we investigate the question “What is the mental health status of women, now adults, with histories in the juvenile justice system?” As shown in Table 6, levels of posttraumatic stress and depression symptoms were elevated in the sample.

Table 6

Trauma and Depression Symptoms in Adulthood (n = 130)

Measure or Subscale	<i>M</i>	<i>SD</i>
Total Trauma Symptoms excluding functional impairment (ITQ)	7.66	5.82
Reexperiencing symptoms	2.88	2.15
Threat symptoms	2.83	2.34
Avoidance symptoms	1.95	2.11
Functional impairment	2.50	3.04
Depression Symptoms (CES-D)	18.69	13.63

Note. ITQ = International Trauma Questionnaire; CES-D = Center for Epidemiologic Studies Depression Scale.

In this sample, there were high rates of posttraumatic stress symptoms, with 65 (50%) participants meeting the clinical criteria for a diagnosis of PTSD. As noted in our descriptive paper on the history of this sample (Schweer-Collins et al., 2024), this prevalence rate is 6.25 times the prevalence rate among the general population of women (Lehavot et al., 2018). Participants

showed the highest levels of re-experiencing and sense of threat symptoms among the clusters of PTSD symptoms assessed through the International Trauma Questionnaire (ITQ; Cloitre et al., 2018). The average depression symptoms in the sample were above the well-established clinical cutoff of 16 on the Center for Epidemiologic Studies Depression Scale (*CES-D*; Radloff, 1977). However, the clinical cutoff for women with community corrections involvement has been shown to be more sensitive at or above *CES-D* scores 23 (Henry et al., 2018; Park & Yu, 2021). In this sample, 47 participants (36.2%) showed clinically elevated depression symptoms at the current wave.

We gathered participant's self-report data on physical health through a modified 12-item version of the RAND Health Survey (Hays et al., 1993) and participant report of other chronic health conditions to be able to understand how participant's self-reported health compared to the index of allostatic load that we obtained. Participants rated their general health at an average of 46.57 ($SD = 22.16$, $n = 124$), slightly under a value of 50, which is considered normative general health. Participants were also asked about 19 different chronic health conditions (Unpublished measure developed for this study) and whether or not they were currently or had ever been treated for or diagnosed with those conditions. The top five most endorsed physical health conditions, excluding mental health or substance use disorders, are presented in Table 7.

It should be noted that a high percentage of the sample also endorsed being treated or diagnosed in the past or at the current assessment wave with gynecological-specific conditions ($n = 24$, 19.2%). Finally, through our recruitment efforts for the current assessment wave, we discovered that eight participants, accounting for 5% of the original 166 women, were deceased. This finding is striking, particularly considering that the average age of the sample was 35 years at this assessment wave.

Table 7

Five Most Endorsed Physical Health Conditions (n = 125)

Health Condition	n (%)
Asthma	59 (47.2%)
Anemia	52 (41.6%)
Obesity	27 (21.6%)
High Blood Pressure	23 (18.4%)
Musculoskeletal (Arthritis)	21 (16.8%)

Allostatic Load

We also computed an index of allostatic load (AL) using the 13 indicators listed in Appendix A. These data were drawn from our biological assessment, which 123 participants completed. This approach is advantageous relative to a single health indicator because it is thought to reflect a more comprehensive picture of how health is affected through a cascading effect of stress dysregulation on the immune, endocrine, and cardiometabolic systems (Seeman et al., 2001). The AL index in this study primarily relies on secondary mediators in the stress-health association. Following the MacArthur Studies on Aging (Seeman et al., 2001), we computed quartiles for each indicator based on the distribution of scores in the sample. An AL (total) score was then computed by summing the number of health indicators in which a participant fell into the highest (25%) quartile with two exceptions being for HDL cholesterol and peak expiratory flow, in which the bottom quartile is indicative of greater risk. Where available, we also used empirical data on clinical benchmarks to determine when values for each biomarker were in or out of range, reflecting potential health risk (see Appendix A for the clinical cutoffs used in this report). Please

note that there is not yet agreement on consistent clinical cutoffs for all biomarkers and health indicators used in our AL index (Duong et al., 2016).

Using raw, untransformed values, we found that the average AL in the sample was 3.48 ($SD = 2.13$; $n = 118$, range 0 – 9 [of possible 13]) for the percentile-based scores. The average AL in the sample was 4.09 ($SD = 1.50$, $n = 118$, range 0 – 8 [of possible 12]) using the clinical derived cut-off scores. Given the poor general health and high rates of chronic health conditions reported by participants in this sample, it is possible that AL scores were higher when using clinical cutoff values versus percentile-based scoring methods, due to a larger percentage of participants meeting or exceeding those empirically determined thresholds that are indicative of greater risk for disease.

We used analysis of covariance (self-reported health outcome), and Poisson regression (percentile-based AL outcome; clinical cutoff based AL outcome) to investigate the associations between categorical desistance and persistence offending groups and self-reported and biological health outcomes. We first constructed discreet offending groups using all official criminal records data. Using participant date of birth and the offense date, we computed the age of each offense. We then used these offense records and ages to categorize participants into four mutually exclusive categorical offending groups. The four groups under study build from those established in a prior study by Gunnison (2014) and were constructed as follows: ‘early desisters’ were participants who had offenses in adolescence, but no offenses at age 18 or older; ‘late desisters’ were participants who had offenses in both adolescence and the transition to young adulthood (ages 18-25), but no offenses after age 26; ‘adult desisters’ were individuals who had no new offenses five years preceding their final assessment that was conducted as part of this longitudinal extension; ‘persisters’ were individuals who had ongoing criminal involvement demonstrated either through offenses in the last five years preceding their final assessment or demonstrated through current

incarceration at the time of their final assessment (see Table 8).

Table 8

Number and proportion of participants categorized in each discrete offending group

Offending Group	<i>n</i> (%)
Early desisters	36 (28%)
Late desisters	33 (25%)
Adult desisters	18 (14%)
Persisters	43 (33%)

To investigate whether membership in one of the four discrete desistance or persistence offending groups predicted the clinical cutoff derived AL scores, we conducted a Poisson regression given the outcome was count-based and inspection of the mean and variance suggested that overdispersion was minimal.⁸ We ran one model without controls and additionally, ran a second model controlling for participant age, and the randomization group variable in this model (see Table 9). There was no evidence that the discrete offending groups predicted AL.

Next, we ran Poisson regression models predicting percentile-based AL scores. Again, we specified one model with and without the controls of participant age and the randomization group variable (see Table 9).⁹ Results were consistent with the clinically derived AL scores; there was no evidence that membership in any of the persistence or desistance groups predicted AL in adulthood. Although there are several possible explanations for these findings, one could be that more proximal stressors (mental health, trauma exposures, relational or economic stressors) are

⁸ We also ran a negative binomial model. There was no significant improvement in fit for the negative binomial model compared to the Poisson model as indicated by the likelihood ratio test, $\chi^2(1) = 0.0017$, $p = .968$.

⁹ We also ran a negative binomial model. There was no significant improvement in fit for the negative binomial model compared to the Poisson model as indicated by the likelihood ratio test, $\chi^2(1) = 3.12$, $p = .077$. Additionally, effects did not vary substantively or in terms of statistical significance.

predictive of AL (McEwen, 2022). Additionally, there is ongoing conversation in the field about how best to capture AL and it is possible that systems-based metrics (e.g., cardiovascular, endocrine) or specific individual biomarkers are more clinically useful when unpacking the relevance of stressors, such as criminal legal system involvement and incarceration, on indicators of health (see Duong et al., 2016 for a review).

Table 9

Results of Poisson regressions with offending groups predicting percentile and clinical cutoff derived allostatic load scores

Parameter	Clinical Cutoff Allostatic Load			Percentile Allostatic Load		
	Model 1a			Model 2a		
	Estimate (SE)	p-value	IRR [95% CI]	Estimate (95% CI)	p-value	IRR [95% CI]
Late Desisters	-0.002 (0.13)	.98	0.99 [0.78, 1.28]	-0.13 (0.13)	0.31	0.87 [0.69, 1.13]
Adult Desisters	0.05 (0.14)	.70	1.06 [0.80, 1.40]	0.04 (0.15)	0.80	1.04 [0.77, 1.40]
Persisters	-0.04 (0.12)	.76	0.97 [0.77, 1.21]	-0.14 (0.14)	0.31	0.87 [0.66, 1.14]
Parameter	Model 1b			Model 2b		
	Estimate (SE)	p-value	IRR [95% CI]	Estimate (95% CI)	p-value	IRR [95% CI]
	Late Desisters	0.001 (0.13)	.73	1.00 [0.87, 1.28]	-0.14 (0.14)	0.303
Adult Desisters	0.055 (0.15)	.71	1.06 [0.79, 1.21]	0.02 (0.15)	0.903	1.02 [0.75, 1.38]
Persisters	-0.041 (0.12)	.99	0.96 [0.76, 1.21]	-0.13 (0.13)	0.309	0.88 [0.68, 1.13]
<i>Controls</i>						
Group	-0.027 (0.09)	.77	0.97 [0.81, 1.17]	-0.02 (0.10)	0.806	0.98 [0.80, 1.19]
Condition						
Participant Age	0.015 (0.04)	.71	1.01 [0.94, 1.10]	-0.04 (0.04)	0.302	0.96 [0.88, 1.04]

Note. Early desisters were specified as the reference group. Models ending with 'b' contain controls.

Our final goal in Aim 3 was to investigate whether persistence or discrete types of desistance were predictive of self-reported health, as measured through general health measured through the RAND Health Survey measure. We used analysis of variance and covariance to predict the continuous general health outcome from the discrete offending groups. The full results, together with the adjusted means and 95% confidence intervals for each offending group are reported in Table 10.

Table 10*Adjusted means, standard deviations, and a one-way analysis of covariance of general health*

Measure	Early Desisters	Late Desisters	Adult Desisters	Persisters	$F(3, 119)$	η^2
	<i>M</i> [95% CI]	<i>M</i> [95% CI]	<i>M</i> [95% CI]	<i>M</i> [95% CI]	1.46, $p > .05$	0.03
General Health	44.29 [41.8, 52.6]	42.67 [38.5, 46.8]	47.22 [41.8, 52.6]	40.89 [37.4, 44.4]		

There was no evidence that individuals classified into discrete offending groups had statistically significant differences in self-reported adult general health. Notably, however, all groups had average general health scores below the U.S. national average of a score of 50, with the persistence group reporting the lowest (albeit not statistically different) general health ratings.

Aim 4: To examine the long-term effects of the Treatment Foster Care Oregon intervention on adult offending and crime, and biological and self-reported health, including indicators of endocrine, cardiovascular, and metabolic health through an index of allostatic load.

Under Aim 4, we provide initial findings on the long-term impact of TFCO on metrics of adult criminal legal system contact and desistance. Our first question was “are women from the TFCO condition less likely to be incarcerated since the final assessment in young adulthood?” We compared model fit of a Poisson, negative binomial, and zero-inflated negative binomial models (ZINB) with the treatment condition and participant age entered as predictors of the number of new incarcerations at the final time point. We determined that the ZINB model fit the data best when compared to the Poisson model ($\chi^2(5) = 256.08, p < .001$) and the regular negative binomial models ($\chi^2(3) = 20.90, p < .001$), as indicated by the likelihood ratio test. Although results of the

count model showed that group condition was not predictive of the number of new incarcerations since the young adult assessment (est. = 0.46, $SE = 0.24$, $p = .058$), participant age was a significant predictor of the number of new incarcerations ($IRR = 0.78$, est = -0.25, $SE = 0.10$, $p = .011$), with older participants having a fewer number of new incarcerations. In the zero-inflation part of the model, results indicated that women in the TFCO condition had 2.27 higher odds (95% CI [1.01, 5.12]) of having no new incarcerations relative to women in the control condition (est. = 0.82, $SE = 0.41$, $p = .048$). Age was not a significant predictor of the odds of being in the group with no new incarcerations (est. = -0.11, $SE = 0.18$, $p = .54$).

These findings should be interpreted in relation to one another. First, results suggest that TFCO may predict the reduced likelihood of adult incarceration for women, however, given the wide confidence intervals around this effect and the smaller sample size, these results should be interpreted with caution. Additionally, the adolescent-delivered TFCO treatment does not appear to predict the number of new incarcerations among those who were still incarcerated in adulthood. Taken together, these results show that TFCO may reduce or prevent the likelihood of future incarceration overall, but for women who remain involved in the justice system and face incarceration, TFCO seems to have less of an impact on reducing the frequency of incarcerations.

Our next question was to explore whether women in the TFCO condition were more likely to have desisted at this assessment time point in adulthood relative to women in the comparison condition. The desistance variable was coded as 1 ('desister') and 0 ('persister'). Individuals categorized as desisters did not have any official offenses in the past five years. We selected five years as a metric given that prior empirical studies have found five years to be more appropriate for higher offending groups (Kazemien, 2007; Sampson & Laub, 2001), as opposed to shorter timeframes of 6-months, 1, or 3 years. Additionally, individuals who were incarcerated during the

last assessment point or who were released from prison within the past five years preceding their assessment (i.e., no opportunity to desist for five years) could not be considered desisters, even though they may not have had a new offense in the past five years. Descriptively, a larger proportion of women in the TFCO group had desisted for 5 years or longer (69%) relative to the control sample (59%). A binary logistic regression was used to examine the effect of the TFCO treatment group and participant age at baseline on the likelihood an individual had desisted for 5 years or longer at the most recent follow-up. Although results were in the expected direction, they showed that the TFCO treatment condition was not a significant predictor of whether or not an individual had desisted for 5 years or longer (OR = 1.53, 95% CI [0.74, 3.16]).

Table 11

5-Year desistance metrics by the full sample and treatment condition

Desistance Timeframe	Full Sample (<i>N</i> = 130)	TFCO Sample (<i>n</i> = 64)	Control Sample (<i>n</i> = 66)	Fisher's Exact p-value
	<i>n</i> (%)	<i>n</i> (%)	<i>n</i> (%)	
5 years	83 (64%)	44 (69%)	39 (59%)	<i>p</i> = .28

Our next analysis was to investigate whether participation in TFCO predicted processes of desistance (i.e., slopes of desistance) using latent growth curve modeling with a negative binomial distribution (given model selection criteria described in Aim 1), where the number of offenses (count) was modeled across development. This model slightly differs from that of Aim 1 because we examined trajectories of offending following participant randomization assignment to the treatment or control condition, through the centering of time at randomization (Time 2, see Figure 5). Several notable findings emerged. First, the slope of offending trajectories was negative and significant, suggesting that on average, offending decreased over time for women in both the treatment and comparison conditions ($b = -0.64$, $SE = 0.06$, $p < .001$). When exponentiated, the

IRR of 0.53 (95% CI [0.47, 0.59]) suggests that as women moved from one timepoint to the next (e.g., T2 to T3 or adolescence to young adulthood), following entry to the randomized study, the expected number of offenses decreased by 47%. The variance of the slope was also significant, as expected, indicating that women varied in their trajectories of change in offending over the longitudinal study ($b = 0.04$, $SE = 0.02$, $p = 0.027$). As hypothesized, women in the TFCO condition showed significantly steeper declines and greater reductions in offending over time ($b = -0.16$, $SE = 0.07$, $p = 0.028$). The *IRR* for this effect (0.85, 95% CI [0.74, 0.98]) suggests that women in the TFCO condition showed a slightly faster rate of linear declines (15%) in offending relative to women in the control condition. The TFCO condition did not significantly predict the intercept, which was expected and suggests that women did not show group differences at baseline ($b = -0.10$, $SE = 0.13$, $p = 0.434$). However, the variance of the intercept was statistically significant, indicating that there was significant variability in initial levels of offending across women ($b = 0.08$, $SE = 0.02$, $p < .001$). The covariance between the intercept and slope was also significant and positive ($b = 0.08$, $SE = 0.02$, $p < .001$), indicating that women who showed higher initial levels of offending before randomization (Time 1), tended to show steeper declines in offending over time.

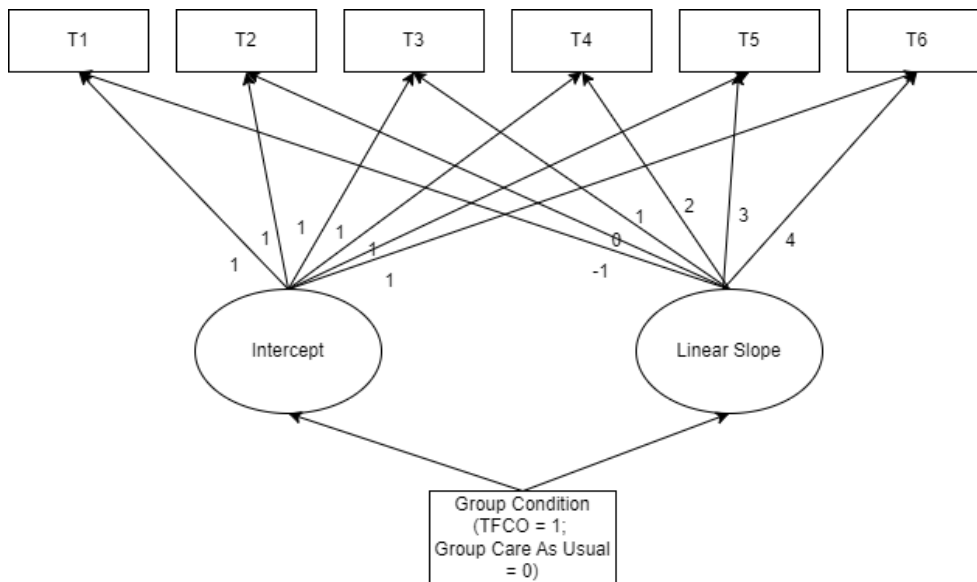
Given these results, we ran an exploratory analysis to further explore whether TFCO treatment condition was associated with the number of years of desistance at the final time point, with the rationale that women in the TFCO treatment condition may have desisted earlier than women in the comparison condition, but not yet for an average of five years earlier. Results of a multiple linear regression ‘static’ model of desistance showed that participation in the TFCO intervention significantly predicted a greater number of years of desistance ($F(2, 127) = 2.76$, $B = 2.58$, 95% CI [0.06, 5.10]) even when controlling for participant age, which also contributes to

desistance processes. Participation in the intervention explained approximately 3% of the variance in years of desistance (partial $R^2 = 0.03$).

Overall, results from Aim 4 analyses exploring the hypothesized long-term TFCO effects show that participation in the TFCO intervention was associated with reductions in new incarcerations in adulthood, and more favorable (earlier) processes of desistance. Although there were no significant group differences in the binary 5-year metric of desistance, it is possible that the benefits of the adolescent treatment on desistance processes are still being realized, as evidenced by women in the TFCO treatment group condition showing faster declines in offending across adolescence and into adulthood, and through results that show women who participated in TFCO desist, on average, around 2.5 years sooner relative to women in the comparison condition.

Figure 5

Representation of the final conditional latent growth curve model examining long-term intervention effects



Note. Residuals and covariance between intercept and slope are not shown to improve the readability of the figure. T= time; T1 = 10-13; T2 = 14-17; T3 = 18-22; T4 = 22-25; T5 = 26-29; T6 = 30-33. TFCO = Treatment Foster Care

Oregon.

It should be emphasized that there was wide variability in all criminal legal system variables in both the treatment and control groups, which further demonstrates that future studies should consider moderators or mediators of these intervention effects to better explain for whom or under what conditions the TFCO intervention yielded positive benefits as shown through desistance from adult crime and offending. Findings from this study document desistance from crime and offending in the sample, with 64% of the subsample of women who participated in this longitudinal follow-up showing no new offenses or arrests within five years of the last assessment, based on official records. This illustrates the value of this longitudinal follow-up – the generation of evidence that the age-crime curve is also relevant for women, with additional desistance occurring as women enter their thirties. As demonstrated through this report, rich opportunities exist to further explore processes of desistance and persistence using the historical data and newly collected data on co-occurring risk and protective factors in this sample.

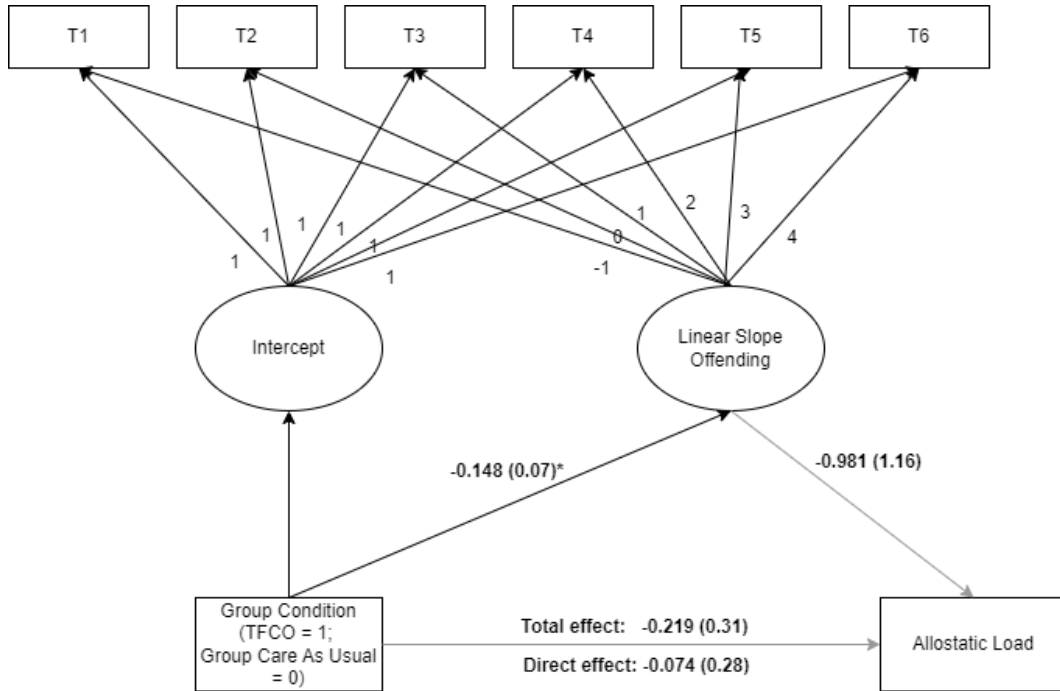
Our final prespecified analysis for Aim 4 was to explore long-term effects of TFCO on indices of allostatic load in adulthood, through observed treatment-driven reductions in offending trajectories. We used latent growth curve modeling in a structural equation modeling framework to test the mediation of the TFCO treatment condition on the clinical and percentile-based allostatic load indexes through the linear slope of offending (see Figure 6 for the depiction of the clinical allostatic load outcome). The indirect effect was not statistically significant ($a \times b = 0.145$, $SE = 0.20$, $p = 0.467$, 95% CI $[-0.247, 0.537]$), suggesting there was no evidence that changes in offending from adolescence to adulthood mediated the link between assignment to TFCO and allostatic load in adulthood. Additionally, there was no evidence of a direct link between the TFCO treatment condition and clinically derived scores of allostatic load ($B = -0.219$, $SE = 0.314$, $p = 0.486$). Results from the modeling using percentile-based allostatic load scores showed similar

null results ($a \times b = -0.005$, $SE = 0.24$, $p = 0.984$, 95% CI [-0.475, 0.465]). Together these results suggest there was no significant longitudinal relationship between assignment to TFCO and allostatic load in adulthood, either directly or indirectly.

It is possible that because allostatic load represents the accumulation of ‘wear and tear’ on the body through chronic, repeated stressors, the allostatic load outcome is more strongly linked with a broader set of risks and stress exposures that are associated with but not captured through counts of offending alone (trauma exposures, substance use, interpersonal violence, experiences of incarceration). Additionally, although our allostatic load measure is robust and contains a large number of biomarkers across physiological systems in the body, one key limitation is the absence of upstream neuroendocrine mediators of stress (e.g., cortisol, catecholamines such as epinephrine and norepinephrine, dehydroepiandrosterone; Johnson et al., 2017). These data were not collected in the present study because of the additional burden placed on participants (i.e., many of these indicators require repeated multi-day assessments; Loucks et al., 2006) and given that the blood spot samples collected in this study were our sample’s first introduction to providing biomarker data. Future studies should consider the inclusion of these biomarkers into studies exploring the effects of psychosocial stress, such as offending and incarceration, on physiological health and dysfunction.

Figure 6

Mediation of treatment condition on allostatic load in adulthood by offending trajectories



Note. Residuals, disturbances, and the covariance between intercept and slope are not shown to improve the readability of the figure. T= time; T1 = 10-13; T2 = 14-17; T3 = 18-22; T4 = 22-25; T5 = 26-29; T6 = 30-33. TFCO = Treatment Foster Care Oregon. Allostatic load was derived using clinical cut-offs described in Appendix A.

Limitations

One important limitation of the current sample is that white participants are overrepresented relative to the national U.S. juvenile justice system racial demographic proportions for girls (68% versus 46% white; 32% vs. 54% minority; Sickmund et al., 2020), although the sample is racially representative of the juvenile justice population in most mid-sized suburban communities nationwide. While this may limit generalizability of study findings, within the current sample, racial and ethnic minorities are slightly overrepresented from the population in the pacific northwest region of the U.S. from which participants were drawn (U.S. Census

Bureau, 2019).

Additionally, due to COVID-19 the prison systems that we interviewed in did not permit in-person assessment, thus we were not able to get biological data from our participants who, by definition, had not desisted from offending. Given the known link between offending and health, it should be noted that our biological data sample does not include these participants (specifically the measures collected as part of the allostatic load assessment battery) who represent one portion of the sample with ongoing, substantial legal systems involvement. Nonetheless, a strength of this study is that we were able to include all participants who were known to be incarcerated during this longitudinal follow up, thus other measures in the study will not be limited by the same potential bias.

Finally, it is noteworthy that 123 participants completed the biological assessment, and 118 provided blood samples, three declined to provide a blood sample, and two samples were not received after participants returned them through the U.S. Postal Service. Given the volume of blood needed to derive the seven biomarkers obtained from dried blood spots (DBS), several participants were missing one or more DBS-derived indicators; however, we capitalized on all available data and therefore the average number of indicators each participant had available varied, with the average number of missing indicators for the clinically derived total scores being 1.10 ($SD = 1.43$) and the average number of missing indicators for the percentile based total scores being 1.20 ($SD = 1.62$). Nonetheless, the high rates of participation in this aspect of the assessment are noteworthy given participants had not previously provided biological data in the history of the longitudinal study.

ARTIFACTS

List of products

Papers including data from the current assessment wave

1. Schweer-Collins, M. L., Dierkhising, C. B., Huffhines, L., & Leve, L. D. (in progress). Exploring long-term effects of adolescent-delivered TFCO on adult allostatic load: Findings from a 20-year follow-up
2. Schweer-Collins, M. L., Dierkhising C. B., Alexander, A., & Kerig, P. (in progress). A longitudinal analysis of trauma and traumatic stress among women with juvenile justice backgrounds.
3. Schweer-Collins, M. L., Dierkhising C., & Leve, L. D. (2024). The collateral consequences of female incarceration. *Frontiers in Psychology, 14*, 1321355. <https://doi.org/10.3389/fpsyg.2023.1321355>
4. Gondoputro, A. & Schweer-Collins, M. L. (manuscript in progress). The association between miscarriage and allostatic load is moderated by traumatic childbirth and pregnancy experiences.
5. Gondoputro, A. The association between miscarriage and allostatic load. (2023). Honor's Thesis. University of Oregon, Eugene, OR.

Papers involving the sample and data collected in prior assessment waves, which were published or developed during the project period

6. Leve, L. D., Schweer-Collins, M. L., & Bates, E. (2022). Criminal offense charges in women: A 10-year follow-up of an RCT of Treatment Foster Care Oregon. *Journal of*

Consulting and Clinical Psychology, 90(12), 901–910.

<https://doi.org/10.1037/ccp0000764>

7. Franz, D., Schweer-Collins, M. L., Cioffi, C., & Leve, L.D. (2024). Adolescent child custody loss predicts trajectories of polysubstance use during the transition from adolescence to emerging adulthood. *Children and Youth Services Review*, 157, 107421. <https://doi.org/10.1016/j.chidyouth.2023.107421>
8. Turner, A., Jenkins, D., Schweer-Collins, M.L., & Leve, L. D. (manuscript under review) Intimate partner discouragement of substance use linked with reductions in alcohol consumption: A longitudinal study on women with histories in juvenile justice.
9. Bates, E., Schweer-Collins, M. L., & Leve, L. (manuscript in progress). Longitudinal associations between adverse childhood experiences and depression symptoms in young adulthood for women with histories in the juvenile justice system.

Presentations

1. Gondoputro, A. (2023). The association between miscarriage and allostatic load. Paper presented at the University of Oregon’s Undergraduate Research Symposium, Eugene, OR.
2. Turner, A., Jenkins, D., Schweer-Collins, M.L., & Leve, L. D. (2022). Intimate partner discouragement of substance reduce linked with reductions in alcohol consumption: A longitudinal study on women with histories in juvenile justice. Paper presented at the Society for the Study of Emerging Adulthood, San Diego, CA.
3. Berny, L., Bates, E., Turner, A., Schweer-Collins, M., & Leve, L. (2023). Peer and romantic partner influences on substance use: A longitudinal examination of social

influences in a sample of systems-involved females. Poster presented at the Society for Prevention Research Annual Meetings, Washington, D.C.

4. Dierkhising, C. B. & Schweer-Collins, M. L. (2024). Longitudinal analysis of trauma and legal system contact among women from adolescence to adulthood. Presented at the American Psychological Association Annual Conference.
5. Dierkhising, C. B. & Schweer-Collins, M. L. (2024). An Empirical Test of the Sexual Violence to Prison Pipeline Among a Longitudinal Sample of Women. To be presented at the American Society of Criminology.
6. Dierkhising C., Schweer-Collins, M. L., & Leve, L. Longitudinal analysis of Institutional betrayal, traumatic stress, and justice system contact among a sample of formerly juvenile justice-involved adult females. Paper submitted (not accepted) for presentation at the International Society for Traumatic Stress Studies 29th Annual Meeting.
7. Schweer-Collins, M. L., Dierkhising, C. B. & Leve, L. The collateral consequences of female incarceration. Submitted (not accepted) to the American Psychology-Law Society Annual Conference.

Data Sets Generated

Data collected through this assessment wave and funding mechanism have been submitted for archival to NACJD. The data will be restricted use due to the vulnerable nature of the sample and sensitive nature of the data and available through NACJD procedures (<https://www.icpsr.umich.edu/web/pages/NACJD/discover-data.html>).

Dissemination Activities

To disseminate the findings, thus far, we have submitted abstracts to three conferences and have published one peer-reviewed journal article. Our future dissemination activities include

future peer-reviewed publications and conference presentations. For example, we will seek to present this work at the Society for Prevention Research's Annual Meeting, the American Psychological Association (abstract submitted), and the American Society of Criminology. In addition, we are in the process of publishing a website in development to guide practitioners, policymakers, and researchers who are interested in this longitudinal sample. This website will contain information on the history of the sample, as well as information about where to retrieve the data, and protocols and guidelines for assisting trainees and researchers in using the data. We will also continue to seek opportunities to share the study and findings with community partner agencies that provide services to similar populations. For example, PI Schweer-Collins presented the background of this study and the assessment procedures to the University of Oregon's Center on Parenting and Opioids Community Advisory Board (CAB) to gain additional insight about ways in which to conduct trauma-informed research with individuals with histories of both involvement with the legal system and substance use disorders and destigmatizing language to use when discussing the findings from this study.

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APPENDIX A

Allostatic Load Indicators	Obtained from dried blood spot	Clinical Cutoff Used
Waist-to-Hip Ratio		≥ 0.85
Systolic Blood Pressure		≥ 140
Diastolic Blood Pressure		≥ 90
C-Reactive Protein (mg/L)	X	≥ 0.30 mg/L
Epstein Barr Virus (IU/mL)	X	NA
Total Cholesterol (mg/dL)	X	≥ 200 mg/dL
Triglycerides (mg/dL)	X	≥ 150 mg/dL
Interleukin-6 (pg/mL)	X	≥ 6.10 pg/mL
Resting Heart Rate		≥ 90
Body Mass Index		≥ 30
High-density lipoprotein cholesterol (mg/dL)	X	≤ 39 mg/dL
Hemoglobin A1c (% of total hemoglobin)	X	≥ 6.50 % hemoglobin
Peak Expiratory Flow (PEF)		≤ 319