

Looking Within:
Examining the Short- and Longer-Term Consequences of Criminal Justice

Confinement on Internalizing Problems

by

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ABSTRACT

This study examined whether periods of secure confinement in juvenile detention, jails, and prisons are associated with short- and longer-term increases in adolescent males' internalizing problems during adolescence and young adulthood. Data came from a longitudinal community sample of 506 male adolescents who were assessed every six months for three years and annually for ten subsequent years. At each assessment, participants reported on their confinement experiences and internalizing problems (i.e., anxiety, depression) during the recall period. Fixed-effects models examined within-individual changes in internalizing problems before, during, and after youth reported any overnight stay in a correctional facility, after controlling for the time-varying confounds of externalizing problem behaviors and previous justice system contact. Additionally, this study tested whether changes in the participants' internalizing problems varied depending on the confinement facility (i.e., juvenile detention, jail, prison). Overall, results indicated that internalizing problems increased during periods where participants had been confined in a facility. In contrast, there were no changes in internalizing problems in the period prior to confinement and internalizing problems returned to baseline levels in the year following confinement. Facility-specific analyses indicated confinement in prison was associated with the largest increase in internalizing problems. Findings from this study indicate confinement does influence internalizing problems and interventions sensitive to internalizing problems should focus on providing services during confinement and immediate reentry period.

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INTRODUCTION

With over 2 million people residing in juvenile detention, jail, or prison on any given day (Bronson & Carson, 2019; Puzzanchera & Hockenberry, 2019; Zeng, 2019), the United States has the world's largest confined population (Walmsley, 2018). Considering 95% of those confined are estimated to reenter the community (Hughes & Wilson, 2013), the ramifications of confinement on subsequent adjustment impacts both confined individuals and the communities to which they return (Wildeman et al., 2012; Wakefield & Wildeman 2013; Wildeman & Muller 2012; Turney, 2014; see also Wilson, 2012). Although studies tend to examine post-confinement adjustment in terms of outwardly-directed, or externalizing, problem behaviors like aggression or violence (Lipsey & Cullen, 2007; Mears & Bales, 2009; Spohn & Holleran, 2002; Winokur, Smith, Bontrager & Blankenship, 2008), previous literature also well-establishes the pervasiveness of self-directed, internalizing problems among confined populations (Cauffman, 2004; James & Glaze, 2006; Fazel, Hayes., Bartellas, Clerici, & Trestman, 2016; Teplin, Abram, McLelland, Dulcan, & Mericle 2002).

Internalizing problems are commonly conceptualized as clinical and subclinical symptoms related to anxiety and depression, such as worry, excessive guilt, sadness, suicidal ideation, and/or loneliness (Achenbach, 1991; Graber, 2004). Internalizing problems, in turn, have been linked to an increased risk for substance use/misuse (Swendsen & Merikangas, 2000), suicidal ideation (Hawton, iComabella, Haw, & Saunders, 2013; Kanwar et al., 2013), shorter life expectancy (Archer, Kuh, Hotopf, Stafford, & Richards, 2018), lower educational attainment (Weidman, et al., 2015), difficulty transitioning into the labor market and poorer economic performance (Dearing

et al., 2006; Veldman, Reijneveld, Verhulst, Ortiz, & Bültmann, 2017). Further, evidence suggests children of parents with internalizing problems are more likely to develop internalizing problems, contributing to an intergenerational cycle of risk for poor outcomes (Murray & Farrington, 2008). Poorer health and socioeconomic outcomes at the individual level are a collective burden on society, both economically and socially (see Wilson, 2012). Thus, internalizing problems are consequential across several life domains.

Although extant literature well-establishes an association between current confinement in a correctional facility and internalizing problems (Cauffman, 2004; Fazel et al., 2016; Teplin et al., 2002), the extent to which self-directed problem behaviors are due to confinement or due to preexisting causal factors remains unclear. This is because factors contributing to the development of internalizing problems also tend to contribute to the development of delinquency (Defoe, Farrington, & Loeber, 2013). This relationship is further obscured by conflicting empirical evidence suggesting short-term effects (Brown & Ireland, 2006; Porter & Demarco, 2019; Shulman & Cauffman, 2011), long-term effects (Abram et al., 2015; Barnert et al., 2017), and no effects (Craig, Piquero, Murray, & Farrington, 2018; White, Shi, Hirschfield, & Loeber, 2010) of confinement on internalizing problems. Moreover, despite fundamental differences between correctional facilities, little is known about how the responses to confinement vary across juvenile detention, jail, and prison stays. Thus, the current study seeks to assess the causal role of confinement by examining within-individual changes in internalizing problems in response to changes in confinement, the duration of these changes, and whether or not these changes vary across facility types.

LITERATURE REVIEW

Internalizing Problems and Confinement

Previous literature consistently indicates the disproportionate prevalence of internalizing problems among adolescents and adults in correctional facilities compared to the general population (Cauffman, 2004; James & Glaze, 2006; Fazel, et al., 2016; Teplin et al., 2002). Estimates indicate that up to 54% of confined samples are impacted by internalizing problems (Abram et al., 2015; Cauffman, 2004; Fazel et al., 2016), compared to 11% of the general population (Costello, Egger, Copeland, Erkanli & Angold, 2011). Indeed, confined adolescents are projected to be three times as likely to report suicidal ideation as non-confined youth (Suk et al., 2009) with estimates suggesting 1 in 10 will attempt suicide (Abram et al., 2008). Considering the diverse consequences of internalizing problems and the increasing normality of confinement for disadvantaged men (Pettit & Western, 2004), it is imperative that prevention and intervention efforts consider the role of confinement in the subsequent development of internalizing problems.

Conditions of confinement may foster internalizing problems. A review of studies examining prison environments argues the confinement to adaptive responses of hypervigilance, fear, and social withdrawal (Haney, 2012). Further, a study on 5,552 current confined adults across 214 facilities indicated distance from social support, overcrowding, and punitiveness were associated with internalizing problems during confinement (Edgemon & Clay-Warner, 2019). These findings are consistent with prior evidence emphasizing the importance of social support during confinement in reducing

internalizing problems (Monahan, Goldweber, & Cauffman, 2011). However, identifying the independent effects of confinement on internalizing problems is challenging.

A major challenge in determining the causal role of confinement on the emergence of internalizing problems is adequately controlling for potential alternative explanations, or confounding factors. One possible explanation for the differences between confined and non-confined individuals is that factors that lead individuals to develop internalizing problems may also lead them to engage in crime. For example, adverse childhood experiences (Björkenstam, Vinnerljung, & Hjern, 2017; Defoe et al., 2008; Lansford et al., 2007), racial discrimination (Simons, Chen, Stewart, & Brody, 2003), and temperament (Gjone & Stevenson, 1997), have all been prospectively associated with the development of both internalizing problems and delinquency. Additionally, delinquency and externalizing problem behaviors also are associated with a higher risk for developing internalizing problems may (Burke, Loeber, LAhey, & Rathouz, 2005; Defoe et al, 2008; Joliffe et al., 2019). If confined individuals engage in more crime, they are also at a higher risk of developing internalizing problems and becoming involved in the criminal justice system. Lastly, the association between confinement and internalizing problems may be explained by the effects of arrest (Sugie & Turney, 2017). In this case, differences between confined and non-confined individuals may actually be attributed to differences between arrested and non-arrested individuals. Unless comparing confined and non-confined individuals who had previously been arrested, between-individual comparisons have a limited ability to conclusively identify the effects of confinement on internalizing problems (see Massoglia & Pridemore, 2015). Rather, comprehensive examinations on the effects of confinement necessitate

longitudinal approaches and must account for relevant confounds such as causal factors predating confinement, externalizing problems, and prior arrest.

The Within-Individual Association between Internalizing Problems and Confinement

Although *between-individual differences* in confinement have been associated with internalizing problems (Cauffman, 2004; Fazel et al., 2016; James & Glaze, 2006; Teplin et al., 2002), it is unclear whether *within-individual* changes in confinement are associated with changes in internalizing problems. That is, do individuals' internalizing problems change if their confinement status changes? If so, are these changes acute (i.e., lasting the duration of confinement) or sustained (i.e., lasting after confinement)? Findings from the limited existing literature on the within-individual effects of confinement on internalizing problems are mixed.

Longitudinal studies on periods of confinement, reentry, or with delayed follow-up periods of confined samples suggest aspects of the association between confinement and internalizing problems. Some studies identify participants during confinement and examine changes in internalizing problems while confined. These studies attempt to isolate within-individual changes by controlling for prior individual-level differences using retrospective measures of internalizing problems and other relevant confounds (Brown & Ireland, 2006; Shulman & Cauffman, 2011). Results from these studies indicate internalizing problems significantly increase during the initial transition to confinement before declining over the first few months of confinement suggesting an acute effect of confinement. However, both of these studies focused solely on

internalizing problems in juvenile confinement facilities and only followed individuals during confinement. Another key limitation of studies using confined samples is the inability to prospectively assess preexisting predispositions to develop internalizing problems, making causal inferences difficult to ascertain.

Other studies examine the acute effects of confinement by assessing changes in internalizing problems during the reentry period. For example, a study of prisoners during the first six months post-confinement controlled for prior internalizing using a baseline measure of internalizing during confinement and group-based trajectory modeling (Thomas et al., 2016). Findings showed 82.8% of the sample reported stable internalizing problems and 11.6% of the sample reported increases in internalizing problem during this immediate release period implying a sustained negative effect of confinement. However, this study examined individuals confined in adult facilities within the Australian legal system, which may limit the generalizability to the United States penal system. Another study assessing the continuity of mental health problems after confinement in a juvenile facility in Cook County, Illinois suggested the prevalence of internalizing problems decreased by half five years later. However, this study does not examine individual changes in reports of internalizing problems or control for arrest history making interpreting the independent effects of confinement difficult. Despite their limitations, together these studies provide evidence that internalizing problems vary both between-individuals and within-individuals.

Two recent studies using more complex between-individual analyses suggest a null effect of confinement on internalizing problems. These studies use propensity-score matching, a quasi-experimental approach that statistically balances observed differences

between confined and non-confined individuals. One longitudinal study using data from the Cambridge Study in Delinquent Development matched individuals who reported any conviction or confinement before the age of 29 to non-convicted individuals on 16 potential confounding factors to assess differences in the development of internalizing problems at age 32 (Craig, Piquero, Murray, & Farrington, 2018). After matching participants, findings from this study suggested neither conviction nor confinement were associated with long-term effects on anxiety or depression. However, only 34 individuals in the sample experienced confinement, the study measured confinement broadly as any incarceration before age 29, and the follow-up periods lacked regularity to assess acute effects of confinement. External validity is further limited due to the majority White sample confined within the English penal system.

The second study utilizing propensity score matching examined the effects of juvenile confinement at age 15 on internalizing problems at age 16 using data from the Pittsburgh Youth Study, a longitudinal study using a school-based sample of high-risk male adolescents (White, Shi, Hirschfield, & Loeber, 2010). After matching confined and non-confined youth on 26 theoretically relevant potential confounding factors, this study also utilized group-based trajectories of internalizing problems in an attempt to account for individual-level differences in internalizing problems. Consistent with the previous study, there were no significant differences in internalizing problems between the confined and non-confined group. However, the total matched sample size for each internalizing outcome (i.e. anxiety, depression) was less than 40 matched pairs, the study only focused on juvenile confinement, and the follow up period of one year may not capture shorter term effects of confinement on internalizing problems during periods of

reentry. Further, studies using propensity score matching are also limited to balancing individuals on observable differences between individuals.

On the other hand, findings from three recent studies leveraging large, nationally representative samples with regular assessments of mental health and confinement experiences tend to imply negative consequences of confinement on internalizing problems. First, Barnert and colleagues (2017) examined the effects of juvenile or jail confinement during adolescence on adult depression and suicidal ideation using data from the National Longitudinal Study of Adolescent to Adult Health. The researchers attempted to isolate the effects of confinement by controlling for over 20 individual-level, family-level, and community-level potential confounding factors. Results indicated confinement during adolescence predicted worse suicidal ideation and depression during young adulthood (ages 24-34). However, there was a 14 year gap between the baseline and follow up assessments. Additionally, changes in confinement status during adolescence was measured retrospectively at the follow-up interview, limiting causal inference.

Two other recent studies use subsamples from the National Longitudinal Study of Youth 1997 (Porter & Demarco, 2019; Sugie & Turney, 2017). Both studies focused on examining within-individual change over time, an analytic approach which eliminates all time-stable factors as potential confounds (e.g., race, genetics, temperament), thereby strengthening internal validity. Sugie and Turney (2017) used annual assessments to examine the effects of justice system contact on changes in subsequent internalizing problems. Results indicated that during periods of confinement participants' tended to experience an increase in their internalizing problems, but this association was

significantly attenuated after controlling for the effect of arrest on internalizing problems. Using the same sample, Porter and Demarco (2019) examined both short and long term effects of confinement on internalizing problems using the cumulative length of time spent in confinement across 24-month recall periods. Findings indicated longer periods of confinement were associated with fewer internalizing problems while confined, but more negative outcomes post-confinement. Together, these studies suggest evidence of both a negative, acute as well as a delayed effect of confinement on internalizing problems. However, these studies did not compare differences in adjustment across correctional facilities or examine whether or not increases in internalizing problems may have led to confinement.

Although recent studies attempt to more comprehensively examine the causal role of confinement on mental health, findings from these studies seem to disagree on the association between confinement and internalizing problems. Considering the disproportionately high prevalence of internalizing problems within confined samples and the diverse deleterious consequences associated with internalizing problems, identifying whether the development of these subsequent mental health problems are due to confinement or other pre-existing factors is crucial.

Differences between Facility Types

Broadly, correctional confinement in juvenile detention, jail, or prison facilities share many similar features. Across all facilities, confined individuals are removed from their community and social support networks to be placed into a regimented environment with unfamiliar, potentially dangerous individuals. However, correctional settings vary greatly

between types of facilities and even within facility types. Generally, confinement in a juvenile facility entails short correctional stays that emphasize education, recreation, treatment and mentoring (Kupchik, 2007). Jails typically hold adults serving short-term sentences (<1 year) for minor offenses or pre-trial individuals (Zeng, 2019). The average jail stay is approximately 30 days (Zeng, 2019) Whereas, prisons tend to hold adults convicted of serious offenses and serving lengthy (>1 year) correctional stays (Bronson & Carson, 2019).

On one hand, the relative rehabilitative orientation of juvenile facilities compared to adult facilities may attenuate negative responses to juvenile confinement such as internalizing problems. On the other hand, previous literature suggests confinement may be particularly detrimental for youths' mental health (Lambie & Randell, 2013) and short stays present institutional difficulties to identify and provide efficacious treatment. For jail facilities, high turnover rates, more punitive orientation, and limited financial resources may present additional challenges to providing appropriate services, which may exacerbate responses to confinement. For both jail and juvenile confinement, studies suggest adjusting to and from the community may be particularly distressing suggesting responses to shorter stays in these facilities may be especially deleterious for internalizing problems (Brown & Ireland, 2006; Shulman & Cauffman, 2011). Similar to jail facilities, prisons are less focused on rehabilitation than juvenile facilities. Due to the requisite severity of offenses for a lengthy stay, prison settings may be more volatile leading to a more fearful or worrisome environment resulting in higher reports of related internalizing problem behaviors. Yet longer correctional stays and lower turnover rates should theoretically present less challenges to providing appropriate treatment and recreational

services that may beneficially impact internalizing problems. Overall, there are reasons to believe that the broad facility-specific differences in correctional environment may differentially impact the development of internalizing problems

Despite the distinctive characteristics of each facility type, previous studies on the effects of confinement tend to either treat confinement within these disparate facilities as equivalent or focus on one type of confinement. Notably, Porter & Demarco (2019) did perform a supplementary facility specific analyses in their within-individual analysis of the impact of confinement. The researchers found jail spells of confinement were significantly associated with increases in broad psychological distress. However, prison confinement spells were not. However, the authors did not examine the duration of these effects and only focused on adult confinement. Considering the variation between facility type settings, a thorough examination of the ramifications of confinement on internalizing problems should consider facility specific differences.

Limitations of Previous Work

Previous literature has yet to comprehensively examine the timing of the association between confinement and internalizing problems. Empirical evidence suggests four possible outcomes. First, internalizing problems may increase during confinement and decrease after post-release. There is some empirical support for this acute effect of confinement (Brown & Ireland, 2006; Shulman & Cauffman, 2011; Thomas et al., 2016; Craig et al., 2018; White et al., 2010). Internalizing problems may also increase during confinement and persist after experiencing confinement. There is some evidence for this sustained impact of confinement (Brown & Ireland, 2006; Abram

et al., 2015; Barnert et al., 2017; Sugie & Turney, 2017). Additionally, internalizing problems may not change during confinement, but may increase after confinement. There is limited evidence for this delayed effect of confinement (Porter & Demarco, 2019). Finally, it is also conceivable that confinement is not associated with meaningful changes in internalizing problem (Craig et al., 2018; White et al., 2010). This would be considered a null effect of confinement.

In order to comprehensively assess these divergent explanations, longitudinal studies are necessary to examine how internalizing problems change before, during, and after periods of confinement while accounting for externalizing problem behaviors and prior arrest. Clarifying normative responses to confinement can inform delinquency prevention and mental health interventions. To the extent that internalizing problems are improved following confinement, more closely examining this relationship may be beneficial to identifying effective treatment methods. If, however, internalizing problems are exacerbated by confinement, then interventions that reduce confinement could also reduce internalizing problems. Furthermore, if previous exposure to shared etiological factors account for both confinement and internalizing problems, then preventative efforts should be focused on these factors in order to reduce the likelihood urban youth will engage in criminal offending and develop internalizing problems.

CURRENT STUDY

To address these limitations, this longitudinal study examined whether urban males tended to experience increases in their baseline levels of internalizing problems during periods of confinement in different types of correctional facilities (i.e., juvenile

detention, jail, prison), as well as whether these problems persisted following their release back into the community. The data for this study came from community based sample of youth at increased risk for criminal offending who were assessed biannually and then annually across a 12 year period from adolescence into young adulthood. The aim of this study was to characterize changes in internalizing problems in the year immediately during and immediately following confinement, as well as whether this change varied by facility type. If internalizing problems were higher in years immediately before confinement relative to years confined or after confinement, this was considered evidence that internalizing problems increased prior to confinement. An increase in internalizing problems while confined, but not in years before or after confinement indicated an acute effect of confinement on internalizing problems. An increase in baseline levels of internalizing problems during confinement and in the year following release back into the community was indicative of a more sustained effect of confinement on emotional adjustment. Lastly, increases in baseline internalizing only in years after confinement indicated a delayed effect of confinement.

Based on previous literature using within-individual approaches linking both current (Sugie & Turney, 2017) and previous confinement (Porter & Demarco, 2019) to increases in internalizing problems, it is hypothesized that being confined will be associated with acute and sustained increases in internalizing problems. More specifically, it is hypothesized that internalizing problems will increase during confinement and these increases will be sustained one year after confinement. Considering differences in correctional settings across facility types, it is also

hypothesized that confinement in jail would be associated with the largest increase in internalizing problems.

DATA AND METHODS

Participants and Procedures

Data came from the oldest sample of the Pittsburgh Youth Study (PYS), a longitudinal school-based sample of males adolescents originally recruited in the 7th grade who were repeatedly assessed into young adulthood (see <http://www.lifehistorystudies.pitt.edu/pittsburgh-youth-study>). For this study, 1,009 boys in 7th grade enrolled in inner-city public schools in Pittsburgh, Pennsylvania in 1987-88 were randomly selected for participation. Of those selected, 85% of boys and their caretaker agreed to continue on in the study. At the initial interview, youth, caretakers and teachers were administered a screening assessment to evaluate youths' risk for developing conduct problems. Based on those assessments, approximately 250 of youth who scored in the top 30th percentile of the sample and about the same amount of randomly selected youth from those in the latter 70th percentile were selected to form the follow-up group. In sum, 506 boys aged 12.6 years old on average at the initial screening interview were selected to continue on in the study. Follow-up interviews were conducted biannually for three years and annually for ten years until participants reached age 25. Youth predominantly self-identified as Black (54.55%) or White (41.70%), with a small portion identifying as some other race (3.75%). Retention rates across all waves were high (>80%). Interviews during confinement were conducted by trained research assistants in juvenile detention, jail, and/or prison facilities. Semiannual assessments for

confinement were aggregated to the annual level in order to remain consistent across time points. Thus, the current study examines 12 annual waves with available confinement data (see Appendix).

Table 1. Descriptive Statistics (n=502)

Variable	Full Sample		Ever Confined	
	M/%	SD	M/%	SD
<i>Dependent Variable</i>				
Anxious/Depressed (0 to 2)	0.18	0.22	0.23	0.25
<i>Independent Variable</i>				
Ever Confined	40.44%		100%	
in juvenile detention	0.85%		6.29%	
in jail	1.57%		11.61%	
in prison	3.48%		27.09%	
Recently released	7.39%		55.61%	
<i>Time-varying Controls</i>				
Aggressive Problems (0 to 2)	0.32	0.28	0.36	0.31
Arrest (yes=1)	65.94%		100%	
<i>Time-invariant Characteristics</i>				
Race				
White	41.83%		26.09%	
Black	54.38%		71.01%	
Other	3.79%		2.90%	

Note: M=mean, SD= standard deviation, %= proportion of the sample.

Anxious/Depressed and Aggression subscales are mean-scored responses from the *Youth Self-Report* and *Young Adult Self Report* (Achenbach, 1991). Facility type characterized by the participant's location at the time of the assessment. If recently released, facility type is unknown. Confinement totals exceed 100% as participants could have been confined in multiple facility types.

Dependent Variable

Internalizing Problems. Internalizing problems were measured at each annual assessment through the anxious/depressed subscale of the Youth Self-Report (YSR) during adolescence and the Young Adult Self-Report when participants transitioned into

adulthood (YAS; Achenbach, 1991, 1997). Although the YAS replaced the YSR once participants reached 18 years of age, the current study used the 16-items from the anxious/depressed problem subscale that remained consistent across both versions of the scale. Participants were asked to reflect on the past two weeks and describe how true (0=not true, 1=somewhat or sometimes true, 2=very true or often true) they found each statement (e.g., *you worry a lot, you feel worthless or inferior*). Mean scores were calculated to indicate individuals' average response (from 0 to 2). Higher scores were indicative of more severe internalizing problems. Both the YSR and YAS have been shown to discriminate between youth with and without internalizing disorders (Ebesutani, Bernstein, Martinez, Chorpita & Weisz, 2011). The anxious/depressed subscale was internally consistent ($\alpha > 0.81$) across all waves.

Independent Variables

Current Correctional Facility Confinement. Current confinement was measured through interview location. A dichotomous variable was created to indicate whether participants were interviewed in juvenile detention, jail, or prison confined (currently confined=1) or interviewed in a community location (not confined=0).

Current Correctional Facility Type. Although multiple sources of information were collected for identifying whether or not participants experienced any confinement, specific information on facility type was identified through interview locations. If participants' were interviewed in a juvenile detention, county jail, state jail, state prison, or federal prison facility at the time of the interview, they were considered to be confined in the respective facility type. Three dichotomous variables were created to indicate

whether participants experienced confinement in a juvenile detention facility (yes=1, no=0), jail (yes=1, no=0), or prison (yes=1, no=0).

Recently Released from a Correctional Facility. Self-report questions assessing institutionalization for delinquency were first offered when youth were enrolled in the 8th grade and regularly thereafter. Corroborative official criminal records from the Commonwealth of Pennsylvania were used beginning when youth were approximately 17 years old. Participants were considered recently released if their official records or self-reports indicated at least one overnight stay in a correctional facility during the recall period, but they were not interviewed in a correctional facility (recently released=1). If there were no reports of institutionalization for delinquency from participants or collateral sources, participants were considered not to have been recently released (not confined=0).

Time-Varying Covariates

Externalizing Problems. Externalizing problems were assessed through the aggressive behavior problem subscale of the YSR and YAS (Achenbach, 1991, 1997). Similar to the anxious/depressed subscale, the 19-items of the aggression subscale remain consistent across versions and participants were asked to describe how true (0=not true, 1=somewhat or sometimes true, 2=very true or often true) they found each statement (e.g., *you argue a lot, you have a hot temper*). Mean scores were calculated so that higher scores were indicative of worse aggressive problem behaviors.

Arrest for Criminal Offending. Previous justice system contact was operationalized as arrest within the recall period. Arrests in the sample varied in severity

from drug dealing (e.g., sale or delivery of marijuana or cocaine), moderate to serious theft (e.g., larceny, burglary), to moderate or serious violence (e.g., assault, robbery, murder). A dichotomous variable was created to indicate whether or not participants had been arrested during each recall period (yes=1, no=0) according to official records from their local, state and federal governments, their self-report, or from local newspaper accounts. Any arrest, with the exception of those for minor offenses (e.g., status, traffic violation, noise violation), were coded (arrest=1).

ANALYTIC STRATEGY

Missing Data

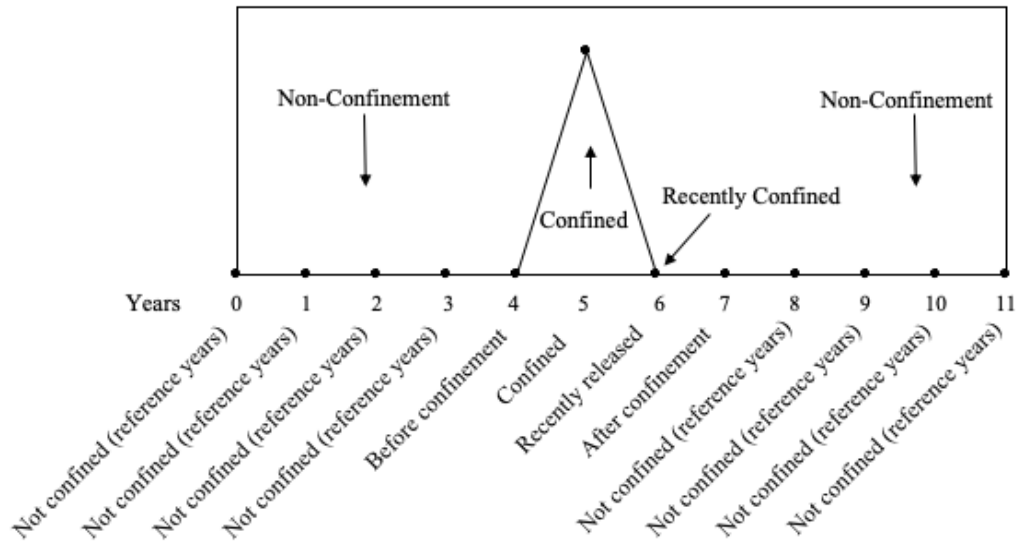
Of the 506 participants, most (57.1%) completed all 12 interviews; 15.8% missed one interview, 7.5% missed two interviews, 4.3% missed three interviews, and 15.2% missed four or more interviews. The average retention rate across the 12 interviews was 88%, ranging from 83.2% to 94.9% (see Appendix). Although White youth were significantly more likely to complete all interviews ($\chi^2(1) = 12.57, p < 0.001$), race did not significantly associate to missing interviews ($\chi^2(11) = 14.04, p = 0.231$). At baseline, there were internalizing problems ($\chi^2(19) = 20.90, p = 0.343$), aggressive problems ($\chi^2(27) = 24.68, p = 0.592$), and socioeconomic status ($\chi^2(47) = 57.952, p = 0.131$; Hollingshead, 1975) were not significantly associated with completed interviews. Additionally, current confinement did not significantly predict differences in missing interviews ($\chi^2(11) = 18.09, p = 0.080$). However, arrest ($\chi^2(11) = 30.77, p = 0.001$) and recent confinement ($\chi^2(11) = 48.91, p < 0.001$) significantly predicted missing interviews, such that participants were more likely to miss an interview if they had recently been

arrested or confined. To address missing data, this study used the model default of pair-wise deletion because there were overall low rates of missing data and lack of baseline differences between missing and non-missing data.

Characterizing Confinement

To examine within-individual variation of internalizing problems before, during, and after confinement, four time-specific binary indicators were created. The first indicator was coded to identify the assessment wave just prior to confinement. Next, a second binary indicator was coded to identify assessment wave in which youth were interviewed within a correctional facility. A third binary indicator was coded to identify years in which youth were recently released from a correctional facility if they were confined during the recall period, but were not interviewed in a correctional facility. Finally, a fourth indicator representing years immediately after confinement were coded if participants were confined in the previous year, but were not confined in the subsequent recall period. Under this coding strategy, it was possible that years before confinement and after confinement may have overlapped. Importantly, characterizing confinement in this manner contrasts coefficients during the coded years (before, during, recently released, after confinement) to data from all remaining non-confinement years. Fig. 1 illustrates a hypothetical case of a participant who was confined for a single year and what these variables would look like for that individual.

Figure 1. Hypothetical Characterization of Confinement



Note: Figure 1 (adapted from Docherty, Mulvey, Beardslee, Sweeten & Pardini, 2019) presents a hypothetical case in which an individual was confined at year 5. During year 6, the individual experienced confinement during the recall period, but was released at the time of the interview. Year 7 was considered the year after confinement. All of the other years (years 0 to 3 and 8 to 11) were considered non-confinement years and form the reference group for the other coefficients.

Analytic Models

Fixed-effects linear regression models were conducted to examine how within-individual changes in confinement over time impact changes in internalizing problems. Fixed-effects models account for observed and unobserved time-stable heterogeneity by treating each participant as their own control as opposed to making between-individual comparisons (Allison, 2009). More specifically, instead of comparing participants who have versus have not experienced confinement, changes in each participant’s average

internalizing problems across the time series is contrasted with levels of these problems in the years before, during, or after confinement, after controlling for other time-varying covariates. Due to the inability of time-stable characteristics (e.g. race, temperament, upbringing), either observed or unobserved, to explain within-individual changes in internalizing problems over time, fixed-effects models inherently control for potential time-stable confounding factors (Allison, 2009). Nevertheless, it is still necessary to account for time-varying factors. Consequently, all of the following analyses control for co-occurring changes in externalizing problem behaviors, arrest, and assessment wave (contrast coded).

Model 1. The current study first analyzed how changes in confinement in any type of correctional facility (i.e., juvenile detention, jail, or prison) influence changes in internalizing problems over time. The general equation for Model 1 is shown below:

$$y_{it} = \beta_0 + \beta_1(\text{before confinement})_{it} + \beta_2(\text{during confinement})_{it} + \beta_3(\text{recently released})_{it} + \beta_4(\text{year after release})_{it} + \sum \beta_z(\text{Covariates}) + \varepsilon_{it}$$

In this equation, y_{it} represents internalizing problems reported by an individual participant i at year t . The individual-specific, time-stable effects are represented by β_0 and the variation over time attributed to random error is represented by ε_{it} . Moreover, β_1 signifies the change in internalizing the year before confinement, β_2 denotes the change in internalizing during confinement, β_3 represents the change in internalizing in years where participants experienced confinement, but were not confined at the time of the interview and β_4 is the change in internalizing in the years after confinement. Lastly, $\sum \beta_z$ represents

the total sum effects of the included time-varying covariates. In order to conduct the most stringent test of the hypotheses, the magnitude of the estimated coefficients were compared to assess significant differences (e.g., $\beta_3 - \beta_1 = 0$) using linear combination of estimators.

Model 2. Next, analyses examined facility specific effects of current confinement on internalizing problems. The general equation for Model 2 is displayed below:

$$y_{it} = \beta_0 + \beta_1(\text{before detention})_{it} + \beta_2(\text{in detention})_{it} + \beta_3(\text{after detention})_{it} + \beta_4(\text{before jail})_{it} + \beta_5(\text{in jail})_{it} + \beta_6(\text{after jail})_{it} + \beta_7(\text{before prison})_{it} + \beta_8(\text{in prison})_{it} + \beta_9(\text{after prison})_{it} + \beta_{10}(\text{recently released})_{it} + \sum \beta_z(\text{Covariates}) + \alpha_i + \varepsilon_{it}$$

In Model 1, any confinement in juvenile detention, jail, and prison were examined to assess an overall effect of confinement on changes in internalizing problems. To elucidate potential differences in the effects of different types of confinement, Model 2 analyzes the effects of confinement by facility type on changes in internalizing problems. Accordingly, β_1 , β_2 , and β_3 represent changes in internalizing problems before, during, and after confinement in a juvenile facility respectively. Similarly, β_4 , β_5 , and β_6 denote changes in internalizing problems before, during, and after jail confinement. Finally, β_6 is changes in internalizing problems before imprisonment, β_7 is the change while imprisoned, and β_8 is the change in internalizing problems following imprisonment. In order to conduct the most stringent test of the hypotheses, the magnitude of the estimated coefficients before, during, and after confinement in each facility type were compared to assess significant differences (e.g., $\beta_3 - \beta_1 = 0$) using linear combination of estimators.

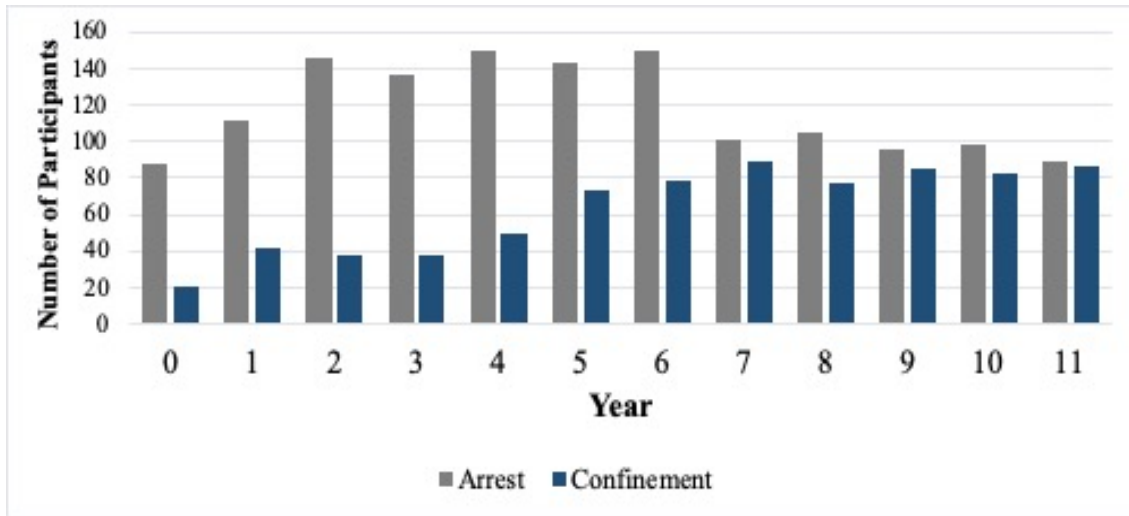
Similarly, to assess differences in estimated responses to confinement across facility types, the magnitude of the estimated coefficients for internalizing problems while currently confined in juvenile detention, jail, and prison were compared (e.g., $B_8 - B_6 = 0$). All analyses were conducted in StataCorp16.1 (StataCorp, 2019).

RESULTS

Descriptive Statistics

Overall, there were 5,287 years of data collected on 502 individuals in the analytic sample (see Table 1). A majority (65.94%, $n=331$) of the sample reported at least one arrest and 40.44% participants reported experiencing at least one confinement (see Figure 2). Of these 203 individuals, 16.26% ($n=33$) reported at least one stay in a juvenile detention facility, 29.06% ($n=59$) reported at least one jail confinement, 27.09% ($n=55$) reported at least one imprisonment, and 93.10% ($n=189$) reported at least one period of being recently released from an unspecified correctional facility. These totals exceed 100% as it was possible for participants to be confined in different facilities at each time point. In total, participants reported 715 confined years comprised of 45 juvenile confinement years, 83 jail years, 184 prison years, and 403 recently released years. On average across the full sample, participants reported an average internalizing score (0 to 2) of 0.18 ($SD=0.22$, $range=0-1.63$). Among those who ever experienced confinement, the average internalizing score across time was 0.27 ($SD=0.28$, $range=0-1.5$).

Figure 2. Justice System Contact by Year



Effects of Confinement on Internalizing Problems

The coefficients for the estimated change in internalizing problems from the fixed effects linear regression in Model 1 are presented in Table 2. Results indicated that changes in externalizing problems were associated with changes in internalizing problems ($B=0.379$, 95% confidence interval [CI]=0.342, 0.415, $p<0.001$). Within-individual changes in arrest were not significantly associated with changes in internalizing problems.

Results indicated there were no significant changes in participants' internalizing problems in the year before or year after confinement, after controlling for other model covariates. However, there was a significant increase in internalizing problems during periods when participants were in confinement ($B = 0.125$, CI=0.090, 0.160, $p < 0.001$) and when they had been recently released from confinement ($B = 0.012$, 95% CI=0.012,

Table 2. Effects of Confinement on Internalizing Problems

	<i>B</i>	<i>SE</i>	<i>CI</i>
<i>Key Variables</i>			
Before	0.017	0.011	-0.005, 0.038
Confined	0.129***	0.018	0.093, 0.165
Recently Released	0.043***	0.012	0.018, 0.067
After	0.012	0.011	-0.009, 0.032
<i>Time-Varying</i>			
<i>Covariates</i>			
Aggressive Problems	0.379***	0.019	0.342, 0.415
Arrest	-0.004	0.005	-0.015, 0.007
<i>Time</i>			
<i>time 0</i>	-	-	-
<i>time 1</i>	-0.009	0.006	-0.024, 0.006
<i>time 2</i>	-0.009	0.007	-0.021, 0.013
<i>time 3</i>	-0.004	0.009	-0.011, 0.024
<i>time 4</i>	0.007	0.009	0.007, 0.043
<i>time 5</i>	0.025**	0.009	0.002, 0.038
<i>time 6</i>	0.020*	0.009	0.015, 0.053
<i>time 7</i>	0.034***	0.010	0.001, 0.041
<i>time 8</i>	0.021*	0.010	-0.017, 0.022
<i>time 9</i>	0.003	0.010	-0.005, 0.036
<i>time 10</i>	0.015	0.010	0.069, 0.116
<i>time 11</i>	0.092***	0.012	-0.025, 0.015
Constant	-0.005	0.010	0.017, 0.055
Observations (Years)	5,287		
R-squared	0.250		
<i>N</i>	502		

M=mean, *SE*= standard error, *CI*= confidence interval.

Estimated changes in anxious/depressed mean scores (0 to 2) before, during, and after confinement by facility type compared to all non-confinement years. Contrast group for time is time 0.

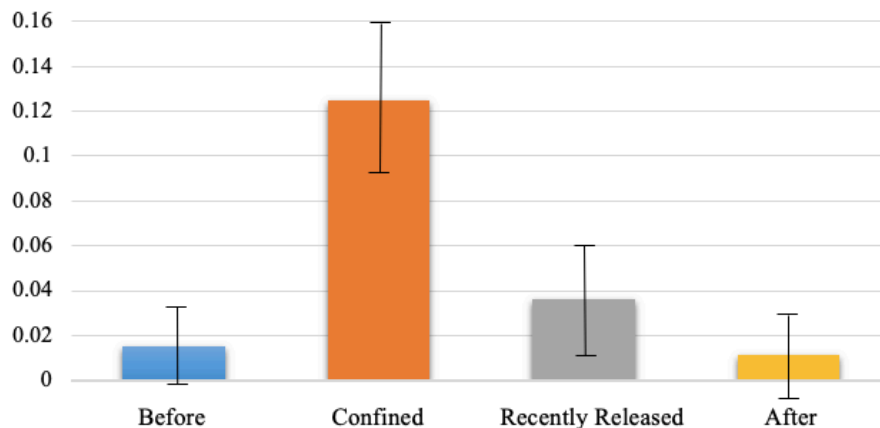
*** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$

0.060, $p < 0.01$). That is, internalizing problems were significantly worse while confined and when recently confined relative to reference years. To comprehensively assess the acute and sustained impact of confinement, differences between coefficients for

internalizing problems in periods before, during, recently released, and after confinement were assessed. The estimated increase in internalizing problems during confinement ($B = 0.12$, $SE=0.018$, $p < 0.001$) was significantly higher than in years before confinement ($B = 0.017$, $SE=0.011$, $p = 0.13$; $diff=0.112$, $SE=0.018$, $p < 0.001$), in years recently released ($B = 0.043$, $SE=0.012$, $p < 0.01$; $diff=0.086$, $SE=0.016$, $p < 0.001$), and years after any confinement ($B = 0.012$, $SE=0.011$, $p = 0.27$; $diff=0.117$, $SE=0.017$, $p < 0.001$).

Additionally, increases in internalizing problems in years recently released ($B = 0.043$, $SE=0.012$, $p < 0.01$) were significantly higher ($diff=0.026$, $SE=0.012$, $p < 0.05$) than estimated internalizing problems in years before confinement ($B = 0.017$, $SE=0.011$, $p = 0.13$) and years after confinement ($B = 0.012$, $SE=0.011$, $p = 0.27$; $diff=0.031$, $SE=0.012$, $p < 0.01$). However, there were no significant differences in estimated internalizing problems before confinement and after confinement ($diff=0.005$, $SE= 0.013$, $p=0.69$). These analyses revealed internalizing problems in years recently confined are significantly lower than in years currently confined. However, internalizing problems seem to return to pre-confinement levels by the year after confinement.

Figure 3. Estimated Within-Individual Changes in Internalizing Problems



Facility Specific Effects of Current Confinement on Internalizing Problems

The coefficients from the fixed-effects analyses for Model 2 examining the within-individual changes in internalizing problems for current confinement separated by facility type are presented in Table 3.

Juvenile Detention. Results indicated there were no significant changes in participants internalizing problems in the year before or year after juvenile confinement, after controlling for other model covariates. However, there were significant increases in internalizing problems ($B = 0.131$, $CI=0.051, 0.212$, $p=0.001$) during juvenile confinement. Post hoc analyses revealed no significant differences in internalizing problems in years before ($B = 0.043$, $SE=0.041$, $p=0.30$) and after confinement ($B = -0.042$, $SE=0.041$, $p=0.30$; $diff=0.085$, $SE=0.046$, $p=0.065$) using a threshold of $p<.05$. Additionally, differences in internalizing problems before confinement ($B = 0.043$, $SE=0.041$, $p=0.30$) and during confinement ($B = 0.131$, $SE=0.041$, $p=0.001$) approached significance ($diff=0.089$, $SE=0.05$, $p=0.055$), such that internalizing problems were higher during confinement. Lastly, internalizing problems during juvenile confinement ($B = 0.131$, $SE=0.041$, $p=0.001$) were significantly higher than in years after confinement ($B = -0.042$, $SE=0.024$, $p=0.30$; $diff=0.17$, $SE=0.042$, $p<0.001$). These results suggest current juvenile confinement is associated with worse internalizing problems. However, increases in internalizing problems do not precede juvenile confinement and seem to return to pre-confinement levels by the year after confinement.

Jail. Findings revealed no significant changes in participants internalizing problems in the year before or year after reporting jail confinement, after accounting for other model covariates. There were significant increases in internalizing problems

($B = 0.072$, $CI=0.029, 0.115$, $p=0.001$) during jail confinements. Post hoc analyses revealed no significant differences in internalizing problems in years before ($B = -0.001$, $SE=0.016$, $p=0.97$) and after confinement ($B = 0.00$, $SE=0.021$, $p=0.99$; $diff=0.001$, $SE=0.027$, $p=0.977$). Additionally, internalizing problems in years before confinement ($B = -0.001$, $SE=0.016$, $p=0.97$) significantly increased in years confined ($B = 0.072$, $CI=0.029, 0.115$, $p=0.001$; $diff=0.0728$, $SE= 0.023$, $p<0.05$) before significantly decreasing by the year after ($B = -0.001$, $SE=0.016$, $p=0.97$, $diff=0.0720$, $SE= 0.030$, $p<0.05$). Thus, jail-specific analyses suggest that confinement in jail is associated with worse internalizing problems and these findings neither precede jail confinement nor persist one year after confinement.

Prison. Internalizing problems were significantly higher in years before confinement in prison ($B = 0.066$, $CI=0.024, 0.108$, $p<0.01$) and during imprisonment ($B = 0.148$, $CI=0.098, 0.199$, $p<0.001$) compared to non-confinement years. However, internalizing in years after confinement did not significantly differ from reference years. Post hoc analyses indicate internalizing problems are significantly higher in years before confinement in prison ($B=0.067$, $SE=0.02$, $p<0.01$) than in years after ($B=-0.037$, $SE=0.026$, $p=0.15$; $diff=0.102$, $SE=0.031$, $p=0.001$). Further, internalizing problems in years before confinement ($B=0.067$, $SE=0.02$, $p<0.01$) significantly increase in years during prison confinement ($B = 0.148$, $SE=0.26$, $p<0.001$; $diff=0.082$, $SE=0.027$, $p<0.01$) before significantly decreasing in years after confinement ($B=-0.037$, $SE=0.026$, $p=0.15$; $diff=0.19$, $SE=0.031$, $p<0.001$). Prison-specific analyses suggest that periods before and during confinement are associated with increases in internalizing problems; however, the years after confinement are not.

Table 3. Facility Specific Effects of Current Confinement on Internalizing Problems

	<i>b</i>	SE	CI
<i>Juvenile Detention</i>			
Before	0.043	0.041	-0.038, 0.124
Confined	0.131**	0.041	0.051, 0.212
After	-0.042	0.024	-0.090, 0.005
<i>Jail</i>			
Before	-0.001	0.016	-0.032, 0.031
Confined	0.072**	0.022	0.029, 0.115
After	0.000	0.021	-0.041, 0.042
<i>Prison</i>			
Before	0.066**	0.022	0.024, 0.108
Confined	0.148***	0.026	0.098, 0.199
After	-0.037	0.026	-0.087, 0.014
Recently Released	0.036***	0.011	0.015, 0.057
<i>Time-Varying Covariates</i>			
Aggressive Problems	0.380***	0.019	0.343, 0.416
Arrest	-0.002	0.006	-0.013, 0.009
Time	-0.009	0.008	-0.024, 0.006
<i>time 0</i>	-	-	-
<i>time 1</i>	-0.003	0.009	-0.020, 0.014
<i>time 2</i>	0.009	0.009	-0.008, 0.027
<i>time 3</i>	0.027**	0.009	0.009, 0.045
<i>time 4</i>	0.021*	0.009	0.003, 0.039
<i>time 5</i>	0.035***	0.010	0.016, 0.054
<i>time 6</i>	0.023*	0.010	0.003, 0.042
<i>time 7</i>	0.004	0.010	-0.016, 0.024
<i>time 8</i>	0.017	0.010	-0.003, 0.038
<i>time 9</i>	0.094***	0.012	0.070, 0.117
<i>time 10</i>	-0.004	0.010	-0.023, 0.016
<i>time 11</i>	0.035***	0.010	0.016, 0.054
Constant	0.380***	0.019	0.343, 0.416
Observations (Years)	5,287		
R-squared	0.254		
<i>N</i>	502		

M=mean, *SE*= standard error, *CI*= confidence interval.

Estimated changes in anxious/depressed mean scores (0 to 2) for current confinement by facility type. Reference group for coefficients are all other waves. Contrast group for time is time 0.

*** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$

Comparison of Internalizing Problems During Confinement

Comparing estimated coefficients of internalizing problems while confined in juvenile detention, jail, and prison offers information about relative responses to confinement across facility types. Results indicate internalizing problems in prison were significantly worse than internalizing problems in jail ($diff=0.078$, $SE=0.030$, $p<0.05$). Although higher in prison than in juvenile detention, there were no significant differences in internalizing problems while confined in a prison or juvenile facility ($diff=0.018$, $SE=0.048$, $p=0.713$). Further, there were no significant differences while confined in a juvenile or jail facility ($diff=0.061$, $SE=0.046$, $p=0.184$). This suggests that confinement across facilities is similarly distressing overall; however, internalizing problems were most severe in prison.

DISCUSSION

The present study followed a sample ($n=502$) of male adolescents over the transition to adulthood to examine the extent to which confinement was associated with short- and longer-term increases in internalizing problems. Overall, analyses indicated internalizing problems increased during periods of confinement and during periods when men had been recently released from confinement. However, internalizing problems returned to pre-confinement levels by the following year. Facility specific analyses suggested that periods of prison confinement resulted in the most pronounced increase in internalizing problems. This study uniquely contributes to the literature by examining the timing of the association between confinement and internalizing problems, as well as comparing differences in responses to juvenile detention, jail, and prison confinement.

These findings are important because they indicate that net of the impact of arrest and co-occurring changes in externalizing problems and beyond between-individual differences, secure confinement influences internalizing problems.

Consistent with previous studies adopting within-individual approaches (Porter & Demarco, 2019; Sugie & Turney, 2017), it was hypothesized that internalizing problems would increase during confinement and these increases would be sustained into the year following confinement. Compatible with prior cross-sectional studies (Cauffman, 2004; Teplin et al., 2002) and studies on confined samples during confinement (Brown & Ireland, 2006; Shulman & Cauffman, 2011) and reentry (Thomas et al., 2016), results demonstrated current and recent confinement were consistently associated with increased internalizing problems. Further examining the timing of this association revealed the hypothesis was partially supported such that preexisting internalizing problems were exacerbated while confined and slightly elevated post-release before returning to pre-confinement levels one year later. Contrary to the hypothesized association, these findings indicate an acute, short-term effect of confinement on internalizing problems.

Findings from the current study proffer an explanation bridging seemingly divergent findings from recent studies examining the effects of confinement using fixed-effects analyses and propensity score matching. On one hand, studies using the within-individual, fixed-effects approach linking confinement to increases in internalizing problems failed to assess the duration of the observed changes in internalizing problems (Sugie & Turney, 2017; Porter & Demarco, 2019). Whereas, between-individual comparisons using propensity-score matching methodology that found no lasting impact of confinement on internalizing problems lack the ability to examine shorter, within-

individual changes (Craig et al., 2018; White et al., 2010). By examining the timing of the association between confinement and internalizing problems, the current study suggests these seemingly disparate findings are indeed complementary due to transitory effects of confinement. That is, the previous within-individual approaches may have identified the shorter-term increases in internalizing problems while the between-individual approaches may have identified the return to pre-confinement levels of self-directed problem behaviors.

Although findings from the current study suggest limited duration of the impact of confinement on internalizing problems, it is possible that confinement plays an indirect role on the development of internalizing problems. Research on the etiological factors of internalizing problems suggests the emergence of problem behaviors may depend on the extent of exposure to life stressors (Horwitz, Widom, McLaughlin, & White, 2001). Results suggest confinement, similar to poverty, abuse, neglect, and parental separation, are a significant life stressor. Alternatively, it is possible that confinement produces sustained increases for individuals with a pre-existing propensity for developing internalizing problems or unmeasured aspects of the confinement experience (e.g., victimization, duration) may cause some individuals to experience delayed consequences of confinement. Indeed, there is some evidence of the prolonged impact of confinement (Barnert et al., 2017; Porter & Demarco, 2019). However, parsing out these interaction effects and assessing changes in internalizing problems beyond the year after confinement was outside the scope of the current study.

It was also hypothesized that jail would be associated with the largest increase in internalizing problems due to high turnover rate, punitive orientation, and secure

conditions. Overall, internalizing problems increased during confinement and abated by the year after across each facility type. Contrary to the hypotheses and previous literature (Porter & Demarco, 2019), prison confinement was associated with the largest increase in internalizing problems. However, these findings may be due to exceptionally poor treatment of individuals with mental health problems in Pennsylvania Prison facilities at the time. In 2014, the Civil Rights Division of the United States Department of Justice found the Pennsylvania Department of Corrections engaged in unconstitutional use of solitary confinement for prisoners with serious mental illness during this time (Samuel & Hickton, 2014). Thus, these divergent findings may be due to facility-level characteristics.

Prison specific effects were also unique in two more important ways. First, internalizing problems were increased prior to prison confinement. This finding was surprising considering higher levels of internalizing problems typically predict less justice-system involvement (Hirschfield et al., 2006). Second, the only sustained effects of confinement were significant reductions in internalizing symptoms following imprisonment compared to before prison confinement. Given the increase in internalizing problems prior to confinement relative to non-confinement years, this suggests the reduction in internalizing problems is likely due to a third variable rather than indicating a beneficial impact of confinement. Notably, the study found that when accounting for the increases prior to confinement, the association between confinement and internalizing problems during confinement remained. This suggests that above and beyond pre-confinement stressors, prison confinement further exacerbated internalizing problems.

Limitations

Although this study has many strengths, it is important to contextualize these findings within their limitations. First, this high-risk community sample was comprised solely of male adolescents from Pittsburgh, Pennsylvania. Although this sampling strategy is optimal for prospectively examining youth likely to develop criminal behavior over time, generalizability may be limited to areas with different demographic compositions. Additionally, despite the high confinement rate (41%), the within-individual, estimated changes in internalizing problems were aggregated from a relatively small amount of participants who experienced confinement (n=203). Future studies using a similar approach on more diverse samples would be beneficial to add confidence to the current study's findings.

As one of the first studies to focus on the timing of the association of confinement on internalizing problems, the present study assessed only main effects of confinement on the development of internalizing problems up to one year following confinement. It is possible that time-varying moderators such receiving mental health treatment, victimization, or individual propensity to develop anxiety or depression may affect the severity and duration of changes in internalizing problems. It is also possible that time stable characteristics (e.g., race, temperament) may also influence the development of internalizing problems.

Furthermore, there remain aspects of the consequences of confinement that were unmeasured by the present study. Although externalizing problems are highly comorbid with internalizing disorders and may influence internalizing problems, the effect of confinement on externalizing problems was not explored. Due to the focus on whether

confinement was associated with any within-individual change in internalizing problems, another key limitation of this study is the lack of differentiation between clinical and subclinical manifestations of internalizing problems. Consequently, changes in internalizing problems may be normative, adaptive responses to the correctional confinement experience. Although confinement exacerbated pre-existing levels of internalizing problems and reports of suicidal ideation during confinement (Abram et al., 2008) imply clinical impairment for some individuals, distinguishing between maladaptive and adaptive internalizing problems was beyond the scope of this study.

Implications and Future Directions

Results support an acute negative effect of confinement on internalizing problems. In light of these findings, intervention efforts geared towards ameliorating or preventing internalizing problems should focus on periods of confinement and reentry. For example, reentry programs providing social support during the transition from confinement throughout the first year following confinement may prove beneficial for reducing anxiety, fear, and suicidal ideation. Further, these results suggest individuals do not return to pre-confinement functioning until one year after returning to the community without being re-confined. These findings suggest that it may be necessary to adjust expectations of the capacity of recently confined individuals to accomplish sanctions as they adjust back into the community.

It is important to note that while internalizing problems post-confinement returned to pre-confinement levels, studies consistently show disproportionate prevalence of internalizing problems among justice-involved individuals compared to uninvolved

individuals regardless of confinement status (Cauffman, 2004; Fazel et al., 2016; Schnittker, Massoglia, & Uggen, 2012; Teplin, 2002). Therefore, justice-involved populations are a high mental health needs population. Though, studies examining the consequences of confinement without controlling for relevant time-stable and time-varying confounding factors may overestimate the independent contribution of the confinement experience to the development of mental illness. Results from the present study underscore the importance of early interventions aimed at reducing exposure to shared risk factors for developing internalizing problems and engaging in criminal behavior.

Future studies aiming to determine the independent effects of justice-system contact such as confinement may benefit from adopting examining the timing of the association between confinement and mental health using a within-individual approach across larger, more diverse samples to replicate and build upon the current findings. Moreover, examining the impact of correctional confinement on alternative mental health outcomes may reveal important differences in the consequences of confinement. Important aspects to consider in future assessments of the impact of correctional confinement include the frequency, duration, and developmental timing of confinement on subsequent changes in mental health as well as indirect effects of confinement.

CONCLUSION

This study contributes to the literature on the consequences of confinement by examining the timing of the within-individual association between confinement and internalizing problems using a higher risk, school-based sample of male adolescents.

Above and beyond between-individual differences, confinement was significantly associated with increased internalizing problems during periods of confinement or recent confinement. However, findings indicate the impact of confinement on internalizing problems is relatively acute as there were no changes in internalizing problems by the year after confinement. Results of this study also suggest that individuals respond similarly to confinement regardless of facility type; however, confinement in prison predicted the largest increase in internalizing problems. Thus, interventions geared towards addressing internalizing problems should focus on adjustment during confinement and the reentry period.

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APPENDIX
SAMPLE CHARACTERISTICS

Retention Rate

Retention Rates														
Time	0	1	1	2	3	4	5	6	7	8	9	10	11	
Number	480	460	458	449	433	421	472	454	436	445	440	438	427	421
Percent	94.9	90.9	90.5	88.7	85.6	83.2	93.3	89.7	86.2	87.9	87	86.6	84.4	83.2
Deceased	0	0	0	0	0	0	3	6	6	10	11	14	15	16

Note: Percent shown is the percentage of the total sample that was interviewed; the total includes participants who had died before the phase was conducted.

Follow-Up Interviews

Oldest Cohort (N=506)																	
Grade	7th	8th	8th	9th	9th	9th	9th	10th	10th	11th	11th	12th					
Mean age	12.6	13.1	13.6	14.1	14.6	15.1	16	17	18	19	20	21	22	23	24	25	34.8
Informants	P,T,C	P,T,C	P,T,C	P,T,C	P,C	C	C	C	C	C	C	C	C	C	C	C	C
Time			0	0	1	1	2	3	4	5	6	7	8	9	10	11	16

Note: C= child interview, P=parent interview, T=teacher interview