



Cognitive abilities and antisocial behavior in prison: A longitudinal assessment using a large state-wide sample of prisoners



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ABSTRACT

Cognitive abilities have been shown to have both direct and indirect effects on antisocial behavior in a wide variety of contexts, including inmate misconduct. Nevertheless, although the findings have been robust, no assessments have offered an examination of the association between cognitive abilities and longitudinal variation in the frequency of inmate misconduct during imprisonment. In an effort to address this gap within the literature, the current study directly examines the longitudinal association between cognitive abilities and the frequency of inmate misconduct during imprisonment. Analyses were conducted using data collected during the state-wide Evaluation of Ohio's Prison Programs. The analytical sample of $N = 88,145$ and the 5 ½ year period represent one of the largest and longest assessments of the frequency of inmate misconduct clusters within prison and the first to examine the influence of cognitive abilities on such clustering. The results of growth curve analyses (GCA) indicated that higher cognitive abilities were associated with a lower intercept and a more gradual decline in the frequency of misconduct over time when compared to individuals with lower cognitive abilities. This pattern was also partially supported by the misconduct clusters estimated during latent class growth analysis (LCGA). Overall, the findings indicate that cognitive abilities affect both the clustering and the frequency of prison misconduct.

1. Introduction¹

The aggregation of antisocial people within prison generates sizable concerns for staff and inmate safety (Steiner, Butler, and Ellison, 2014). At the forefront of the challenges facing staff within correctional facilities is inmate misconduct. Inmate misconduct refers to the violation of within-prison policies, which generally corresponds to the behavioral tendencies that infringe upon the rights of other inmates and prison staff. While numerous assessments have examined the predictors of within-prison misconduct using cross-sectional data (e.g., Steiner et al., 2014), only a limited number of longitudinal assessments of prison misconduct exist (e.g., Cihan, Sorensen, and Chism, 2017a; Cochran, 2012; Reidy et al., 2017). Furthermore, of the available extant literature (e.g., Diamond, Morris, and Barnes, 2012; Gendreau, Goggin, and Law, 1997; Soyer et al., 2017) no empirical examinations have assessed the association between cognitive abilities and prison misconduct using longitudinal methodologies. Thus, given the limited research presented in the corrections literature and the robust observation of the long-term effects of cognitive abilities in a wide variety of contexts in the intelligence literature (e.g., Boutwell, Meldrum, and Petkovsek, 2017; Deary et al., 2007; Karwowski et al., 2017), it is reasonable to expect that cognitive abilities could affect behavior over a long period of time even in a highly controlled environment like prison. However, this

expectation remains an unaddressed empirical question.

In an effort to address the limitations in the existing literature, the current study presents a two-part empirical examination of the longitudinal association between cognitive abilities and the frequency of inmate misconduct during imprisonment. First, the longitudinal association between cognitive abilities and the frequency of inmate misconduct during imprisonment was examined at the baseline using a random intercept model and random intercept growth curve analysis (GCA) to assess the magnitude of the longitudinal association. Second, in an effort to account for the potential concealment of longitudinal variation on misconduct trajectories, clusters based on the frequency of inmate misconduct were approximated using latent class growth analysis (LCGA). Further, post-LCGA models were estimated where a measure of cognitive abilities was used to predict between- and within-cluster variation on the longitudinal misconduct trajectory. This methodology allows for the examination of variation that likely exists in multiple clusters that would be concealed using methods other than LCGA. The current assessment represents one of the largest ($N = 88,145$) and longest (five and a half years) examinations of the association between cognitive abilities and the frequency of inmate misconduct during imprisonment.

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2. Cognitive abilities and antisocial behavior

Scholarship assessing the association between cognitive abilities and antisocial behavior has a longstanding history within disciplines such as criminology and psychology (e.g., Loeber et al., 2012; McGloin, Pratt, and Maahs, 2004; Moffitt, Gabrielli, Mednick, and Schulsinger, 1981; Yun and Lee, 2013). Although some analyses assumed a spurious association (e.g., Cullen et al., 1997; Wright and Miller, 1998), scholars have consistently demonstrated that a robust direct association between cognitive abilities and antisocial behavior exists (e.g., Herrnstein and Murray, 1994; Hirschi and Hindelang, 1977; Lynam, Moffitt, and Stouthamer-Loeber, 1993; Moffitt et al., 1981). For example, empirical assessments have demonstrated that cognitive abilities were associated with delinquency independent of socioeconomic status (Moffitt et al., 1981), that the differential detection hypothesis put forth by various critics (e.g., Stark, 1975) is only valid in certain circumstances (Moffitt and Silva, 1988; Schwartz and Beaver, 2018), and that the reverse causality hypothesis (i.e., engagement in antisocial behavior reduces cognitive abilities) leveled by other critics was likely false (Boccio and Beaver, 2017; Hare, 1984; Lynam et al., 1993; Shanok and Lewis, 1981). More recently, scholarship assessing the association between a variety of measures of cognitive abilities and antisocial behavior has directed focus away from demonstrating the relationship between the two concepts towards investigating the functional form of the association (e.g., Mears and Cochran, 2013; Schwartz et al., 2015), the indirect effects of the association (e.g., Silver and Nedelec, 2018), and the protective effects of cognitive abilities on antisocial behavior (Tfofi et al., 2016). Of importance to current study are the various longitudinal assessments of the relationship between cognitive abilities and antisocial behavior.

2.1. The longitudinal association between cognitive abilities and antisocial behavior

Consistent with contemporary criminological scholarship, longitudinal data has cultivated innovative approaches in examining the association between cognitive abilities and antisocial behavior. Recently, Tfofi et al. (2016) conducted a meta-analysis assessing the effects of cognitive abilities on antisocial behavior which included fifteen prospective longitudinal studies (the fundamental inclusionary criteria for the meta-analysis) spanning six different countries. The results of the meta-analysis indicated that cognitive abilities were associated with subsequent antisocial behavior, where individuals with lower IQ scores had a higher probability of offending than individuals with higher IQ scores (OR = 2.32). Furthermore, cognitive abilities functioned as a protective factor attenuating the effects of adverse environmental conditions (e.g., parental separation, deleterious rearing environments, and poor housing).

Schwartz and Beaver (2018) advanced the existing literature by examining the longitudinal association between cognitive abilities and being arrested. Data for the analysis was derived from the Pathways to Desistance Study, a longitudinal sample of 1354 previously adjudicated youth in Arizona and Pennsylvania. Schwartz and Beaver (2018) employed survival analysis with time-stable covariates and a latent measure of criminality to examine the effect of cognitive abilities on the likelihood of arrest. The findings indicated that lower levels of cognitive abilities were associated with an increased likelihood of being arrested earlier even after controlling for criminality, impulsivity, and socioeconomic status. The authors concluded that the results supported the differential detection hypothesis, where individuals with lower levels of cognitive abilities were more likely to be arrested than individuals with higher levels of cognitive abilities. While the vast majority of scholarship on the longitudinal association between cognitive abilities and antisocial behavior has done so employing multi-wave data (e.g., Beaver et al., 2013; Boccio et al., 2018; Silver and Nedelec, 2018; Yun & Lee, 2013), Schwartz and Beaver's (2018) article represents one of the

first statistical analyses examining the variation in antisocial trajectories predicted by cognitive abilities. Thus, the limited scholarship employing longitudinal methods (e.g., multi-level longitudinal models, growth curve analysis, and latent class growth analysis) to examine the association between cognitive abilities and antisocial behavior points towards a long-term association. However, given the exclusive use of community-based samples the extent to which these observed longitudinal associations manifest in non-community settings, such as prison, is relatively unknown.

3. Cognitive abilities and inmate misconduct

By housing approximately one million inmates in a given year, prison represents one of the largest non-community settings in the United States (Carson, 2018). Commonly, antisocial behavior within correctional settings is classified as inmate misconduct. Although broad, inmate misconduct generally encompasses a variety of antisocial behaviors including – but not limited to – fighting, selling drugs, and unruly behaviors (Steiner and Wooldredge, 2014). In the criminological literature, inmate misconduct is generally considered another form of antisocial behavior and can be subjected to similar theoretical expectations (e.g., Irwin and Cressy, 1962; Lindsey et al., 2017; Mears et al., 2013; Morris and Worrall, 2014; Steiner, Butler, and Ellison, 2014; Steiner, 2016).

Consistent with much of the criminological literature, correctional scholars have historically downplayed the existence of an association between cognitive abilities and inmate misconduct (Brown and Spevacek, 1971; Coe, 1961; Jaman et al., 1966; Wolfgang, 1961; Zink, 1958). Nevertheless, there has been a small accumulation of literature that has examined the relationship between cognitive abilities and the frequency of inmate misconduct. The earlier literature in this area was included in a meta-analysis by Gendreau et al. in 1997. While Gendreau et al.'s meta-analysis included 677 effect sizes derived from 39 published and unpublished assessments of inmate misconduct between 1940 and 1995, only 14 effect size estimates ($N = 3588$) pertained to the association between cognitive abilities and inmate misconduct. Encompassed within the operationalization of cognitive abilities were estimates of the association between the Raven Matrices test, IQ tests, problem-solving skills, and the California Personality Inventory and inmate misconduct. Overall, the mean effect size of the association between cognitive abilities and inmate misconduct was $z_+ = -0.04$ (95%CI = $-0.07; -0.01$). Despite the statistically significant association observed between cognitive abilities and inmate misconduct, the authors did not focus on this finding in their discussion.

Since the meta-analysis by Gendreau et al. (1997) only three individual studies have examined the association between cognitive abilities and inmate misconduct. First, Morris et al. (2012) employed data ($N = 6328$) from a large southern state to assess the impact of various inmate- and institutional-level variables on violent misconduct. Included in their list of inmate-level variables was a measure of intelligence obtained from the Weschler Adult Intelligence Scale-Revised (WAIS-R) exam delivered during the inmate's most recent prison sentence. Although employed only as a covariate and not a focal point of the analyses, the findings regarding IQ are nonetheless relevant to the current study. Using latent class growth analysis, the authors observed that lower intelligence was predictive of inmates who engaged in chronic violent misconduct. Additionally, the findings illustrated that intelligence was negatively associated with the intercept of the misconduct trajectory. However, given that the focus of the study was not on the association between IQ and inmate misconduct the authors did not discuss these observations. The final two studies, however, did focus on such an association and provided direct tests of the potential link between cognitive abilities and inmate misconduct.

Diamond et al. (2012) assessed the association between cognitive abilities and inmate misconduct employing a multi-level approach. Specifically, through the use of data collected from 2500 inmates

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