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Improved Educational Achievement as a Path to Desistance

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Abstract

In this article we present a summary of the literature on the associations between learning difficulties/disabilities and juvenile delinquency. This literature is almost a hundred years old, but, although reportedly demonstrating the low academic achievement–delinquency connection, contains numerous unanswered questions regarding the frequency, strength, direction, stability, and causality of these associations. We then use this literature to contextualize the research taking place at the Houston Learning Disabilities (LD) Hub, a member of the LD Centers and Hubs Network, supported by National Institute of Child Health and Human Development (NICHD). In doing so, we present our previous studies and our current research. We conclude by discussing a number of shortcomings in the literature, some—but far from all—of which we hope to address in our ongoing work.

The prevalence rate of extremely high-risk youth¹ is estimated as being 1–2% of the general population (U.S. Governmental Accountability Office, 2008); these rates appear to be consistent internationally (e.g., U.S. Governmental Accountability Office, 2008; Israel Central Bureau of Statistics, 2009). Yet, the U.S. juvenile court (also referred to as juvenile justice, JJ) system is the largest in the world (Bochenek, 2016). The size of the system is, in part, rooted in its history. The Juvenile Justice and Delinquency Prevention Act of 1974 established the aim of the JJ system as the protection and diversion of detained youth from the formal and punitive adult justice (AJ) system; the primary goal was to rehabilitate, not to punish. However, a short-lived surge in juvenile delinquency in the 1980s prioritized the safety of the community (Fried & Reppucci, 2001; Fritsch, Caeti, & Hemmens, 1996; Jenson, Potter, & Howard, 2001), and this surge changed the JJ system's primary focus from rehabilitation/medicalization to punishment/criminalization (Cocozza & Skowrya, 2000; Fried & Reppucci, 2001; Jenson et al., 2001). Specifically, in the early 1990s more than half of the states in the United States passed more punitive laws to address adolescent crime and to prosecute youths in the AJ system (Fried & Reppucci, 2001; Wald & Losen, 2003).

Although juvenile crime in the United States has decreased consistently since the 1990s (Unruh & Bullis, 2005), the number of youths processed in the JJ system has increased (Harms, 2002). To illustrate, JJ courts, on average, processed daily 1,100 delinquency cases in 1960, 4,000 in 2009, and 2,900 in 2013 (Hockenberry & Puzzanchera, 2015). In 2015,

Notes

¹ Pursuant to 20 USCS § 1087ii (b), [Title 20. Education; Chapter 28. Higher Education Resources And Student Assistance; Student Assistance; Federal Perkins Loans] the term “high-risk children” refers to “individuals under the age of 21 who are low-income or at risk of abuse or neglect, have been abused or neglected, have serious emotional, mental, or behavioral disturbances, reside in placements outside their homes, or are involved in the juvenile justice system.” “Extremely” here indicates either at the utmost degree of risk factors (e.g., abuse or neglect) or with the greatest severity of disturbances.

there were more than 31 million youth under juvenile court jurisdiction (Hockenberry & Puzzanchera, 2018). Law enforcement agencies made an estimated 921,600 arrests of persons under the age of 18 (OJJDP, 2018) accounting for about 8.5% of all arrests (DOJ, 2015). Of the 884,900 delinquency cases processed (or 28.1 delinquency cases for every 1,000 juveniles in the population), 52% involved youth younger than 16, 28% involved females, and 43% involved White youth (Hockenberry & Puzzanchera, 2018). Although statistics vary from year to year, about 68% of arrests are sent to the courts, approximately 50% of those advance to formal legal processing, and about 26% of those result in commitment to a juvenile correctional facility (Sickmund & Puzzanchera, 2014). Importantly, a substantial number of JJ-involved youth recidivate (~55% are rearrested and ~24% get adjudicated), reentering the system multiple times (Development Services Group, 2017).

Youth from racial/ethnic minority and low-income backgrounds are overrepresented in the JJ system (Gatti, Tremblay, & Vitaro, 2009; Puzzanchera & Adams, 2011), as are youth with mental health problems. It has been reported that the majority of JJ-involved youth (65–70%) have at least one diagnosable, and 20–25% have serious, mental health problem (Shufelt & Coccozza, 2006; Teplin, Abram, McClelland, Dulcan, & Mericle, 2002; Wasserman, McReynolds, Lucas, Fisher, & Santos, 2002). One of the most often observed diagnoses among JJ-involved youth is that of learning disabilities, LD (Grigorenko, 2006).

The link between learning difficulties and delinquency has been noted since the nineteenth century (Lindsay, 2002; Lund, 1990; Murphy, Harrold, Carey, & Mulrooney, 2000). Notwithstanding multiple inquiries into this association at all of its levels (schools, courts, detention, and post-adjudication facilities), it is, perhaps, one of the most controversial cause-and-effect conundrums. Seen as a school-to-prison pipeline, this connection has funneled youth with LD in disproportionate numbers into the JJ system (Federal Advisory Committee on Juvenile Justice, 2010) and has gained the attention and concern of many policy makers and stakeholders (Mallett, 2014).

The purpose of this article is twofold. First, we review the literature on the connection between learning difficulties/disabilities and delinquency. Second, we exemplify some of the points from this literature with data available through the Houston LD Hub—a member of the LD Centers and Hub network that focuses on JJ youth.

Learning Difficulties, Learning Disabilities, and Delinquency: A Capsule Literature Review

The association between learning difficulties/disabilities and delinquency has been registered in four different lines of research. The first two lines include studies with samples drawn from the general population, specifically, the research (1) examining academic difficulties as a risk factor for delinquent behavior and (2) focusing on the diagnosis or presence of LD as a risk for entry into the JJ system. The other two lines focus on JJ-involved youth, specifically, research on (3) the presentation of academic difficulties among JJ-involved youth and (4) the prevalence of LDs among these youth. Here, we briefly

comment on these four lines of research, clustering them by the (sub)populations (general or JJ-involved) from which the corresponding samples were drawn.

Academic Difficulties and LD as Risk Factors for Delinquency in the General Population

At younger ages, academic failure (Hawkins et al., 2000) and risk-taking and difficult behaviors (McEvoy & Welker, 2000; Snyder, Espiritu, Huizinga, Loeber, & Petechuk, 2003) are associated with an increased risk for later delinquent behaviors. In adolescents, academic difficulties are disproportionately represented among those who are suspended, expelled, and/or drop out of high school (Keleher, 2000); congruently, poor school performance and school truancy have been linked to delinquent behaviors (Farrington, 1986; Hagan & McCarthy, 1997; Hawkins et al., 1998; Simons, Whitbeck, Conger, & Conger, 1991). Similarly, suspensions, expulsions, and drop-outs have been associated with delinquency in general and serious offending in particular (Hawkins et al., 2000; Sum, Khatiwada, McLaughlin, & Palma, 2009). Also, academic difficulties are not only predictors of delinquency and dropout (Risler & O'Rourke, 2009); there is also a documented connection between such difficulties and alcohol and drug use, acts of aggression, and sexual activity (McNamara, Vervaeke, & Willoughby, 2008). Based on this and related evidence, the American Academy of Pediatrics has recommended early identification of and intervention with youth experiencing school difficulties as a means of lowering the odds of involvement with the JJ system (American Academy of Pediatrics Committee on School Health, 2003).

Specific learning disabilities (SLD, also LD as referred to above and below) are the most common of education-related disabilities, identified by the Individuals with Disabilities Education Improvement Act, IDEIA (20 U.S. code chapter 33 §1401 (30); sites.ed.gov/idea/statute-chapter-33/subchapter-I/1401/30) as severe learning difficulties in specific academic areas (reading, mathematics, and writing). In U.S. schools, 2.4 million students (5% of school enrollment) are being provided special education due to LD (Cortiella & Horowitz, 2014). As remediation outcomes are not strong, deficits accumulate with age, so that older youth with LD account for a larger percentage of the total population receiving special education: 14% of youth ages 6–11, but 26% of youth ages 12–17 (U.S. Department of Education, 2009, 2010).

A sizable body of literature reporting on the analyses of nationally representative data examines the association between delinquency and IDEIA-defined disabilities in general and LD in particular (McNamara et al., 2008; McNamara & Willoughby, 2010; Shandra & Hogan, 2012). To illustrate, a sample of 7,232 youth from the U.S. National Longitudinal Survey of Youth 1997 was used to explore the connection between the presence of LD and emotional disturbances (ED), chronic health conditions, sensory conditions, physical disabilities, or multiple conditions and ten delinquent acts, including violence-related delinquency, property crimes, drug offenses, and arrest (Shandra & Hogan, 2012). In these data both LD and ED, uniquely and jointly, were observed to be significant risk factors for eight delinquent acts, whereas other conditions generated only one significant finding, for gang membership, and only when all conditions but LD and ED were combined. The odds

ratios (and their standard errors) varied, but averaged about 1.58. Similarly, in a national sample (Newman, Wagner, Cameto, Knokey, & Shaver, 2010), youth diagnosed with ED and LD in 1990 and 2005 had significantly higher arrest rates in the AJ system compared with other students with disabilities (the first 4 years out of high school; ED 36% and 61%, respectively; LD 16% and 24%, respectively).

Reports from a large ($n = 6,124$) sample from Canada also attest to the presence of an association between LD and delinquency. Specifically, when risk-taking behaviors (substance use, engagement in major and minor delinquency, acts of aggression, and gambling activities) were compared over time in subsamples of youth with ($n = 307$) and without ($n = 307$) LD, it was observed that youth with LD engaged more frequently in smoking, marijuana use, acts of delinquency, acts of aggression, and gambling (McNamara & Willoughby, 2010). When risk-taking behaviors were compared in groups of youth with LD ($n = 230$), with comorbid LD/ADHD ($n = 92$), and without LD or ADHD ($n = 322$) on their substance use, engagement in major and minor delinquency, acts of aggression, sexual activity, and gambling activities, the comorbid combination of LD/ADHD appeared to present the highest risk (McNamara et al., 2008).

The literature on regional research involves smaller samples and is less concordant. Thus, some studies have indicated an overrepresentation of youth with LD among runaways in a Canadian sample from Toronto (Barwick & Siegel, 1996) and in a sample from a large Midwestern city in the United States, among other developmental disabilities (Sullivan & Knutson, 2000). Youth with LD from the states of Oregon and Nevada were found to be at an increased risk of being arrested while in school, as well as within one year after finishing school (Doren, Bullis, & Benz, 1996). A study from Chicago (Chen, Symons, & Reynolds, 2011) explored differences between students with LD and ED. The researchers reported that students with LD only demonstrated slightly higher rates of delinquency compared to students without LD. Students identified with ED, however, consistently had higher rates of juvenile delinquency and adult arrest. Yet, in a longitudinally assessed sample from Seattle, there was no relationship between having LD in fifth grade and number of arrests or participation in violent or nonviolent delinquent activity in the year before an interview in twelfth grade (Malmgren, Abbott, & Hawkins, 1999). Similarly, in a study from Pittsburgh, no association between LD and delinquency was registered (White & Loeber, 2008).

Thus, notwithstanding the disagreement in the literature discussed above, reviews of the relevant research have concluded that the risk of being involved in delinquent behavior is substantially greater for youth with LD, compared to youth without LD (Bryant et al., 1995; Doren et al., 1996; Klein, 1998; Mallett, 2014; Matta-Oshima, Huang, Jonson-Reid, & Drake, 2010; McCord, Widom, Bamba, & Crowell, 2000; Newman et al., 2010; Wang, Blomberg, & Li, 2005). Moreover, LD has been associated with the onset of criminal activity at a younger age (Einat & Einat, 2008). In addition, youth with LD are at a higher risk for substance abuse (Beitchman, Wilson, Douglas, Young, & Adlaf, 2001; Cosden, 2001; Molina & Pelham, 2001; Weinberg, 2001), use of nicotine products, alcohol, and illicit drugs (Weinberg, 2001), and unemployment (Brier, 1994; Brown, Fisher, Stys, Wilson, & Crutcher, 2003; Morrison & Cosden, 1997).

Yet, although documented, the association between LD and later juvenile delinquency and criminal offenses is not well understood (Jonson-Reid, Williams, & Webster, 2001; Malmgren & Leone, 2000). There are multiple theories connecting LD and delinquency; here, three are exemplified. According to a “school failure” hypothesis, LD triggers a prolonged period of academic failure, which, in turn, starts a chain of negativity, such as the development of a negative self-image, detachment from school, marginalization from academically successful peers, stigmatization, harassment, and denigration by non-LD peers and adults, and increased likelihood of dropout; the continuous experience of negativity leads to delinquent behaviors (Cawley, Kahn, & Tedesco, 1989; Malmgren et al., 1999; Osher, Woodruff, & Sims, 2002) as a response to low self-esteem and as a means of securing peer recognition (Alm & Andersson, 1997; Jensen, Lindgren, Wirsén Meurling, Ingvar, & Levander, 1999; Riddick, Sterling, Farmer, & Morgan, 1999).

According to a “susceptibility” theory, youth with LD as a group are characterized by personality traits and predispositions (e.g., low impulse control, inability to anticipate consequences to actions, irritability, suggestibility, and a tendency to act out) that make these youth susceptible to situations and opportunities that heighten the risk for delinquency (Murray, 1976; Waldie & Spreen, 1993). Thus, of the 9% of public school students who qualify for special education services, 40% have had some involvement with the JJ system and 20% with ED have been arrested at least once before leaving school (Huizinga, Loeber, & Thornberry, 2000). Similar to the “school failure” hypothesis, there is no single personality trait or predisposition that leads to delinquency; it is a combination of traits and predispositions that put youth at risk for offending.

These two hypotheses have been criticized as being too simplistic, not addressing the complexity and continuous nature of the development and manifestation of delinquent behavior. Clearly, not all students with LD demonstrate delinquency, and there is a tremendous amount of inter-individual variability in the balance between risk and protective factors, which needs to be taken into account when the link between LD and offending is considered (Werner, 1999). A third hypothesis (Crawford, 1996; Preski & Shelton, 2001; Shelton, 2001, 2004, 2006; Tremblay et al., 1992; Vitaro, Brendgen, & Tremblay, 1999; Waldie & Spreen, 1993) attempts to overcome these limitations through a developmental orientation, (1) viewing early difficulties in language maturation as the basis for challenged school readiness in general and reading acquisition in particular; and (2) viewing the manifestation of delinquency as a result of a continuously unfolding accumulation of disruptive behavior, peer rejection, and school suspension/expulsion.

Academic Difficulties and LD Among JJ-Involved Youth

It is well documented that, as a whole, JJ-involved youth are characterized by lower overall academic performance and levels of competencies in all academic domains, compared to the general population of their peers (Blomberg, Bales, & Piquero, 2012; Houchins, Jolivet, Krezmien, & Baltodano, 2008). To illustrate, the mean reading comprehension score in a sample of sixty adjudicated youth (16–19 years of age) from two residential facilities in New Zealand reflected performance at the 4th percentile; in turn, indicators of reading comprehension were reported to predict recidivism, capturing rate, seriousness, and

persistence of offending among released youth ($n = 51$) 4 years post-assessment (Rucklidge, McLean, & Bateup, 2013). In a large Florida sample of JJ-involved youth and their matched noninvolved peers, the JJ-involved youth were much more likely to attain lower GPAs, demonstrate poorer attendance, repeat the same grade, and receive more disciplinary actions (Wang et al., 2005).

It has been observed that nearly 70% of incarcerated youth suffer from at least one diagnosable disability (Leone, Zaremba, Chapin, & Iseli, 1995), although many of them are underdiagnosed. The prevalence of youth with disabilities as defined by IDEA in the JJ system has been observed to be markedly higher than the estimated 8% (Morris & Morris, 2006; Quinn, Rutherford, Leone, Osher, & Poirier, 2005; Rozalski, Deignan, & Engel, 2008), 9% (U.S. Department of Education, 2000), 10% (National Council on Disability, 2003), or 12% (Stizek, Pittsonberger, Riordan, Lyter, & Orlofsky, 2007) prevalence among school-age children in the U.S. general population. Studies have generated a variety of different estimates of disabilities among JJ-involved youth, for example, 28% (Rutherford, Nelson, & Wolford, 1985), 32% (Burrell & Warboys, 2000), 33.2% (Harris, Baltodano, Bal, Jolivet, & Malcahy, 2009), 33.4% (Quinn et al., 2005), 35.6% (Casey & Keilitz, 1990), 38.15% (Gagnon, Barber, Van Loan, & Leone, 2009), 42.4% (Morgan, 1979), and 46% (Quinn, Rutherford, & Leone, 2001), among others. In general, the literature agrees on the high prevalence of disabilities manifested in the special educational needs of JJ-involved youth (Foley, 2001; Grigorenko, 2006; Mallett, 2014; Rozalski et al., 2008).

Although it has been argued that the incidence rates of various disabilities among JJ-involved youth are high and have not changed significantly over time (Rutherford et al., 1985), there are disagreements in the literature on the presence of variability in the prevalence estimates of disability in this subpopulation across states. Thus, some studies conclude that the prevalence is high and stable across various states (Harris et al., 2009), others acknowledge a high variability in the magnitude and stability across various states (Quinn et al., 2005; Rutherford et al., 1985). Such variability of both estimates and their interpretation in the literature has been acknowledged and its sources have been considered (Mallett, 2014; Wang et al., 2005).

Among these sources are the operationalization of “disability” and the heterogeneity of research methods used to quantify various disabilities (Morris & Morris, 2006). There are also considerations of sample size, proper comparison groups, and spuriousness due to lack of control for confounding variables (Wang et al., 2005). In addition, there is a recognized age-dependency of prevalence estimates, not always reflected in the literature but indicated in the fact that the frequency of disabilities increases with the age band considered. For example, in a sample of adult prisoners from Israel, the frequency of LD was 69.6% and ADHD 57.3% (Einat & Einat, 2008), that is, higher than the estimates obtained in the JJ system. Finally, a clear description is needed of the subpopulations in which the estimates were obtained, that is, whether of court-involved (i.e., most inclusive, with any involvement with juvenile court) youth or of youth adjudicated to residential facilities (i.e., the most restrictive, with the most severe sentencing).

Yet, although it has been difficult to obtain precise estimates of disability prevalence and incidence in the JJ-involved population, it has been stated that the proportion of youth in JJ facilities who received special education services before their commitment is at least three to five times higher than youth in public schools identified as having a disability (Leone & Meisel, 1999). Among these disabilities, LD has been demonstrated to be overrepresented in both the JJ and AJ systems as compared with the general population (Brier, 1994; Burrell & Warboys, 2000; Davies & Byatt, 1998; Dunivant, 1982; Einat & Einat, 2008; Gagnon et al., 2009; Jackson, 1994; Mallett, 2011; McKay & Brumback, 1980; National Council on Disability, 2003; Reid & Kirk, 2001; Weiner & Weiner, 1990; Wilgosh & Paitich, 1982; Zabel & Nigro, 2001). For example, in a sample ($n = 60$) from two JJ residential facilities for post-adjudicated youth in New Zealand, prevalence rates of LD were 91.7% (Rucklidge et al., 2013).

Similar to the observations from the general population, in JJ samples LD often co-occurs with ED, whose prevalence estimates among these youth range from 16 to 50% (Murphy, 1986). To illustrate, in a national sample of youth detained and committed to the JJ system, among youth with identified special educational needs, 47.7% had an identified ED, 38.6% had LD, 9.7% had an intellectual disability, 2.9% had other health impairments, and 0.8% had multiple disabilities (Quinn et al., 2005).

Data from regional U.S. samples are congruent. Thus, between 1993 and 1998, 39–42% of the youth committed to the Virginia Department of Juvenile Justice were identified as eligible for special education services at the time of commitment; LD was one of the three most frequently identified special education needs (McGarvey & Waite, 2000). In a sample ($N = 3729$) ascertained from a state-level juvenile custody system located in the southeastern region of the United States, the prevalence of educational exceptionalities (e.g., designated to special education in accordance with IDEIA) was 39.8% at the time of admission; the prevalence rates were 19.5% for LD and 18.1% for ED, when considered separately (Cruise, Evans, & Pickens, 2011). In a study from South Carolina (Barrett, Katsiyannis, Zhang, & Zhang, 2014) comparing a JJ-involved sample with a matched sample of peers with no JJ records, the JJ-involved youth were more likely to have been on free or reduced-price lunch (61.5% vs. 50.7%), been in foster care (5.3% vs. 0.8%), been in child protective services (12.3% vs. 2.8%), had a *DSM-IV* diagnosis for an aggressive personality disorder (14.5% vs. 1.3%), had another *DSM-IV* diagnosis (25.6% vs. 6.9%), been diagnosed as ED (5.6% vs. 1.4%), or been diagnosed as LD (16.7% vs. 10.6%). A secondary analysis (Shelton, 2006) of a cross-sectional random sample (25% or $n = 376$ of the total JJ population in the state of Maryland) set out to describe the status of youth with LD in detention and residential facilities (i.e., detained and committed youth); 38% ($n = 143$) met the diagnostic criteria for LD.

Importantly, the overrepresentation of LD among JJ-involved youth is consistent with earlier research (Keilitz & Dunivant, 1986), indicating that youth with LD are 220% more likely to be adjudicated than other adolescents. Similarly, a diagnosis of LD was associated with lower age of first offense (Barrett et al., 2014).

The picture is further complicated by the comorbidity of LD with other than ED disabilities. For example, in a sample of detained or committed youth from Maryland (Shelton, 2006), high rates of LD coexisted with high rates of physical health problems (70%) and mental health disorders (38%). In a sample of Chinese youth from post-adjudication facilities in Hong Kong, the LD (specific reading disability, SRD) and ADHD comorbidity subgroup showed impairments in executive functioning (interference control, specifically) and significantly higher delinquency severity compared to either SRD or ADHD groups (Poon & Ho, 2014). Importantly, researchers have demonstrated the connection between the presence of LD and low academic self-efficacy beliefs, which, in turn, lower academic achievement and worsen prospects for educational attainment (Amitay & Gumpel, 2015). In general, as a group, JJ-involved youth are characterized by a host of exogenous problems, such as victimization (Karnik, 2001) and deprived environments (Asscher, Van der Put, & Stams, 2015), and endogenous difficulties, such as aggression and substance abuse (Andreassen, 2015; Heynen, van der Helm, Cima, Stams, & Korebrits, 2017; Sawyer, Borduin, & Dopp, 2015).

Deficient academic skills are not only a risk factor for entering the JJ system; people with LD are also viewed as disadvantaged when navigating the system itself (Ford et al., 2008; Hellenbach, 2012), due to their unmet needs (Chitsabesan et al., 2006), at all stages of the JJ process, necessitating redirection to problem-solving courts (Chin, 2017). Moreover, learning difficulties are also a risk factor for successfully transitioning back into the community (Cavendish, 2014; Feierman, Levick, & Mody, 2009/2010; Newman et al., 2010; Unruh & Bullis, 2005) without recidivating (Blomberg, Bales, Mann, Piquero, & Berk, 2011) or recidivating at a higher rate (Katsiyannis & Archwamety, 1997). Thus, in a five-year longitudinal study of JJ-involved youth discharged from a residential facility, juveniles with a special education diagnosis were 2.8 times more likely to be placed in a residential facility again and 2.2 times less likely to be engaged in either employment or enrolled in school within 6 months upon exit from a youth correctional facility compared to a sample of their peers without disabilities (Bullis, Yovanoff, Mueller, & Havel, 2002). Post-release, JJ-involved youth with LD were more likely, as adults, to use publicly funded mental health or substance use services (Newman et al., 2010).

To summarize, there is a sizable literature connecting learning difficulties/disabilities to delinquency both in the general population and among JJ-involved youth. Although there is consensus on the presence of this connection, there is a substantial amount of variation in and shortage of (1) estimates of the strength and direction of this association; (2) understanding of the causal mechanisms of this association; and (3) the development of corresponding policies for accommodating youth with LD in the JJ system and upon their community re-entry. It is on these three shortcomings of the literature that we focused our Hub (the Houston LD Hub) on LD in post-adjudicated JJ-involved youth.

Learning Difficulties, Learning Disabilities, and Delinquency: Data From the Houston LD Hub

The Houston LD Hub, funded in 2017 by the U.S. National Institutes of Health (specifically, the Eunice Kennedy Shriver National Institute of Child Health and Human Development, NICHD), capitalizes on working relationships between faculty at the Baylor College of Medicine and the University of Houston, and practitioners at the Connecticut Court Support Services Division (CSSD, Connecticut) and the Harris County Juvenile Probation Department (HCJPD, Texas). Here we briefly summarize the studies (conducted mostly in Connecticut) that formed the foundation for the ongoing work (unfolding now primarily in Texas).

Our interest in LD in the JJ-involved population began when we conducted a situation analysis at the request of CSSD in the juvenile detention centers and community residential centers in the state of Connecticut (Macomber et al., 2010). The purpose of this analysis was to: (1) describe the educational characteristics of detained children and youth; (2) describe the educational programs currently used in detention and assess their consistency with the framework of the State of Connecticut Department of Education; (3) characterize the community of teachers working with students in detention; (4) identify systemic obstacles and/or challenges to educating this population; (5) ascertain the pathways of educational records of detained children and youth; and (6) identify system barriers or challenges to delivering education to this population and teaching in detention or in alternative to detention settings. While working on the first objective of the study, we documented that nearly 70% of all teachers reported that juvenile detainees' special learning needs are "underidentified," as opposed to "properly identified" or "overidentified." These observations were supported by screened records, according to which only seventy students of 713 screened (i.e., 9.9%) were identified as having special educational needs. Of these seventy, only eight (i.e., 11.4% of all identified students) had an Individualized Education Program (IEP), or notes referring to an IEP, in their files.

To further substantiate our understanding of the situation, we systematically ascertained a random sample of ~20% (every consecutive fifth admission) of all adolescents admitted to juvenile detention centers in Connecticut in a single calendar year (Grigorenko, Edwards, & Chapman, 2015; Grigorenko, Sullivan, & Chapman, 2015). Three hundred and seventy-one unique individuals were included. The available administrative records, including mental health records, were analyzed. According to these records, 96.8% of the sample had a mental health diagnosis. Many youth (85.7%) had multiple diagnoses, and a small group (1.3%) had seven diagnoses. Even when all diagnoses were considered, only 7.2% of the sample had diagnoses of LD, and only 0.8% of the sample had this diagnosis as their primary diagnosis.

Given the literature, these documented rates of LD were unexpectedly low, so we developed an educational placement screener for use in short-term juvenile detention facilities (Hart et al., 2012). The screener was designed to gauge levels of competence in reading (at the word and text level) and mathematics for juveniles in grades 3–12, and to serve as a rapid assessment device for subsequent educational placement within 48 hours of admission. The

psychometric properties of the screener were evaluated in a Connecticut sample of 1,078 youths in detention and 157 youths in the community. The mean age of JJ-involved youth was 14.94; their mode grade was 9. However, their average level of performance on the screener was around grade 5. Thus, youth in detention, on average, perform substantially below expectations based on their grade placements in their home schools. In some cases, the discrepancy in performance is as large as 8 grades.

In a subsequent study, the screener was computerized and administered to a sample of 1,337 youth (mean grade = 9.04) detained in Connecticut (Grigorenko et al., 2015). A subsample ($n = 410$) of these youth received the *Wide Range Achievement Test*, in addition to the educational screener. Quantitative (scale-based) and qualitative (grade-equivalence-based) indicators were then analyzed for both assessments. Depending on the specific academic skill, results established the range of LD in this sample from 13% to 40%, averaging 24.9%. Youth's grade equivalence indicators varied: 3.51–4.27 for word-level reading, 6.01–6.22 for text-level reading, and 5.24–5.64 for mathematics.

Subsequent to this work, with the help of funding from the U.S. Institute of Educational Sciences, we worked with the state of Connecticut to generate a set of administrative data, merging information from the CSSD and the Connecticut State Department of Education (Hein et al., 2017). These data contained the administrative records from seven academic years (2006–2007 to 2012–2013) for 58,678 JJ-involved youth. Across these years, there was a range in the number of IDEIA diagnoses of LD in this sample, from 4.1% in 2012–2013 to 6.4% in 2007–2008 and 2008–2009 (the mean rate was 5.6%). However, an examination of standardized achievement data on reading and math achievement indicated that across years, a much higher number of youth performed below (mean 24.9%, range 20.0–31.4%) or at basic² (mean 47.7%, range 41.4–60%) levels.

The observed discrepancy between established diagnoses and the actual level of performance on standardized tests and our screener led us to conduct a study with one of the largest JJ systems in the country, the HCJPD. It is an ongoing clinical trial for an evidence-based reading intervention program, where post-adjudicated youth are enrolled based on a set of inclusion and exclusion criteria. They are first referred to the program, Strategies for Enhancing Reading in Older Underperforming Students (SERIOUS), when they have a previously established or currently suspected diagnosis of LD by the social workers who are first assigned to them upon their arrest to get to know them and their records well while the JJ system prepares for their adjudication. After referral, they undergo a comprehensive neuropsychological evaluation, where their diagnosis is confirmed or removed; if their eligibility is confirmed, they are enrolled. The key feature of the program is its inclusion of sublexical reading skills within an intervention framework that is built for use with teenagers, particularly those with spotty learning histories, and with an acknowledgement of the need to reinforce learning-to-learn executive skills. The program includes twenty-four 90-minute lessons, sixteen of which introduce new orthographic patterns and then follow this introduction with practice in phonological recognition, pseudoword decoding, word

²-Defined as minimally appropriate for grade level, as established by the U.S. National Standards (https://nces.ed.gov/nationsreportcard/guides/scores_achv.aspx)

reading, spelling, vocabulary, repeated and choral reading of a controlled text, discussion of prosody, and comprehension exercises. The remaining eight lessons reinforce these skills with enrichment exercises and provide opportunities for reteaching if necessary. Progress monitoring is carried out at each session utilizing a small subset of words that have been taught so far in the intervention, but also a counterbalanced set of unique pseudowords that encompass each of the sixteen orthographic patterns taught (and those to be taught). After the twenty-four one-on-one sessions are completed, students are provided with a cell phone on which a series of word-based computer games have been pre-installed, that are designed to build automaticity with the orthography, phonology, and semantics that have been taught. In addition to the clinical trial component, the Hub, using the system's administrative data, focuses on the estimation of the prevalence of LD in the HCJPD-involved youth, attempting to add to the literature with regard to the strength and direction of the association between learning difficulties/disabilities and delinquency. Moreover, using a longitudinal design, the Hub researchers collect neurophysiological (via EEG and ERP) and molecular (via DNA methylation) biomarkers of change in response to intervention, attempting to gain insight into the etiology of the learning difficulties/disabilities and delinquency association.

As the Houston LD Hub is only in its second (of 4) year of funding, we are still acquiring the data, including both the empirical clinical trial data and the administrative data from the HCJPD. We have only received two initial waves of administrative data for all JJ-involved youth in the county (years 2006–2017 and years 2017–2018, total $N = 79,119$), and one data release for JJ-involved youth with mental health diagnoses (years 2014–2017). Based on the first type of data, the frequency of LD in the first two samples were .01% and .03%³, respectively. In the sample of JJ-involved youth with mental health diagnoses ($n = 3,566$ unique youth sampled through entries), the frequency of LD diagnoses was 9%. This brief initial summary of the data acquired through CSSD and HCJPD reveals a rather obvious conclusion: the recorded frequency of LD diagnosis is comparable to that in the general population. However, all analyses of the testing data obtained directly from these youth indicate that they, as a group, substantially lag behind their typically developing peers.

Learning Difficulties, Learning Disabilities, and Delinquency: Future Directions

Juvenile delinquency represents a serious societal problem (Loeber & Farrington, 1998). Notwithstanding the fluctuations of the number of juvenile crimes, arrests, detentions, and incarcerations over the last 50 years, the U.S. JJ system today is characterized by stricter treatment of status offenses and by lower likelihood that a delinquency case will be handled informally (Hockenberry & Puzzanchera, 2015). These characteristics lead to a large number of youth being involved at different stages of court processing. Both the scope and complexity of the JJ system introduce substantial challenges for the development and implementation of treatment interventions (Mathys, 2017). These challenges are characteristic of various types of therapies, including behavioral and educational therapies.

³.Note that these two samples are not independent, as they include youth who recidivated and were referred to HCJPD in both time frames.

Yet, although the literature on the effectiveness of various interventions is complex and heterogeneous, and there is no treatment approach that “works for all” or even the majority of JJ-involved youth, the literature offers clear conclusions. Specifically, if not treated while placed, youth recidivate at the rate of 60–80% (Farrington, 1995; Jenson & Howard, 1998); if treated, the average reduction of recidivism is about 9% (Grietens & Hellinckx, 2004). Also, ultimately, as recidivating almost inevitably results in entry into the AJ system, it is more economically practical to treat JJ-involved youth to prevent their transition into the AJ system (Greenwood, 2008).

Although the “marching order” to treat is in place, there are numerous obstacles to the selection and delivery of evidence-based treatments in the JJ system, especially with regard to educational therapies. First, there are various obstacles to the accurate assessment of the needs of these youth. There is evidence that, among juvenile facilities, 25% (National Council on Disability, 2003) have not been routinely assessed for LD, and that 40% have not met standards for mental health care as established by the American Correctional Association (Parent, Leiter, Livens, Wentworth, & Stephen, 1994), or special education services as defined by the law (Redding, 2000). However, even if the facilities commit to assess, there are no clear guidelines on how and with what instruments these assessments should be carried out in JJ settings and how LD should be operationally defined. The existing literature, unfortunately, does not offer a good starting point as there is a wide range of definitions of LD, a shortage of rigorous studies, a substantial variation in the samples in which these estimates have been obtained (court-involved, arrested, detained, adjudicated, referred, and/or committed youth), and concerns about sampling strategies.

Second, JJ-involved youth have been observed to be resistant to intervention and lacking in engagement, possibly because they are not personally motivated to change (Karver, Handelsman, Fields, & Bickman, 2006; Orsi, Lafortune, & Brochu, 2010; van der Helm, Klapwijk, Stams, & van der Laan, 2009) and often are not aware of or deny their difficulties (Englebrecht, Peterson, Scherer, & Naccarato, 2008). It has been demonstrated that youth with LD disproportionately drop out of high school and neither work nor continue their education (Blackorby & Wagner, 1996; Wells, Sandefur, & Hogan, 2003), despite the majority having goals to the contrary (Cameto, Levine, & Wagner, 2004). JJ-involved youth with LD have been stated to be doubly disadvantaged (Chung, Little, & Steinberg, 2005; Shandra & Hogan, 2012), as they routinely interrupt both their regular and special education.

Third, these youth experience lack of access to educational programs in general and special education programs in particular (Rutherford et al., 1985). Special education needs have been recognized as a significant target for service planning by both mental health and educational professionals in the JJ system (Malmgren & Meisel, 2002; Rozalski & Engel, 2008). More specifically, there is literature stating that care for LD should be an important component of JJ services, both nationally (Zajac, Sheidow, & Davis, 2015) and internationally (Bradley, 2009; Senior & Shaw, 2011). These observations necessitate the development of both functionally oriented (i.e., focused on applied skills, such as functional literacy and numeracy) and age- and status-appropriate motivationally solid intervention programs, of which there is currently a shortage.

Fourth, academic achievement has been described as a key variable in successful reintegration (Jackson, 1994; Jackson & Martin, 1998). Yet, various protective, wrap-around, and rehabilitative services often do not specifically emphasize the importance of educational achievement (Jackson, 1994). In fact, there is literature indicating that more than 50% of a sample ($n = 131$) of school principals working within the JJ-system asserted that grade level expectations should not be expected of youth with ED and LD (Gagnon et al., 2009). However, there is also evidence that JJ-involved youth demonstrate academic resiliency and a continued desire to pursue education (Reed & Wexler, 2014), necessitating the further development and evaluation of appropriate educational and vocational programs (Zajac et al., 2015). As indicated above, the theories connecting learning difficulties and delinquency are neither plentiful nor sophisticated or well regarded. To understand the connection between these two risk factors to life success, and to develop appropriate interventions, a great deal more theoretical work is needed.

Fifth, there is a lack of trained JJ-system practitioners who can work with youth with special needs in general and LD in particular. The literature indicates that less than two-thirds (62%) of the sampled juvenile detention and court services personnel in the state of Virginia had received training about persons with disabilities, and less than half (47%) had received training about persons with LD (Kvarfordt, Purcell, & Shannon, 2005). Moreover, there needs to be buy-in on the importance of academic services throughout the JJ system. As of now, schooling in detention or residential placements is the last, not the first, priority within the system. Similarly, it might be that ED (not LD) is the primary diagnosis, at least within the JJ system, raising the importance of behavioral and negating the importance of educational therapies.

It is these obstacles and the overall shortage of both literature and data on the prevalence, typology, and etiology of LD among JJ-involved youth that move us to complete this essay with a reference to what The National Council on Disability (Mears & Aron, 2003, p. iii) called "...a tremendous gap in empirically based knowledge about children and youth with disabilities, especially those who are either at risk of delinquency or involved in the juvenile justice system." There is much to learn and much to do here. We hope that the interventional research taking place within the Houston LD Hub will contribute to closing this gap.

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