



Factors influencing school bonding among juvenile offenders – The experience of a systematic review

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ABSTRACT

Background: School attendance and school bonding have protective effects against later criminal behaviour, with young people who are not strongly attached to prosocial individuals and conventional institutions more likely to engage in criminal behaviour. Problems with school bonding reinforce the gradual disengagement of students from school, which, together with other personal, social and contextual variables, contributes to the development of deviant behaviour.

Methods: A systematic PRISMA review was conducted using EBSCO Discovery Service Search Engine (using 85 databases during searching) to access studies which investigated the association of school bonding of juvenile offenders with risk of subsequent reoffending and successful reintegration into society, finally 10 studies were reviewed. The PICOS format was used to define inclusion criteria, and the Joanna Briggs Institute (JBI) critical appraisal tool was used to assess the quality of the studies.

Results: The research reviewed confirmed our hypothesis that increasing school bonding and engagement can support the reintegration of juvenile offenders into society, particularly through extracurricular activities and mentoring. At the same time, we cannot ignore the study of social influences, because family dynamics, peer relationships and partner relationships have a strong influence on school bonding and consequently on the likelihood of delinquency.

Conclusions: Although this review has highlighted important links with school bonding among juvenile offenders, future research on this less researched topic would be worthwhile to better understand the nature of school bonding and the opportunities and good practices to strengthen school bonding, thereby increasing the chances of desistance.

Introduction

Education is one of the key areas of concern for dually-involved youth, with school attendance, school bonding and school performance for juveniles having a protective effect against later delinquent behaviour (Cook & Hirschfield, 2008; Hirschfield & Gasper, 2011). School bonding is recognized as a complex phenomenon encompassing behavioral, affective, and cognitive elements that are activated through interactions and within educational settings. This attachment varies based on a student's relationship with education as a whole, the rules and values upheld by the school, and the individuals and peers that constitute the school community (LeBlanc, 1998; Silva et al., 2016, p. 92).

In examining the protective effects of education, we should highlight

the Theory of cumulative disadvantage as promoted by Sampson and Laub (1997), in addition to Hirschi's (1969) bonding theory. Hirschi (1969) sees crime as a consequence of weak social bonds, which are reflected in weak bonding to others and low participation in conventional social life. From this perspective, the role of the school, which is, according to Hirschi (1969, p. 110), a "highly conventional" institution, is particularly pronounced, and thus attachment to school is a barrier to deviance. Sampson and Laub's (1997) theory of cumulative disadvantage integrates theories of social control and labelling. According to social control theory, a weak bonding to school intensifies problematic attitudes such as truancy and early school leaving (Kirk & Sampson, 2013). Labelling theory suggests that once an individual is officially designated as 'delinquent', their treatment within educational institutions shifts significantly, particularly if they have a criminal record.

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This leads to various processes of detachment that increase the likelihood of further deviance, including the potential for dropping out of school. To maintain control and safety within schools, students with criminal histories might be removed from secondary education through exclusionary practices and placed into specialized programs for at-risk youth, thereby isolating them from conventional educational, job, and social opportunities (Kirk & Sampson, 2013).

Bonding theory and the Theory of cumulative disadvantage suggest that children with strong attachment to their schools are less likely to commit crimes and deviate from social norms, so it is important to focus on strengthening school bonding. However, young people who are affected by the side effects of being involved in multiple systems (e.g. frequent moves, high-risk peer groups and stigmatisation) also have several problems related to low bonding to school, including interruption of the educational process, low school participation, higher proportion of learning and behavioural problems and a higher likelihood of exclusion, higher dropout rates and disproportionate referrals to special education services (Leone & Weinberg, 2010; Pérez & Teasley, 2015). Weak connections to school encourage deviant behavior among students, necessitating disciplinary actions within the institution. This cycle results in increased disengagement from school and a decline in student performance. Such conditions can ultimately contribute to dropout rates, adversely affecting young individuals who are deprived of the advantages that education provides (Feijó & Assis, 2004).

Prior studies have indicated a correlation between measures of school bonding and measurable academic success, as well as the behaviors of young individuals. For instance, notable links have been established between adolescents' self-reported levels of school bonding and various factors such as academic performance, motivation for learning, attendance duration, truancy rates, tendencies toward substance abuse or violence, and the likelihood of school dropout (Archambault et al., 2009; Blomberg et al., 2012; Cernkovich & Giordano, 1992; Chapman et al., 2011; Herz et al., 2010; Massey & Krohn, 1986; Ryan et al., 2013). Blomberg et al. (2012) showed in their study that young people with high educational attainment have stronger school bonding and are thus more likely to return to school after leaving school, resulting in a 15-25 % lower probability of dropping out within 12-24 months. Issues related to school bonding further strengthen the slow process of withdrawing from school, and when combined with various personal, social, and contextual factors, this leads to the emergence of deviant behavior, which can be viewed as a reaction to challenging circumstances (Janosz & Le Blanc, 1999). However, while appropriate school bonding can indeed lead to increased social control, simply staying in school does not reduce reoffending; it also requires continued school performance. Thus, interventions to improve academic performance can contribute to reducing recidivism, and in addition to the school climate, appropriate relationships with teachers are key to this.

An important element in developing a bonding to school is a positive relationship with teachers, which can be particularly important for young people in custody who have few positive social support providers in their lives due to separation from their families. Research in this area shows that relationships with teachers strongly influence student outcomes concerning academic performance, behaviour and persistence (Cernkovich & Giordano, 1992). Several findings from the general population show that teacher-student solid connection and bonding increase school engagement and improve academic performance, and teachers who are attentive to students enhance their feeling of school bonding (Christle et al., 2007; Martin & Dowson, 2009; Roorda et al., 2011). Strong bonding to teachers reinforces commitment, which in turn fosters individuals' perceptions of school rules and norms as legitimate. With a supportive teacher-student relationship, teachers are more likely to identify certain indicators that can serve as warning signs of dropout and regression (LeBlanc, 1998; McNeely & Falci, 2004). However, instruction that does not value and question students' personalities alienates students and creates resistance to learning, thereby reducing

school bonding (Blue & Cook, 2004).

Methods

This systematic literature review was created based on the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines (Moher et al., 2015). (Fig. 1.).

Literature review

EBSCO Discovery Service Search Engine (using 85 databases during searching) was used for systematic search. The keywords we used for searching were "juvenile offenders" or "juvenile justice" or "adolescent offenders" or "juvenile criminals" or "juvenile delinquents" AND "school attachment" or "school engagement" or "school bonding" or "academic engagement" or "commitment to learning". Beside the search engine, snowball search was applied, checking the reference list of papers found by the search engine. Also, the top 30 journals indexed in Web of Science (having the highest percentile above 50 %) were screened (see Annex Table 1). The searches were performed in August 2024. Unscreened articles were listed in Zotero (V6.0.22, Roy Rosenzweig Center for History and New Media, George Mason University, Washington DC). Overall, 361 records were detected. After double filtering, 21 record was excluded. After title and abstract screening, 310 records were excluded. Therefore, 30 papers were sent for full-text screening, which led to the involvement of 10 papers in the qualitative synthesis.

Inclusion and exclusion criteria

The following inclusion criteria were set, following the PICOS format (P: Population, I: Interventions, C: Comparisons, O: Outcomes, S: Study designs):

- *population*: juvenile offenders/criminals
- *intervention*: original empirical research published in a peer-reviewed journal;
- *comparison*: examined the phenomenon of school engagement in various contexts (sociodemographic background, nation, psychological characteristics or non-offenders as a control group);
- *outcomes*: school engagement and commitment;
- *study design*: interview, survey.

Papers must also be written in English and in the disciplines of psychology, social sciences, humanities, and educational sciences. Review papers, commentaries, letters to the editor, conference papers, books, book chapters, dissertations, or newspaper articles were excluded.

Data extraction and assessment of methodological quality

A multistage screening process was conducted to identify studies that fulfilled the inclusion criteria. The literature was searched independently by the authors, who reviewed the titles and abstracts of each study. Subsequently, all identified records had their titles and abstracts screened. Those studies that satisfied the inclusion criteria underwent a thorough full-text review. The detailed analysis, quality assessment, and data extraction of the selected studies were managed by the authors. In instances of uncertainty, the authors engaged in discussions to reach a decision.

For data extraction, an Excel spreadsheet and Data Extraction Forms were used. We included the full article citation, sample characteristics (number of participants, gender, ethnicity, other), aim of the paper, theoretical background and theories applied, methods (qualitative or quantitative), tools applied, the characteristics of school engagement/commitment, results/outcome, and comments related to study quality.

The Joanna Briggs Institute (JBI) critical appraisal tool was utilized

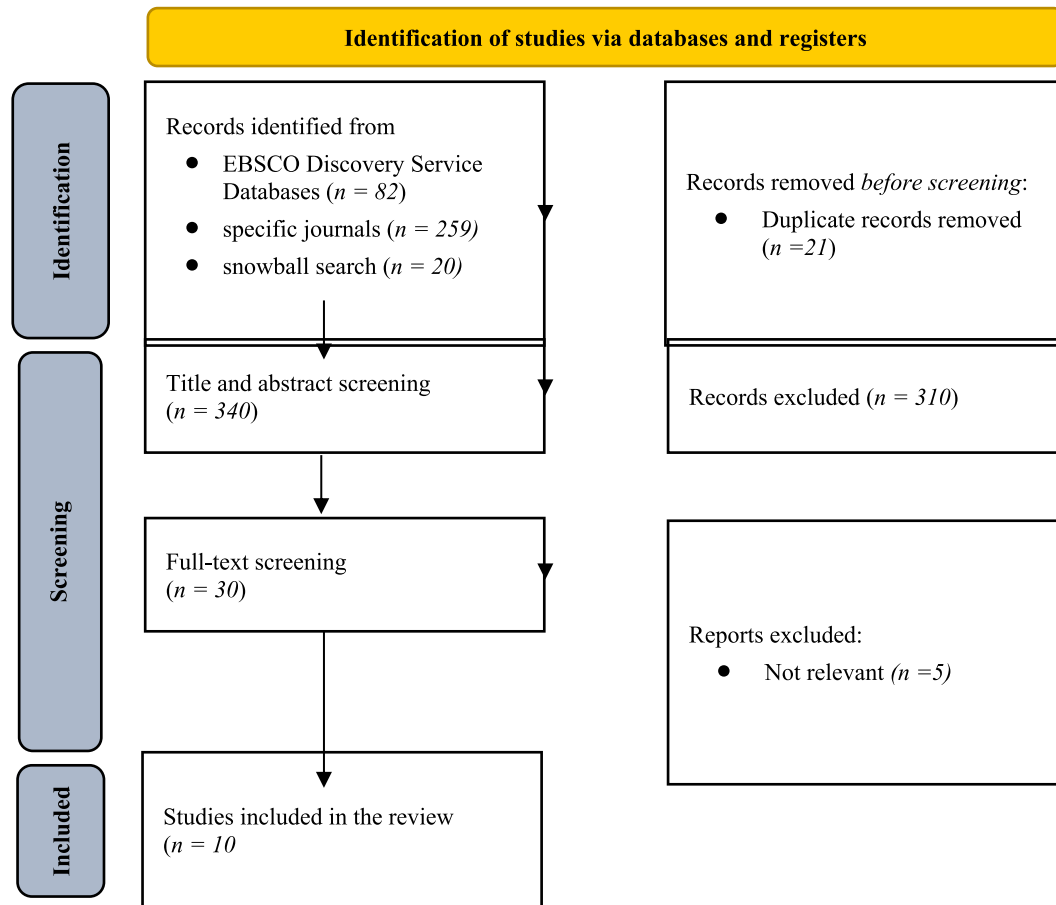


Fig. 1. Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) diagram.

to assess the risk of bias and the quality of the studies, specifically for qualitative studies (Lockwood et al., 2015) and cross-sectional studies (Moola et al., 2015). Each paper was reviewed using the relevant tool on a 4-point scale (yes/no/unclear/not applicable) (Appendix Table 1).

Results

Sociodemographic factors

The characteristics of the papers analysed are introduced in Table 1. The investigations analysed were carried out between 1991 and 2020. Concerning the location of the research, most investigations were carried out in the USA (Abeling-Judge, 2022; Bender, 2012; Chung et al., 2011; Jäggi et al., 2020; Kirk & Sampson, 2013; Longshore et al., 2005; Tan et al., 2018; Vroom et al., 2023) while only one paper focused on Brazil (Silva et al., 2016) and one on Nigeria (Atilola et al., 2021). This geographic concentration may lead to findings biased by specific cultural, systemic, and socioeconomic contexts inherent to the U.S. The lack of representation from Asian, European, and other global contexts restricts the generalisability of conclusions. For example, cultural attitudes toward education and discipline vary widely, potentially impacting the role of school bonding in preventing delinquency.

With regard to the specificity of the topic, most studies presented information concerning the sociodemographic background of the participants and its relevance. Gender, ethnicity, and socioeconomic status (SES) were usually taken into account. Since only papers focusing on juvenile offenders were analysed, the age of the participants was usually reported, but its impact was not calculated.

Regarding gender, only two papers focused on male offenders exclusively (Atilola et al., 2021; Tan et al., 2018) while other papers

represented both male and female adolescents in their investigations (Abeling-Judge, 2022; Bender, 2012; Chung et al., 2011; Jäggi et al., 2020; Kirk & Sampson, 2013; Longshore et al., 2005; Silva et al., 2016; Vroom et al., 2023). However, most research did not investigate the manifestation of gender differences. Vroom et al (2023) pointed out that female justice involved adolescents (JIA) with higher levels of school bonding had a lower likelihood of opium misuse in comparison with male JIA. It seems that gender differences can shape the nature of school engagement. For instance, boys are often more prone to physical delinquency, while girls may experience social alienation that impacts their bonding to school. Research shows that positive teacher-student connections may be particularly critical for male offenders, who often face higher disciplinary actions in schools. Programs addressing gender-specific needs, such as building resilience against peer pressure for boys or fostering a sense of belonging for girls, could enhance engagement.

Ethnicity received higher attention. Most papers reported the race and/or ethnicity of the sample used (Abeling-Judge, 2022; Bender, 2012; Chung et al., 2011; Jäggi et al., 2020; Longshore et al., 2005; Vroom et al., 2023), usually having the following categorisation: White, Black, Hispanic and other ethnicity. However, none of the papers operated with any hypotheses focusing on the impact of ethnicity on school bonding. However, systemic biases and cultural differences may play unexamined roles in shaping school engagement. Ethnic minority youth often face systemic biases and discrimination within educational institutions, which can weaken their attachment to school. For instance, unequal disciplinary practices disproportionately affect Black and Hispanic students, creating further detachment. Culturally relevant curricula and training for educators on implicit biases can improve relationships between schools and minority students.

Table 1
The characteristics of the papers analysed.

Metadata	Location	Period	sample	aspect, aim	theoretical background	variables	tool	result	treatment, suggestion, new initiatives, future research
Abeling-Judge (2022)	USA (Arizona and Pennsylvania)	2000-2003	Pathways to Desistance Study (n=1354). 14 - 18 years both male and female various ethnicity	Investigating the psychological growth, societal factors, and experiences within the criminal justice system that support or obstruct offenders' return to education after they have left school prematurely.	Turning points can be understood as distinct occurrences or particular moments	return to education social influences future orientation personal aspirations friendship quality ongoing offending behaviours age, being in a romantic relationship, being a parent	Interviews educational reengagement (dichotomous) Contact with Caring Adults inventory Friendship Quality scale Future Outlook Inventory Perceptions of Chances for Success sum of the frequency of 11 aggressive crimes	Romantic relationships have a beneficial impact on the decision to re-engage with education. Psychological elements, particularly the emergence of new or enhanced social ambitions, seem to play a significant role in motivating individuals to return to their studies.	The results indicate potential ways to encourage changes in the informal factors affecting returning youth offenders' reintegration into school, while also exploring various educational paths for those who have dropped out.
Atilola et al. (2021)	Nigeria (Oregun Lagos, Youth Correctional Centre for Boys)	2020	A total of 103 teenage boys were held at the Youth Correctional Centre for Boys, aged between 12 and 17 years; they had an average of 6.6 years of formal education (M=6.6; SD=2.3); prevalence rates included conduct disorder at 54 %, oppositional-defiant disorder at 39 %, and ADHD at 26 %.	to recognize the possible obstacles to comprehensive rehabilitation, including educational reintegration in Africa	comprehensive psycho-social and behavioral recovery, which encompasses ongoing education or the reintegration of detained young individuals	Socio-demographic variables Educational variables	School Engagement Measure	The study found that the connection between the total years of education completed prior to imprisonment and school bonding scores indicated that those who displayed a mix of symptoms aligning with behavioral disorders had notably lower average SEM scores.	A significant initial measure requires a thorough restructuring of the custodial correctional system, ensuring that facilities for minor offenders and those with status offenses are separated from those accommodating youths who have engaged in more serious criminal activities, including felonies.
Bender (2012)	USA	2002	the survey included a national sample of youths aged 11 to 15 years (N=1,179; M=12.75; SD=1.28), with 57.9 % identifying as female. In terms of delinquency severity, the frequency rates were as follows: none at 51.2 %, minor at 5.7 %, moderate at 15.2 %, and severe at 14.6 %, encompassing white, black, Hispanic, and other ethnicities.	To investigate if a prosocial connection—school involvement—clarifies the relationship between abuse and delinquent behaviour.	According to life course theory, young individuals who do not have connections with supportive persons and traditional institutions are at a higher risk of committing a crime (Sampson & Laub, 1993).	Maltreatment Risk Delinquency DFSCA Control Variables: individual-level control variables (age, gender and race/ethnicity. socioeconomic status) questions regarding the caregiver concerning their problems, background.	Interviews Self-Reported Delinquency measure (Elliot & Ageton, 1980) (Dowd et al., 2002).	The extent of school engagement among youths accounts for the impact of maltreatment on early delinquency. Those at a higher risk for maltreatment indicated lower levels of engagement in school, and this disengagement from school was subsequently linked to a greater probability of delinquent behavior.	Educators, school leaders, and professionals in educational environments should adopt methods that foster students' interest. Universal and selective prevention initiatives are essential, and practitioners might explore the establishment of formal mentoring programs. Additionally, supplementary activities like sports or tutoring can aid at-risk youth, while multimodal programming is frequently available in after-school programs.

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Table 1 (continued)

Metadata	Location	Period	sample	aspect, aim	theoretical background	variables	tool	result	treatment, suggestion, new initiatives, future research
Chung et al. (2011)	USA (Philadelphia, PA or Phoenix, AZ)	2000-2003	A total of 833 male juvenile offenders, consisting of Black, White, and Hispanic individuals aged 14 to 17 at the time they committed their offenses, were convicted of serious crimes. Pathways to Desistance study	Examining how neighborhood and personal factors impact achievement can help clarify the dynamics of school performance.	Bronfenbrenner's (1979) Ecological Systems Theory	Neighbourhood Affluence Perceived Opportunity Structure Expectations to Succeed School Functioning Variables (e.g. age, IQ, grades)	baseline interview with the child, a parent or parental guardian. index of neighbourhood affluence Perceived Opportunity Structure (Eccles et al., 1998) Perceptions of Chances Success (Menard and Elliot, 1996)	In more wealthy communities, young individuals have greater access to educational and employment possibilities, which is linked to elevated success expectations and enhanced academic achievement.	It is essential to motivate young individuals to contemplate their social identities, as these identities can include views on the availability of educational and career prospects.
Kisk & Sampson (2013)	USA (Chicago)	1995-2002	PHDCN-LCS, N= 659	What accounts for the seemingly significant impact of arrest on adolescents' educational experiences? There are three avenues to explore: 1. assess the educational path of the same individual in two distinct scenarios—one where the student faced arrest and another where the student successfully avoided it. 2: employing Rosenbaum's (2002, 2010) bounding method to assess how sensitive our propensity-matched conclusions are to unobserved biases 3: investigating reductions in educational aspirations, connection to school, and support from friends associated with dropping out of school.	Nolan (2011) "zero tolerance" educational climate Rosenbaum's (2002, 2010) bounding approach	educational expectations, school attachment, and friend support The PHDCN-LCS data contain information on youth and family characteristics.	question on educational expectations: planned attendance of education questions on school attachment: liking school, importance of grades, getting along with teachers, perceived usefulness of doing homework, frequency of finishing homework. questions for friend support: having friends	Limited evidence was found concerning the decreases in school attachment, educational expectations, or friend support as mediating factors.	Additional research is necessary to grasp the considerable effect that arrest appears to have on academic performance. A focus on how schools address criminal conduct among students stands out as an essential and largely unexamined topic for future exploration. The impact of these arrests may differ across social demographics. Furthermore, the allocation of "second chances" is likely to be unequal, as individuals in disadvantaged structural positions frequently struggle more to avoid the consequences of arrest (Sampson and Laub 1997).
Jäggi et al. (2020)	USA (Philadelphia, PA or Phoenix, AZ)	2000-2010	The Pathways to Desistance Study focuses on serious juvenile offenders in the U.S., with 91 % of them being male 569 participants (50 female) 310 legal minors (< 18 years) + 259 adults who had undergone a minimum of three months of institutional education during a stay in the institute	The objective is to investigate and assess different facets of the educational experiences of youth delinquents in institutional environments. This research distinctively merges indicators of motivation and quality—like school orientation, relationships with teachers.	life-course theory of crime (Sampson & Laub, 1997)	Facility school experience (bonding to teacher, school orientation) average time spent on homework grades amount of schooling Employment (older sample, adults) Self-reported delinquency Control variables: School history, race/ethnicity, age, etc.	baseline interview	The relationship between a student's attachment to the school within the facility and a decrease in delinquency 12 months after release was observed for both genders across all age groups. Additionally, this attachment to the school in the facility served as an indicator of school	Initially, the importance of the school climate within facilities is highlighted, suggesting that investing in programs aimed at boosting motivation for continued education can yield positive results—even for previously disengaged youth who have faced challenges in their academic journey. This current study underscores the value and practicality of adopting a developmental viewpoint when examining the consequences of

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Table 1 (continued)

Metadata	Location	Period	sample	aspect, aim	theoretical background	variables	tool	result	treatment, suggestion, new initiatives, future research
Longshore et al. (2005)	USA	1991-1995	A total of 359 young offenders were examined, comprising 257 males (74 %) and 92 females (26 %). Their ages varied from 12 to 18 years (M=16.0)	Assessment of five Treatment Alternatives to Street Offending (TASC) programs aims to evaluate social bonding factors and the influence of deviant peer associations.	Crime results from weak social connections (Hirschi, 1969). Akers' (1994) theory emphasizes self-control as the key factor explaining variations in deviant behavior.	Low self-control Attachment Commitment Conventional Moral Belief Deviant Peer Association Offending	Individuals involved in the evaluation underwent an initial interview and then a follow-up interview six months afterward.	engagement for minors upon their return. A positive relationship was observed with deviant peer association and subsequent offending.	incarceration. Therefore, instead of viewing it as an opaque entity, future research ought to explore how individual variations in the incarceration experience influence the re-entry process for juveniles. Although there may be methodological constraints, the absence of a connection between deviant peer associations and offending in the multivariate model could hold significant implications.
Silva et al. (2016)	Brazil (Ribeirão Preto)	N/A	A total of 60 adolescents, were organized into four groups of fifteen persons each: school dropouts who are adolescent offenders, adolescent offender students, school dropouts who are non-offenders, and non-offender students.	To confirm the presence of differences in school bonding across various adolescent groups and pinpoint the most concerning issues faced by adolescents in legal conflict.	Theory of Social and Personal Control of Deviant Behaviour during Adolescence (Le Blanc et al., 2003)	Investment, Commitment Attachment to Teachers	structured interview	Dropouts displayed the weakest signs of connection to the school environment. Students who did not engage in any offenses showed the highest dedication to activities related to school, while those identified as offenders were significantly more involved in extracurricular activities, especially in the realm of sports.	
Tan et al. (2018)	USA (a Midwestern state, not specified)	N/A	In a sample of 502 individuals, 331 (66 %) were young men charged with a sexual offense, while 171 (34 %) were charged with a nonsexual offense, all between the ages of 12 and 20.	Examining the relationship between student traits and delinquent behavior by studying two groups of adjudicated youth to evaluate the variations in their school experiences, etc.	No specific theory	Academic Difficulties Social Communicative Difficulties School experience Delinquency Race/ Ethnicity and Special Education Status	Academic Difficulties: five questions Likert scale Social Communicative Difficulties Likert scale School experience: 5-point scale Delinquency:	The link between the quality of school experiences and delinquency is clear for both general delinquents (GDs) and juvenile sexual offenders (JSOs). The experiences within the school environment demonstrated a negative relationship with delinquency across both groups.	To improve the social communicative abilities of delinquents, programs could adopt a social-emotional learning framework that facilitates the screening, identification, and correction of particular shortcomings in social skills. The reading and mathematics skills of young individuals can be assessed.
Vroom et al. (2023)	USA (Florida)	From 2004	FLDJJ conducted a study involving 77,763 adolescents	The objective is to explore the connection between school attachment and	People with strong connections to mainstream society	Opioid Misuse (OM) school bonding	School Bonding Index (SBI) consists of eight variables: 1. a history	Female JIA patients who showed higher	Findings indicate that the school environment and the connections formed within

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Table 1 (continued)

Metadata	Location	Period	sample	aspect, aim	theoretical background	variables	tool	result	treatment, suggestion, new initiatives, future research
		to 2015	who were part of the justice system, turned 18 by 2015, and had sufficient information regarding school bonding and operational measures (OM). The most common age for justice-involved adolescents (JIA) from 2004 to 2015 was between 13 and 14 years old.	opioid misuse (OM) in individuals diagnosed with juvenile idiopathic arthritis (JIA), while also examining how this relationship varies by gender. Hypothesis 1 (H1): Individuals with JIA who report greater levels of school bonding are expected to show a lower tendency to meet the criteria for opioid misuse in the past 30 days (P30D). Hypothesis 2 (H2): It is anticipated that female patients with JIA who exhibit higher levels of school attachment will use less likely opioid compared to male ones.	are less prone to commit a crime than those with weaker ties (Hirschi, 1969).	control variables, e.g. age, income.	of suspensions or expulsions, 2. issues related to school conduct, 3. the belief among JIA that their school fosters a supportive environment, 4. JIA participation in school activities, 5. JIA attendance at school, 6. the likelihood of JIA remaining in school, 7. JIA's conviction regarding the importance of education, and 8. the number of school staff members (such as teachers or coaches) with whom JIA felt at ease discussing matters.	school attachment scores use less opioid	it should be taken into account in treatment, particularly regarding how this atmosphere might influence opioid misuse (OM). Furthermore, disengagement from school—characterized by e. g. a disinterest, substance misuse, and dropping out (Skinner et al., 2008). Generally, disengagement from school precedes dropout and can lead to exclusionary disciplinary actions.

The role of socioeconomic status was analysed in one case (Bender, 2012). Bender's study did not confirm the significant impact of SES on school bonding (neither on health-risk behaviour nor on other delinquent behaviour). From another perspective, the relevance of neighbourhood was investigated by Chung et al. (2011) with the index of neighbourhood affluence, reporting that young people in more prosperous communities tend to have better access to educational and job opportunities, which leads to increased involvement in school activities. Kirk & Sampson (2013) found that committing violent crimes and living in a concentrated poor neighbourhood increases the chances of being arrested and neighbourhood poverty may contribute to the lower level of school bonding. Lower SES often correlates with limited access to educational resources, higher rates of absences, and less parental involvement in education, all of which negatively impact school bonding.

Chung et al. (2011) noted the role of parental education and detected its negative correlation with school bonding (along with other socio-demographic factors such as location, community exposure, and several prior educational and psychological factors such as IQ, opportunity structure, expectations to succeed, and grade). Kirk and Sampson (2013) also reported asking about the parents' educational attainment in their investigation. However, they did not measure its importance.

Comorbid psychological disorders were reported in only one case (Atilola et al., 2021). The researchers found that conduct problems, oppositional-defiant disorder and/or ADHD were significantly associated with lower school engagement. Besides, Bender (2012) measured the relevance of the caregiver's mental health. However, the research did not report any significant impact on school bonding, although the author noted that the parent's poor mental health may have a disruptive effect on school bonding and educational outcomes, similar to maltreatment, which can result in mental health problems of the child/adolescent, including posttraumatic stress disorder (PTSD), depression, or conduct problems.

In some cases, offenders (as the experiment group) were compared to non-offenders (the control group). Bender's (2012) study highlighted school disengagement among youths as a significant intervening factor in the connection between maltreatment and delinquency. Those youths who faced a higher risk of maltreatment indicated lower levels of engagement in school, such as difficulties in relationships with teachers and incomplete school assignments. Consequently, this disengagement from school was linked to a greater probability of engaging in delinquent behaviour. According to the research conducted by Silva et al. (2016), the degree of school bonding was a key factor in differentiating the groups, revealing that students who left school had the weakest signs of bonding with respect to their investment, commitment, and connection to teachers. Furthermore, the offenders displayed markedly reduced levels of involvement in both school-related and extracurricular activities.

Methodology

Concerning the methodology of the papers, two main types could have been detected namely interviews and surveys. It was also typical to use the data of a huge database. In three cases, the Pathways to Desistance study, which is a long-term examination of adolescents convicted of serious offenses within the court systems of Philadelphia, PA (Philadelphia County) or Phoenix, AZ (Maricopa County), was utilised (Abeling-Judge, 2022; Chung et al., 2011; Jäggi et al., 2020). Bender (2012) used data from the National Survey for Child and Adolescent Well-Being (NSCAW), which contained self-reported data and interviews with youth and their caseworkers. In their 2013 study, Kirk and Sampson (2013) examined the data from the Project on Human Development in Chicago Neighborhoods Longitudinal Cohort Study (PHDCN-LCS), a multi-wave research initiative created by the Chicago Police Department, the Illinois State Police, and the CPS, utilizing neighborhood and school-level information sourced from the U.S.

census, CPS, and the PHDCN Community Survey. Vroom et al. (2023) applied the data of the Positive Achievement Change Tool (PACT) assessment designed by the Florida Department of Juvenile Justice (FLDJJ). Only one paper has been detected in evaluating currently existing programs and their efficacy. Longshore et al. (2005) examined the gathered data to evaluate five Treatment Alternatives to Street Offending (TASC) programs, aiming to assess the substance treatment needs of perpetrators, to guide them to the necessary drug treatment or training and to track their progress. The other paper focused on single cross-sectional studies, using an own typically lower sample of below 1000 participants (Atilola et al., 2021; Silva et al., 2016; Tan et al., 2018).

Cross-sectional studies were the predominant methodology across the reviewed studies. These provide a snapshot of the relationship between school bonding and delinquency, they cannot measure causality. Longitudinal studies could capture how school bonding evolves over time and its long-term effects on behaviour. However, this type of paper was underrepresented. The same is true for quasi-experimental studies, which could assess the efficacy of mentoring programs, extracurricular activities, or school reintegration efforts.

Data Collection Methods may have an impact on the results. Surveys and interviews were frequently used to gather self-reported data on school bonding and delinquency. However, these are subject to bias, such as social desirability. Mixed-method studies could be effective for capturing both quantitative trends and qualitative insights while such approaches could better contextualise findings within the lived experiences of juvenile offenders.

Main outcomes

School bonding can be regarded as a soft index that can be interpreted in various ways, and the interpretation of school bonding varies in different papers. Tan et al. (2018) support this statement, declaring that the literature refers to school experience by many terms, including "school bonding," "school engagement," and "school connectedness". Longshore et al.'s (2005) paper gave the most precise and detailed interpretation of bonding, supported by theories. In their case, commitment is an investment in adherence to traditional behaviours or dedication to established practices (Nagin & Paternoster, 1994). It is generally assessed through educational or career aspirations, the perceived significance of work or education, and/or levels of religiosity (Akers & Sellers, 2004). Involvement, which reflects the temporal dimension of connection, is frequently evaluated based on the amount of time dedicated to homework, conventional employment, religious gatherings, or standard extracurricular activities. A substantial conceptual overlap exists between these two dimensions of social bonding, making empirical separation challenging (Conger, 1976; Hirschi, 1969; Kempf, 1992; Krohn et al., 1983). For this reason, Longshore et al. (2005) combined commitment and involvement into a single measure, including liking for school, the importance of getting good grades and educational aspirations. Conversely, Silva (2016), referencing the Theory of Social and Personal Control of Deviant Behaviour during Adolescence established by Le Blanc (1998) and Le Blanc et al. (2003), viewed school bonding as a concept with multiple dimensions that encompasses investment, commitment, and bonding to educators. Investment relates to the time allocated to academic endeavors, feelings of competence or inadequacy, and the ambition to succeed in school while participating in extracurricular activities. Within this framework, the time dedicated to school-related tasks, including attendance and homework, is directly linked to students' academic performance (grades) and their connection to teachers. Commitment, which refers to a student's engagement in education, reflects a sense of responsibility that adolescents internalize to varying extents, motivating them to attend school and concentrate on their studies.

According to Vroom et al. (2023), the connections that adolescents form with their schools, school representatives, and various aspects of

their academic experiences are referred to as school bonding (Maddox & Prinz, 2003). Based on social bonding theory, it is posited that adolescents who maintain a stronger connection to their educational environment are less inclined to partake in risky behaviours, as they are socialised to align with the expectations of the school and are more likely to embrace the established norms within that context. The establishment of this connection fosters the development of positive relationships with peers, educators, and other supportive adults, thereby facilitating prosocial growth (Cassino & Rogers, 2016). Moreover, important components of social bonding theory are crucial for understanding the idea of school bonding, which highlights (1) commitment to traditional objectives, like appreciating education; (2) participation in socially approved activities, such as going to class or finishing assignments; and (3) the level of trust in common norms and values, demonstrated by youths' faith in the value of education and their respect for authority (Gilmore et al., 2005; Hirschi, 1969).

Several correlations have been found in the research studies that have examined the positive or negative association between school bonding and other indicators, the most important of which are the findings on childhood maltreatment, time spent in education before entering prison, dropout, self-control and social influences. First, the link between early drop-out and maltreatment should be highlighted, Bender (2012) found a positive correlation in his research. He pointed out that young people more exposed to maltreatment reported higher rates of lower school engagement (e.g. getting on less with teachers, not completing school work), dropouts from school were more likely to be related to delinquency, and thus a strong correlation between bullying, school dropouts and delinquency.

An interesting correlation was found by Atiola (2021) when he discovered a positive correlation between the time spent in education prior to entering prison and the level of school engagement. This means that the more years of schooling before arrest, the higher the respondents' school engagement scores.

Silva's (2016) research finds a strong link between dropout and school bonding. He points out that of the four groups studied (O-Drop, O-S, NO-Drop, NO-S), non-offending students (NO-S) had the highest levels of school bonding, and dropouts had the lowest levels of school bonding. The connection was clear across all three domains analyzed: investment, which includes time dedicated to schoolwork and activities that bolster education; level of engagement, reflecting the significance placed on succeeding in school and one's attitude towards it; and bonding to teachers, indicating emotional identification with educators. The link between bonding to school and dropout rates underscored the significance of this variable for maintaining academic progress during adolescence, highlighting its potential role as a protective factor and a deterrent against the deviant and delinquent behaviors of at-risk individuals.

Longshore's (2005) study explored the link between school bonding and self-control, revealing that low self-control had a negative correlation with all three indicators of bonding examined (traditional moral beliefs, attachment, and commitment/engagement), while showing a positive correlation with interactions with other offender youths and participation in crime in subsequent analyses. Thus, young people with lower self-control are less attached to school and have a higher risk of contact with delinquent peers and of committing a crime.

Social influences, including family and peer relationships, strongly impact successful participation in education, as Abeling and Longshore have investigated in their research. The research conducted by Abeling-Judge (2022) indicated that social factors, such as family, peers, and partners, enhance the chances of young offenders who have dropped out early returning to education. While his findings lend some credence to his hypothesis—showing that partner relationships have a positive impact on school reentry—he could not establish a similar connection for family or friends. The significance of partner relationships is further corroborated by qualitative studies on educational reentry (Haley, 2006) and earlier life course research (Boylan & Renzulli, 2017).

Longshore et al. (2005) assessed the effect of peer groups on juvenile offenders. He used five indicators to measure the deviant peer factor; these were alcohol use, drug use, doing things against the law, getting into arguments or fights and getting into trouble. It is notable that this measure of deviant peer relationships is not based on a simple count of deviant peers. His study revealed that interacting with deviant peers correlates with low self-control and weaker connections to school across all three areas (conventional moral beliefs, bonding, and commitment/involvement), indicating that young individuals with diminished self-control are more prone to form ties with deviant peers and are less likely to feel attached to their school.

Good practices

In the studies reviewed, researchers have formulated very useful, forward-looking, adaptable suggestions and good practices for strengthening the school bonding of juvenile offenders, both in terms of prevention and intervention.

Jäggi (2020), Vroom (2023) and Tan (2018) highlight in their research that school climate matters and that it pays to support young people's motivation to learn, even among disengaged young people who are already struggling in school. Positive school experiences, the promotion of social communication skills and academic achievement can improve school bonding among young people, so their long-term positive impact and importance is unquestionable.

Based on Bender's (2012) findings, he asserts that teachers, school administrators, and educational professionals ought to implement strategies aimed at boosting young people's interest and involvement in school. Engaging young individuals should encompass prevention and intervention initiatives at the individual, classroom, and school levels, as well as participation in community-based activities. Chung (2011), Tan (2018) and Bender (2012) highlight that providing youth-focused programmes that aim to set long-term future goals and raise expectations for success is key to improving school attendance and engagement. The bonding of young people who are less attached to school can be strengthened by allowing them to participate in more curricular and extracurricular activities and school leadership initiatives while serving their sentence. In particular, Bender (2012) stresses that their involvement in community-based extracurricular activities can contribute to their positive development and support their school engagement. It is, therefore, key that they not only participate in school-based activities, but these initiatives can also contribute to developing personal and interpersonal social skills.

Vroom (2023) and Abeling-Judge (2022) also draw attention to the screening and prevention of school disengagement, which typically manifests itself as a lack of interest in school and intrinsic motivation (Skinner et al., 2008). School disengagement is crucial to screen for because it typically occurs before dropout and, in addition to leading to exclusion from school, may also be associated with deviant behaviour.

Silva stresses the key to developing the relationship between young people and their teachers. This link is also important in the education system in general, but it requires particular attention in reintegration programmes, where the young people concerned are young people in conflict with the law. They often have problematic relationships with teachers but they have no influential authority figures with whom they can develop stable relationships and identify.

Bender elaborates on the importance of considering which students to focus on when determining intervention strategies. Alongside universal programmes, selective programmes should also be taken into account. Universal prevention initiatives aim at the entire student body to foster norms of school engagement and achievement, while selective programmes can be tailored for juveniles engaged with the child welfare system. Furthermore, Bender recommends the establishment of formal mentoring programmes specifically designed for at-risk young individuals.

Atiola made valuable suggestions on how the juvenile justice system

in Africa could become an actually restorative and rehabilitative platform. The main problem, apart from underfunding and lack of differentiation, is the lack of identification and intervention programmes to address the social, educational, and behavioural needs of young people in pre-trial detention (Atilola et al., 2021).

Discussion

In the current systematic review, we analysed the characteristics of school bonding of juvenile offenders from various aspects. Given the specificity of the topic, most studies provide information on the socio-demographic background of the participants and its relevance. Typically, gender, ethnicity, and socioeconomic status (SES) are taken into account. Measuring the sociodemographic background of juvenile offenders concerning school bonding is important for several reasons. First, it may be crucial to understand the roots of offending behaviour. Youth from lower socioeconomic backgrounds might face limited access to resources, poor living conditions, and financial stress, which can influence their behaviour and school bonding (Reiss et al., 2019). Parents with lower educational attainment might have less knowledge or fewer resources to support their children's education, leading to weaker school bonding. This can increase the likelihood of juvenile offending, as educational disengagement is often linked to delinquent behaviour (Kim, 2020). The sociodemographic background is also critical in identifying disparities and targeted interventions. Gender Differences may appear in school-related experiences. For instance, boys might be more prone to physical delinquency, while girls might experience different forms of social alienation (Miller et al., 2010; Vidal et al., 2017). Ethnic and racial disparities also can have a significant relevance. Ethnic minority youth might face discrimination, cultural differences, or systemic biases in schools that weaken their bonding to the institution (Greenwald et al., 2022; Lambert et al., 2024). Understanding sociodemographic characteristics may also help professionals, policymakers, and decision-makers address the cycle of disadvantage. Juvenile offenders often come from backgrounds of multiple disadvantages, including low socioeconomic status, lower parental education, and marginalised ethnic groups. These factors can perpetuate a cycle of poor school bonding and delinquency (Abhishek & Balamurugan, 2024). Moreover, Understanding the sociodemographic background helps educators develop strategies to enhance school bonding for at-risk youth, potentially improving their academic performance and social integration (Roorda et al., 2011).

When exploring the elements that affect school bonding, we begin with Life course theory, which suggests that young individuals who do not have connections to prosocial adults or traditional institutions that encourage law-abiding behavior are at a higher risk of engaging in criminal activities (Sampson & Laub, 1997). Young people who have experienced abuse frequently come from environments where bonding is weak, or where the only available bondings are to antisocial or violent adults (Rikhye et al., 2008). Given that significant bondings can evolve throughout an individual's life (Sampson & Laub, 1993), schools represent a crucial opportunity for maltreated youth to engage with prosocial institutions, enabling them to build relationships with positive adult figures (Crooks et al., 2007) and cultivate prosocial skills (Catalano & Hawkins, 1996). In this context, the research by Tyler et al. (2008) indicates that the connection between neglect and delinquency is affected by school engagement: youth who experience neglect are less prone to delinquency when they are actively involved in their school environment, suggesting that school engagement could serve as a vital protective factor for maltreated young individuals. Similarly, Bender's findings reveal that a higher likelihood of delinquency is linked to dropping out of school, establishing a clear relationship among delinquency, maltreatment, and school dropout.

Social influences, including family and peer relationships, have a strong impact on successful participation in education. Research studies have shown that relationships with partners positively influence return

to school (Abeling-Judge, 2022) and association with deviant peers is associated with lower self-control and poorer school bonding (Longshore et al., 2005). The value of social connections, peers, family members and partnerships in relation to educational success has been highlighted by several studies (Boylan & Renzulli, 2017; Bridgeland, 2010; Haley, 2006). Taking into account the results of Haley (2006) and Boylan and Renzulli (2017), we can conclude that social influences from parents, peers, or partnerships can increase or decrease the reintegration of dropout offenders into the educational system.

Research in criminology predominantly indicates that the family is essential in the prevention, minimisation and reduction of criminal behaviour via affective relationships, parental supervision and continuous feeling of bonding (Abeling-Judge, 2022; Farrington, 2016; Farrington et al., 2006). While peer groups frequently encourage antisocial behaviors and mindsets, recent studies suggest that altering these peer networks can result in positive social changes. Adolescents are more at risk of dropping out of education if their bonding to their family is weakened (Bridgeland, 2010) or if peers negatively influence them, as they see their friends as role models (Haley, 2006).

An important finding of Longshore's (2005) research highlights the connection between self-control and offending when he finds that young people with lower self-control are more at risk of committing crimes and more at risk of coming into contact with peers who do commit crimes. These results are in line with the combined control theory according to which individuals having low self-control are more likely to spend less effort on maintaining traditional connections, reject the prevailing moral values of conformity, and instead seek the company of deviant individuals (Evans et al., 1997; Hirschi, 1969; Short, 1998). The research shows that the weakest school bonding is found among juvenile offenders who have suffered maltreatment as children, have had a shorter period of time in the education system before entering prison, have dropped out, have low self-control, and have poor social influences (Fernández-Suárez et al., 2016; Li et al., 2015).

The research highlighted various results, but it should be noted that these findings all point in one direction. As researchers have examined the relationship between school attachment and the academic engagement of juvenile offenders from a variety of perspectives, they have found evidence in several areas of the impact of school attachment factors in this particular setting. The research reviewed has drawn attention to the role of school dropout, maltreatment, level of self-control, community influences or time spent in education prior to incarceration in the process of school attachment. Studies have shown that early dropout, maltreatment, low self-control, less social contact and shorter time spent in school before going to prison are all associated with lower levels of school attachment, and that action in these areas would be worthwhile to improve school attachment among juvenile offenders (Romano et al., 2015).

The studies reviewed has identified a number of good practices that can help support the school bonding of young offenders in the long term. We should highlight the suggestion of Bender(2012), who stresses the need for more extracurricular activities to improve school engagement, which also emerges as an important protective factor. This finding is in line with that of Eccles & Barber (1999) and Mahoney et al. (2005) who contend that involving young individuals in extracurricular activities can create a supportive environment linked to favorable educational results. They assert that those who take part in sports teams, school leadership roles, intellectual endeavors, and study groups are more inclined to seek higher education. Furthermore, such activities connect at-risk youth with positive adult role models, while also offering chances for them to form bonds with peers who are engaged in learning, fostering shared values and objectives (Mahoney et al., 2005).

Based on Bender's suggestions, several universal and selective prevention programs and mentoring would also be needed to improve school engagement. Universal prevention efforts are particularly valuable when they contain both emotional and social programmes to support the improvement of behavioural and learning skills and encourage

young people to build relationships with each other and with their teachers. They have also been shown to have tangible results; for example, prevention programmes that teach how to deal with aggression in schools have been successful in reducing violent behaviour and victimisation in schools (Crooks et al., 2007; Farrington et al., 2006). Because of constrained resources, professionals in schools frequently implement selective prevention programmes instead of universal ones, directing their efforts toward youth identified as being at risk. These selective prevention programmes may focus on young individuals who are part of the child welfare system, who are frequently victims of abuse, or who face the chance of early school leaving due to various environmental influences such as low socioeconomic status or minimal parental involvement. Connecting these young individuals with supportive adults and peers through complementary activities like sports, school clubs, and other extracurricular options can be beneficial. Participation in such activities creates a protective environment linked to favorable educational results. Mentoring proves particularly effective for youth facing environmental risk factors, who might not have positive social connections within their families or communities, thus making it an excellent intervention for a targeted program. Young people who establish robust relationships with their mentors tend to report greater bonding to school and enhanced self-esteem in comparison to those who have not received mentoring in comparison to those who have not received mentoring (King et al., 2002).

The problem is that young people who commit status offences very often serve their sentences together with serious offenders. Atilola's research has made most of its recommendations for low- and middle-income countries (LMICs), but some of these may also be relevant for high-income countries (HICs). A solution could be to completely restructure the prison system so that offenders with a low-severity status offence are detained in a separate institution from offenders with more serious offences and to institutionalise a pre-admission psychosocial and educational assessment and a post-identification intervention plan.

Regardless of whether the initiatives are aimed at universal or selective prevention or intervention programmes, they are valuable and help young people connect with prosocial institutions, which can contribute to preventing reoffending. The importance of supporting school bonding and preventing early school leaving cannot be over-emphasised, as academic achievement is clearly closely related to long-term financial sustainability. Identifying the factors that determine academic achievement and supporting these processes can help researchers, policymakers and teachers to reintegrate as many juvenile offenders as possible into society.

Collecting as many good practices as possible would be crucial so that proven initiatives can be more easily replicated in other countries. It would be important to present the methods in detail, highlighting potential pitfalls and constraints, while allowing for flexibility to adapt to the challenges that arise. The exchange of knowledge of good practices would be useful, alongside the need for international comparison, to enable countries to benefit from successful initiatives by other countries' improvement agencies to support school engagement. Engagement strategies should be tailored to address the distinct needs and challenges faced by boys and girls. School policies and programs should reflect the cultural values and experiences of minority students. Also, academic, social, and economic support should be provided to low-income families and students.

Concerning methodological issues, we must emphasise that we could only detect interviews and cross-sectional studies. In these cases, it would be critical to measure the social background of the participants. Regarding the methodological quality, we should stress that by highlighting the validity and reliability of the arrangements and tools applied is often missing. However, ensuring the use of valid and reliable instruments is a cornerstone of scientific work. Developing and validating a universal tools for measuring school bonding across diverse contexts would be also critical. Due to the characteristics of the target group, quasi-experimental studies are extremely underrepresented.

However, using a quasi-experimental design can support the understanding and evaluation of new methodologies and practices. Also, designing and developing longitudinal studies could help professionals understand the development of delinquents' academic performance and general (physical, mental and social) health. Future studies should put greater emphasis on creating a long-term research design to better understand the youth concerned. Including diverse geographic and cultural contexts would also improve the applicability of findings globally.

Although this review offered a detailed comparison between the studies included in the literature, the research is not without limitations. Only cross-sectional studies could have been detected, which did not allow us to investigate the changing nature of school bonding. The cross-sectional nature of the studies limits causal inference by design, making it impossible to determine the direction of relationships. For example, while a correlation between weak school attachment and delinquency might be observed, cross-sectional studies cannot state whether weak school bonding causes delinquent behaviour or if engaging in delinquent activities leads to reduced bonding to school. On the contrary, longitudinal studies may address these gaps, allowing researchers to observe changes over time, capturing the sequence of events and potential feedback loops. A longitudinal design could track how interventions aimed at strengthening school bonding influence delinquent behaviour over months or years, providing insights into the sustainability and timing of intervention effects. Without this clarity, interventions risk addressing only symptoms rather than the root causes. For example, strategies designed to increase school bonding might be less effective if delinquency itself undermines bonding. Mentioning further limitations, only English papers were included, which can also be a hindering factor in detecting such programs. Because of the heterogeneity and diversity of the studies, no pool sizes and effect sizes were measured.

Future studies should also focus on the topics detected as under-represented themes to improve the knowledge of school bonding and our potential for its development and maintenance. As detailed above, another essential aspect would be a clear definition of school bonding. Furthermore, longitudinal investigations and quasi-experimental research should also be carried out to reach a better understanding.

Conclusions

This systematic review has provided a comprehensive analysis of the sociodemographic characteristics influencing school bonding among juvenile offenders. The findings highlight the critical role that socio-demographic background such as socioeconomic status, parental education, gender, and ethnicity play in shaping both school engagement and delinquent behaviour.

A key take-home message of this review is the importance of school bonding as a protective factor against delinquency. Life course theory emphasises that young people who do not have strong and close bonding to prosocial adults and institutions are more at risk to be offenders. Schools, therefore, represent a vital opportunity for juvenile offenders, especially those from disadvantaged backgrounds, to form positive relationships and develop prosocial skills. The research reviewed supports the notion that enhancing school engagement, particularly through extracurricular activities and mentoring, can significantly mitigate the risk of reoffending and support the reintegration of juvenile offenders into society.

Examples of extra-curricular activities could include the provision of different sports programmes, as sport develops self-discipline, teamwork and stamina, as well as providing opportunities to build positive relationships with peers and coaches. Artistic activities (music, visual arts, theatre) can also support self-expression and creativity, help emotional regulation and offer alternatives to destructive behaviour. Also, study circles or special interest groups (e.g. robotics, coding, literature) can stimulate intellectual development, strengthen problem-solving skills and help set long-term goals. Individual mentoring in the presence of an adult builds on a trusting relationship, which reduces loneliness and

feelings of rejection and increases self-esteem. Peer mentoring, which involves help from young people of a similar age but in a more stable situation, models prosocial behaviour and reduces negative peer influence. Mentoring activities in small groups also develop social skills and create a community support network. These programmes emphasise the role of relationships, as building prosocial relationships and strong bonding helps counteract negative influences. Skills development also plays a significant role, as key skills such as emotional regulation, problem solving and teamwork contribute to social inclusion. Positive feedback and the experience of success boosts young people's self-confidence, which helps them avoid re-offending. In addition, the support of the school community and mentoring adults reduces social isolation. It is important to tailor these programmes to the individual needs of the young people and to involve them in the planning and implementation of activities. This will ensure that young people are actively involved and genuinely engaged, further increasing the effectiveness of the programmes. Cooperation between schools and community organisations can be key to achieving long-term results.

The review also underscores the influence of social relationships on educational success. Family dynamics, peer relationships, and partnerships have a profound impact on school bonding and, consequently, on the likelihood of delinquent behaviour. Interventions that strengthen these social bonds, such as mentoring programs and involvement in extracurricular activities, have been shown to enhance school engagement and decrease the likelihood of dropping out and offending.

In conclusion, while this review has illuminated important factors and interventions related to school bonding among adolescent delinquents, there is a urge for more robust research methodologies to better understand and address the challenges faced by this vulnerable population. Enhancing school bonding through targeted, evidence-based interventions remains a critical pathway for reducing juvenile delinquency and supporting the successful reintegration of these youth into society.

Ethics approval and consent to participate

This research was conducted in accordance with the Declaration of Helsinki. The research is conducted ethically, the results are reported honestly, the submitted work is original and not (self-) plagiarised, and authorship reflects the individuals' contributions. Informed consent was not required for the study.

Consent for publication

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Declaration of competing interest

The authors declare the following financial interests/personal

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Supplementary materials

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