Systematic Review:

Systematic Review: The effects of adult mentoring interventions for children and young people at risk of offending on behavioural, psychosocial, and offending outcomes: A mixed-methods systematic review and meta-analysis

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Abstract

Background

Youth participation in anti-social behaviour, violence and offending is a significant cause of concern, with an increase in serious violence reported in recent times. Mentoring programmes may address these issues by providing an adult figure who builds a healthy relationship to guide and engage the youth, ultimately providing support opportunities for desired change, reducing the likelihood of criminality, violence, and antisocial behaviour.

Objectives

The mixed-methods review assesses both effectiveness and implementation evidence on adult mentoring for children who display or are at risk of displaying violence, anti-social or criminal behaviour.

Search methods

We used the following strategies to identify completed and on-going potential studies. A database search was conducted on Medline, PsycInfo, PsycExtra, Social Policy & Practice, Scopus, Repec, ERIC, Econlit, CASE Engagement database (EEP, UCL), and the US National Criminal Justice. We also searched relevant journals and websites. The data base search was conducted in June 2021, and the journal and website search were completed in March 2022.

Selection criteria

The review includes adult mentoring interventions targeted at children involved in crime or violence or at-risk children aged 18 years or below. The review includes effectiveness studies (experimental and non-experimental studies with a comparison group), process evaluations, cost and cost-effectiveness studies which utilise mentoring-only interventions or multi-component interventions with mentoring.

Data collection and analysis

Two review authors independently assessed studies for inclusion, extracted data, critically appraised the studies, and synthesized findings.

Main Results

We found 109 studies of which 87 are effectiveness studies and 32 qualitative studied or process evaluations.

The results indicate that mentoring interventions may have small to medium positive effects in reducing all offending, crime, violence, recidivism, substance misuse, externalizing behaviours, and improving peer outcomes, familial outcomes, physical health and academic and school-related outcomes. Out of 40 studies reporting costs, 35 studies reported a net saving to society and out of 15 studies providing comparisons to alternative provisions, all but one highlighted a direct saving from mentoring interventions.

The qualitative findings describe barriers and facilitators to participation and achieving outcomes. The barriers to participation include: mentor and mentee hesitancies; limited mentor availability; recruitment processes of mentors and mentees; lack of care giver buy-in; mismatch between mentors and mentees; challenges relating to the induction and retention of mentors and mentees; proselytising; fear of law enforcement authorities; lack of perceived benefits and competing priorities; harassment and disrespectful behaviours by mentees; issues of trust and confidentiality and transportation issues.

The facilitators to participation are mentor characteristics/qualities, training and supporting volunteer mentors, targeted recruitment, mentoring relationships, blending mentoring with other interventions, mentors performing different roles, well-matched mentors and mentees and satisfaction and personal development of mentors.

The barriers to outcomes include mentee activity attenuation, grappling with mentoring complexities, communication and coordination issues, poor leadership and senior management, location issues, funding issues, short-term mentoring programmes, and poorly managed termination of the mentoring relationship.

Buy-In from teachers and other members in after school mentoring interventions, long-term mentoring, supervision of mentors, financial incentives, leaders going an extra mile, multifaceted benefits from mentoring, parental/caregiver involvement, satisfaction and formal termination of the mentoring relationships are facilitators to achieving outcomes.

The main design issues in the included studies relate to weak explanation of programme activities, lack of specificity of mentoring interventions, heterogeneity between studies and the use of mentee self-report as a common method of assessment.

Summary of findings tables

The summary of findings tables shows:

- There were small and moderate beneficial effects on all offending, crime, violence, recidivism, substance misuse, externalizing behaviour, peer outcomes, familial outcomes, physical health and academic and school-related outcomes. All confidence intervals indicate a positive effect from mentoring interventions. Caution must be taken when interpreting our all-offending outcome. Furthermore, in most cases, there is low confidence in study findings.
- Mentoring interventions also reduced internalizing behaviour and mental health outcomes, although none were statistically significant, and confidence intervals indicate a wide range of possible effects. Confidence in study quality was also low for these outcomes.
- Socio emotional outcomes, attitudes and beliefs, service use and behavioural outcomes worsened as a result of mentoring interventions. Gang involvement also increased although all were not statistically significant, and the finding for gang involvement is based on just one study.
- Mentoring interventions reduced recidivism by 20.0% and improved peer outcomes by 29.4%. These findings were based on a large number of studies, although most are with low confidence in study findings.
- The majority of studies identified in this review were judged to have low confidence in study findings: 78 studies out of 86 studies and 24 out of 32 process evaluations were rated as low confidence.

Table 1. Summary of findings from quantitative analysis[1][2]

Outcome	*Effect Size OR (CI)*	*Critical Appraisal*	*Summary*
All offending	1.22*** (1.14-1.31) n = 37, k=100	9 high confidence, 28 low confidence	Moderate effect with large number of studies with mainly low confidence in study findings and possible publication bias
Violent offending	1.32** (1.08 – 1.61) n= 7, k= 17	7 low confidence	Moderate effect with very small number of studies and low confidence in study findings
Crime	1.18*** (1.09 - 1.27) N=31, k=71	3 high confidence, 28 low confidence	Small effect with large number of studies and low confidence in findings and possible publication bias
Gang involvement	0.88 (0.44-1.77) n=1, k= 2	1 study low confidence	Harmful effect from a single study with two outcomes and with low confidence in study findings
Recidivism	1.47*** (1.28-1.69) n= 23, k=58	4 high confidence, 19 low confidence	Moderate effect with moderate number of studies and low confidence in study findings and possible publication bias
Externalizing	1.13** (1.04-1.23) N=23, k=58	3 high confidence, 2 medium confidence, 18 low confidence	Small effect with moderate number of studies with low confidence in study findings
Internalizing	1.14 (0.98-1.32) n= 26, k=64	1 high confidence, 2 medium confidence, 23 low confidence	Small effect with moderate number of studies with low confidence in study findings
Attitudes and Beliefs	0.93 (0.785-1.098) N=18, k=50	8 high confidence, 1 medium, 9 low confidence	No effect with medium number of studies with moderate confidence in study findings
Social and Emotional Outcomes	0.81*** (0.76-0.86)	5 low confidence	Harmful effect with very small number of studies

[1]An increase in the effect is desirable, so OR>1 is improvement/increase e.g., reduction in crime.

[2] * P< 0.05; ** P<0.01, *** P<0.001.

	n=5, k=8		with low confidence in study findings
Behavioural outcomes	1.00 (0.90-1.11) n=14, k=22	1 medium confidence, 13 low confidence	No effect with moderate number of studies with low confidence in study findings
Substance misuse	1.34** (1.10-1.64) n=17, k=39	2 high confidence, 15 low confidence	Moderate effect with moderate number of studies with low confidence in study findings
Education - attendance	1.21*** (1.19-1.31) n=18, k=34	18 low confidence	Moderate effect with large number of studies with low confidence in study findings
Education - attainment	1.22*** (1.13-1.32) n=34, k=80	34 low confidence	Small effect with large number of studies with low confidence in study findings and possible publication bias
Education – Aspirations and Attitudes	1.16** (1.10-1.31) n=16, k=33	16 low confidence	Small effect with moderate number of studies with low confidence in study findings
Education - behaviour	1.00 (0.97-1.03) n=14, k=35	14 low confidence	No effect with small number of studies with low confidence in study findings
Familial outcomes	1.10** (1.02-1.18) n=11, k=33	1 medium confidence, 10 low confidence	Small effect with small number of studies with low confidence in study findings
Peer outcomes	1.69*** (1.30-2.22) n=12, k= 14	12 low confidence	Large effect with moderate number of studies with low confidence in study findings
Physical health outcomes	1.15** (1.03-1.29) n=3, k=3	3 low confidence	Small effect with very small number of studies with low confidence in study findings
Mental health outcomes	1.06 (0.89-1.25)	11 low confidence	No effect with small number of studies with low

	n=11, k=16		confidence in study findings
Service use, Attendance, and engagement	0.74 (0.422-1.30) n=2, k=13	2 low confidence	Harmful effect with very small number of studies with low confidence in study findings
Notes: Terminology is selected to be consistent with YEF toolkit (Youth Endowment Fund, 2021): Effect sizes High $d \geq 0.25$, moderate $0.10 \leq d < 0.25$, small $0.1 \leq d \leq 0.05$, no effect $-0.05 < 0 < 0.05$, harmful $d \leq -0.05$. For number of studies more than 30 is large, 12-29 moderate, 8-11 small and 7 or less very small. Publication bias is indicated in the last column for $p<0.05$ for Egger's test.			

Table 2. Summary of findings from qualitative analysis summary

Domain	Major themes identified
Barriers to participation	• Mentor and mentee hesitancies • Limited mentor availability • Recruitment processes of mentors and mentees: rigid prerequisites, non-awareness of service referrals and challenges relating to mentor induction • Mismatch between mentors and mentees: issues of mentor-mentee compatibility • Failed expectations • Challenges relating to the induction and retention of mentors and mentees • Proselytising • Fear of law enforcement authorities • Lack of perceived benefits and competing priorities • Harassment and disrespectful behaviours by mentees • Issues of trust and confidentiality • Transportation issues
Facilitators to participation	• Mentor characteristics/qualities • Training and supporting volunteer mentors

	• Targeted recruitment • Mentoring relationship: phases, emotional bond, trust, reciprocity, relationship based on respect rather than authority • Blending mentoring with other interventions • Mentors donning various hats: mentors as role models, mentors as guides, mentors as confidence builders • Well-matched mentors and mentees • Satisfaction and personal development of mentors
Barriers to achieving out-comes	• Mentee activity attenuation • Grappling with mentoring complexities • Communication and coordination issues • Poor leadership and senior management • Location issues • Funding issues • Short term mentoring programmes • Poor management of the termination of the mentoring relationship
Facilitators to achieving out-comes	• Buy-In from teachers and other members in after school mentoring interventions • Long term mentoring • Supervision of mentors • Financial incentives • Leaders going an extra mile • Multi-faceted benefits from mentoring (mentoring having other advantages) • Parental/caregiver involvement • Successful partnerships (connection to services)

	• Formal termination of the mentoring relationship with follow-up support
Study design issues	• Lack of information on content of intervention • Lack of clarity on mentoring specific components • Mentee self-report was a common method of assessment • Weak explanation on the termination process • Heterogeneity between studies

Table 3. Summary of findings from cost analysis summary

Cost analysis	*Findings*
Cost effectiveness	13 studies provided cost-effectiveness information for their mentoring intervention, with all but one indicating cost-effectiveness of their interventions.
Cost per participant	Eight studies provided information relating to the cost per participant, with studies reporting full programme cost and others just direct costs for participation. An example of the latter is Weiler et al. (2015) with a £11.52 reward forparticipation, and the former is Moodie and Fisher (2009) who report a cost per participant for the BBBS program in Australia of £3,501.
Total cost	10 studies provided information relating to the total costs of their interventions. Costs ranged from £11,903 to £845,000 per mentoring program.
Programme cost	23 studies reported information on programme costs. These studies referred to salary costs, costs to offer services, stipends, and incentives to complete interventions.

The findings relating to barriers to participation fall under following themes: mentor and mentee hesitancies, limited mentor availability, recruitment processes of mentors and mentees, mismatch between mentors and mentees, volunteer drop out, proselytising, fear of law enforcement authorities, lack of perceived benefits from "additional" after-school mentoring, harassment and disrespectful behaviours by mentees and issues of trust and confidentiality.

The themes under facilitators to participation are: mentor characteristics/qualities, training and supporting volunteer mentors, targeted recruitment, mentoring relationships, blending mentoring with other interventions, mentors donning various hats; and well matched mentors and mentees.

Barriers to achieving outcomes are: mentee activity attenuation, grappling with mentoring complexities, communication and coordination issues, poor leadership and senior management, location issues, funding issues, transportation issues, short-term mentoring programmes; and poorly managed termination of the mentoring relationship.

The major themes under the section of facilitators to achieving outcomes are: buy-In from teachers and other members in after school mentoring interventions, long-term mentoring, supervision of mentors, financial incentives, leaders going an extra mile, multi-faceted benefits from mentoring, parental / caregiver involvement, satisfaction and personal development of mentors, successful partnerships; and formal termination of the mentoring relationships.

In the qualitative section, we also discuss study design issues and the causal processes identified from the included process evaluations.

Table of contents

List of figures

List of tables

Abbreviations and acronyms

List any relevant abbreviations or acronyms used.

AIM	Advocate, Mentor and Intervene
BBBS	Big Brothers and Big Sisters
CAKE	Caring About Kids Effectively
CMA	Comprehensive meta-analysis
CYP	Children and Young People
FOC	Friends For Change
ITT	Intention to Treat
JJB	Juvenile Justice Board
MLM	My Life Mentoring
Q1	Qualitative
QES	Qualitative Evidence synthesis
QOP	Quantumu Opportunity Program
Qt	Quantitative
RCTs	Randomized Controlled Trials
RQ	Research Question
TBSR	Theory Based Systematic Review
ToT	Treatment of the treated
UK	United Kingdom
USA	United States of America
WHO	World Health Organisation
YJB	Youth Justice Board
YOT	Youth Offending Team

1.0 Background

1.1 The Issue

This review targets children and young people under the age of 25 who have already offended or are at risk for offending. Risk is characterized by the presence of personal or environmental characteristics that increase the probability of engaging in criminal or violent behaviour later in adolescence or adulthood (Tolan, 2013).

Youth participation in anti-social, violent behaviour and offending is a significant cause of concern. There has been a significant increase in serious violence, as well as the number of knife-related crimes committed by children, in recent years (White et al., 2021). Youth violence is the fourth leading cause of death for young people worldwide, with an estimated 200,000 deaths per year (WHO, 2015). The problem affects victims and perpetrators of youth violence, their families, friends, and communities to a great extent.

Over the last decade, the number of research studies describing risk factors that contribute to youth violence, as well as protective factors that reduce victimisation and perpetration rates, have seen a gradual rise (WHO, 2015). Interventions to address violence have been classified as adopting either a deterrence approach or rehabilitation approach (Lipsey et al., 2010). The focus on rehabilitation has evolved from preventive approaches which have sought to protect children from risk factors, to strengths-based approaches, such as positive youth development, that build on a child's strengths to facilitate their achieving their potential (Case, 2018).

Mentoring interventions have been identified as one such effective intervention for high-risk youth or youth engaged in anti-social behaviours (DuBois et al., 2002; Tolan et al., 2008; Raposa et al., 2019). Mentoring programmes have grown in popularity over the last two decades and continue to remain one of the most popular interventions to combat youth anti-social behaviour and offending. In the United States, it is estimated that 4.5 million youth are involved in formal mentoring relationships (Congressional Research Service, 2019).

Mentoring is defined as a method of working with children and young people that typically involves a relationship between an older, more experienced mentor and a young protégé who is not related to the mentor (the mentee) (Goldson, 2008). In practice, mentoring programmes are designed and implemented in a number of different ways. All of the programmes, however,

give young people the chance to interact and engage with older or more experienced people who support them (DuBois, 2021).

There is good evidence base available for mentoring interventions in children and adolescents on varied outcomes such as education, health, behavioural, psychological, and emotional difficulties (Du Bois et al., 2002, 2011; Christensen et al., 2020; Raposa et al., 2019, Wheeler et al., 2010) The most recent review focused on offending outcomes (Tolan et al., 2013) requires updating. In addition, the existing evidence reviews are either exclusively quantitative in nature or narrative syntheses, rather than the mixed methods approach which is taken up in this review. Specifically, this review assesses the effectiveness of interventions to address offending, anti-social and disruptive behaviour in children aged up to 18 who have already offended or are at risk of doing so.

1.2 The intervention

Mentoring interventions

Mentoring has been described by the United States Office of Juvenile Justice and Delinquency Prevention as an unwavering, altruistic relationship between an older and more experienced peer and a novice or inexperienced youth. Recent times have seen an increase in mentoring activities (Garringer et al., 2017).

Whilst the nature of mentoring interventions and their components vary (Karcher & Hansen, 2014), four key common characteristics have been identified (Tolan et al., 2013):

1) The recipient's identification with the mentor, which aids in motivation, behaviour, and bonding.

2) Information or training to help with social, educational, legal, family, and peer difficulties;

3) Advocacy for the mentee in many systems and settings (e.g. employment and service engagement); and

4) Emotional support and befriending to build self-efficacy, confidence, and a sense of belonging (Tolan et al., 2013).

Mentoring can be split into two categories: formal and informal mentoring (Chao et al., 1992). In the case of formal mentoring, a mentor is recruited, trained and matched with a mentee to engage in various activities such as goal-setting, addressing risk behaviours and building on the young person's strengths and abilities. Informal mentoring, also known as natural mentoring evolves organically from the youth's social environment and the mentoring process is largely unstructured in nature (Du Bois & Rhodes, 2006). Examples of informal mentors include teachers, sports coaches and religious figures.

Both types of mentoring use the mentoring relationship to teach and guide mentees on how to better regulate their emotions and behaviour, become more socially conscious and committed, make healthy choices, deal with stressful life events, and build social capital (Dolan & Brady, 2012).

Other distinctions are between adult or peer mentoring, between one-on-one or group mentoring interventions (Burton, 2020) in-person vs. virtual forms of mentoring, whether programmes either take place at a specific site (e.g., school) or allow for mentor-youth activities to take place in a variety of community settings, whether additional components (e.g., skills training or stipends) are included distinct from and in addition to mentoring, and whether mentors are volunteers or paid (Garringer et al., 2017).

Our review assesses only studies on adult mentoring interventions for youth who have offended, and at- risk youth, aged under 18 years. Adult mentoring interventions typically pair a youth with an adult without advanced professional training who is not a family member to promote positive development of the young person in areas such as behaviour, school performance, and emotional well-being (DuBois & Karcher, 2014). The review covers only mentoring interventions; the effect of informal mentoring is not included.

Adult mentoring to prevent anti-social and criminal behaviour, including violence, generally involves an adult figure who builds a healthy mentoring relationship and uses it to provide support opportunities for desired change in young people. The relationship that exists between a youth and an adult figure is crucial. The mentor uses the mentor-mentee relationship to guide and engage the young person, reducing the likelihood of criminality, violence, and antisocial behaviour. We include studies that evaluate mentoring-only interventions and multi component interventions with mentoring. These multi-component interventions combine

mentoring with other components such as life skills training, academic and remedial support, vocational guidance, and advocacy.

There is also a distinction between structured and non-structured approaches. The traditional approach is non-structured or non-specific. Christensen (2020) describes the latter as the 'historically dominant, non-specific friendship model, which holds that a supportive relational bond—alone—promotes positive developmental change [sic] to mentoring' (ibid: p.959). In contrast structured are more prescriptive on how the mentor should engage with the mentee, and the activities to be undertaken. Structured approaches may thus include elements to develop specific skills and/or assist with attainment of particular goals (e.g., employment, college acceptance). Raposa et al. (2019) found that adult-youth mentoring programmes included in their meta-analysis were mostly programmes 'unstructured' or 'semi-structured' (21%) in nature. The relative effectiveness of structured versus unstructured approaches is a key policy issue. Our review includes structured, semi-structured, and unstructured mentoring interventions.

There are questions that remain unanswered about the effectiveness and implementation process of mentoring interventions. A systematic review of independent evaluations of mentoring programs targeting children and adolescents found the large variability in the efficacy of these interventions to be a continued constraint on our ability to give policy advice (Du Bois et al., 2011). There is also a lack of clarity on the specific mechanisms by which mentoring can lead to behaviour changes. The ability to analyse these is constrained by the fact that many studies fail to capture the features of intervention design and programme characteristics of mentoring (Tolan et al., 2013).

Our mixed methods review assesses both effectiveness and implementation evidence on adult mentoring for children who display or are at risk of displaying violent, anti-social or offending behaviour.

1.3 How the intervention might work

A theory of change is a visual representation created through a participatory process that shows how an intervention is intended to contribute to the desired outcomes by identifying causal links (White, 2009). Existing reviews on the efficacy of mentoring programmes for at-risk youth show that mentoring is expected to achieve positive outcomes for offending behaviour

(DuBois et al., 2002; Rhodes, 2002; Ropasa et al., 2019; Tolan et al., 2014). Existing studies point out the lack of well-developed theories of change in the design of mentoring programmes, as well as a poor description of mentoring programmes. This limits the knowledge base on mentoring (Tolan et., 2013). A theory of change for interventions provides insights into how change processes may work.

Recent research in youth crime calls for researchers to engage in strengths-based approaches to youth justice work (Barton & Butts, 2008; Nissen, 2006; Wood, 2009). That is, rather than concentrating solely on risk factors and deficits in children and their immediate surroundings, we also seek to explore the assets and strengths of children and young people who have already offended or are at risk of offending. The model steps away from the sole focus on shortcomings or deficits, emphasizing also a young person's resources and potentials. This technique emphasises positive growth, strengths, and resilience (Rose, 2006). The strength-based approach aims to provide children with experiences that will aid in the development of beliefs, attitudes, and skills that will lead to happy childhoods and successful adulthood that is fully and constructively engaged in society (Holt et al., 2020). The theoretical grounding for the review comes from an asset-based approach and the strengths perspective. To the extent possible, our review tests the applicability of this approach to adult mentoring and provides insight into the processes and factors which contribute to positive outcomes from mentoring interventions, and by so doing avoid negative outcomes such as anti-social and violent behaviour. However, quantitative studies may not report the intermediate outcomes of interest to test causal pathways, though qualitative data may provide insights into which ones are most likely to be operating.

Following Rhodes (2005), as described in DuBois et al. (2011), adult-youth mentoring programmes are believed to work through three channels:

(1) A healthy and meaningful relationship is established between the mentor and the mentee. Mentors help mentees build prosocial behaviours and attachments by providing support and modelling caring behaviour. As a result, mentees' social-emotional abilities improve;

(2) The development of cognitive skills such as information processing and self-regulation through engaging in discussion with adults; and

(3) Identity formation, whereby adult mentors act as role models.

In addition to these three channels, the following channels can also support positive outcomes:

(1) structured programmes with elements such a goal setting and additional components may directly contribute to life skills development;

(2) mentors act as advocates for children, which can help with social and other connections;

(3) mentors can provide employment services such as preparing CVs and interview preparation;

(4) mentors can assist with connection to services; and

(5) there can be a diversionary effect – that is diverting the youth from settings and activities which may encourage anti-social and offending behaviour - through the time spent with the mentor, and in new interests developed as a result of the mentoring engagement.

According to many studies, the mentor-mentee bond/relationship is an important asset which enables mentoring programmes to achieve intended outcomes (Abrams et al., 2014; Dam et al., 2018; Edwards et al., 2015), so the quality of that relationship will be an important mediating variable for many of the above channels.

This review's proposed theory of change is a mid-level theory. This means that the theory sits between high-level theory (which is too abstract to be empirically tested) and project-specific (or low-level) theories of change. The theory of change helps frame the analysis and understand if the existing evidence is consistent with the different hypothesized causal mechanisms, which can have implications for design

The theory presented here is based on those contained in the papers we reviewed and additional causal mechanisms which were evident from our scoping of the literature, though not explicitly spelled out as such in those papers. The order in which the theories are presented is not determined by any sort of preference or importance.

- Solution focussed theory: This strengths-based approach focuses on resources and how they can be used to effect positive change. The framework's key components include focusing on goals, eliciting solutions to problems faced by the young person, and identifying strengths and resources (Bond et al., 2013).
- Labelling theory: This theory is a sociological approach to crime and deviance that focuses on the role of social labelling in the development of criminality and deviance. Although social labels are a part of the cultural framework that people use to define and classify the social world, deviant labels are distinct because they are stigmatising. Labelling theory is premised on this assumption. Labelling applies to mentoring interventions in at least two ways: (i) mentoring may be offered as part of a pre-court diversion intervention which keeps the young person out of the justice system, thus avoiding the labelling associated with that; and (ii) the mentor will reinforce positive aspects of the young person, with the intention of countering negative labels which they may have encountered in their past. Both of these channels should help build self-esteem.
- Social learning theory: Drawing from the work of Albert Bandura (1977), this theory believes individuals learned crime via interactions with close associates (Scarpitti et al., 2009). In mentoring, the mentor builds a close relationship with the mentee and influences the youth's cognition and behaviour. And time spent in positive activities leaves less time to be spent with peers who may lead the young person to anti-social behaviour. Mentoring also provides young people with repeated exposure to situations in which they are shown to be in charge of their own destiny (Clarke, 2009). This is closely associated with modelling theory in which the mentor could serve as a positive role model for the child and influence the child to adapt pro-social behaviours.
- Theory of mentoring relationship: The relationship between mentor and mentee is the core of mentoring. A mentoring relationship, according to Keller's theory of mentoring relationship development, is a dynamic and evolving relationship characterised by stages of development that include a contemplation phase, an initiation or getting acquainted phase, followed by a growth and maintenance phase, and finally a decline phase. The mentor uses these phases to build and establish trust with the mentee and work towards bringing about the desired changes. Stability and longevity of mentoring relationships are central to Keller's theory (De Wit, 2016). Both duration and quality of mentoring are suggested mediators.

- Activity theory: Relationships are formed in settings with people who participate in the setting's activities together. These shared experiences are intersubjective, affecting the people in each activity setting's cognitions, emotions, and behaviours. Mentoring programmes can engage youth in pro social activities which support positive cognitive development.
- In the protective model of resilience that pays attention to protective factors, it is argued, that mentoring can foster positive outcomes, and healthy personal qualities in the face of adversity (Bonanno, 2004; Ungar, 2004). In the context of mentoring for children, the mentor identifies protective qualities and factors and builds on them.

Table 4. Causal processes and intermediate outcomes

Theory (causal process)	Intermediate outcomes
Relationship theory	Diversion Meaningful interaction Sense of belonging, acceptance and connectedness Positive attitude Improved interpersonal relationships Pro social values Development of new skill
Social learning theory	Opportunities for learning and modelling Change in cognition and behaviour Pro social values Healthy attachment Aspirations
Social bond theory	Social and emotional support from an adult Healthy attachment Formation of positive relationship Pro social values Pro social attitudes Enhanced self-competence Change in cognition and behaviour
Labelling theory	Diversion, reduction of negative consequences Differential surveillance Change in setting (removal from court) Time use Positive attention

	Positive engagement
Solution focussed theory	Positive evaluation Identification of resources & strengths Goal setting Increased self-worth Positive change in cognition Diversion Pleasure from leisure activities
Activity theory	Positive stimulation & engagement Development of interpersonal skills Mutual interests
Protective model	Identification of strengths & resources Reduction of risks and negative interactions Healthy attachment Positive attitude & growth mindset Aspirations Values
Advocacy	Connection to services Social capital
Connection to services	Mental health services Accommodation
Remedial education	Human capital Academic performance School engagement
Employment services	Human capital

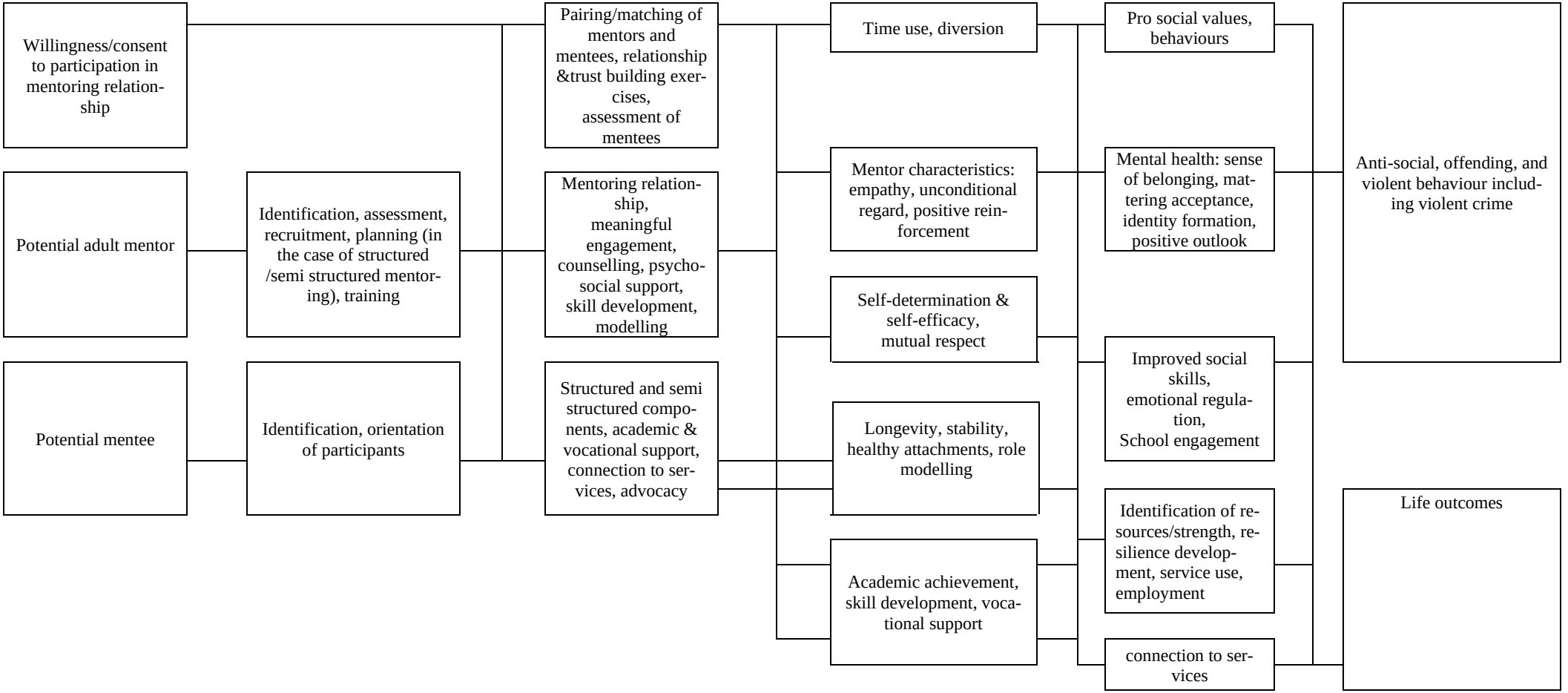
	Job applications and interviews Employment status
Positive youth development	Competence (Human capital) Confidence (Self-worth / esteem) Character (Values) Caring/compassion (Empathy) Connection (Social skills, social capital)

The processes and intermediate outcomes by which positive results can be acquired are shown in Table 4. The discussion points out that many of these outcomes are dependent on the mentoring relationship. Understanding the various phases of mentoring relationships sheds light on how changes occur in mentoring relationships (Kram, 1983). The goals of a relationship are established during the initiation of the relationship. The cultivation phase follows, during which the participants get to know and understand one another. There is a stronger emotional bond formed, as well as more meaningful interactions. When there is a structural or emotional separation, the separation phase begins. The mentee becomes more self-sufficient. The final phase is redefinition, which occurs when the relationship takes on a different layer or comes to an end. However, as discussed below, if termination is badly handled then any beneficial effects from mentoring may be offset.

Figure 1 provides a visual representation of the causal processes. The figure includes a range of causal processes in mentoring that may contribute to the reduction in child anti-social, violent, and criminal behaviour, some of which have been largely overlooked by existing systematic reviews.

These causal pathways are depicted in Figure 1, which portrays the flow operation of the theory from inputs to activities and outputs, as well as intermediate and final outcomes. It is very important to emphasise that carrying out these activities does not inevitably result in these outcomes. Analysis of these elements through the included qualitative studies facilitates disentangling the causal pathways.

Figure 1. Theory of change for mentoring interventions



1.4 Why it is important to do the review

There is only one existing review that assesses the effect of mentoring on offending outcomes (Tolan et al., 2013). This review needs updating.

In addition to that, this review is needed since:

- None of the existing reviews are mixed method reviews.
- None of the existing reviews tackle the issue of high rates of attrition which have been observed in mentoring programmes. This attrition has been reported as over 50 per cent in a process evaluation of 80 mentoring interventions carried out by the youth justice board in England and UK between 2001-2004 (Roberts et al., 2005).
- Raposa et al. (2019) reviewed 70 mentoring programme evaluations and concluded that mentoring services have a medium/moderate impact on all youth outcomes considered. The review found that structured mentoring interventions are no more effective than unstructured. However, the review by Christensen et al. (2020) reports that structured mentoring interventions have an overall effect size that is more than double that of non-specific relational approaches, according to the results. This conflicting finding is examined further in the review.

Finally, the funder of this review, the Youth Endowment Fund, is interested in the impact of mentoring on children's involvement in violence, which has not been assessed in any of the existing reviews - Tolan et al. (2013) reported aggression but not violent offending.

2.0 Objectives

The review addresses the following research questions:

- What is the evidence on the effects of adult mentoring programmes in reducing anti-social, violent and offending behaviour in children at risk aged under 18 years? Are these effects sustained after the end of mentoring?

- Which aspects or features of adult mentoring programmes, and their participants, promote the reduction of anti-social, violent and criminal behaviour in children aged under 18 years (that is, how do we explain observed variation in effects)?

- What are the hindering factors and barriers that affect the successful implementation of adult mentoring programmes in children aged under 18 years?

- What are the supporting factors and facilitators that contribute to the achievement of intended outcomes of adult mentoring programmes in children at risk aged under 18 years?

- What is the evidence on programme costs and incremental cost effectiveness? (The incremental (or marginal cost) is the cost of providing the intervention over and above the cost of usual services).

3.0 Methods

3.1 Study Selection Criteria

Studies are included in the review if they are an evaluation of a programme which meet the following selection criteria:

- The programme (or intervention) involves adult mentoring intervention of children at risk of involvement in crime or violence, including youth who have offended.
- The programme is an organised activity (so merely engaging in motivating/influencing conversations, unorganised role modelling and lay counselling is not included).
- The programme is targeted at children/youth who offend or at-risk children, or youth aged below 18 years (i.e., up to and including 17 years of age). It is the programme, not the study sample, that must be targeted.

These criteria are elaborated below.

3.2 Types of participants

Children aged up to and including 17 years old who have engaged in or are at risk of engaging in offending or antisocial or disruptive behaviour. Studies including youth aged 18 to 25 have been included if the majority of the intervention and control groups met the inclusion criteria. Evidence suggests that the prevalence of offending rises in late childhood, peaks in adolescence (around ages 15-19), and then declines in the early twenties (Piquero et al., 2007). But mentoring programmes are most common amongst children and youth not young adults, so the upper age limit is set at 17.

Risk is defined as the presence of personal or environmental traits that raise the likelihood of engaging in criminal or violent behaviour in adolescence or adulthood (Tolan, 2013). Children who engage in destructive or violent behaviour, both of which are risk factors for antisocial and criminal behaviour in adolescence, children who have had traumatic or adverse life experiences, and children from economically disadvantaged families are examples. Most commonly, the target population is described as at risk by the study authors and we take that as indicating an eligible population.

Children who have previously offended are especially vulnerable to repeat offences. Mentoring interventions may serve as a correctional intervention for these offending children.

‘At-risk’ children can be identified in the included studies a variety of ways:

- Screening: Prior to implementing an intervention (e.g., for disruptive behaviour), a research team may administer an assessment tool and induct only those with a high score into the study for both experimental (treatment) and control groups.
- Assessment: Many countries have assessment systems in place to identify children and young people who are at a medium or high risk of offending, and these systems can be used to recruit participants into the intervention.
- Referral: Social workers, schoolteachers, and police officers may refer youth to a mentoring intervention programme. In England and Wales referrals are commonly made by Youth Offending Teams.
- Youth can be directly recruited by outreach such as project staff visiting places where children and young people who are at risk are known to spend time and schools with large numbers of disadvantaged students.
- Geographical targeting: The intervention could take place in a neighbourhood with a large number of at-risk children and youth.
- Proxy targeting of the intervention to reach young people who already have risk factors for antisocial and criminal behaviour, such as socioeconomic status and ethnicity.

To target children and youth who have already offended, interventions in custodial settings, referral on discharge, or referral as part of a diversion approach may be used (Malhotra et al., 2021).

3.3 Types of interventions

Studies of secondary and tertiary adult mentoring interventions are included in this review. These studies are designed specifically for children who are at risk of offending or have already offended.

Secondary prevention strategies strive to reduce or eliminate the harm caused by established risk factors, and build on the young person’s strengths. They are aimed at those who show early indicators of having poor life trajectories, with the goal of assisting them in achieving a positive life trajectory (Bowen, 2016). Tertiary preventive programmes are designed to minimize rather than reverse harm in the most seriously at-risk people who already have offended. They aim to reduce the likelihood of future offending (Bowen, 2016).

Universal (or primary) mentoring interventions open to all children are not a part of this review. Generic mentoring programmes open to all children to navigate a range of challenges such as ‘every child needs a mentor’ in the UK are excluded.

We include both studies with mentoring as the sole intervention and studies with mentoring and other interventions. Mentoring and life skills training, mentoring and remedial coaching, and mentoring and sports are examples of multi-component interventions.

We exclude studies with interventions that are entirely focused on the therapeutic component and only have mental health outcomes such as mentoring and cognitive behavioural therapy for depression and mentoring for anxiety disorders.

3.4 Types of outcomes measures

Table 5 outlines examples of primary and secondary outcomes included in this review. Only studies reporting at least one of the primary outcomes are included in this review. In very broad terms, the outcomes are:

- Primary outcomes: behavioural, psychosocial, and offending outcomes such as violent offending, substance abuse, reoffending, anti-social, disruptive and delinquent behaviour.
- Secondary (intermediate) outcomes: values, attitudes and beliefs, mental health, and resilience.
- Barriers and facilitators: Themes will be extracted from qualitative data. Any quantitative data related to barriers and facilitators, such as participation rates, will also be coded and reported.
- Cost-effectiveness: costs (total and unit, average or marginal), cost-effectiveness, and cost-benefit analysis.

Table 5. Outcome categories, with examples of each outcome[3]

Outcome category	Examples
Violent offending	Arrests for violent acts; assault; homicide; violent crimes; knife crime
Crime	Arrests; delinquency; court contacts; criminal contacts; convictions; non-violent offences; drug arrests; property related crime; misconduct
Gang involvement	Currently a gang member; ever a gang member
Recidivism	Recidivism; time to first recidivism; probation officer contacts; likelihood of any reoffending
Externalising	Conduct problems; antisocial behaviour; CBCL externalising; PSDQ total difficulties; emotional symptoms; ADHD; ODD; aggression; anger
Internalizing	CBCL internalizing; PSDQ total difficulties; self-esteem; self-concept; self-worth; self-control; self-adequacy; self-regulation; immaturity; coping
Attitudes and beliefs	Empathy; future orientation; social competencies; acceptance, compliance; attitudes towards older people; hope; attitude to cooperating in crime; attitude to dropping out of school; attitude to having a baby while a teenager; perceptions of classmates' acceptance
Social and emotional outcomes	Thriving; prosocial skills; developmental assets; emotional engagement; conscientiousness; social-emotional competence; emotional engagement

[3]CBCL = Child Behaviour Checklist; PSDQ = Parental Styles and Dimensions Questionnaire; ADHD = Attention Deficit Hyperactivity Disorder; ODD = Oppositional Defiant Disorder; GPA = Grade Point Average.

Behavioural outcomes	Prosocial behaviour; socialization; responsibility; cooperation; assertiveness
Substance misuse	Alcohol volume; frequency of alcohol use; frequency of drug use; substance abuse; alcohol use; drug use; involved in drug activities
Academic and school related outcomes: attendance, attainment, aspirations/attitudes and behaviour	GPA; grades; reading; writing; value of school; school delinquency; trouble in school; attendance; discipline referrals; absenteeism; skipping school
Familial outcomes	Family and living arrangements; special adult; connectedness to family; home support; quality of parental relationship; social support from family, parent, mother, father
Peer outcomes	Affiliation with delinquent peers; peer refusal skills; connectedness to peers
Mental health outcomes	Depression; anxiety; psychotic conditions; mental health treatment; well-being
Service use, attendance and engagement	Community Service; advocacy activities, contracting activities; recreational activities

3.5 Types of studies

This is a mixed methods review that includes different study designs to address our research questions (RQ). To evaluate the effectiveness of adult mentoring interventions (RQ 1 & 2), we include:

- Experimental designs: randomized controlled trials (RCTs)
- Non-experimental / quasi-experimental designs: designs with a non-randomly assigned comparison group.

We do not include before versus after studies with no comparison group.

We use these evaluations to extract outcome data and conduct a meta-analysis (or meta-analyses) to evaluate the effectiveness of adult mentoring interventions, as well as moderators that explain observed variation in effects.

To understand the success factors and possible barriers to participation in adult mentoring interventions and achievement of outcomes (RQ3) we also included:

- Process evaluations and qualitative studies of interventions: Any evaluation or study of an eligible intervention discussing design and implementation issues.
- Information on barriers and facilitators were also be extracted from effectiveness studies if reported.

To evaluate the cost-effectiveness of adult mentoring interventions (RQ 4), we included any other studies and reports presenting cost data, as well as extracted information from effectiveness studies or process evaluations if available.

3.6 Search Strategy

Search methods and sources

The research team members (HW&ML) first identified the key words by reviewing benchmark studies. Then, the search strategy was developed in consultation with our information specialist (JA). The searches were executed by our information specialist (JA). The search included the following databases: Medline, PsycInfo, PsycExtra, Social Policy & Practice, Scopus, Repec, ERIC, Econlit, CASE Engagement database (EEP, UCL), and the US National Criminal Justice Reference Service. Appendix A presents an example of the search strings used for publication databases and search engines, with terms for interventions, regions, and methodologies.

Searching other resources

In addition to searching electronic databases, we screened the bibliographies of included studies and existing reviews of mentoring intervention programmes for eligible studies. Studies on mentoring from the YEF Evidence and Gap Map were rescreened for the purposes of possible inclusion in this review. We hand-searched the table of contents for the last five years for the journals listed in Table 1 of Appendix A. In addition, we searched relevant websites listed in Table 2 of Appendix A. We snowballed to other websites identified in these searches, systematically documenting each website searched (website, URL, date, any filters or search strings used, and studies identified for screening). Further details on the search strategy are described in the study protocol (Lakshminayaran et al., 2021).

4.0 Data collection and analysis

4.1 Screening and study selection

Screening of studies for inclusion or exclusion was undertaken in two stages using EPPI reviewer 4. In the preliminary stage, title and abstract screening was carried out. The second stage encompassed full text screening. Both stages of screening were done by two independent researchers (MN, GS) against predefined inclusion criteria for the review, with a third-party arbitrator in case of disagreement (HW). Examples of excluded studies can be seen in Table 16.

4.2 Data extraction and management

For impact and process evaluations and qualitative studies, we used a standardized data extraction form (Appendix D) to extract descriptive data from all the studies that met our inclusion criteria. Data extraction from each study included context/geographical information, population, study design and method, intervention types and outcome types, and subcategories. Two researchers (MN, GS) conducted the data extraction for each study. Both coders were trained on the tool before starting. Disagreements were resolved through discussion with a third reviewer consulted as needed (HW).

For effectiveness studies, extraction of raw data from evaluations was conducted by students from Lanzhou University (JL, ZL) and GS. All relevant information was extracted for all outcomes reported by the primary evaluations, and agreement between the coders was assessed. Any disputes were discussed and resolved.

4.3 Assessment of risk of bias in included reviews

The confidence in the study findings of all studies included in the review was assessed using a critical appraisal tool for primary studies developed by the Campbell Collaboration Secretariat. The tool has been constructed in such a manner that it covers both quantitative and qualitative studies. Please refer to Appendix C for the tool with coding criteria. Coding for critical appraisal was carried out by two independent reviewers (MN, GS) with disagreements resolved through discussion with a third-party reviewer (HW). Each researcher was first trained on the critical appraisal tool, and then coded all studies.

The tool contains critical dimensions of the evaluation. Each of these is marked as high, medium, and low. The overall score uses the ‘weakest link in the chain’ principle. Hence, confidence in study findings can only

be as high as the lowest rating given to the six critical items in the effectiveness study and nine critical items in the qualitative/process evaluation.

The tool includes seven critical items for the assessment:

1. Study design
2. Intervention
3. Outcomes
4. Sample Size (Power Calculation)
5. Baseline balance
6. Attrition
7. Evaluation Question

The qualitative tools include nine critical items:

- Is the qualitative methodology described?
- Is the qualitative methodology appropriate to address the evaluation questions?
- Is the recruitment or sampling strategy described?
- Is the recruitment or sampling strategy appropriate to address the evaluation questions?
- Are the researcher's own position, assumptions and possible biases outlined?
- Have ethical considerations been sufficiently considered?
- Is the data analysis approach adequately described?
- Is the data analysis sufficiently rigorous?
- Are the implications or recommendations clearly based in the evidence from the study?

5.0 Meta-analysis

The following sections describe the procedure for conducting a meta-analysis of mentoring intervention programmes. Multiple meta-analyses were conducted for different outcomes that were reported by the primary evaluations, and each meta-analysis followed the same procedure.

5.1 Estimation of effect sizes

The primary unit-of-analysis for the quantitative data within the studies of interest was usually the individual, that is the specific child or young person within a programme. The studies reported data at the programme level, reporting aggregate data for all children or young people in the programme.

Multiple papers or reports based on the same study or data were treated as a single case for purposes of this review, which fits with our proposed approach to mixed methods analysis, described below, in which the unit of analysis is the case or study, not the paper.

Where there are multiple papers, we selected the most complete reference if all of the relevant information is available in a single source. If the multiple reports each provide different information (e.g., different outcomes or different subgroups), then the data from all these reports was coded as separate outcomes in a single case. Where a study reported multiple measures of the same outcome the mean of the relevant outcomes was calculated and used in the overall meta-analysis (as discussed below in section 5.2).

Cohen's *d* effect sizes were transformed to an odds ratio (on the natural logarithm scale) using the following formula: LOR = *d*/0.5513 (Lipsey & Wilson, 2001:201). Odds Ratios were computed via the available information for other effect sizes found in primary studies, such as proportions, percentages, raw frequencies, regression coefficients, chi-square and marginal distributions, etc. All effect size calculations were performed using the Campbell online effect size calculator (Wilson, no date).

Our study includes some outcomes which are typically reported as dichotomous variables (e.g., offending behaviour), and some which are more often reported on a scale (e.g., behavioural measures). To perform the

meta-analysis, we used the odds ratios for dichotomous variables. Cohen's *d* effect sizes were calculated for interventions that reported outcomes as continuous variables.

All effect sizes were reported in the common metric of odds ratios converted to a percentage reduction via 2x2 table for the purposes of communicating with policy makers and practitioners.

An effect size for pre-intervention and post-intervention was recorded and used to calculate the intervention effect (i.e., the pre-post change). These computed effect sizes are indicative of the effectiveness of the intervention, or in other words, how the outcome of interest changed following implementation of the mentoring intervention. This calculation is described in Appendix F.

Under a random effects model, an analogue to the ANOVA approach was used to match moderator analyses of a single categorical variable. Univariate meta-regression techniques were used to perform moderator analyses of continuous or multiple moderators, also under a random effects model.

Direction and comparability of effects

Before conducting the meta-analysis, we carried out rigorous checks to ensure that all outcomes were comparable and reported in consistent directions. All variables were transformed so that an increase is an improvement, and OR>1 favours the intervention. Two authors conducted these checks independently of one another and any inconsistencies were resolved through discussion (GS, MN). Outcomes were grouped using a theoretically informed outcome framework. We also recorded the instrument used to measure each outcome and the definition of the specified outcome to ensure that outcomes grouped together for the meta-analysis were indeed comparable.

The majority of outcomes showed changes in the expected direction. For example, higher values indicated more violence or more prosocial behaviour. A desirable intervention effect for outcomes such as violence or antisocial behaviour would be indicated by a greater *reduction* in the experimental group relative to the change in the control group[4].

[4]Desirable intervention effects also indicated by: (1) no change in the control group, but a reduction in the experimental group; (2) an increase in both groups, but less of an increase in the experimental group compared to the control group; (3) a decrease in both groups, but more of a decrease in the experimental group compared to the control group.

The opposite is true for outcomes such as self-control or prosocial behaviours, where higher scores are desirable. Thus, we adjusted the direction of effect sizes for outcomes such as aggression, so that the resulting intervention effects have a consistent desired direction across all meta-analyses.

The rationale for this adjustment is described in further detail in the technical appendix (Appendix F). The result is that for all meta-analyses, odds ratios greater than 1 represent a desirable intervention effect. It follows that odds ratios of less than 1 represent an undesirable intervention effect, and an odds ratio of equal to one suggests a null intervention effect. In other words, a mean odds ratio of greater than 1 indicates, for example, a greater reduction in aggression in the experimental group relative to the control group and a greater improvement in prosocial behaviour in the experimental group relative to the control group.

5.2 Missing data

There were a number of scenarios where missing information could impact the results of our meta-analysis. For example, when examining the relationship between the mean age of participants and effect size, an evaluation may report an age range rather than the value of the mean age. As such, we handled missing data using the "infer, initiate, impute" method described by Pigott and Polanin (2020; Polanin et al., 2021). Missing data may have resulted in less precise and possibly biased effect estimates in single studies within our analyses.

5.3 Multiple reports of the same outcome

For several reasons, a single study may report the same outcome multiple times. We treated such instances based on the reason for multiple reports as follows:

- Where a study reported multiple effect sizes for the same outcome, we used the mean of the selected subgroups in order to ensure that effect sizes were independent, and not given undue weight in our analysis which would bias the results.
- For the purposes of moderator analysis, we coded each sub-group effect size as a unique effect along with details of the sub-group. A code (full sample or sub-sample) was included so that only the full sample estimate is used in the overall meta-analysis, but the appropriate sub-sample estimate can be used for the sub-group analysis.

- Follow up analysis: Where a study has outcome data on follow up, we coded all effects along with the time of the measure. These effect sizes were used for our analysis of the durability of effects.

Model specification: Non-experimental studies may report effect sizes with and without confounders. We picked the effect size from the preferred model of the study authors (the preferred model was the most parsimonious model which allows for confounders). If no preferred model is stated, then we used the effect size from the most comprehensive model specification.

5.4 Intention to treat (ITT) versus treatment of the treated (ToT) outcome measures

High attrition, that is loss of participants to follow up, is a problem in many youth programmes. Differential attrition was reported during the coding stage for all quantitative studies where possible. Where attrition is high then it matters whether the reported effect size is ITT or ToT. Where a study reports a ToT effect size, it is in principle possible to convert this effect size to ITT, if the data are available to do so. However, as it was not possible to exclude or transform all ToT outcomes, instead of converting ToT effect sizes to ITT effect sizes, we ran a moderator analysis to investigate if differences existed between ITT and ToT study outcomes included in this study.

5.5 Treatment of publication bias

Publication-selection bias was assessed for the primary outcomes of anti-social behaviour, youth offending, and violence by constructing a funnel plot for each of the three outcomes (Higgins & Green, 2011). The funnel plot is used for a trim-and-fill analysis and the calculation of Egger's test.

5.6 Sensitivity analysis

In order to evaluate the impact on the combined effect of an outlier, studies with imprecise estimates, or studies with especially small or large estimates, we ran a 'one study removed' analysis in CMA. This runs an analysis with all studies except the first, then all studies except the second, and so on. The resulting forest plots show the impact of each study on the overall combined effect for a particular outcome. This analysis allows us to comment on particularly influential studies within our analysis which may be influencing results.

5.7 Planned moderator analyses

Moderator analyses were planned *a priori.* For a full list of the moderators, informed by the theory of change, see Table 6.

Table 6. Moderators

Characteristic	**Moderator**
Country	USA Rest of World
Publication type	Published Unpublished
Setting of mentoring	Urban Rural Urban and rural
Structure of mentoring intervention	Highly structured component Moderately structured component Unstructured component
Mentoring vs mentoring plus	Mentoring alone Mentoring plus e.g., academic component
Mentoring component	Mentoring only Primary (mentoring is primary component) Secondary (mentoring is secondary component)
Training of mentors	Yes No
Level of risk for offending	Low Moderate High
Gender	Male Female All sexes
Duration	Length of the mentoring intervention (continuous)
Time of effect analysis	Time taken from the end of the intervention to measurement of the effect
Sample size	All ranges

Intensity	Frequency of meeting Time spent per visit
Age of mentee	All ranges
Age of mentor	All ranges
Ethnicity	All or predominately minority ethnic group (80%+) Partially minority ethnic group (1-79%) No or minority of minority ethnic group (0%)
Nature of intervention	One-on-one Group Combination of one-on-one and group
Research design	Experimental Non-Experimental
Mentor mentee matching	Systematic matching Random allocation
Type of mentors	Volunteers Paid mentors Teachers Probation Officers
Setting for mentoring interven-tions	School Community House other
Key processes in mentoring	Relationship Modelling Emotional support Social support Skills training Guidance Advocacy
Termination of mentoring	Majority planned, informed & reported Majority unplanned and poorly reported
Study quality	High

	Medium Low
Intention-to-Treat (ITT) / Treatment on the Treated (ToT)	ITT ToT
Comparison condition	Passive control Parole Custody Alternative mentoring programme Alternative treatment

5.8 Mixed method analysis (treatment of qualitative research)

The importance of qualitative evidence systematic reviews in tandem with effectiveness reviews is becoming more widely recognised (Lorenc et al., 2011).

This review adopts that approach – that is, combining qualitative data with a quantitative meta-analysis – within the framework of a theory-based systematic review, TBSR (White, 2018). The TBSR approach – which has similarities with the framework synthesis approach (Booth, 2015; Carroll, 2013) – takes the intervention as the unit of analysis, not the individual study. Different studies may contribute to findings at different stages of the causal chain. For example, process evaluations shed more light on implementation issues than do most effectiveness studies, such as the failure of a quality mentoring relationship to be established and why that was so, which can help explain both the size of, and variations in, effect sizes.

Specifically, qualitative data can be:[5]

- *Integrated* with quantitative data to elaborate the causal chain, that, is the different causal mechanisms within the theory of change. For example, there may be a large gap between the intention to treat and treatment of the treated effect size on account of high attrition as mentors or mentees fail to show up in the first place or drop out. Qualitative data is usually best placed to understand barriers and facilitators to participation.

[5] This list draws on Carvalho and White (1997).

- Used to *confirm*, *enrich* and *illustrate* the findings of the quantitative analysis. For example, mentoring can have direct and indirect deterrent effects that may lead to a reduction in criminal behaviour, aggression and violence. Quotes from young people or their parents supporting these causal mechanisms add detail to the report, strengthening confidence in the effect as one that does operate through the posited causal mechanism.

- Used to *explain* the study findings. The TBSR approach uses the funnel of attrition to recognize the fact that effect sizes get smaller moving along the causal chain from outputs to immediate or short-term and intermediate outcomes to final outcomes.

- The relevant factors in mentoring may include: poor relationship with the mentor for various reasons, weak links in the causal chain (for example, qualitative studies highlight that young people involved in crime may not lack self-esteem, so the causal mechanism through higher self-esteem through mentoring won't operate); badly managed termination of mentoring programmes participation, and that mentoring, especially group mentoring, may provide a channel for anti-social behaviour and aggression.

- The previous point contains examples where qualitative data may contradict or *refute* the intended causal mechanisms, possibly leading to a counter-theory (Carvalho & White, 2004), e.g., that services for at-risk children may have iatrogenic effects by bringing them into contact with other peers who are involved in crime.

- Merged with findings from quantitative analysis into a single set of implications for policy and practice.

The causal chain framework is shown in Table 7. Quantitative data are indicated as Qt and qualitative as Ql. Quantitative data refers to both effect sizes and factual quantitative data such as participation rates. As shown in the table, we tested the consistency of the data with various theories identified in the theory of change.

Table 7. Stages of the causal chain with data to be examined at each stage

Stage in causal chain	Data
Awareness of the programme amongst relevant service providers and target group	Know of programme, aware of eligibility criteria, purpose and how to access (Qt/Ql)
Enter the programme Stay with programme for whole duration	Attrition (Qt) Reasons do not participate or remain in programme (Ql)
Activities undertaken	Descriptive material (Ql)
Nature of the mentoring relationship	Mentoring relationship (Ql)
Diversion	Time use (Qt and Ql)
Connection to services	Channels for service connection (Ql) Effects on service engagement (Qt)
Behavioural impact	Pro-social behaviour. Self-worth. Future outlook. (Qt supported by Ql).

Table 8 shows the TBSR framework, which is used for both horizontal and vertical synthesis (White, 2018). The data in Table 8 is subject to vertical, horizontal, and total synthesis. Vertical synthesis involves summarizing the evidence across all cases, which is the way systematic reviews are usually performed, especially for quantitative analysis of effects. In the case of qualitative data, vertical synthesis is a thematic analysis, in which common themes are identified across studies.

Horizontal synthesis summarises across a case – which may be done in narrative reviews, but with the difference here that the data for an intervention may come from more than one study.

The overall synthesis combines both, though may well contain separate overall synthesis by sub-group. The overall synthesis approach, drawing on both horizontal and vertical synthesis, 'tells the story' of if the intervention works, for whom, under what circumstances and why.

Table 8. Theory Based Systematic Framework

	Barriers to participation	Facilitators to participation	Barriers to achieving outcomes	Facilitators to achieving outcomes	Causal processes	
Case 1						Horizontal synthesis
Case 2						

Case n						
	Vertical synthesis					Overall synthesis

5.9 Cost analysis

For the cost analysis in the review, we extracted data relating to costs from impact evaluations, process evaluations, and cost related studies (cost effectiveness, cost per participant, total costs, and studies that report programme costs). This included data in an ingredients approach to listing intervention components and their cost, cost effectiveness, which includes an estimate of averted cases of offending, or a cost-benefit analysis which sets costs against the financial savings from averted offending or later criminal activity.

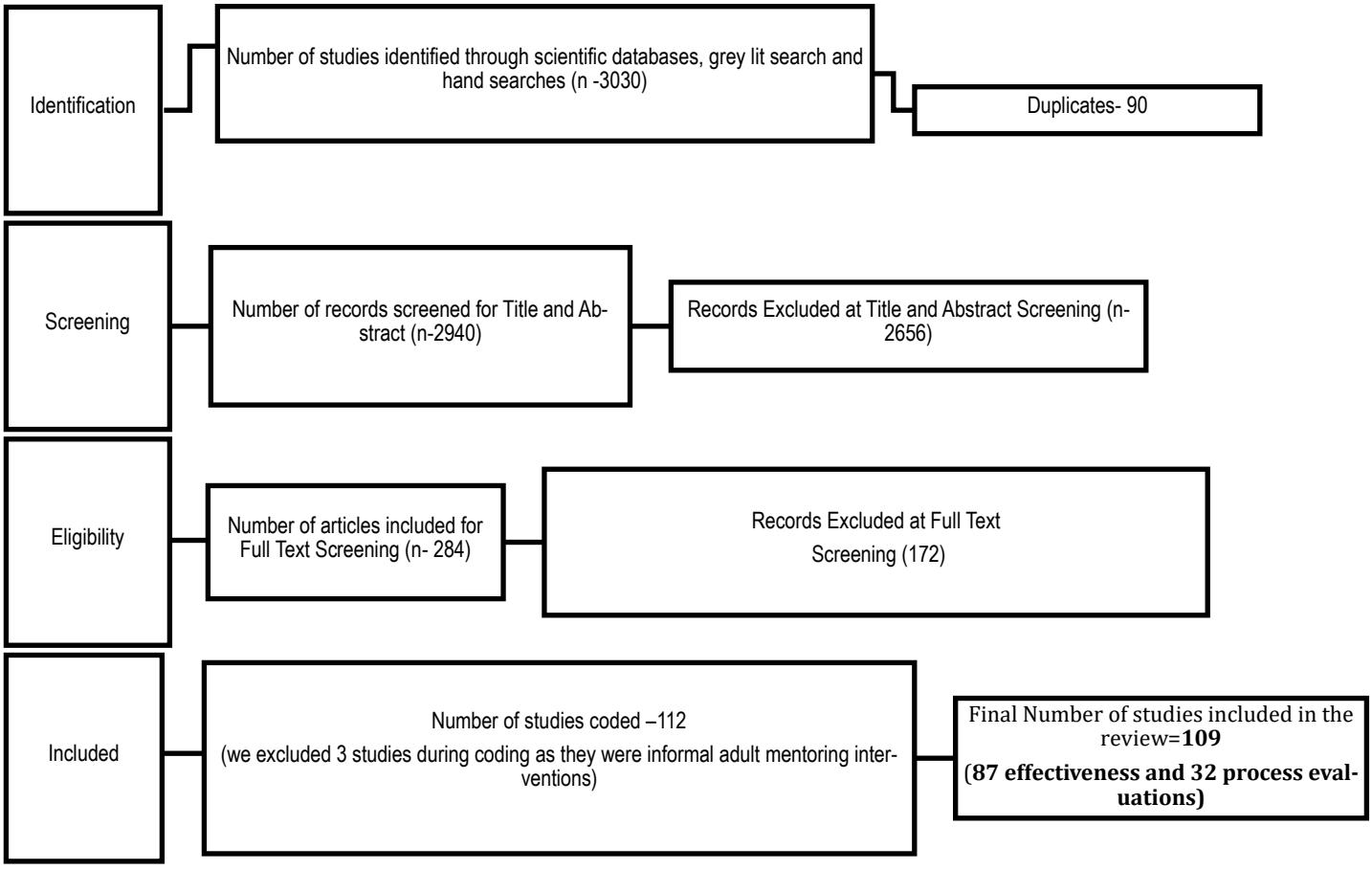
The characteristics of these studies were summarised narratively. To effectively and accurately compare between the costs involved and analyse within mentoring interventions in this review, all figures were calculated to the average value of the Great British Pound (GBP) in 2021, from either Euros, Australian or US Dollars.

6.0 Results

6.1 Description of results

We identified 3,030 studies from database searches. This included 2,947 studies from the scientific database search and 83 studies from the grey literature search. We identified 90 duplicates, leaving 2,940 studies for title and abstract screening. We excluded many studies at this stage as they failed to target children and youth at risk for offending or those who have already offended. 284 studies were screened at the full text stage. We excluded 175 studies at the full-text screening stage, leaving 112 studies for coding. The final number of included studies in the review is 109 with 87 are effectiveness studies and 32 qualitative and process evaluations. These figures are shown in the PRISMA diagram (Figure 2).

Figure 2. PRISMA Diagram[6]



The included studies include:

- 87 effectiveness studies, of which:
- 63 are experimental studies
- 24 are non-experimental studies
- 4 four effectiveness studies with cost-analysis
- 32 Process Evaluations.

[6]Some mixed method and cost studies have been coded in more than one category.

Geographical Area

The vast majority (87%) of the included studies are from North America, with the others mainly from Europe, including 11 from the UK. We found no studies from South Asia, or South America or Africa. The studies are all from high-income countries.

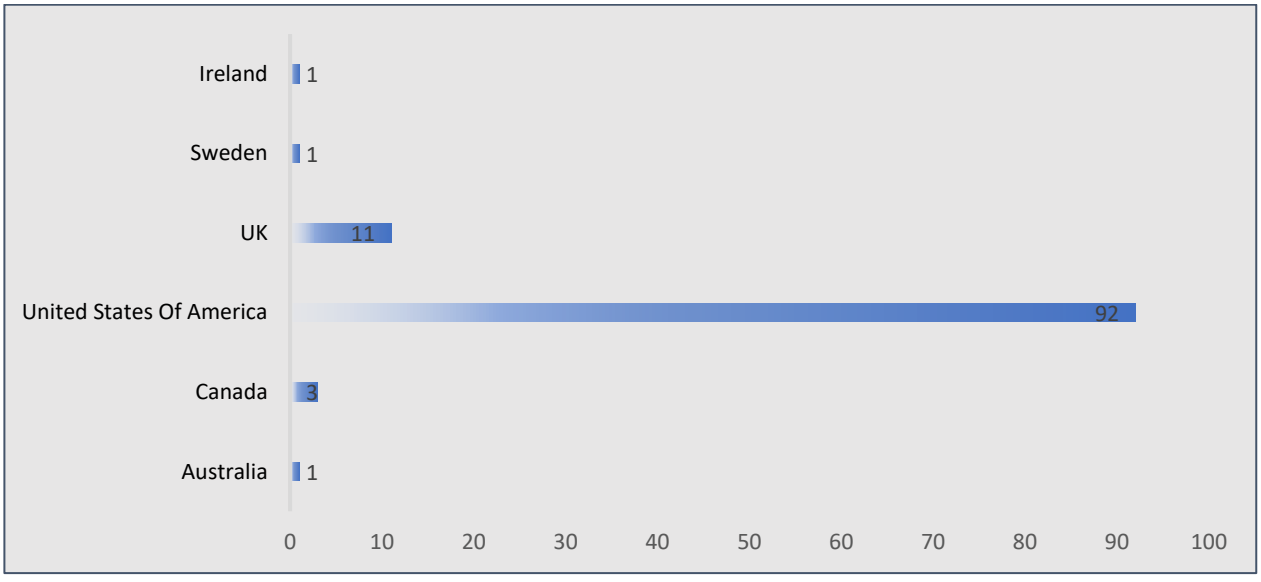
Table 9. Number studies as per the region

Region	Count
Europe & Central Asia	13
North America	95
Oceania	1

Studies classified by country

Most of the studies are from the United States of America (92); see Figure 3. This is followed by 11 from the UK. There are three studies from Canada and one each from Australia, Sweden and Ireland.

Figure 3. Studies classified by country

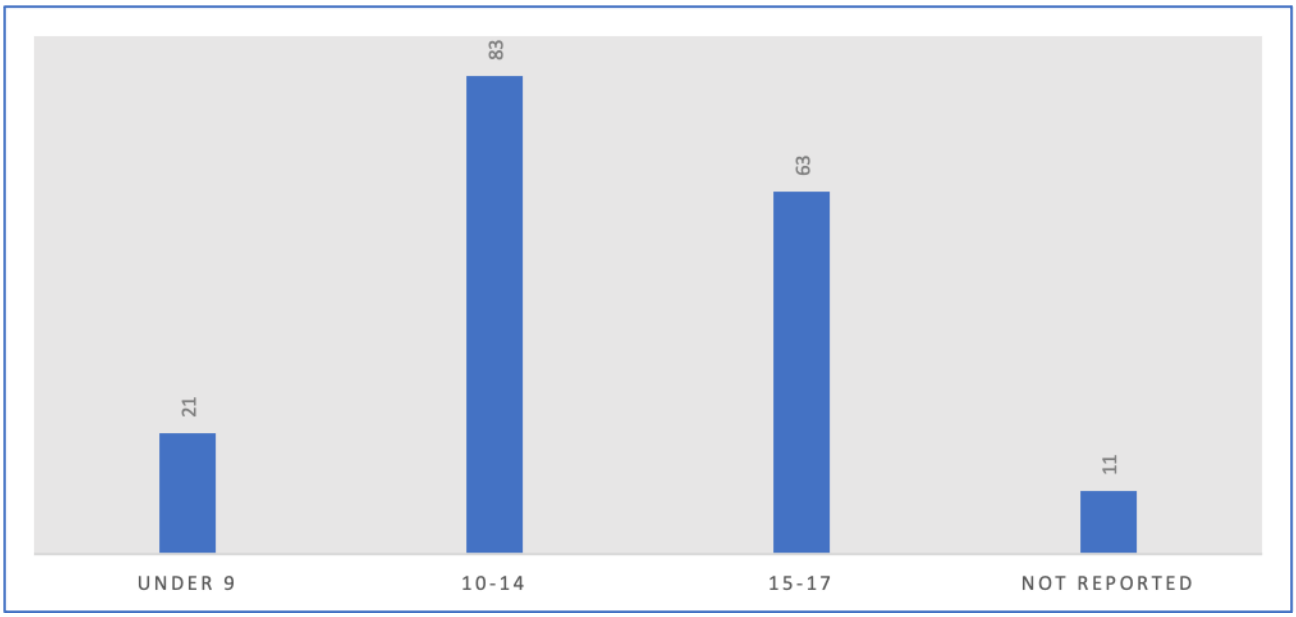


6.2 Study populations (effectiveness and process evaluation)

Age of the Participants

The age group of most of the participants in the assessed interventions were between 10-14 (eighty-three studies) and 15-17 (sixty-three studies). There are also twenty-one studies that assess interventions for children under 9 years of age. There are eleven studies that do not report the age group of the participants. See Figure 4.

Figure 4. Age of the participants



Gender

Eighty four out of 109 studies included both genders. But there were eight studies where intervention was exclusively focused on males such as the Big Brothers programme on boys in single-parent families in the USA (Abott et al., 2010).

There is only one study about interventions for females only, which is on peer relations and delinquency among Girls in Foster Care in the USA (Hu, 2020). The intervention combined mentoring with social and emotional skills development among adolescent girls aged between 10-14.

There are sixteen studies that do not report gender.

Ethnic Minority Population

There were twenty studies where the ethnic minority population is more than 80% of the total sample. For example, Barron-McKeagney et al.'s (2001:7) sample consisted of '...Latino, 82%, Caucasian, 10%, African-American, 4%, Native American, 2%, Other, 2%' and Hanlon et al.'s (2002:464) sample of 408 youth consisted of '... 417 African-American (97.43%) and 11 white (2.57%)'. There were fifty-six studies where there is an ethnic minority population indicated in the study sample, but this is less than 80% of the total sample. For example, in De Wit et al.'s (2007:391) randomized controlled trial, 'thirty-five percent of the children belonged to a visible minority group (i.e., African Canadian, Aboriginal, Asian, Hispanic, Arab, Jewish)'. Two studies report having no ethnic minority individuals in their population. For example, Dicken et al.'s (1977:A) intervention consisted of only 'Caucasian' students and O'Dwyer's (2017) Le Cheile intervention only consisted of Irish youth. Thirty-one studies did not report, or report clearly, whether their samples included ethnic minority individuals.

6.3 Overview – interventions and outcomes

Type of programme design features and activities discussed explicitly in adult mentoring interventions

The included studies assess 109 adult mentoring-based interventions. These studies discuss a range of activities that take place as a part of the mentoring process. The activities explicitly identified in the included studies are presented in tables 10 and 11. In both types of study relationship building is the most commonly mentioned activity in mentoring programmes. More structured activities most commonly relate to social and emotional skills building.

Table 10. Type of mentoring activities in adult mentoring mentioned in included effectiveness studies

Activities	No. of studies (%)
Relationship building	45%
Engaging in activities of mutual interest	26%
Training of mentors	27%
Systematic matching/pairing	24%
School level interventions	22%
Engaging in open & informal conversations	19%
Social & emotional skills building	19%
Recruitment of volunteers/ staff	17%
Legal interventions (working with the court, probation officer, prison authorities etc)	12%
Community level interventions	4%
Family level interventions	3%
Networking (connection to services)	3%

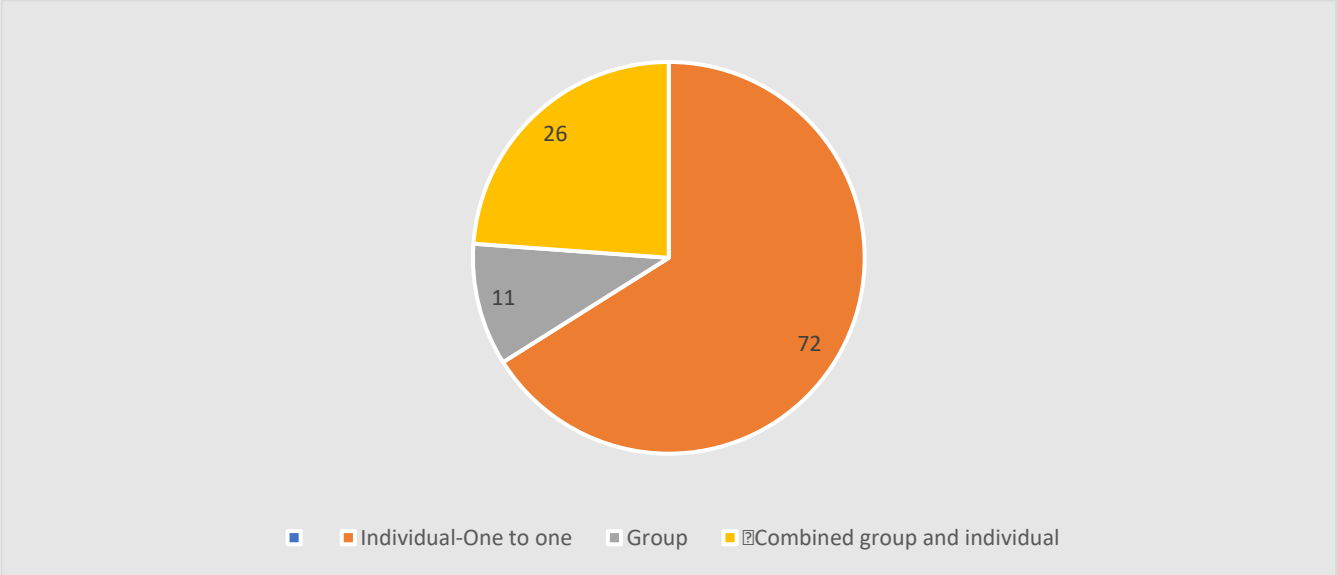
Table 11. Type of mentoring activities mentioned in included process evaluations

Activities	No. of studies (%)
Relationship building	59%
Engaging in open & informal conversations	37%
Social & emotional skills building School level interventions	37% 28%
Training of prospective mentors	31%
Engaging activities of mutual interest	31 %
Recruitment of volunteers/ staff	28%
Systematic matching/pairing	25%
Legal interventions (working with the court, probation officer, prison authorities etc)	22%
Advocacy	9%
Community level interventions	6%
Networking (connection to services)	3%

Unit of Delivery

Individual mode of delivery of is the most popular among assessed studies (66%). This is followed by the combining both group and individual (24%), and group mentoring interventions (10%).

Figure 5. Unit of delivery for adult mentoring interventions



6.4 Components of mentoring interventions

There are 58 studies in which adult mentoring is the sole intervention component.

For example, a study exclusively investigates the effect of a community-based mentoring program for children aged 5-11 years who have teacher- and parent/carer- reported difficulties in UK. (Axford et al., 2020). Axford et al.'s (2020) intervention was delivered by Chance UK across in five London boroughs. The intervention comprised weekly one-to-one mentoring sessions, each intended to last 2 to 4 h, over 12 months. A matching exercise overseen by Chance UK pairs each child with a trained mentor based on several factors. Mentors developed a program of interactive activities, based on solution focused techniques, tailored to their child's interests and needs. The sessions aim to help children to (i) progress to their identified "preferred future" by working towards specified personal goals (e.g., regarding family relationships, activities they enjoy, education), (ii) recognize and build their strengths (e.g., trying hard, exhibiting prosocial behaviour), and (iii) consider and try out more effective responses to difficulties (e.g., role-playing prosocial ways of dealing with frustration or anger), all while giving them access to networks and opportunities that would otherwise be unavailable to them. The first 3 months of mentoring focus on building a trusting relationship between child and mentor and identifying the child's difficulties and strengths. The mentor, child, main parent/carer, and Chance

UK then meet to agree at least one behavioural goal, one educational or social skills goal, and one fun goal. Axford et al. (2022) therefore provides a clear example of study which only investigates the role of mentoring, and does not have any other supplementary dimensions to their intervention.

Our review includes multi component mentoring interventions, in which mentoring may be part of a programme with other components. These could be mentoring as the main intervention and mentoring as a complementary intervention.

Mentoring as the main intervention

Twenty-two of the multi component studies have mentoring as the main intervention. Shiner et al. (2004) published findings of an evaluation study of the British programme: 'Mentoring Plus'. The programme targeted 'disaffected youth' and aimed to enhance education, employment skills and confidence through an adult-youth mentoring programme. The Mentoring Plus programme was implemented across England, in eight London boroughs, Manchester, Bath and Northeast Somerset. The primary component of this study was a mentoring intervention, but it was supplemented with additional components, such as an education/training programme which concentrated on improving the young people's interpersonal and presentation skills, literacy and numeracy, and personal motivation and effectiveness, and a residential course, which aimed to build confidence in the youth through a mixture of physical outdoor activities and indoor sessions. Shiner et al. (2004) therefore provides a clear example of a primary mentoring intervention, in which a core mentoring component is supplemented by additional components.

Mentoring as a supplementary component

There are 19 studies in which mentoring is a supplementary component of intervention. An Experiment in Multi-Systemic Responses to Persistent Young Offenders Known to Children's Services (Little et al., 2004) is an example of such a study from UK. This is an example of a supplementary mentoring intervention because their 'ISSP' multi-systemic intervention has seven components, which included joint and frequent supervision of participants by police and social services staff, a family group conference to encourage the young person and relatives to identify needs and arrive at their own solutions, availability of victim reparation and mediation in appropriate cases, better diagnosis, assessment and individual treatment plan, improved sharing of information between police, social services and education professionals, regular multi-agency review of cases, and finally, availability of a mentoring scheme to place programme participants in contact with a volunteer to act

as a role model and to help fill free time constructively. Little et al.'s (2004) intervention therefore provides a clear example of an intervention which utilises mentoring, but which does not focus on mentoring as its main component; rather, it is supplementary to their other six components.

Multi-Component Studies

There are 10 multi-component studies in which it is unclear if mentoring is the main intervention or supplementary. For example, in Fo and O'Donnell's (1975) 'Buddy System', the authors only describe their intervention in terms of a '...community-based, behavioural intervention program...' and as utilising three steps: '...(a) the supervision of graduate students functioning as behavior analysts, (b) in the training of non-professionals (buddies) as mediators and (c) in the treatment of youngsters serving as targets' (Fo & O'Donnell, 1975:522). Similarly, in Kemple's (2004) 'Career Academies' intervention, it is unclear to what extent mentoring is main or supplementary within their three distinguishing features, i.e., their small learning communities to create a more supportive, personalized learning environment, their combination of academic and career and technical curricula around a career theme to enrich teaching and learning, and the establishment of partnerships with local employers to provide career awareness and work-based learning opportunities for students (Kemple, 2004:ES-1). Fo and O'Donnell (1975) and Kemple's (2004) interventions provide examples of studies classified as 'multi-component', as it is unclear whether mentoring was the main component, a supplementary component or whether it was treated equivalently to their other two components.

6.5 Intervention subcategories for multi component intervention approaches

We extracted the subcategories of interventions in multi-component approaches. They are presented in Table 12 from the studies that reported multi component interventions. Please note that a single study may be coded for many different intervention subcategories.

Table 12. Intervention categories for multicomponent approaches

Intervention subcategory	Count
Educational and vocational interventions	26
Practical life skills	12
Vocational interventions	11
Social and emotional interventions	11
Academic & remedial coaching	12
Mental health and therapeutic interventions	6
Substance use interventions	8
Sports and recreational interventions	1

6.6 Structured element in adult mentoring interventions

Highly structured

Highly structured is defined as a manualized programme with activities and approaches prescribed for each session. Over 54% of the studies included (61) are highly structured adult mentoring interventions.

In 'Mentoring disaffected young people: an evaluation of Mentoring Plus' (Shiner, 2004) from the UK, the programme structure is highly organised. Each programme lasts ten to twelve months and usually begins with a three-day residential course designed to build trust. During the residential, young people participate in a mix of physical outdoor activities and indoor sessions with mentors, and at the conclusion of the residential, young people are paired with volunteer mentors.

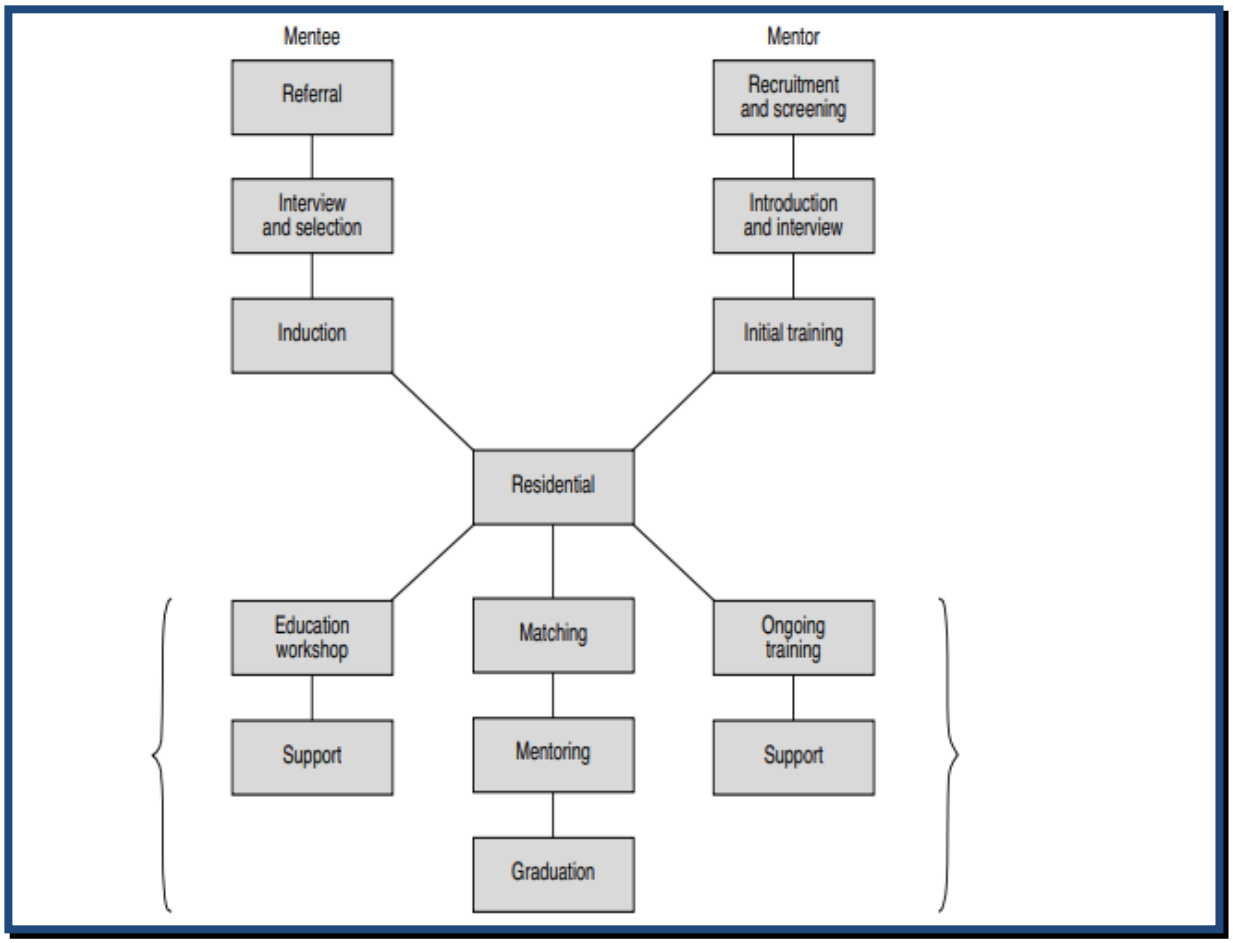
After the matching, there is one-to-one mentoring. The young people and mentors are expected to meet once a week for the duration of the programme. The goal is to provide positive and supportive role models for young people who have previously had difficult relationships with adults.

An education/training programme: This component of the programme intends to provide young people with the necessary practical life skills and educational/training opportunities to help them achieve their new personal objectives. The education component focuses on developing interpersonal and presentation skills,

literacy and numeracy, as well as personal motivation and effectiveness in young people. Classes are designed and led by project staff in-house as well as in collaboration with existing local providers.

Every new cycle begins with a search for mentors and young people. Young people are inducted in a variety of ways, the most common of which is through referrals from statutory and community agencies. Young people are also recruited through outreach work in local communities and youth clubs, as well as through friends and/or family members. Each young person is interviewed and selected after being referred, and if accepted, they attend an induction session to learn more about Mentoring Plus, mentoring, education sessions, and the commitment required of them. Mentoring Plus has a systematic framework for recruiting mentors, which primarily involves placing advertisements, national, and specialist publications. There is also an 'ending session' for mentors to help develop strategies for concluding their relationship with their mentee.

Figure 6. Programme structure for Mentoring Plus (Shiner, 2004)



Moderately structured

Mentoring programmes with recommended activities and approaches, but not session-by-session instructions, are defined as moderately structured. Just under 14% of the studies (15) are moderately structured interventions.

An example of a moderately structured intervention is Blakeslee et al.'s (2018) 'My Life Mentoring Model for Youth in Foster Care'. The primary components of the My Life Mentoring (MLM) model were: '1) individualized mentoring with a focus on applying self-determination skills; and 2) group mentoring workshops addressing transition topics' (Blakeslee et al., 2018:9).

For individualized mentoring, mentors were trained to use meetings to help youth learn to apply skills—in the primary domains of achievement, partnership development, and self-regulation—by following a number of systematic steps. Mentors assist adolescents in learning each skill by rehearsing techniques, performing activities required for goal achievement, cheering them on, and even challenging them to take action. In general, the mentor is required to engage with the children in a balanced blend of didactic, experiential, and relationship-building activities throughout the programme.

The MLM model utilises a moderately structured approach in a variety of ways. First, '...rather than supporting youth to learn and apply skills sequentially as presented in the self-help guide, mentors introduce skills as opportune "learning" and "practice" moments arise. (Blakeslee et al., 2010:9). While mentors have some flexibility in how they sequence programme parts, each youth must cover a certain set of programme parts each month. As the young person's ability to achieve goals develops, the mentor reduces his or her direct involvement in facilitating activities and encourages the youth to set more complex and personally meaningful goals. In the end, mentors encourage young people to create a customised transition plan that they can share with the important adults in their lives (e.g., teachers, foster parents, biological family, caseworkers).

Blakeslee et al.'s (2018) intervention is an example of a moderately structured programme, as mentors are provided with systematic steps to implement, but principally create a tailored programme for youth over time, and focus on introducing skills as opportunities for "learning" and moments for "practise", rather than supporting youth to learn and apply skills sequentially as presented in the self-help guide.

Lightly structured

Lightly structured interventions are defined as providing guidelines for mentoring, but which have no prescribed mentoring activities. Only 1 study has mentoring interventions that are unstructured.

One example of a lightly structured study in the USA is Rowland's (1991) school-based mentoring program. Rowland (1991:5) clearly defines the role of mentors within their program, as '...adults who take time to participate in the lives of the children around them. A mentor relationship calls for a sustained personal commitment to a young person needing the guidance, moral support, and approval of a warm-hearted adult.' The mentors received training on what to expect, school rules, activities appropriate for the age and grade level of their child and special instructions on dealing with confidential matters concerning the child. Rowland (1991:31) states that '[T]he main emphasis of this project was to increase the self-esteem of the child, believing that improved grades, attendance, attitudes, and discipline would result from improved self-esteem.'

Rowland's (1991) mentoring program therefore sets out clear expectations and aims for the mentoring process, but these are not described in terms of prescribed activities or key stages in the intervention process which need to be 'ticked off' in order for the youth to progress in the mentoring process. This is therefore an example of a lightly structured intervention in our review.

Unstructured

The term unstructured refers to interventions which do not have any specific requirements and/or guidelines for mentors. Only 3% (3) of studies analyse mentoring interventions that are unstructured.

One example of an unstructured intervention in the UK is Boulton et al.'s (2019) intervention to divert at risk young people away from serious organised crime (SOC) involvement. Boulton et al.'s (2019:3-4) intervention was coordinated by one of the UK's largest police forces and supported by a multi-agency group of practitioners. First, potential subjects of the intervention were identified using risk factors. To be included, the subject had to have familial links or close non-familial links to organised crime activity. Other risk factors included living in a neighbourhood with known SOC activity, exposure to violence in the home, involvement in the criminal justice system, being excluded from school or not being in mainstream education and a history of substance abuse. Once referred, a "deep dive" was conducted on each subject. This stage brought together

relevant agencies (i.e., police, local authority, education, etc.) to share information on the referred individuals. The outcome of the exercise was a detailed history of the subject, including agency interventions, which was recorded chronologically in electronic form.

Each of these individuals was provided with a 'lead professional', most often a youth worker who would mentor them. Interventions typically involved providing tangible support (i.e., support when applying for a driving licence), one-to-one monitoring and facilitation of education and/or work access; however, the intervention was tailored for each specific individual. However, Boulton et al. (2019) do not define any specific requirements or guidelines that mentors must adhere to during the intervention. Boulton et al. (2019), and studies within similar descriptions of the mentoring process, were therefore classed as an unstructured intervention.

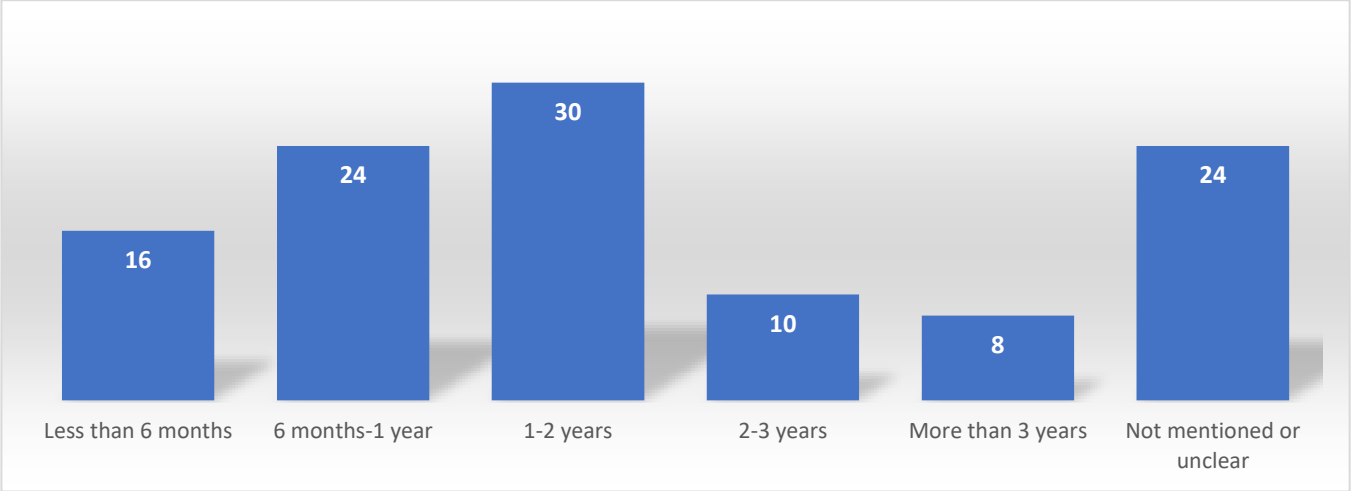
Not Reported or Unclear

In addition, over 26% (29) of studies either did not provide clear descriptions of or did not report on the structure of their intervention was structured.

6.7 Duration/Longevity of mentoring interventions

Duration is the duration of the mentoring programme in months as reported in the included studies. In the majority of the studies (thirty), mentoring relationships lasted for 12-24 months; see Figure 7. This is followed by six-twelve months in twenty-four studies. There are sixteen and ten studies with mentoring relationships of less than six months and between 2-3 years duration respectively. There are only eight studies in which the mentoring relationship was longer than 3 years. There are twenty-four studies in which the duration is either unclear or not reported.

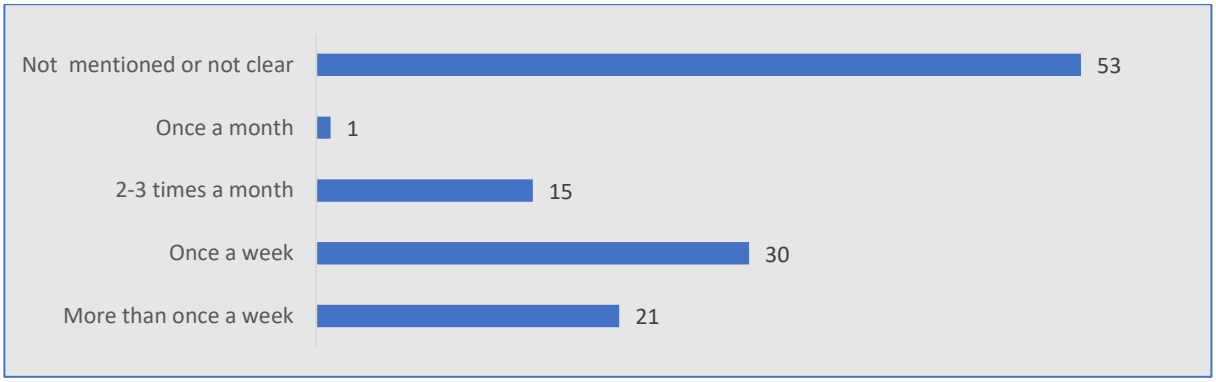
Figure 7. Duration/longevity of mentoring interventions (no. of studies)



6.8 Frequency of meetings between mentor and mentee

In a majority of studies, the mentor-mentee meetings took place once a week (thirty) and more than once a week (twenty-one); see Figure 8. There are fifteen studies which report that the meetings happen 2-3 times a month. Only one study reports that meetings took place once a month. In no cases was it said that meetings did not happen regularly. There are fifty-three studies in which the frequency of meetings is unclear or not reported.

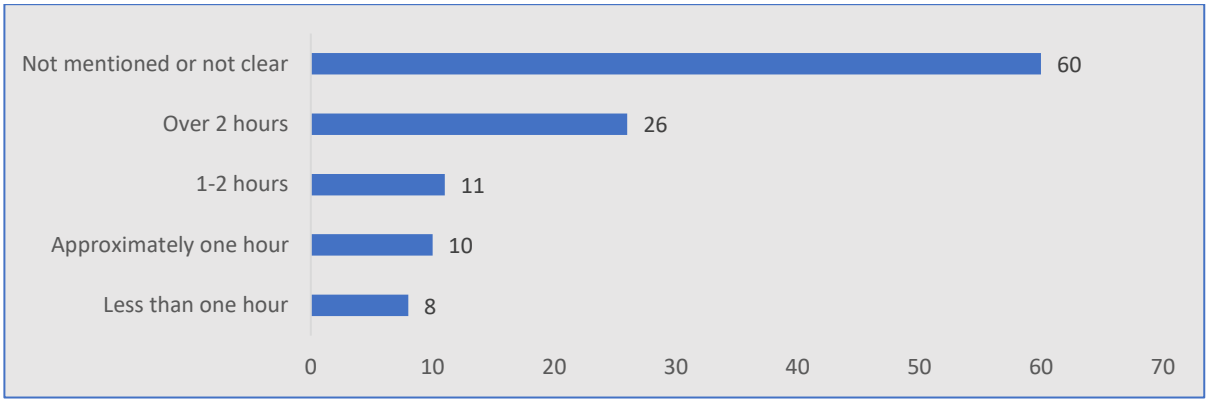
Figure 8. Frequency of meeting of mentoring interventions (no. of studies)



6.9 Length of the meetings

Many studies (sixty) failed to capture the length of the mentor-mentee meetings (Figure 9). However, a considerable number of studies (twenty-six) reported that the length of meetings is more than two hours. In ten studies, the meetings lasted for approximately an hour, and eleven in which it was anywhere between 1-2 hours. There are also eight studies in which the meetings lasted less than an hour.

Figure 9. Length of meeting of mentoring interventions (no. of studies)



6.10 Setting of intervention

The setting for mentoring interventions was most commonly community settings (fifty-eight), followed by schools (thirty-nine); see Table 13. In fifteen studies, the interventions took place in 'other' settings. These include any setting other than the ones mentioned. 'other' settings included: shelters, recreational settings, juvenile justice centers, custody, alternative schools, detention centers, state run juvenile prisons and charities. There were four studies in which the mentoring interventions were held at homes and there was only one study in which the intervention was facilitated in a project office. In eleven studies, the setting is either unreported or not clearly mentioned.

Table 13. Number of studies by intervention setting

Intervention setting	Count
Community	58
School	39
Other	15
Not reported or unclear	11
Home	4
Project office	1

6.11 Person engaged in mentoring

Volunteers are the most common type of mentor in the delivery of adult mentoring interventions (sixty-six studies); see Table 14. The next most common are studies of interventions that use teachers (twenty-six

studies). Almost an equal number of interventions use paid mentors, social workers, law enforcement authorities, and 'others'. 'Others' refer to YOTs, key members from local communities, health workers, educational coordinators, project coordinators and paid foster families. Counsellors and probation officers have been involved only in seven and four studies, respectively. Only one study reports the involvement of prison officers.

Table 14. Key professionals involved in adult mentoring interventions

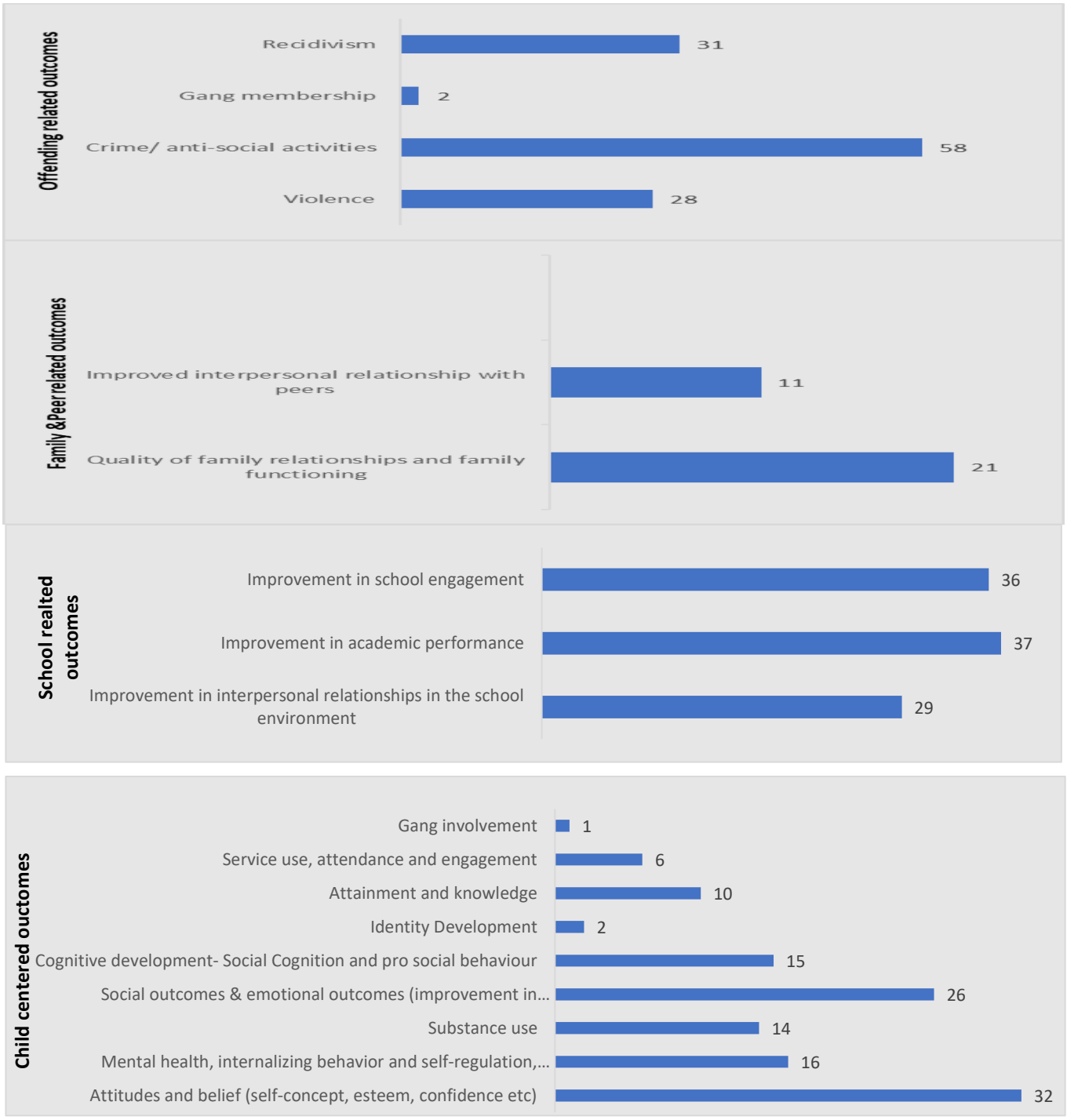
Keys Professionals involved	**Count**
Volunteers	66
Teachers	26
Paid mentors	12
Social workers/case mangers	10
Law enforcement authorities	10
Counsellors/therapists	7
Probation officers	4
'Others'[7]	8
Prison officers	1

6.12 Outcome categories

The review included studies which evaluated the effects of adult mentoring interventions in changing anti-social behaviours and offending outcomes. Figure 10 shows the outcome categories we identified from the included studies.

[7]'Others' refer to YOTs, key members from local communities, health workers, educational coordinators, project coordinators and paid foster families.

Figure 10. Number of studies in each outcome category and sub-categories



6.13 Included and excluded studies

Table 15 describes the studies included in this review. Table 16 describes selected studies which were excluded from this review. There were several effectiveness studies eligible for inclusion in the systematic review of mentoring intervention programmes that were excluded from the meta-analysis. Tables 17 and 18 list these studies and provide a reason for being excluded from the meta-analysis.

Two studies (Chan et al., 2013; De Wit et al., 2016) conducted structural equation modelling and presented results as standardized structural coefficients. The difficulty with standardized structural coefficients lies in the fact that the standardized regression coefficients belong to regression models that include different sets of covariates that do not represent the same parameter (Fernandez-Castilla et al., 2019). Although some studies have explored treating standardised coefficients as a proxy for the correlation without confounders/other variables controlled for (Peterson & Brown, 2005), it was felt in these two specific examples that the underlying coefficients were not sufficiently representative of the outcomes of interest in our analysis. In the future, it may be possible to reconstruct the correlation matrix on which the structural equation models were based and include these in further analyses. Several further papers (Grossman & Rhodes, 2002; Lyons & McQuillin, 2019) upon closer inspection, did not make comparisons between their intervention and control groups for our outcomes of interest.

Table 15. Characteristics of the included studies

Author and Year	Country	Name of Intervention	Duration of the Intervention	Age	Settings	Study Design	Control Group	Baseline Equivalence	Attrition[8]	Intermediate Outcome	Final Outcome Domain
Abbott et al. (1997)	USA	Project Redirection	18 months	Mean age= 11	Community	Experimental Design	Boys on a waiting list who had not yet received a Big Brother	High	Low	-	Educational and employment behaviour, improved maternal and infant health, acquisition of life management skills and delays in subsequent pregnancy
Aiello (1998)	USA	Achievement Mentoring Program	7 months	Mean age= 12.5	School	Experimental Design	This was a quasi-experimental, non-equivalent control group design. A student control group of underachievers in another Fairfax County intermediate school were monitored	High	Medium	Decision-making self-efficacy, goal setting self-efficacy, perception of teacher support, perception of classmates' acceptance, academic performance	Negative school behaviour, disciplinary referrals
Alfonso et al. (2019)	USA	Big Brothers Big Sisters of America	-	-	Community, school	Cost Analysis	Their costs analysis model-controlled serval factors associated with expenditures – caseloads, year, cost of living	-	-	-	Value for money
Anderson (1997)	USA	The Clark County Volunteer Program	2.5 years	-	Community	Experimental Design	Control groups selected on the basis of age, sex, severity of original offense and length of time known to the Court were selected for the one-to-one evaluation	Low	Low	-	Rate of reoffending, severity of subsequent offenses.

[8] Nb. 'Low' indicates attrition is outside IES liberal standards or is not reported. 'Medium' indicates attrition within IES liberal standard. 'High' indicates attrition within IES conservative standards.

Axford et al. (2021)	UK	Chance UK	12 months	5-11-year-olds	Community	Experimental Design	A two-arm, randomized controlled, parallel group, superiority trial recruited from five sites in London. Randomization on a 1:1 ratio took place using computer-generated sequence and stratifying by site. Data collectors and statisticians were blind to participant allocation status	High	High	School based service use	Emotional and behavioural difficulties
Balcazar (2006)	UK	Birmingham Mentoring Consortium, care included, Pioneers (undergraduates), Pioneers (volunteers), Birmingham Youth Offending Service (YOTs)	-	Mean age= 12	-	Process Evaluation	-	-	-	-	Goal Attainment as a strategy to assess the outcomes of mentoring programs for troubled youth
Barnes et al. (2015)	USA	Violence Prevention Programs	-	-	School	Non-Experimental Design	Their study drew from a nationally representative sample of American schools, and compared between mentoring components	Low	High	Behaviour modification, prevention, resolve, community, enrichment, and counsel	Bullying, verbal abuse, violent incidents, and police-reported incidents
Barron-Mckeagney et al. (2001)	USA	The Family Mentoring Project	18 months	10-year-ods	Community	Non-Experimental	11 non-mentored at-risk 10-year-old Latino children	Low	Medium	Social Skills	Problem behaviours - SSRS problem behaviours (Externalizing, internalizing, hyperactivity)
Beardall (2008)	USA	Mentors in Violence Prevention program	-	13-14-year-olds	School	Non-Experimental Design and Process Evaluation	Students not receiving the MVP program in the same school	Low	High	Students' experience of being trained as mentors; middle school teachers' comments about the student mentors' presentations in the middle schools; report on the feedback collected from students who attended MVP Day regarding their perceived	Self-reported perceived changes in respondents' behaviour

										behavioral changes; and the retrospective views of six alumni mentors	
Beier (2000)	USA	Generic adult mentor	-	Mean age= 16.9	Home	Non-Experimental Design	Young people in their convenience sample who were seen consecutively in outpatient care and subsequently did not receive mentoring	Low	High	-	Adolescent smoking, alcohol and drug use, sexual practices, and weapon carrying
Bellamy (2004)	USA	Evaluation of Seven Center for Substance Abuse Prevention Mentoring Programs	6 months	-	Community	Non-Experimental	Young people at high risk of substance use who did not receive mentoring	Medium	High	Problem solving, self-efficacy, and social behaviour	Substance use (30-day use of select substances, age of onset, perceptions of harm, substance use-related problems)
Berger & Gold (1978)	USA	Volunteer Probation Officer Program	6 months	-	Community	Experimental Design	Court staff chose probationers eligible for volunteer services. Those allocated to the control continued to receive all court services, other than the volunteer services revied in the experimental group	Medium	Low	-	Delinquency
Bernstein et al. (2009)	USA	U.S. Department of Education's (ED) Student Mentoring Program	12 months	Mean age= 11.2	School	Experimental Design	32 purposively selected school mentoring programs with control groups of students randomly assigned to not receive mentoring	High	Low	-	Educational attainment and post-secondary labor market experiences
Berry et al. (2009)	UK	Coaching for Communities	9 months	Mid to late teens	Community	Experimental Design	Random allocation to non-intervention condition for youths displaying low-level anti-social behaviour	High	High	Self-esteem, impulsivity, aspirations for the future, positive outlook, negative affect, emotional well-being, behaviour, and whether the CYP was in education/employment	Volume and variety of offending, use of drugs and alcohol

Blakeslee et al. (2018)	USA	My Life Mentoring Model	2-3 years	16-19-year-olds	Community	Experimental Design	Two randomized control trials for adolescents in foster care	High	High	Self-determination and self-efficacy	Criminal justice (delinquency and community violence scales, prior-year arrests and convictions by type and severity, prior-year days incarcerated or supervised by the court)
Blazek et a. (2011)	UK	Plusone Mentoring	12 months	8-14-year-olds	Youth Centre	Process Evaluation	-	-	-	The risk for the young people associated with their neighbourhood, and the young people's skills and positive relationships	Violence, crime, behaviour, children's attitudes to offending
Blechman et al. (2000)	USA	Not specified	4 weeks	8-19-year-olds. Mean age= 14.98	-	Non-Experimental Design	Juvenile offenders' recidivism following nonrandom assignment to juvenile diversion (JD), JD plus skills training or JD plus mentoring.	Low	High	Parent-rated CBCL (internalizing and externalizing), youth rated CSI prosocial coping, and parent self-rated BDI depression	Reduction in recidivism - post intake rearrest, frequency of post-intake rearrests, time from intake to first rearrest
Bodin et al. (2011)	Sweden	Mentor Sweden	12 months	14-year-olds	School	Experimental Design	Eligible 14-year-olds were randomly assigned to the mentoring program or control condition	High	High	Social competence, quality of life, and school performance	Substance use, delinquency, emotional and behavioural problems
Bouffard et al. (2008)	USA	Not specified	6 months	15-17-year-olds	Community, home, school, project office and work	Experimental Design	Compared youth returning from three or more weeks of out-of home placement, who received reentry programming in addition to traditional probation/parole services with similar youth returning from three or more weeks of out-of home placement in a neighboring county, which did not provide reentry services.	Medium	High	Drug use	Short-term recidivism outcomes, including time to first new offense and number of new official contacts within 6 months of release

Boulton et al. (2019)	UK	A diversion intervention	-	-	-	Process Evaluation	-	-	-	-	Reduction in involvement or becoming involved in serious organized crime
Branch (2002)	USA	National Faith Based Initiative for High-Risk Youth	12 months	Mean age was just over 16	-	Process Evaluation	-	-	-	Implementation issues, barriers and facilitators to participation and outcomes	Recruitment of high-risk youth
Brooks (1995)	USA	A school-based mentoring program	12 months	15-18-year-olds	School	Non-Experimental Design	A quasi-experimental design was used. The comparison group was African- American high school students who were chosen by their schools to act as trainers in a goal setting, problem solving, and positive life skill development program known as the Going for the Goal Project	Low	High	-	GPA
Bruster & Foreman (2012)	USA	Seton Youth Shelters, Mentoring Children's Prisoners (MCP) Program	64% of matches completed a full year	10-11-year-olds	Sefton youth shelter	Process Evaluation	-	-	-	Interest in school, completion of homework, and interest in their own well-being	Youth attitude
Campie et al. (2017)	USA	Safe and Successful Youth Initiative	-	14-24-year-olds	Community	Experimental Design	Cities were selected using the quasi-experimental method – regression discontinuity design. Comparisons are made between cities with SSYI funding, and those without	Low	Medium	-	Preventing urban gun violence - violent crime, homicide, aggravated assault, robbery, and non-violent crime

Carswell et al. (2009)	USA	The Village Model of Care	-	11-16-year-olds	School, community	Process Evaluation	-	-	-	Family stability and functioning, school interest and performance	Preventing the initiation and escalation of violence and substance abuse
Cavell & Hughes (2000)	USA	PrimeTime	16 months	Mean age= 7.55	School	Experimental Design	Teacher-identified aggressive children were randomly assigned to one of two treatment conditions, both of which involved college student mentors. The experimental condition (PrimeTime) combined therapeutic mentoring, training in problem solving skills, and consultation with parents and teachers. The comparison treatment (Standard Mentoring) relied solely on the skills of minimally trained, unsupervised mentors	Low	Low	-	Children's aggression
Chan et al. (2013)	USA	Big Brothers Big Sisters school-based mentoring programs	Average duration of 5.1 months	Mean age= 11.15	School	Experimental Design	Youth assigned to a control group who didn't receive the BBBS intervention. However, this study focused on the relationship quality with mentors.	High	Low	Mentor relationship, teacher relationship, parent relationship, prosocial behaviour, academic attitudes, self-esteem, and students' grades	Misconduct and behaviour problems
Chandler et al. (2011)	USA	Youth Advocate Program (YAP)	-	High School Students	School	Non-Experimental Design	Students with predictions that were just below the threshold for YAP referral and who were not referred to YAP via the principals' list. 'Somewhat arbitrarily', they chose the number of students below the threshold to include as controls to be equal to the number above the threshold. To construct a control group for the principals' list, they used a propensity score approach	High	High	-	Violence victimization

Cheng et al. (2008)	USA	Take Charge!	6 months	10-15-year-olds	Community, home	Experimental Design	Randomized controlled trial of youth presenting peer assault injury	High	Low	-	Attitudes about violence, risk factors, fighting and repeat injury
Clarke (2009)	USA	Community-based probation program - The Lincoln-Lancaster Municipal Court's Volunteer Probation Counselor program	12 months	Mean age= 14.5	School	Experimental Design	Students were randomly allocated to the mentoring or control group	Low	High	Social competence, quality of life, and school performance	Criminal Offenses committed during the probationary period, recidivism, seriousness of offenses, pattern of criminal offenses
Coller & Kuo (2014)	USA	Youth Empowerment Program (YEP)	18 months	-	School	Process Evaluation	-	-	-	Self-concept, trust, goals, conflict resolution, and peer pressure response	Risk behaviours and violence
Conduct Problems Prevention Research Group (2011)	USA	Fast Track Intervention	10 years	8-18-year-olds	School, home, foster home	Experimental Design	Randomly assigned by matched sets of schools to intervention or control conditions	High	High	Parental behavior management, deficient child social-cognitive and emotional coping skills, peer relations, academic skills, disruptive and rejecting classroom environments (through curricula directed toward peers and teacher consultation), parental monitoring and supervision, and home–school relations	Psychiatric diagnoses for conduct disorder, oppositional defiant disorder, attention deficit hyperactivity disorder, and any externalizing disorder
Converse & Lignugaris/ Kraft (2009)	USA	A school-based mentoring program	18 weeks	Mean age = 13.5	School	Experimental Design	At risk students were identified by teachers and asked to participate. The remaining participants were randomly assigned to the mentored group or to a nonmentored control group. Students who were randomly assigned to the control group were placed on a waiting list for	Medium	Medium	-	Office referrals, unexcused absences, and school attitude

							mentoring and notified of their status.				
Cramer et al. (2018)	USA	Advocate, Intervene, Mentor (AIM) program	6-12 months	13-18-year-olds	Community, school	Process Evaluation	-	-	-	Relationships with families	AIM is designed as an alternative to juvenile incarceration and is intended to reduce the use of out-of-home placement
Davidson & Redner (1988); Davidson et al. (1977); Ku & Blew (1977); Davidson et al. (1980); Davidson et al. (1990)	USA	The Adolescent Diversion Project	18 weeks	Mean age= 14.2	Community	Experimental Design	Juveniles in legal jeopardy were assigned to either the experimental group (to receive services) or to the control group (diverted outright, without services)	Medium	Low	Positive changes and involvement at home and in school, job-seeking activities	Average number of police contacts, average number of court petitions per child
Davidson et al. (2010)	USA	Michigan State University's Adolescent Project (MSUAP)	18 weeks	-	Community	Experimental Design	Students were randomly assigned to partake in the mentoring program, those not admitted constituted the control group	Medium	Low	Cost savings	Reduced recidivism rates and improvements in the justice system

Davidson et al. (1987)	USA	Four interventions- Action condition, Action condition-family focus, Action condition-court setting, Relationship condition using students/non-professionals	1 year	Mean age= 14.2	Community, secure residence and care home	Non-Experimental Design	Four interventions using nonprofessionals were contrasted with an attention-placebo group and a treatment-as-usual control group	High	High	Tests to assess students' knowledge of training were given at the end of training and at case termination	Multiple measures of self-reported delinquency and official recidivism
Davis (1988)	USA	A mentoring program aimed to increase academic achievement and attendance	12 months	14-15-year-olds	School	Experimental	Random assignment to experimental group receiving mentoring or control condition not receiving any mentoring.	Medium	Low	-	GPA and school attendance
De Wit et al. (2016)	Canada	Big Brothers Big Sisters of America community-based mentoring program	18 months	6-17-year-olds	Community	Non-Experimental Design	Families were randomly assigned to the BBBS program or a waiting list control	High	Medium	Mental health, coping behaviours, perceived social support, peer self-esteem, and perceived social support	Behavioural problems
De Wit et al. (2007)	Canada	Big Brothers Big Sisters of America community-based mentoring program	12 months	7-14-year-olds	Community	Experimental Design	Families were randomly assigned to the BBBS program or a waiting list control	High	Low	Mental health, coping behaviours, perceived social support, peer self-esteem, and perceived social support	Behavioural problems
Dicken et al. (1977)	USA	Companionship Therapy	4 months	Mean age= 9.5	Community	Experimental Design	Disadvantaged children were assigned to a college student or to a control group in a replication of Goodman's study of companionship therapy	High	Medium	Self-concept	Arrest rate and problem behaviours

DuBois & Keller (2017)	USA	Big Brothers Big Sisters - Step-It-Up-2-Thrive	15 months	10-16-year-olds	Community	Experimental Design	BBBS CBM with Thriving vs. BBBS CBM alone	High	High	Thriving in youths' relationships with adults, youths' personal resources for thriving	Problem behaviours - conduct disorder and delinquent behavior
DuBois et al. (2018)	USA	Big Brothers Big Sisters of America community-based mentoring program	-	Mean age= 12.29	Community	Experimental Design	Families were randomly assigned to the BBBS program or a waiting list control	High	Low	Relationships with family and friends; academic performance, attitudes and behavior, self-concept, and social and cultural enrichment	Antisocial activities (e.g., alcohol and drug use, hitting, stealing, principal's office visits, and damaging property)
Duriez et al. (2017)	USA	All the US Department of Youth Services (DYS) mentoring programs	-	12-17-years-old	Community (probation and parole)	Experimental Design and Process Evaluation	Quasi-experimental study with two arms: Parole sample comprised either youth on parole that participated in mentoring serviced or those which did not; The probation sample comprised of youth on probations receiving mentoring services and those who did not participate	High	High	-	New offense/revocation and time at risk to recidivate
Eddy et al. (2017)	USA	Friends of the children (FOTC)	5 years	Mean age= 6.1	-	Experimental Design	A multi-site randomized controlled trial	High	High	Parent reported CBCL (externalizing and internalizing, BERS total strength, youth in trouble in school, youth positive school behaviour, and youth schoolwork	Youth report - deviant peers and antisocial behaviour
Erdem et al. (2016)	Canada	Big Brothers Big Sisters program in Canada	18 months	Mean age= 11.16	Community	Non-Experimental Design	Families were randomly assigned to the BBBS program or a waiting list control	High	Low	-	Emotional and behavioral problems

Ferrer (2018)	USA	Youth Coalition Program sponsored by the local police department	-	15-17-year-olds	-	Process Evaluation	-	-	-	Academic performance	Lower the incidence of truancy and other status offense
Flaherty (1985)	USA	School based mentoring program to improve GPA	12 months	14-15-year-olds	School	Non-Experimental Design	The research design selected was a Pretest-Posttest control group design in which the students were randomly selected. Volunteer members of the faculty were assigned as mentors to the experimental group.	Low	High	-	GPA, absence and school attitude
Fo & O'Donnell (1972; 1975; 1979)	USA	The Buddy System	12 months	10-17-year-olds	Community	Experimental Design	Youths participating in the community-based behavioural intervention were compared with youngsters in a no-treatment control	Medium	Medium	-	Major offences vs no major offences
Grant (2010)	USA	A culturally grounded mentoring program	-	Mean age= 12.5	Community	Experimental Design	The experimental group received mentoring, whereas the control group were referred to a tutoring program	Low	Low	-	Academic improvement, sense of identity, increase in ethnicity, academic self-efficacy
Grossman & Rhodes (2002); Rhodes et al. (2000); Grossman & Tierney (1998)	USA	Big Brothers Big Sisters	18 months	10-16-year-olds	Community	Experimental Design	Families were randomly assigned to the BBBS program or a waiting list control	High	Low	Self-worth, perceived social acceptance, perceived scholastic competence, skipping school, grades, value of school, and quality of the parental relationship	Hitting someone, frequency of drug use and frequency of alcohol use

Guo et al. (2015)	USA	Positive Action	3 years	9-20-year-olds	School	Non-Experimental Design	They compared a whole school intervention sample with a whole school non-intervention sample in a different county	High	Medium	Self-esteem, internalizing symptoms, friend rejection, parent-child conflict, religious orientation, school satisfaction, future optimism, school hassle, parent support, teacher support, and friend support	Aggression
Haddock et al. (2020)	USA	Campus Connections	3 years	Mean age= 14.2	Remote - site based program	Experimental Design	Randomized controlled trial. Overall, participants in the treatment and control groups were comparable. The control condition, however, included more White mentees than the treatment condition ($p< 0.05$) and mentees in the treatment condition showed lower academic grades compared to mentees in the control condition ($p< 0.05$)	High	High	Positive youth development (anger, anxiety, depression, internalizing behaviours, grades, academic aspirations), and developmental outcomes (conscientiousness, developmental assets, future orientation, self-efficacy, prosocial behaviour, social-emotional competencies, meaning in life)	Behavioural difficulties/prosocial behaviour, delinquency, school misbehaviours, and substance use
Hanham & Tracey (2017)	Australia	Generic mentoring program	6 months	16-19-year-olds	Juvenile detention facility	Process Evaluation	-	-	-	-	Recidivism
Hanlon et al. (2002)	USA	Community-based Baltimore City "Youth Bureaus"	12 months	Mean age= 13.27	Community	Non-Experimental Design	Youth were admitted to 2 community-based 'Youth Bureaus' offering counselling services for neighborhood youth referred for delinquent and other problematic behaviour.	High	Low	-	Substance abuse, sexual activity, contact with juvenile authorities, and delinquent activity, including violence-related activity
Harmon (1995)	USA	Open Doors Program	23 days	Mean age= 17.6	Community/Rehabilitation Clinic	Experimental Design	Adolescents in the treatment are offered counselling, workshops, classes, weekend retreats, and a mentor; compared to treatment as usual	High	Low	Self-esteem, GED, family relationships	Alcohol, cigarette, and other drug use, association with deviant peers

Hart-Johns et al. (2017)	USA	Mentoring Initiative for System-involved Youth (MISY): The Aftercare Academy, The Economic Mentoring Program (EMP), Mentor Match, Mentor Portland	1-3 years	12-18-year-olds	-	Non-Experimental Design	Quasi-experimental design. However, their initial quasi-experimental design, due to too small sample sizes, did not allow for a control comparison.	Low	Low	-	Mentor strength of relationship and youth strength of relationship
Hayes (1998)	USA	Big Brothers Big Sisters	4 years	Mean age= 15	School	Non-Experimental Design	Compared between studies classed as at-risk and those not at-risk of dropping out of high school	High	Low	Self-competence, academic performance, and parent-child relations	Behavioural problems
Hazel et al. (2010)	UK	RESET	2 years	11-17-year-olds	Community, custody	Process Evaluation	-	-	-	Housing, leisure, and personal relations with others	Breeching and reoffending
Heard (1990)	USA	Probation Mentor Home Program	-	10-17-year-olds	Community	Cost Analysis	Cost of community-based programs versus costs of institutionalization of juveniles per day	-	-	Avoiding institutionalization, problem solving, behavioural problems	Cost effectiveness of the intervention
Heller et al. (2015)	USA	Becoming a Man (BAM)	First experiment was 1 year, second was two years, Experiment 3 was 3-4 weeks	Experiment 1 and 2 were 15 at baseline. Experiment 3 were 16	Community, temporary detention center	Experimental Design	Three large scale randomized controlled trials exploring differences between those in BAM and those not receiving BAM in juvenile detention	High	Low	School engagement and high school graduation	Total arrests (violent, property, drug, other), for JTDC - probability of readmission

Henry et al. (2021)	USA	Motivational Interviewing with At-Risk Youth (MARS)	10–12-week delivery	10-12-year-olds	Alternative School	Experimental Design	Students were randomized using a block design to receive MARS Mentoring or to a wait-list control group	Low	Low	-	Maladaptive behaviours, disciplinary actions and academic scores
Herrera et al. (2007)	USA	Big Brothers Big Sisters - SBM	15 months	Mean age= 11.5	School	Experimental Design	Families were randomly assigned to the BBBS program or a waiting list control	High	Low	School related outcomes, prosocial behaviour, social acceptance, sense of emotional support from peers, self-worth, assertiveness, relationship with parent	Substance use, misconduct outside school
Herrera et al. (2011)	USA	Big Brothers Big Sisters School-Based Mentoring	5 months mentoring, 18-month follow up	9-16-year-olds	School	Experimental Design	Families were randomly assigned to the BBBS program or a waiting list control	High	Low	-	Rates of problematic behaviour
Herrera et al. (2013)	USA	7 different evaluations, 5 of which were Big Brothers Big Sisters	9.6 months average	8-15-year-olds	Community, school	Experimental Design	Experimental/Random Assignment Component: in the first year of the evaluation, in the two largest programs, about half of the youth were randomly selected to be matched immediately with mentors (the "treatment group"), while the remaining half (the "control group") were not eligible for matching until after the study's 13-month follow-up assessment. Quasi-Experimental Component: in the other five programs and during the second year at the two largest programs, all eligible youth were enrolled in the evaluation and offered a mentor. In this study component, they compared the change over time in the	High	Low	Fewer depressive symptoms, greater acceptance by their peers, more positive beliefs about their ability to succeed in school; social acceptance (a measure of peer relationships), self-perceptions of academic abilities (a measure of academic attitudes) and better grades in school	Misconduct

							outcomes of all youth who were offered a mentor without going through random assignment to that in the control group from the random assignment portion of the study				
Holt et al. (2008)	USA	School-Based Mentoring Intervention	5 months	Mean age= 13.5	School	Experimental Design	Students were either randomly assigned to mentoring or to not receive the intervention	High	High	Health, family, work and leisure time, beliefs and attitudes	Criminal behaviour
Hu et al. (2020)	USA	Keep Safe	12 months	Mean age= 11.54	School	Experimental Design	Analyzed data from a randomized clinical trial of the middle school version of the Keep Safe intervention in a sample of girls in foster care	High	High	-	Risk-taking behaviors such as delinquency, deviant peer affiliation, substance use, and related problems
Iver et al. (2016)	USA	Generic mentoring program	3 years	11-18-year-olds	School	Non-Experimental Design	Quasi-experimental study examines the impact of a mentoring program for low-income and minority middle and high school students displaying early warning indicators of dropping out. A comparison group identified through propensity score matching	High	Medium	Cognitive engagement and emotional engagement	Behavioural engagement
Jarjoura et al. (2018)	USA	Mentoring enhancement Demonstration Program (MEDP)	12 months	10-14-year-olds	Community, school	Experimental Design and Process Evaluation	Random allocation to either the MEDP intervention or to mentoring as usual	High	High	Increased knowledge about access to community resources, connections to significant adults, social emotional learning, community engagement, development of interests and talents, prosocial behaviour, conflict management, academic performance, emotional wellbeing, self-worth, and social support	Involvement in delinquency (stopped by police or arrested, delinquency-person offenses-onset, delinquency-person offenses-frequency, delinquency-property offenses-onset), Juvenile justice involvement, and problem behaviours (conduct disorder, substance use, negative peers), misbehaviour in school)

Johnson (2014)	USA	Action in mentoring	12 months	Mean age= 13.9	Community	Process Evaluation	-	-	-	Family attachment and changeability, social support for adolescents, school engagement scale, attitudes towards gangs, youth coping, individual and protective factors	To assess differences in group mentoring compared to one-on-one mentoring on youth delinquency associated outcomes
Karcher (2008)	USA	SMILE	8 weeks	Mean age= 11.5	School	Experimental Design	Participants in a multi-component, school-based intervention program were randomly assigned to one of two conditions: (1) supportive services alone or (2) supportive services plus SBM	High	Medium	Student academic outcomes, increasing students' self-esteem, providing students with general guidance, and improving students' relationships	High-risk or delinquent behaviour
Karcher & Johnson (2016)	USA	Youth Advocate Programs (YAP)	1-2 years	11-18-year-olds	Community	Experimental Design and Process Evaluation	Quasi-experimental design was used to randomly assign justice involved youth to the YAP intervention or treatment as normal	High	Medium	Deinstitutionalization and pro-social activity (e.g., school and employment status)	Recidivism
Keating (1996); Keating et al. (2002)	USA	Generic 'Mentoring Program'	6 months	10-17-year-olds	Community	Non-Experimental Design	Youth either participated in the mentoring program or remained on the wait list	Medium	Low	-	Teacher and parent CBCL (internalizing and externalizing), hopelessness, self-concept, and delinquent acts
Kemple (2004)	USA	Glasgow Mentor Model	4 years	Mean age= 15	School	Experimental Design	Random allocated to Career Academies or remaining on the waiting list	Low	High	-	Self-concept and achievement variables
Kretschmar et al. (2018)	USA	Ohio's Behavioral Health Juvenile Justice (BHJJ) Initiative	8-16 sessions	10-18-year-olds	local detention centers or state-run juvenile prison	Non-Experimental Design	Three groups were examined, youth appropriate for BHJJ but who did not participate, youth who participated but did not complete treatment, and youth who successfully completed treatment	Low	Low	-	Early adulthood offending, time to first adult charge, and time to recurrent early adulthood charges

Kuperminc et al. (2018)	USA	Project Arrive Group Mentoring	2 years	13-14-year-olds	School	Non-Experimental Design and Process Evaluation	A quasi-experimental design randomly allocated demographically similar students to the Project Arrive group or a non-intervention group	High	High	Development of resilience assets, academic achievement and school attendance	Juvenile justice outcomes
Lattimore et al. (1998)	USA	The Quantum Opportunity Program	4 years	Mean age= 14.5	Community	Experimental Design	Random assignment to the QOP program or to a non-intervention control	High	Low	Academic and functional skills levels, educational attainment	Trouble with the police, criminality
Little et al. (2004)	UK	Intensive Supervision and Support Program (ISSP)	2 years	15-17-year-olds	Under the supervision of the Criminal Justice System	Experimental Design	Youth were randomly assigned to ISSP or one of two control groups: a control group (CG) of cases allocated the standard provision; and a matched control group (MC) of cases in a separate part of the region meeting entry criteria but receiving standard intervention	High	Medium	-	Number of arrests, number of court appearances and arrest/liberty rates
Taylor et al. (1990; 1999)	USA	The Achievement Mentoring Program	12 months	Mean age= 10.5	Community	Experimental Design	Randomized pretest-posttest control group design was used. Experimental and control group classes were selected randomly from among sixth-grade teachers who had indicated a willingness to participate. In the remaining pool of classes, three classes were selected randomly in each school and assigned to one of three groups: no intervention; community service and parent workshops; in addition to mentoring, community service and parting workshops this groups received mentoring. We used the no intervention	High	High	Sense of school belonging, teacher support, academic self-efficacy, decision making, GPA, attendance	Discipline referrals

							group as a control in analyses.				
LoSciuto et al. (1996)	USA	Across Ages	12 months	-	Community	Non-Experimental Design	78 non-mentored Seattle youth returning from a juvenile rehabilitation facility	High	Medium	Attitudes toward school, future and elders, self-perception, well-being, reactions to stress or anxiety, problem-solving efficacy, community service	Frequency of substance abuse, knowledge about substance abuse, reactions to situations involving drug use
Lyons & McQuillin (2019)	USA	Student Mentoring Program	-	Average age was 11 years 2.4 months	School	Experimental Design	Reanalysis of a large randomized controlled trial. Less than 1% of students were not randomly assigned because school personnel deemed a student as in "extreme need of mentoring services"	High	High	Six measures of academic outcomes (i.e., grades in math, English, social studies, and science as well as state test scores in math and reading) and one measure of school engagement (i.e., self-reported school bonding)	Self-reported misconduct and delinquency in school
McCord (1978, 1979)	USA	Cambridge-Somerville Youth Study	5 years	Mean age= 10.5	Community	Experimental Design	Over 500 men, half of whom had been randomly assigned to a treatment program were traced 30 years after termination of the project	High	High	-	Indicators of school success, GPA, school attendance, attitudes towards school
Merenstein et al. (2011)	USA	The Nutmeg Big Brothers and Big Sisters Program	-	-	-	Process Evaluation	-	-	-	-	Issues affecting the efficacy of programs for children with incarcerated parents
Moodie & Fisher (2009)	USA	Big Brothers and Big Sisters Melbourne Program	Provides a comparison of lengths of relationships, not a specific length for the intervention	7-17-year-olds	Community	Cost Analysis	Families were randomly assigned to the BBBS program or a waiting list control	-	-	-	Ascertain whether the program provides 'value for money'

Moore & Levine (1974); Moore (1987)	USA	Boys & Girls Clubs of America implemented an educational enhancement program (''Program'') for BGC youth in public housing	12 months	-	Community	Experimental Design	High risk versus low-risk youths on probation	High	Medium	-	A range of educational skills
Newton (1994)	USA	Generic violence prevention program	-	12-14-year-olds	School	Non-Experimental Designs	Allocate to the experimental condition which received collegiate mentoring, or the control group which did not	High	High	Improve self-concept and increase academic success	Violent Behaviour
O'Donnell & Williams (2013)	USA	The Buddy System	3 years	11-17-year-olds	-	Experimental Design	Youths were randomly assigned to the Buddy System or to no-treatment control group	High	Medium	-	Number of Arrests (arrest rate) and type of offences records over 35 years
O'Dwyer (2017; 2019)	Ireland	Le Chéile Mentoring	12 months	12-18-year-olds	Custody	Process Evaluation	-	Low	Low	Self-confidence, hopefulness, communications, engagement in activities, relationship with parents, relationship with family members, relationship with peers, relationship with authority, involvement in activities, communication skills engagement in education, work, and training	Reducing youth offending
Phillip et al. (2004)	UK	Convesea Intensive Housing Project, Pinefield Education Project, Dundee Youth-Link Befriending Project	12 months	15-17-year-olds	Community	Process Evaluation	-	-	-	-	undertake an analysis of how planned mentoring interventions were perceived by a sample of vulnerable young people who have experienced risk

Raposa et al. (2016)	USA	Big Brother Big Sister	-	Mean age= 11.24	Community	Experimental Design	Families were randomly assigned to the BBBS program or a waiting list control	High	Low	Behavioural risk - academic performance. Youth environmental stress and youth emotional engagement	Behavioural risk - substance use and misconduct
Reyes & Jason (1991)	USA	High School Drop Out Prevention Program	12 months	Mean age= 14.5	School	Experimental Design	Random assignment of eligible participants to intervention or no-intervention control	High	High	-	Maths and reading grades, connectedness, self-esteem, social skills, social support, hope, and mattering
Ringwalt et al. (1996)	USA	Supporting Adolescents with Guidance and Employment (SAGE)	-	Mean age= 14	Community	Process Evaluation	-	-	-	Positive attitudes towards education and employment, fatalism, social responsibility, self-esteem, self-efficacy, and perceived risk of using alcohol or drugs	Verbal and physical violence - hurt in a fight, needed medical care for an intentional injury, carried a gun, carried a knife, hurt someone else in fight, used a knife or gun to injury someone
Rodriguez-Planas (2010)	USA	Quantum Opportunity Program (QOP)	5 years	14-15-year-olds	Community, school	Experimental Design	Randomized controlled trial. Random assignment to QOP or control	High	Low	-	Reducing risk behaviours - substance abuse, crime, and teenage childbearing
Rollin et al. (2003)	USA	School and community-based violence prevention program	-	13-14-year-olds	School, community	Non-Experimental Design	School officials matched intervention students with community-based mentors in an employment setting. Intervention students were compared to a control group of students not receiving mentorship services	Medium	High	Unexcused absences, number of in-school suspensions, number of days of in-school suspensions, number of out-of-school suspensions, number of days of out-of-school suspensions; and total number of infractions committed on school property	The variables explored for this study represent proximal indicators which have been shown to lead to school violence (e.g., suspensions, absences, etc.), as well as distal outcomes of school violence (e.g., reported acts of student violence committed on school property)
Rowland (1992)	USA	A school-based mentoring program	12 months	6-12-year-olds	School	Experimental Design	The control group was matched with the same number of at-risk boys and girls at each grade level who do not receive mentors.	Low	Low	Self-esteem, grades, attitude	Discipline/ behaviour, attendance

Royse (1998)	USA	The Brothers Project	2.8 years	'Teens'	Community	Experimental Design	Random assignment to intervention or no-intervention control group	Medium	Low	Self esteem	Disciplinary infractions
Sabateli et al. (2006)	USA	12 Neighbourhood Youth Centres	-	12-18-year-olds	Community	Process Evaluation	-	-	-	-	Attendance data, perceptions of support and opportunities
Schinke et al. (2000)	USA	PrimeTime	2.5 years	Mean age= 12.3	Community	Non-Experimental Design	A three-arm research design juxtaposed program youth who received educational enhancements with comparison youth in affiliated facilities who did not receive the program and with control youth in other community programs without educational enhancements	High	High	Parent-, teacher-, and peer-reports of others' acceptance, as well as on children's self-rated competence and acceptance by others	Parent-, teacher-, and peer-reports of children's aggression
Schrim et al. (2003)	USA	The Quantum Opportunity Program	5 years	Mean age= 14.5	Community	Experimental Design	Randomized controlled trial. Random assignment to QOP or control	High	Low	High school completion, postsecondary activity, high school performance, resiliency factors	Risk behaviours
Shiner et al. (2004)	UK	Mentoring Plus	12 months	12-19-year-olds	Community	Process Evaluation	-	-	-	School/educational status, attitude to school, qualifications, drug use, family background, and social exclusion	Reduction of youth crime and other at-risk behaviours

St James-Roberts et al. (2005)	UK	Youth Justice Board evaluation of 80 mentoring programs 2001-2004	3 months – 1 year	10-17-year-olds	YOTs, Charities, 'other smaller organisations'	Experimental Design, Process Evaluation, Cost Analysis	80 YJB supported community mentor projects, comparing youth randomly allocated to receive mentoring services and those who do not receive mentoring	High	Low	Attendance and behaviour at school, literacy and numeracy, improvements in accommodation and family relationships, increased involvement in community activities such as sports, clubs, social groups and voluntary organisations at school or in the community, and drug and alcohol use	Reduce offending and drug and alcohol use
Tarling et al. (2004)	UK	39 individual mentoring schemes funded by the Youth Justice Board	18 months	10-17-year-olds	Community	Process Evaluation	-	-	-	Educational outcomes and interpersonal relationships with family members and peers	Risk of offending and recidivism
Tierney et al. (1995)	USA	Big Brothers Big Sisters	12 months	10-16-year-olds	Community	Experimental Design	Families were randomly assigned to the BBBS program or a waiting list control	High	High	Improved academic outcomes, better relationships with family and friends, improved self-concept, social and cultural enrichment, drug and alcohol use	Reduced antisocial activities
Tucker et al. (2019)	USA	Retrospective reflections on non-parental mentors	-	15-17-year-olds	-	Qualitative Study	-	-	-	-	Understanding how some children growing up in high-risk areas succeeded
Weiler (2014); Weiler et al. (2015)	USA	Campus Corps	-	11-18-year-olds	Community	Non-Experimental Design	Comparison between at-risk youth who receive Campus Corps Therapeutic Mentoring, and those in the control who do not receive therapeutic mentoring due to limited space / missing the recruitment window for participation	Low	Low	Perception of problem behaviour, peer refusal skills, and autonomy from substance use	Problem behaviours – delinquency and drug abuse

Table 16. Examples of characteristics of the excluded studies

Author and Year	Country	Type of Intervention	Reason for Exclusion
Barnes et al. (2017)	USA	School wide violence prevention program	The proportional odds logistic regression model analysis only provided information between multiple components (individual attention, mentoring, tutoring) and did not differentiate between coaching of students by students or adults.
Bauldry & Hartman (2004)	USA	The National Faith-Based Initiative	Excluded because it is not an original article, nor is it a process evaluation.
Clarke et al. (2013)	UK	Mentoring intervention with an emergency department.	Before versus after without control group.
Greim (1995)	USA	Adult/Youth Relationships Pilot Project.	No full text could be discovered.

Howitt et al. (1998)	USA	Youth Assistance, a community-based program of the Oakland County Probate Court.	No full text could be discovered.
Owora et al. (2018)	USA	Youth-First, a culturally congruent mentorship pilot project.	Excluded because it is not an original article, nor is it a process evaluation.
Raposa et al. (2016)	USA	Big Brother Big Sister.	This paper's aim is to judge the youth risk to the program, not the effect about the program itself.
Baer (1975)	USA	Outward Bound Survival training course.	Single arm study.
Bowen & Neill (2016)	Australia	Adolescents completed a 'Catalyst' program conducted by the Queensland Police-Citizens Youth Welfare Association.	Single arm study.
O'Dwyer (2017)	Ireland	Le Chéile Mentoring.	No control group.

Table 17. Studies excluded from the meta-analysis

Author and Year	Reason for Exclusion
Tierney et al. (2000)	This study provides 'net impact' in the form of percentages or what appear to be regressions. However, no baseline information or raw data is provided, nor are SD or variance reported. The authors were contacted to see if any additional information could be included in our analysis, but unfortunately did not respond in time for their data to be included in this meta-analysis.
Hart-Johns et al. (2017)	This study only contains information on the implementation of a mentoring intervention and has no discernible outcome data for our meta-analysis. Their initial quasi-experimental design, due to too small sample sizes, did not allow for a control comparison
DuBois et al. (2018)	This study only provides ORs, B or standardized mean differences (d) and p-values. No confidence intervals, standard errors or variances are reported. As no baseline data is provided within the research paper, these cannot be calculated. The authors were contacted, but unfortunately did not respond in time for their data to be included in this meta-analysis.
Baer (2000)	This study only provided ORs and p-values. The authors were contacted to see if they could provide CIs or any additional information could be included in our analysis, but unfortunately did not respond in time for their data to be included in this meta-analysis.
De Wit et al. (2016)	This study used structural equation modelling, and the results are presented as standardized structural coefficients.
Chan et al. (2013)	This study used structural equation modelling, and the results are presented as standardized structural coefficients.

Wichman (1991)	No relevant outcome data.
Bellamy et al. (2004)	No relevant outcome data.
Lyons & McQuillin (2019)	No available data, the intervention group and the control group were not reported separately.
Johns (2017)	No relevant outcome data.
Rodríguez-Planas, 2010	No relevant outcome data.
Grossman & Rhodes (2002)	Did not distinguish intervention and control group in analyses of interest.

Table 18. Studies and reasons for excluding studies included in Tolan et al. (2013)

Author and Year	Reason for Exclusion
Aseltine et al. (2000)	Cannot locate full text or abstract.
Buman & Cain (1991)	Cannot locate full text or abstract.
Johnson (1997, 1999)	No comparison group.
Kelley (1973)	Focus is on student mentors, not adult mentors.
Kelley et al. (1979)	Focus is on student mentors, not adult mentors.
Polit et al. (1985); Quint (1991)	Due to the amount of service use utilized by both the 'Redirect' and control group, the study was unable to draw suitable comparisons. This was therefore excluded on the basis of a lack of control group.
Watson (1996)	Cannot locate full text or abstract.

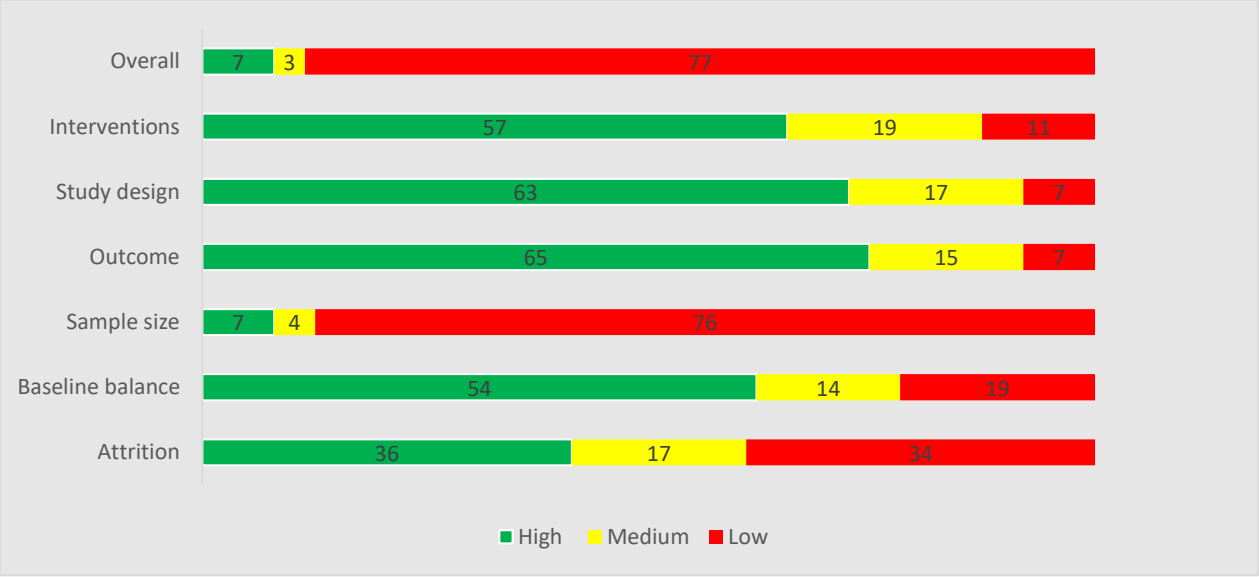
6.14 Critical appraisal of included studies

Effectiveness studies

The large majority of effectiveness studies (seventy-seven studies out of eighty-seven studies) are rated as overall low confidence in study findings, with just three rated as medium and seven as high confidence (Figure 11). The majority of studies are assessed as high confidence for intervention and outcome description, and to a somewhat lesser extent, clear evaluation questions. But the included studies are mainly assessed as low confidence owing to an absence of power calculations (sample size in Figure 11).

Thirty-six studies have low attrition, reflecting that they are often short duration interventions. Thirty-four had high attrition, possibly reflecting design issues. The majority of studies (54 studies) established baseline equivalence, with a further 14 having reasonable balance (assessed as medium confidence). This indicates that the effectiveness studies tended to have good matching between intervention and comparison groups at baseline.

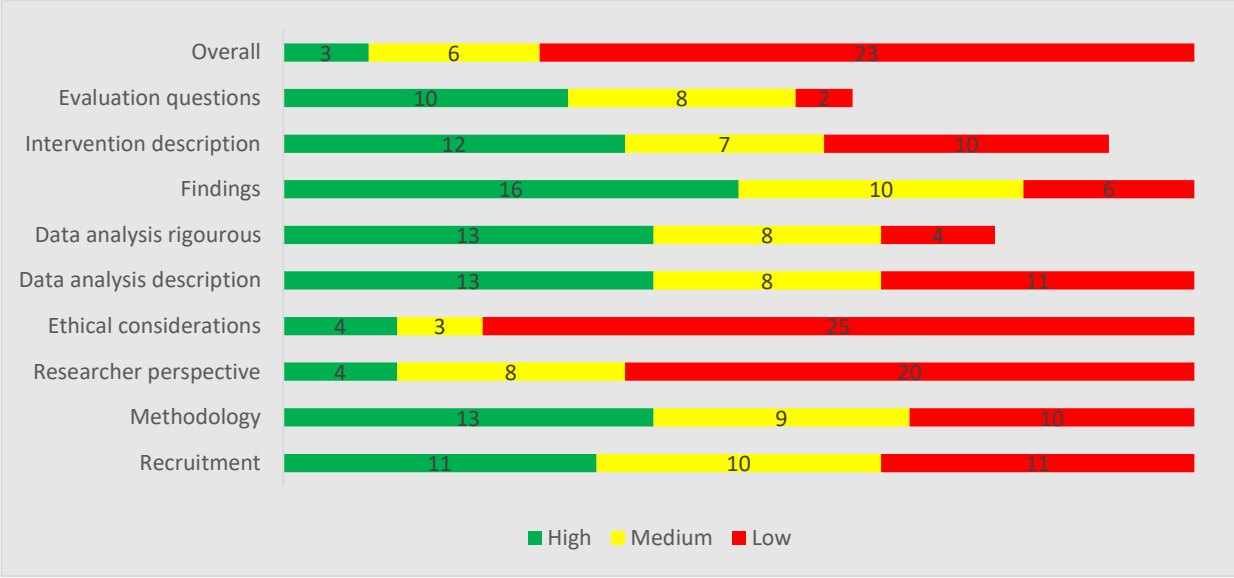
Figure 11. Critical appraisal of effectiveness studies



Process evaluations

In the assessment of confidence of study findings of the qualitative studies (process evaluations) the majority are also rated as low confidence (twenty-four studies). It is important to remember that the evaluation is based on what the study authors say they did. As a result, a low rating could indicate a failure to report rather than a problem with the design and conduct of the study.

Figure 12. Critical appraisal of process evaluations



7.0 Synthesis of the quantitative findings

7.1 Results

Overall, mentoring interventions mostly had a desirable impact on the outcomes included in the present review. The results of the random effects meta-analyses suggest that mentoring interventions reduce all offending, crime, recidivism, substance misuse, externalizing behaviours, and improve peer outcomes, familial outcomes, and academic and school-related outcomes. Table 19 presents a summary of the weighted mean effect sizes for each of the outcomes reported in the present review, but the following sections provide a full outline of the results.

It should be noted that studies often displayed outcome reporting bias in which they noted non-significant findings but did not report them. For example, McCord (1978) investigated their treatment and control groups to compare whether there were differences (a) in the number of serious crimes committed, (b) in age when a first crime was committed, (c) in age when committing a first serious crime, and (d) in age after which no serious crime was committed. However, they just conclude that 'None of these measures showed reliable differences.' Similarly, Reyes & Jason (1991) had several non-significant differences between their experiment and the control group, like students' behavioural adjustment, but these were not specified. This outcome reporting bias likely resulted in an inflation of the impact that mentoring has on reducing youth violence, offending, antisocial behaviour, and recidivism.

Table 19. Summary of weighted mean effect sizes for each outcome

Outcome	*n*	*k*	OR	95% CI	*P*
All offending	37	101	1.222	1.142 – 1.308	.000
Violent offending	8	17	1.321	1.081-1.614	.007
Crime	31	71	1.177	1.092 – 1.270	.000
Gang involvement	1	2	0.885	0.441 – 1.773	.729
Recidivism	23	58	1.468	1.279 - 1.686	.000
Externalizing	23	58	1.130	1.043 – 1.225	.003
Internalizing	26	64	1.142	0.981 – 1.328	.087
Attitudes and beliefs	18	50	0.929	0.785 - 1.098	.338
Social and emotional outcomes	5	8	0.808	0.763 - 0.856	.000
Behavioural outcomes	14	22	0.996	0.902 - 1.100	.936
Substance misuse	17	39	1.343	1.099 – 1.640	.004
Education - attendance	18	34	1.212	1.118 – 1.314	.000
Education - attainment	34	80	1.221	1.133 – 1.315	.000
Education – aspirations and attitudes	16	33	1.160	1.025 – 1.313	.018
Education – behaviour	14	35	0.997	0.970 – 1.025	.836
Familial outcomes	11	33	1.100	1.023 – 1.184	.010
Peer outcomes	12	14	1.691	1.289 – 2.217	.000
Physical health outcomes	3	3	1.152	1.031 – 1.287	.012
Mental health outcomes	11	16	1.059	0.894 – 1.254	.506
Service use, Attendance, and Engagement	2	13	0.740	0.422 – 1.297	.292

Note. n = number of studies; *k* = numbers of effect sizes; OR = odds ratio; CI = 95% confidence intervals. N.a. is not applicable as there are no studies. Small Effect size OR < 1.5; Medium effect size OR = 1.51 - 3.5; large effect size OR = 3.6 - 9.0.

All offending

Using a random effects meta-analytical model, the mean effect size for all offending outcomes indicated that mentoring interventions had a small desirable effect (OR = 1.22; 95% CI 1.142, 1.308, p = .000). This suggests that, overall, in comparison to a control condition, mentoring interventions are effective in reducing offending. For all offending outcomes, there was significant heterogeneity between effect sizes (Q (df = 99) = 842.871, p < .000, I^2 = 88.254). Figure 13.1 in Appendix G presents a forest plot of the observed effects for all offending outcomes.

Offending – violence

Using a random effects meta-analytical model, the mean effect size for violence related outcomes indicated that mentoring interventions had a small desirable effect (OR = 1.321; 95% CI 1.081, 1.614, p = .006). This suggests that, overall, in comparison to a control condition, mentoring interventions are effective in reducing violence. For violence outcomes, there was significant heterogeneity between effect sizes (Q (df = 16) = 77.506, p < .001, I^2 = 79.36). Figure 13.2 in Appendix G presents a forest plot of the observed effects for violence and aggression outcomes.

Offending - crime

Using a random effects meta-analytical model, the mean effect size for crime related outcomes indicated that mentoring interventions had a small desirable effect (OR = 1.177; 95% CI 1.092, 1.262, p < .001). This suggests that, overall, in comparison to a control condition, mentoring interventions are effective in reducing crime. For crime outcomes, there was significant heterogeneity between effect sizes (Q (df = 70) = 707.689, p < .001, I^2 = 90.109). Figure 13.3 in Appendix G presents a forest plot of the observed effects for crime outcomes.

Offending - gang involvement

Only one study reported the effects of mentoring interventions on gang involvement: Schirm et al. (2003). In total, two related effect sizes were estimated for this outcome domain, 'Currently a Gang Member' and 'Ever a Gang Member'. Using a random effects meta-analytical model, the mean effect size for the two gang involvement outcomes indicated that mentoring interventions had an undesirable effect (OR = 0.885; 95% CI 0.441, 1.773, p = .729). This suggests that, overall, in comparison to a control condition, mentoring interventions are not effective in reducing gang involvement. However, the mean effect size was not statistically significant. Heterogeneity was not significant between effect sizes ($Q(df$ = 1) = 0.296, p = .585, I^2 = 0.000). Figure 13.4 in Appendix G presents a forest plot of the observed effects for gang involvement outcomes.

Offending - recidivism

Using a random effects meta-analytical model, the mean effect size for recidivism related outcomes indicated that mentoring interventions had a small desirable effect (OR = 1.468; 95% CI 1.279, 1.686, p < .000). This suggests that, overall, in comparison to a control condition, mentoring

interventions are effective in reducing recidivism. For recidivism outcomes, heterogeneity between effect sizes was significant (Q (df = 57) = 628.269, p < .000, I^2 = 90.927). Figure 13.5 in Appendix G presents a forest plot of the observed effects for recidivism outcomes.

Externalising

Using a random effects meta-analytical model, the mean effect size for externalising related outcomes indicated that mentoring interventions had a small desirable effect (OR = 1.130; 95% CI 1.043, 1.225, p = .003). This suggests that, overall, in comparison to a control condition, mentoring interventions are effective in reducing externalising behaviours. For externalising outcomes, heterogeneity between effect sizes was significant (Q (df = 57) = 201.986, p < .000, I^2 = 71.780). Figure 13.6 in Appendix G presents a forest plot of the observed effects for externalising outcomes.

Internalizing

Using a random effects meta-analytical model, the mean effect size for internalising related outcomes indicated that mentoring interventions had a small desirable effect (OR = 1.142; 95% CI 0.981, 1.328, p = .087). This suggests that, overall, in comparison to a control condition, mentoring interventions are effective in reducing internalising behaviours, but not to a significant degree. For externalising outcomes, heterogeneity between effect sizes was significant (Q (df = 63) = 381.532, p < .000, I^2 = 69.488). Figure 13.7 in Appendix G presents a forest plot of the observed effects for internalizing outcomes.

Child centred-attitudes and beliefs

Using a random effects meta-analytical model, the mean effect size for attitude and belief related outcomes indicated that mentoring interventions had an undesirable effect (OR = 0.929; 95% CI 0.785, 1.098, p = 0.338). This suggests that, overall, in comparison to a control condition, mentoring interventions are not effective in improving children's attitudes and beliefs. However, this finding was not statistically significant. For attitude and belief outcomes, heterogeneity between effect sizes was significant (Q (df = 50) = 800.278, p =0.388, I^2 = 93.877). Figure 13.8 in Appendix G presents a forest plot of the observed effects for attitude and belief outcomes.

Child centred-social and emotional

Using a random effects meta-analytical model, the mean effect size for social and emotional related outcomes indicated that mentoring interventions had an undesirable effect (OR = 0.808; 95% CI 0.763, 0.856, $p < .000$). This suggests that, overall, in comparison to a control condition, mentoring interventions are not effective in improving children's social and emotional outcomes. For social and emotional outcomes, heterogeneity between effect sizes was significant (Q (df = 51) = 786.975, $p < .000$, $I^2 = 23.770$). Social and emotional outcomes are presented in a forest plot of the observed effects in Figure 13.9 in Appendix G.

Child centred-behavioural outcomes

Using a random effects meta-analytical model, the mean effect size for behavioural related outcomes indicated that mentoring interventions had an undesirable effect (OR = 0.996; 95% CI 0.902, 1.100, $p = .936$). This suggests that, overall, in comparison to a control condition, mentoring interventions are not effective in improving children's behavioural outcomes, although this was not statistically significant. For behavioural outcomes, heterogeneity between effect sizes was significant (Q (df = 21) = 59.487, $p < .000$, $I^2 = 64.698$). Figure 13.10 in Appendix G presents a forest plot of the observed effects for behavioural outcomes.

Child centred-substance use

Using a random effects meta-analytical model, the mean effect size for substance use related outcomes indicated that mentoring interventions had a small desirable effect (OR = 1.343; 95% CI 1.099, 1.640, $p = .004$). This suggests that, overall, in comparison to a control condition, mentoring interventions are effective in reducing substance misuse outcomes. For substance misuse outcomes, heterogeneity between effect sizes was significant (Q (df = 39) = 872.754, $p < .000$, $I^2 = 95.646$). Figure 13.11 in Appendix G presents a forest plot of the observed effects for substance use outcomes.

Education – attendance

Using a random effects meta-analytical model, the mean effect size for educational attendance related outcomes indicated that mentoring interventions had a small desirable effect (OR = 1.212; 95% CI 1.118, 1.314, $p < .000$). This suggests that, overall, in comparison to a control condition,

mentoring interventions are effective in improving educational attendance. For educational attendance outcomes, heterogeneity between effect sizes was significant (Q (df = 33) = 106.508, p <.000, I^2 = 69.016). Figure 13.12 in Appendix G presents a forest plot of the observed effects for educational attendance outcomes.

Education – attainment

Using a random effects meta-analytical model, the mean effect size for educational attainment related outcomes indicated that mentoring interventions had a small desirable effect (OR = 1.221; 95% CI 1.133, 1.315, p < .000). This suggests that, overall, in comparison to a control condition, mentoring interventions are effective in improving educational attainment. For educational attainment outcomes, heterogeneity between effect sizes was significant (Q (df = 79) = 373.652, p < .00, I^2 = 78.857). Figure 13.13 in Appendix G presents a forest plot of the observed effects for educational attainment outcomes.

Education – aspirations and attitudes

Using a random effects meta-analytical model, the mean effect size for educational aspirations and attitude outcomes indicated that mentoring interventions had a small desirable effect (OR = 1.160; 95% CI 1.025, 1.313, p = .018). This suggests that, overall, in comparison to a control condition, mentoring interventions are effective in improving educational aspirations and attitudes. For educational aspirations and attitude outcomes, heterogeneity between effect sizes was significant (Q (df = 32) = 136.030, p < .000, I^2 = 76.476). Figure 13.14 in Appendix G presents a forest plot of the observed effects for educational aspirations and attitude outcomes.

Education – behaviour

Using a random effects meta-analytical model, the mean effect size for behaviour in an educational setting indicated that mentoring interventions had an undesirable effect (OR = 0.997; 95% CI 0.970, 1.025, p = .836). This suggests that mentoring interventions had no effect on improving behaviour in educational settings. For outcomes reporting behaviour in an educational setting, heterogeneity between effect sizes was not significant (Q (df = 34) = 47.639, p = .060, I^2 = 28.630).

Figure 13.15 in Appendix G presents a forest plot of the observed effects for outcomes reporting behaviour in an educational setting.

Familial outcomes

Using a random effects meta-analytical model, the mean effect size for familial related outcomes indicated that mentoring interventions had a small desirable effect (OR = 1.100; 95% CI 1.023, 1.184, p = .010). This suggests that, overall, in comparison to a control condition, mentoring interventions are effective in improving familial related outcomes. For familial related outcomes, heterogeneity between effect sizes was not significant (Q (df = 32) = 29.844, p = .525, I^2 = 0.000). Figure 13.16 in Appendix G presents a forest plot of the observed effects for familial related outcomes.

Peer outcomes

Using a random effects meta-analytical model, the mean effect size for peer related outcomes indicated that mentoring interventions had a medium desirable effect (OR = 1.691; 95% CI 1.289, 2.217, p < .000). This suggests that, overall, in comparison to a control condition, mentoring interventions are effective in improving children's peer related outcomes. For peer related outcomes, heterogeneity between effect sizes was significant (Q (df = 13) = 202.209, p < .00, I^2 = 93.571). Figure 13.17 in Appendix G presents a forest plot of the observed effects for peer related outcomes.

Physical health outcomes

Using a random effects meta-analytical model, the mean effect size for physical health related outcomes indicated that mentoring interventions had a small desirable effect (OR = 1.152; 95% CI 1.031, 1.287, p = .012). This suggests that, overall, in comparison to a control condition, mentoring interventions are effective in improving physical health related outcomes. For physical health related outcomes, heterogeneity between effect sizes was not significant (Q (df = 2) = 0.040, p = .980, I^2 = 0.000). Figure 13.18 in Appendix G presents a forest plot of the observed effects for physical health related outcomes.

Mental health outcomes

Using a random effects meta-analytical model, the mean effect size for mental health related outcomes indicated that mentoring interventions had a small desirable effect (OR = 1.059; 95% CI 0.894, 1.254, $p = .506$). This suggests that, overall, in comparison to a control condition, mentoring interventions are effective in improving mental health related outcomes, but not to a significant degree. For mental health related outcomes, heterogeneity between effect sizes was significant (Q (df = 15) = 68.577, $p < .000$, $I^2 = 78.127$). Figure 13.19 in Appendix G presents a forest plot of the observed effects for mental health related outcomes.

Service use, attendance, and engagement

Using a random effects meta-analytical model, the mean effect size for service use, attendance, and engagement related outcomes indicated that mentoring interventions had an undesirable effect (OR = 0.740; 95% CI 0.422, 1.297, $p = .292$). This suggests that, overall, in comparison to a control condition, mentoring interventions are not effective in improving service use, attendance, and engagement related outcomes. However, these results were not statistically significant. For service use, attendance, and engagement related outcomes, heterogeneity between effect sizes was not significant (Q (df = 12) = 9.177, $p = .688$, $I^2 = 0.000$). Figure 13.20 in Appendix G presents a forest plot of the observed effects for service use, attendance, and engagement related outcomes.

7.2 Publication bias analysis

In the present review, we used Egger's regression test and examination of funnel plots to assess the possibility of publication bias in each of the meta-analyses. Figures 14.1 to 14.19 present the funnel plots for publication bias for each outcome. Due to a lack of separate effect sizes, a funnel plot could not be created for gang involvement.

Figure 14.1 Funnel plot for all offending outcomes

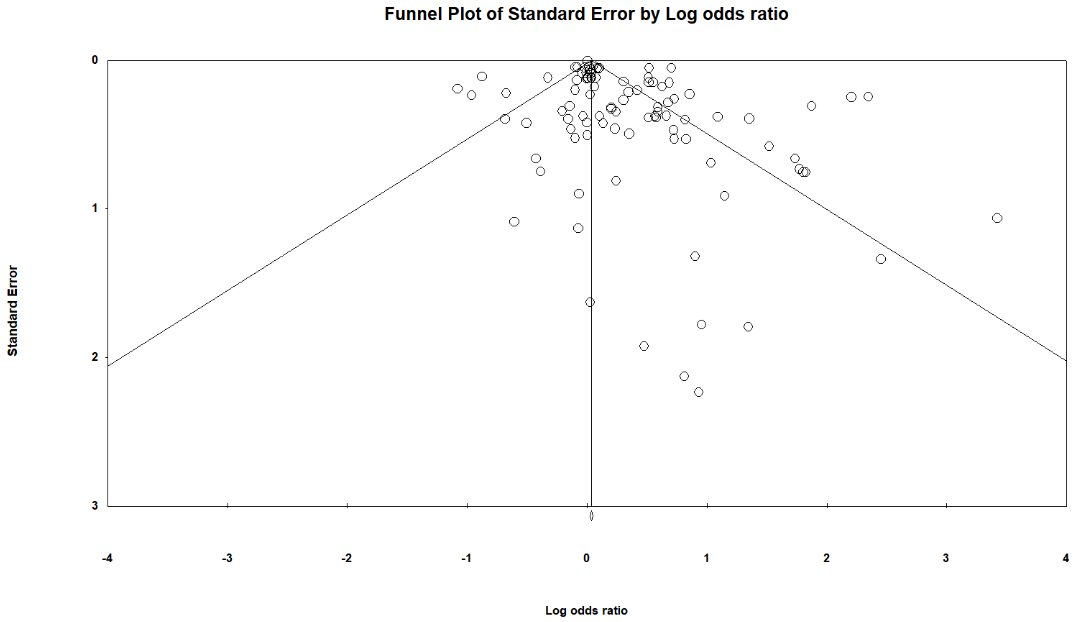


Figure 14.2 Funnel plot for violence outcomes

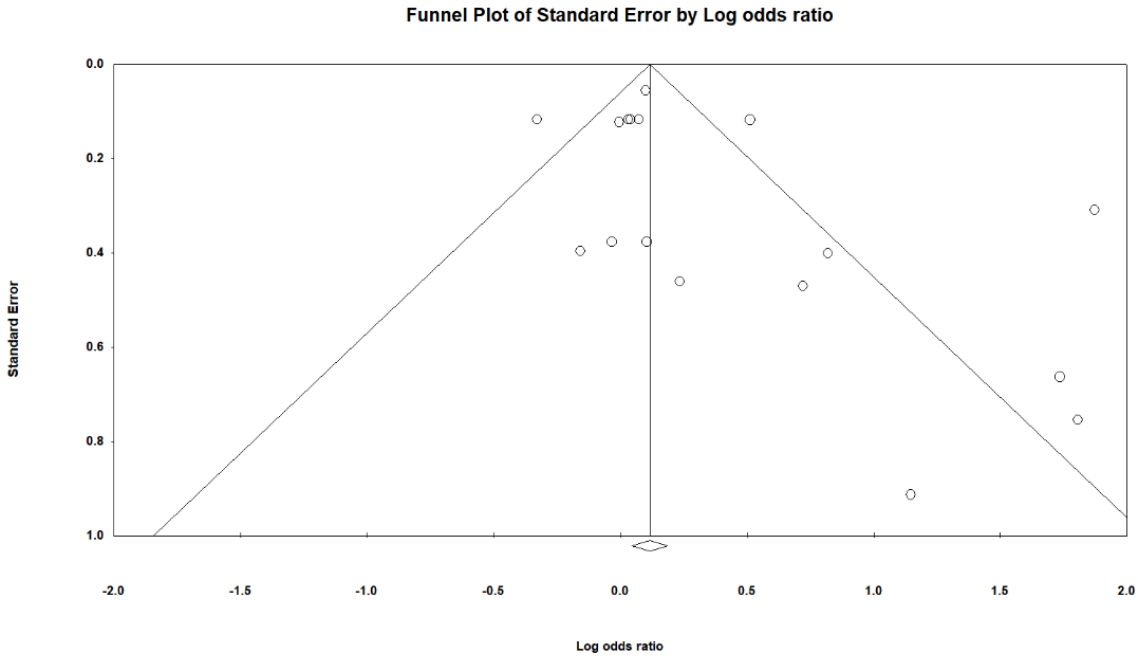


Figure 14.3 Funnel plot for crime outcomes

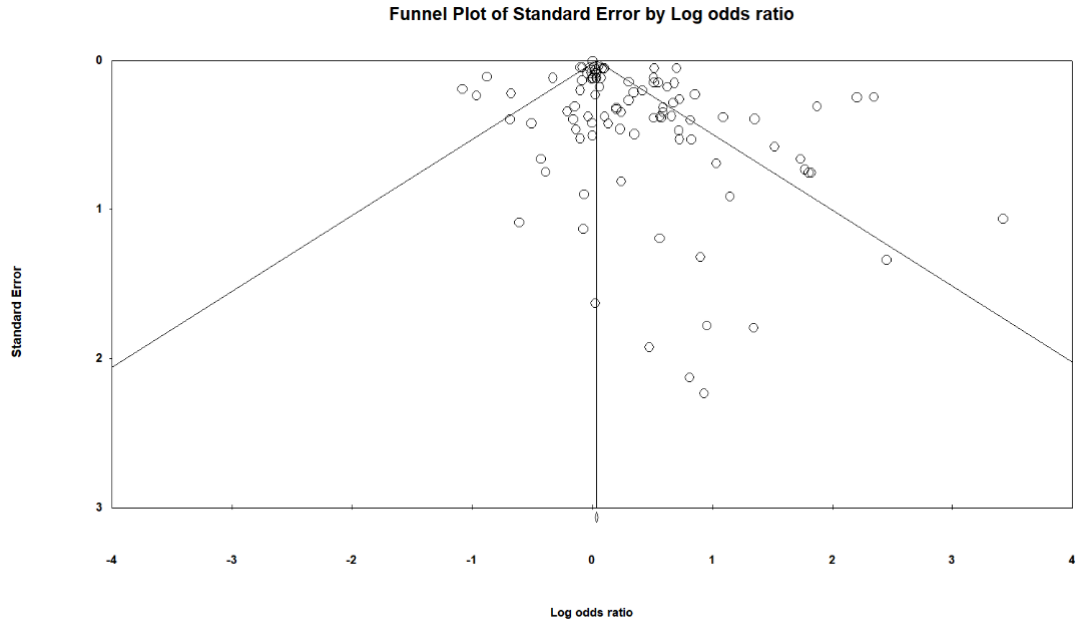


Figure 14.4 Funnel plot for recidivism outcomes

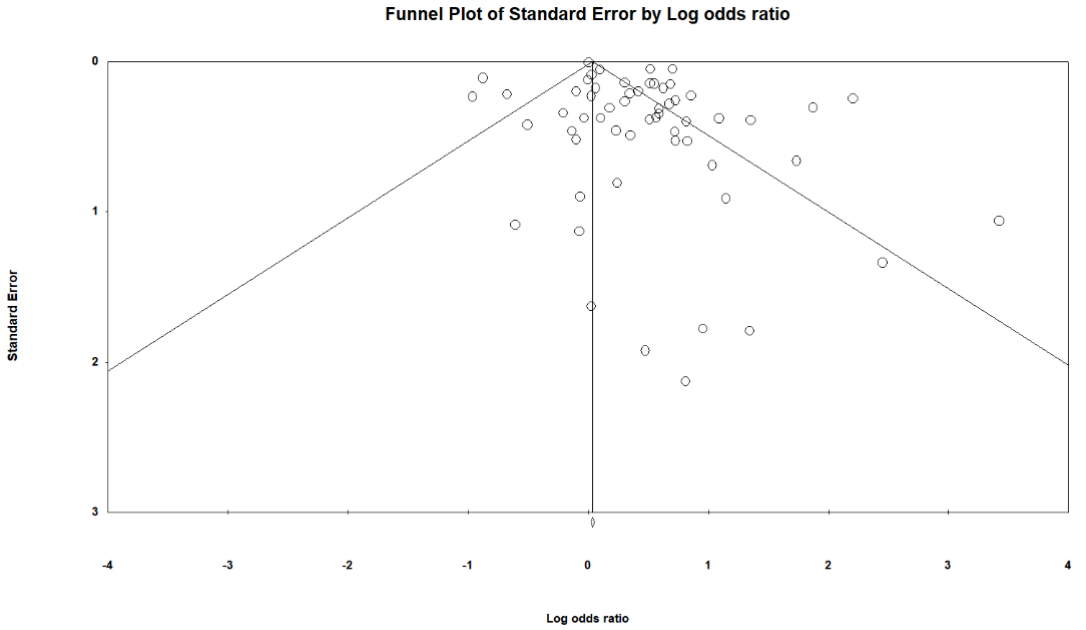


Figure 14.5 Funnel plot for externalising outcomes

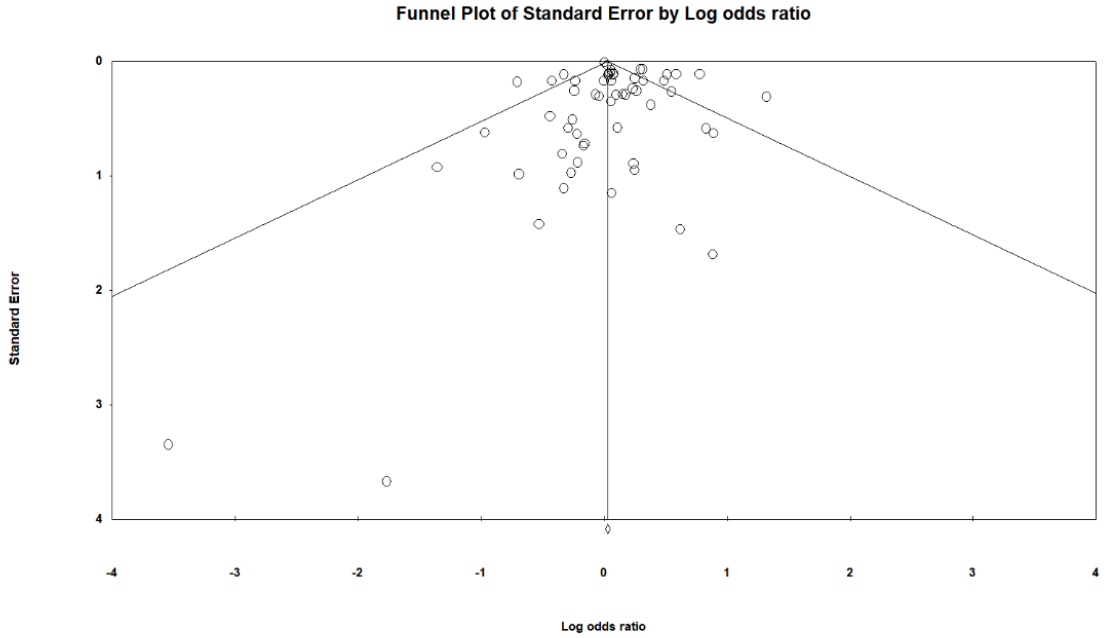


Figure 14.6 Funnel plot for internalizing

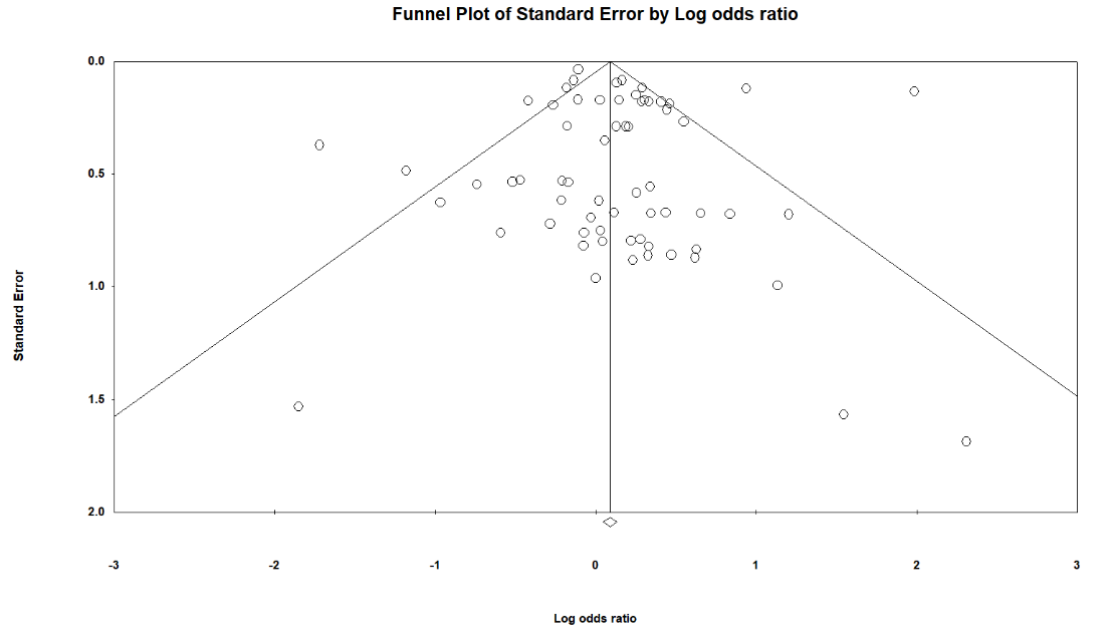


Figure 14.7 Funnel plot for attitudes and beliefs outcomes

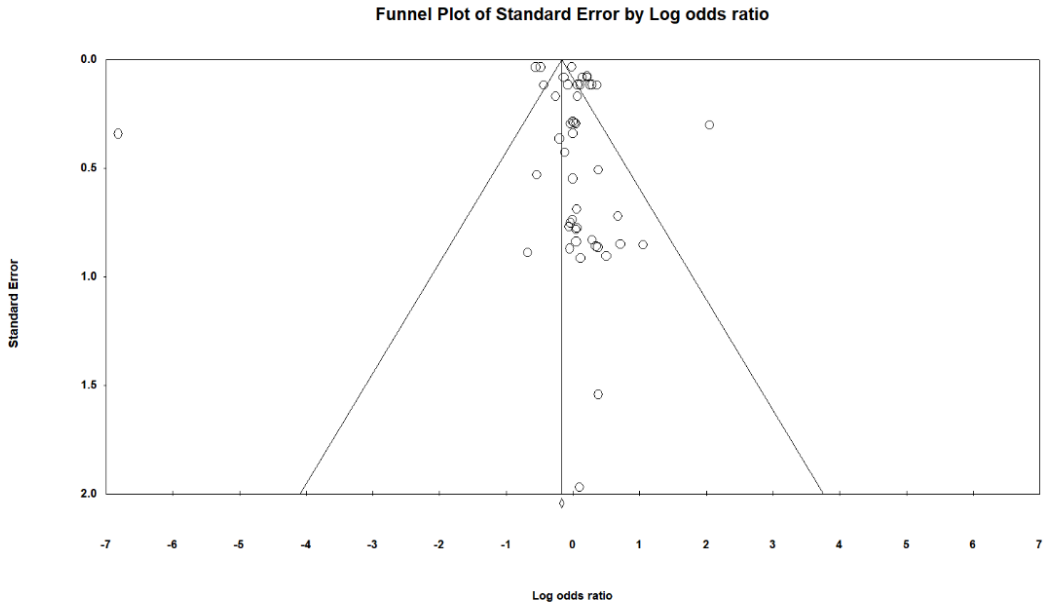


Figure 14.8 Funnel plot for socioemotional outcomes

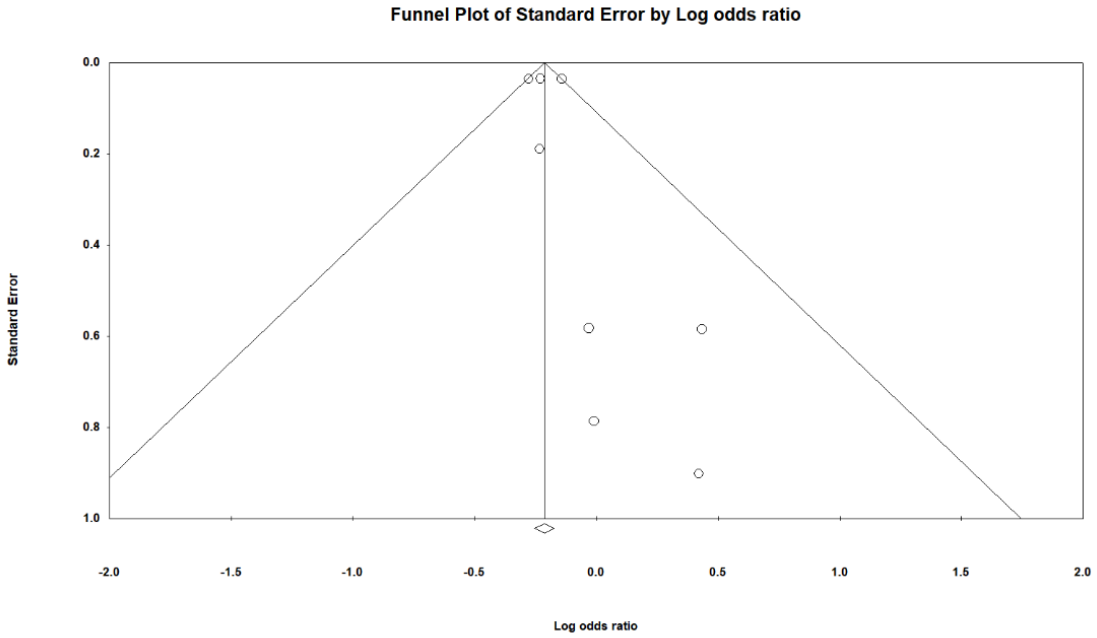


Figure 14.9 Funnel plot for behavioural outcomes

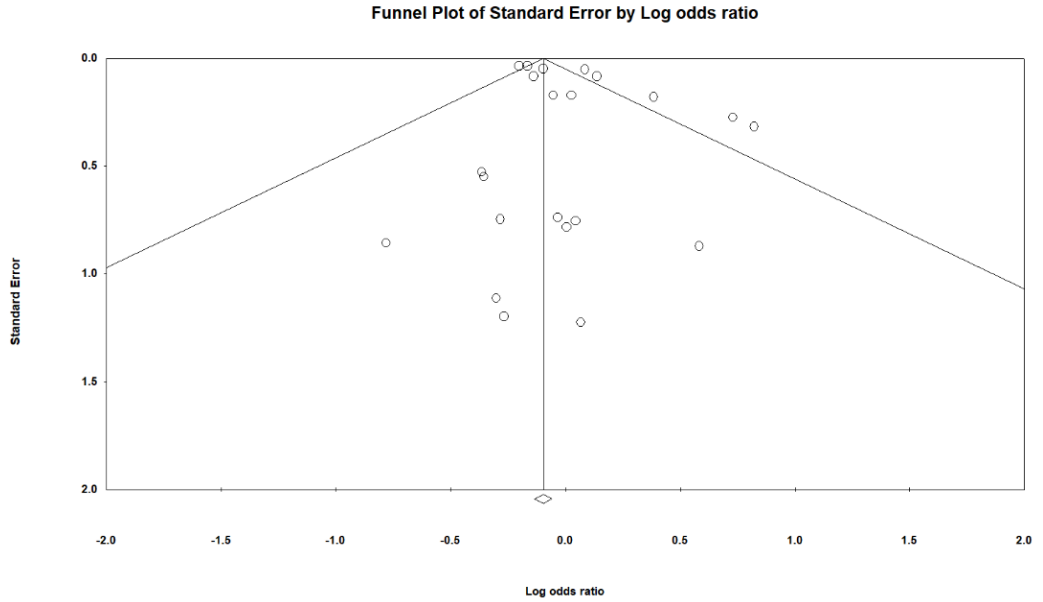


Figure 14.10 Funnel pot for substance use outcomes

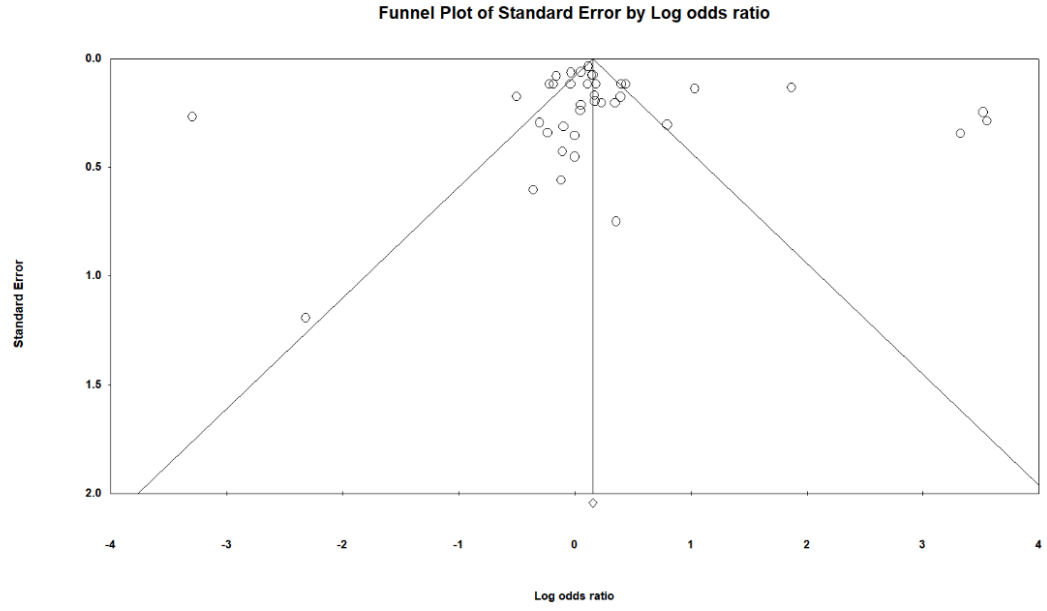


Figure 14.11 Funnel plot for education – attendance

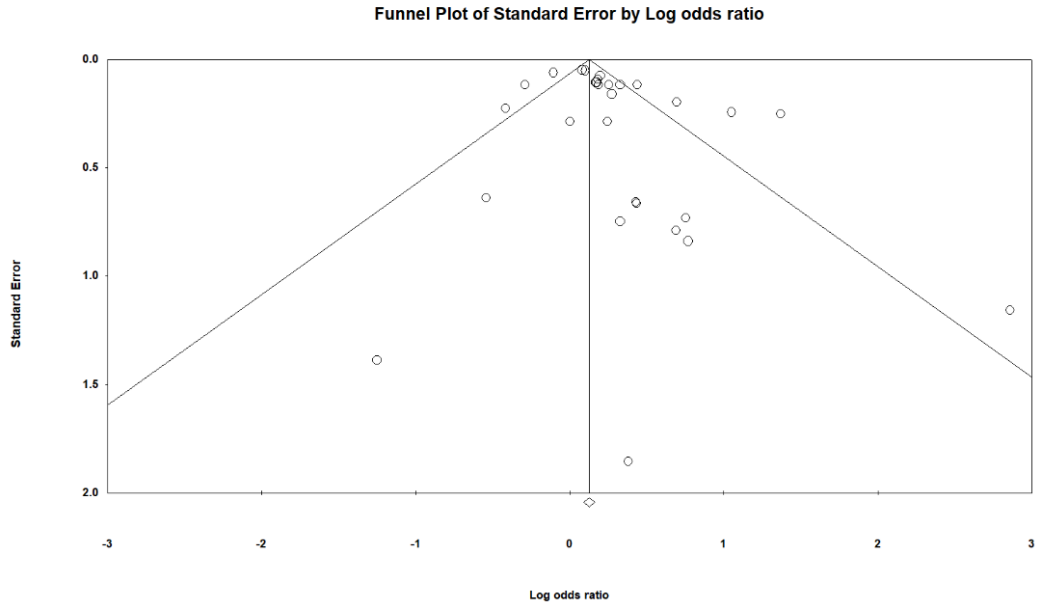


Figure 14.12 Funnel plot for education – attainment

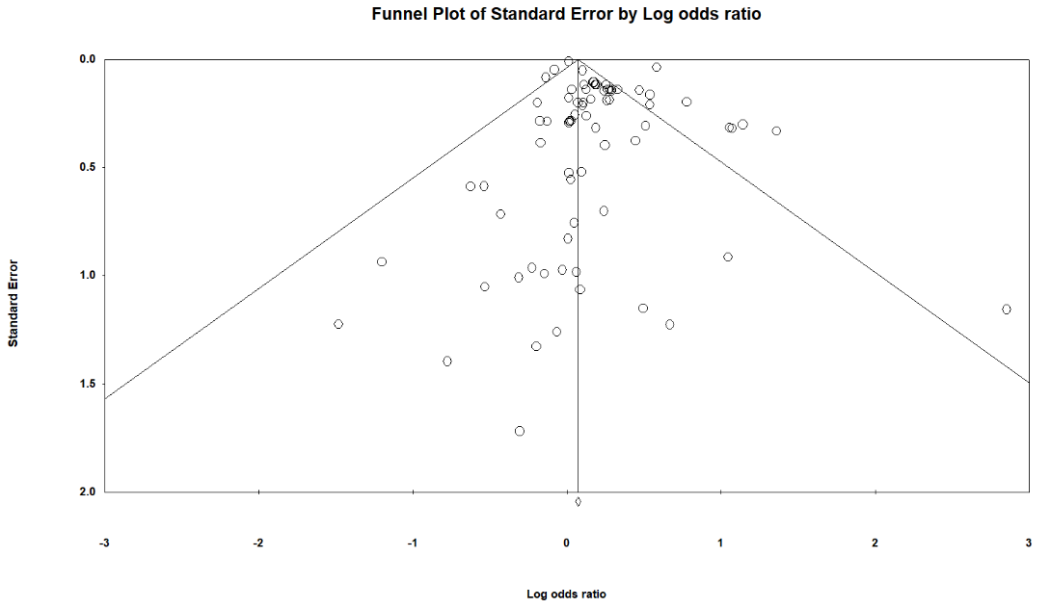


Figure 14.13 Funnel plot for education – aspirations and attitudes

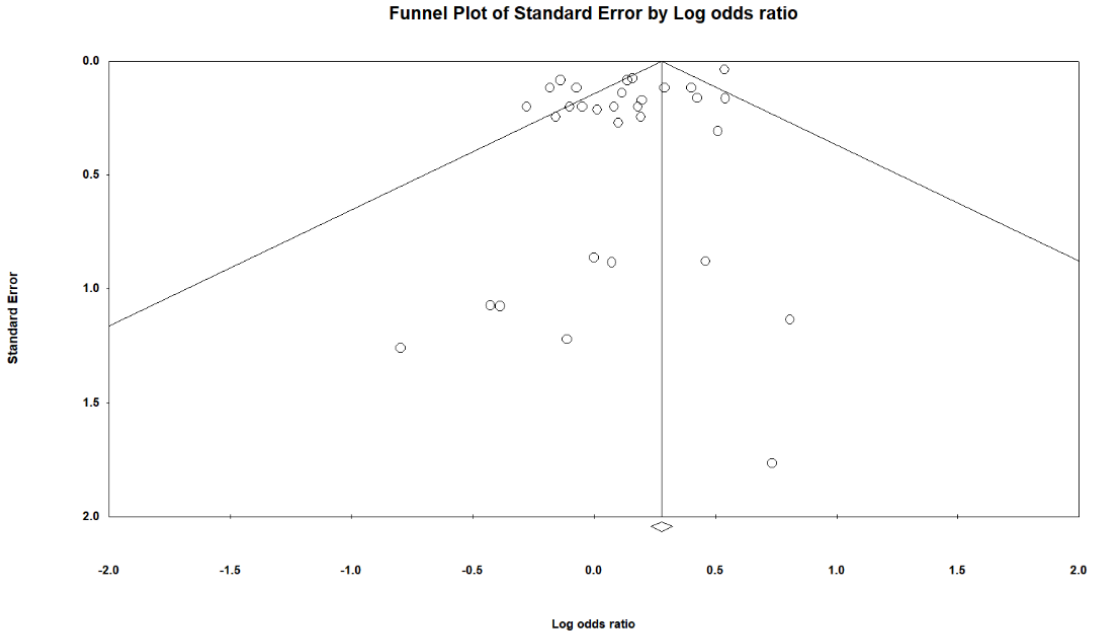


Figure 14.14 Funnel plot for education - behaviour

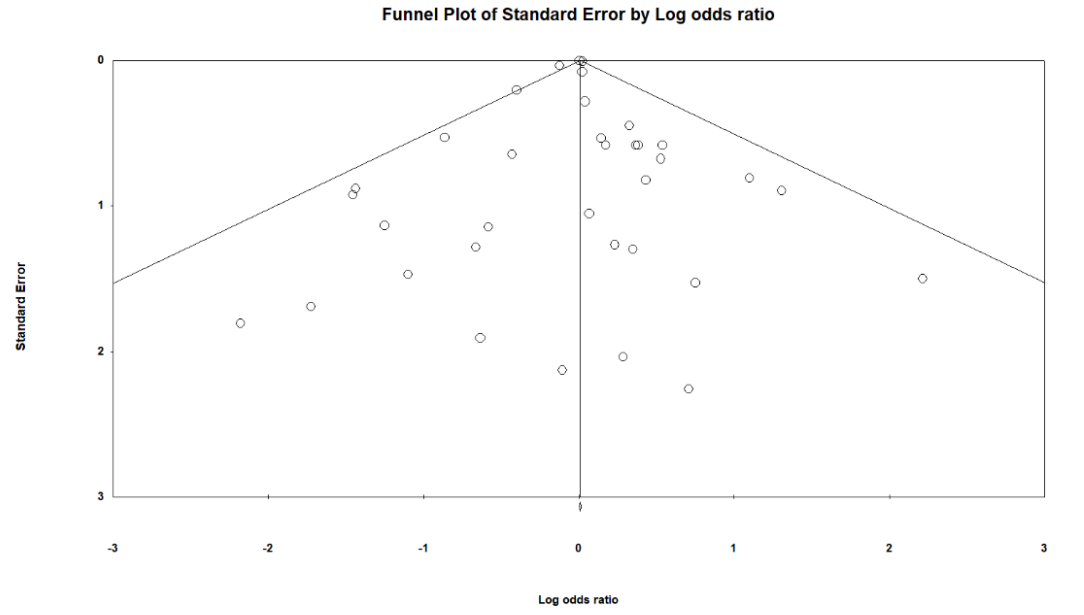


Figure 14.15 Funnel plot for familial outcomes

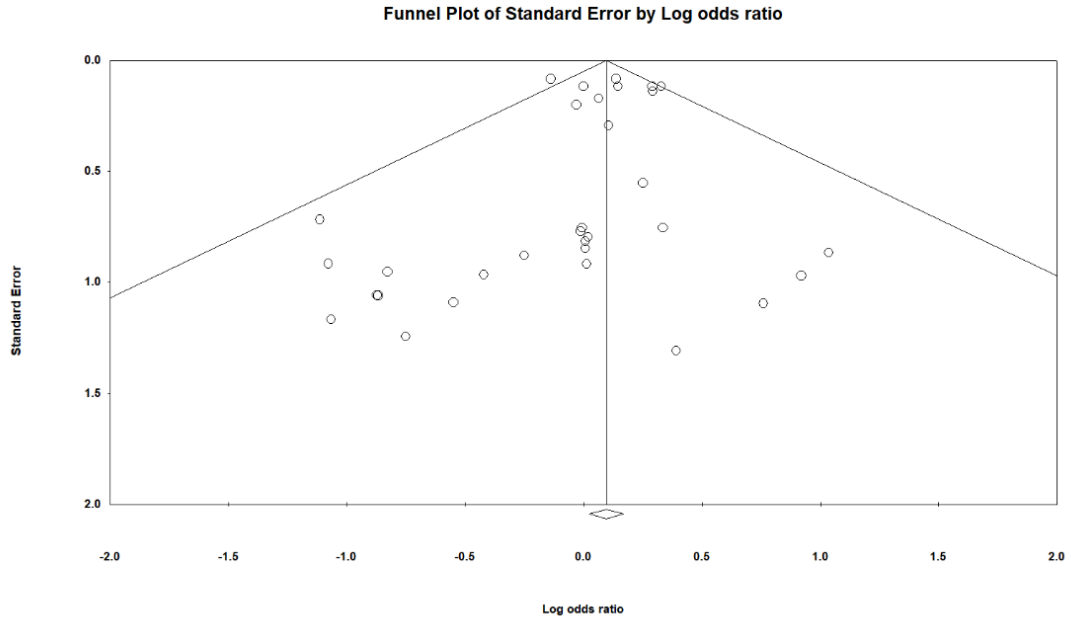


Figure 14.16 Funnel plot for peer outcomes

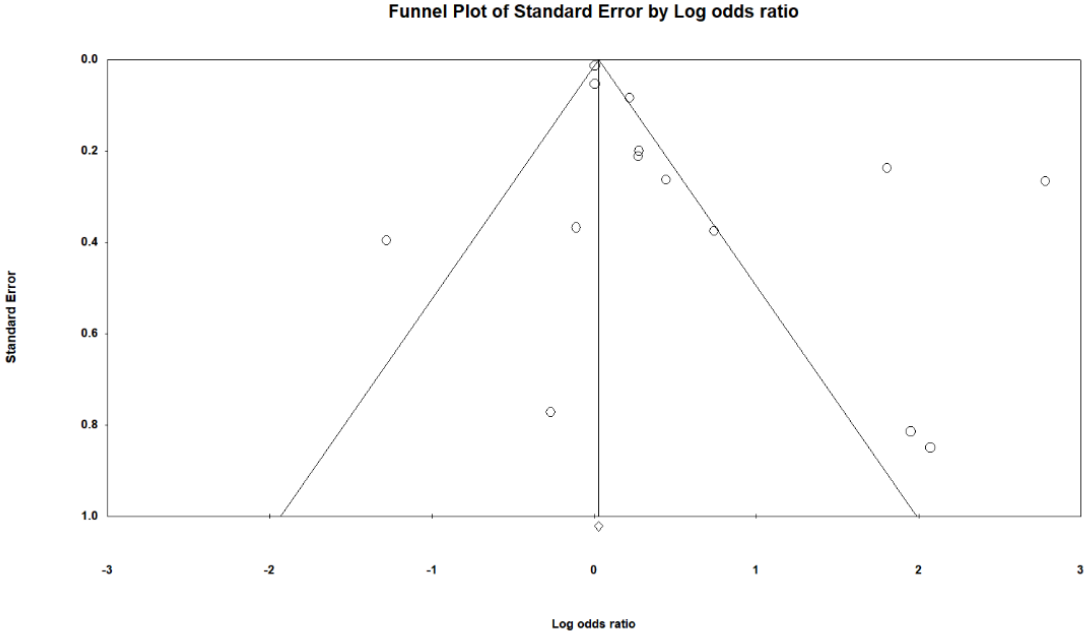


Figure 14.17 Funnel plot for physical health outcomes

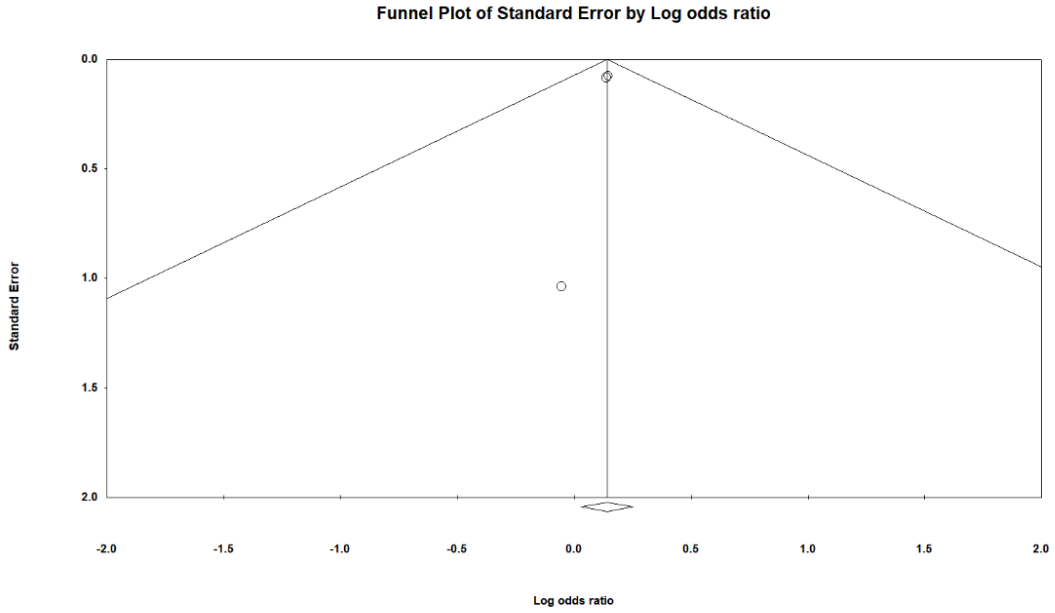


Figure 14.18 Funnel plot for mental health outcomes

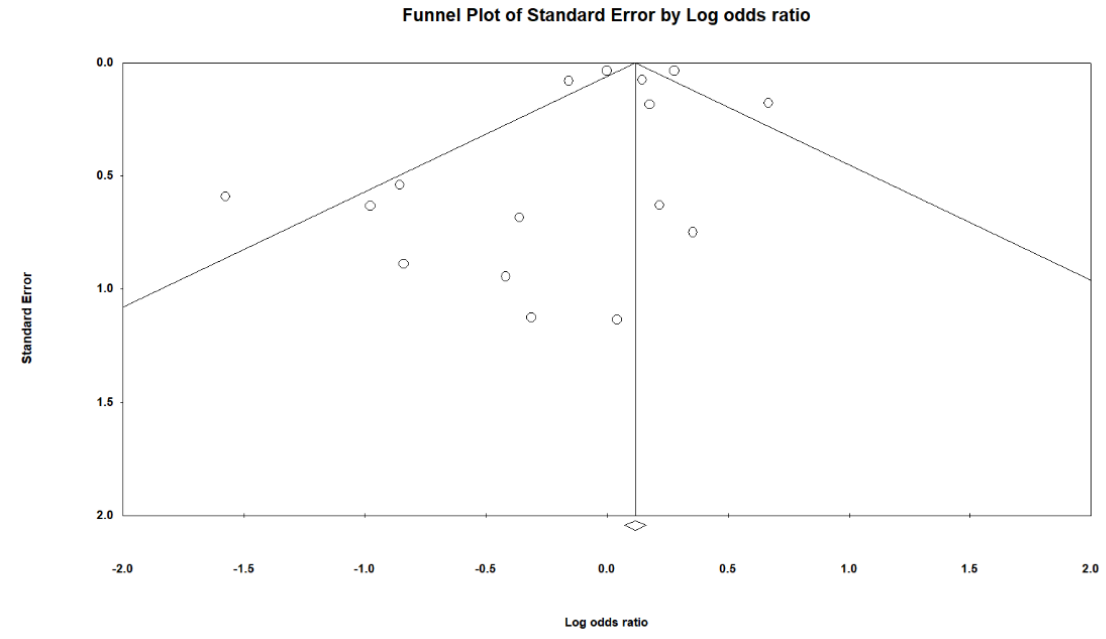


Figure 14.19 Funnel plot for service use, attendance, and engagement outcomes

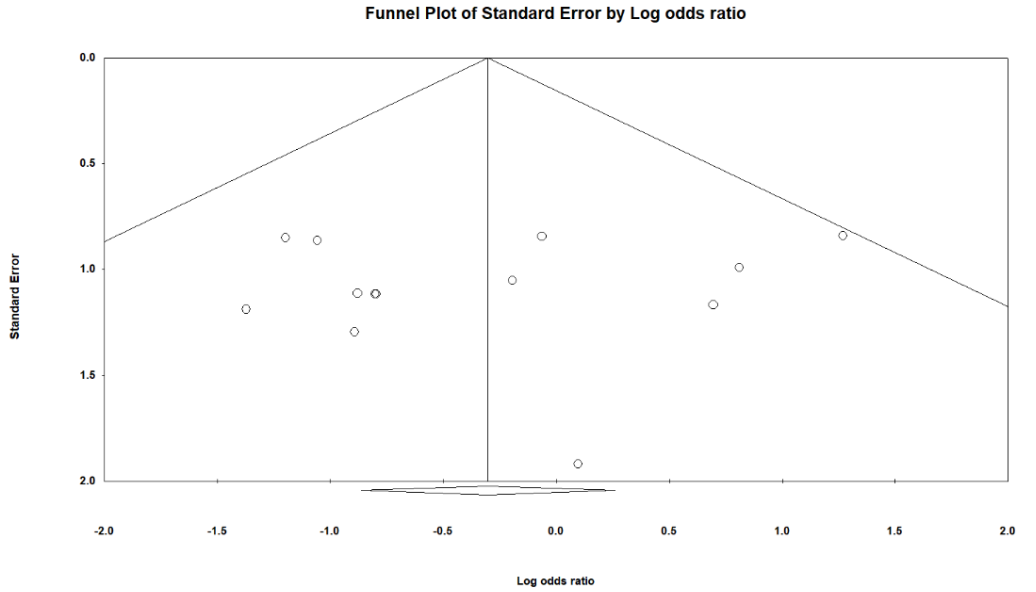


Table 20 shows the results of Egger's regression test for plot asymmetry for each of the meta-analyses. This test assesses the relationship between observed effect sizes and the standard error, and if the relationship is statistically significant, then asymmetry is present. Here, if asymmetry is present, this is considered an indication that publication bias is present in the meta-analysis. This means that we should interpret the results for outcomes such as crime and antisocial behaviour, recidivism, and academic and school related outcomes with caution, as there is likely publication bias present.

Table 20. Egger's regression test for publication bias

Outcome domain	Egger's regression test	95% CI	*z*	*p*
All offending	1.061	0.443 – 1.680	3.403	.001
Violent offending	1.403	-0.121 – 2.927	1.952	.087
Crime	0.965	0.139 – 1.791	2.330	.023
Gang involvement[9]	-	-	-	-
Recidivism	1.445	0.593 – 2.297	3.398	.001
Externalizing	0.403	-0.145 – 0.951	1.473	.146
Internalizing	0.372	-0.455 – 1.198	0.900	.372
Attitudes and beliefs	0.855	-0.664 – 2.373	1.132	.263
Social and emotional outcomes	0.520	-0.860 – 1.901	0.923	.392
Behavioural outcomes	0.732	-0.202 – 1.667	1.636	.118
Substance misuse	1.280	-1.283 – 3.843	1.012	.318
Education – attendance	1.065	0.130 – 1.999	2.320	.027
Education – attainment	0.702	0.166 – 1.239	2.604	.011

[9] There must be at least three lines of data for a regression to be conducted.

Education – aspirations and attitudes	-1.213	-2.213 - -0.213	2.474	.019
Education – behaviour	-0.133	-0.560 – 0.293	0.635	.530
Familial outcomes	-0.272	-0.754 – 0.210	1.154	.258
Peer outcomes	2.302	-0.013 – 4.612	2.166	.051
Physical health outcomes	-0.208	-0.890 – 0.474	3.878	.161
Mental health outcomes	-0.692	-2.118 – 0.733	1.041	.315
Service use, attendance, and engagement	-0.527	-3.392 – 2.338	0.405	.693

7.3 Sensitivity Analysis

To examine the impact single studies had on the combined effect size estimate, one study removed analyses were conducted for each outcome. In forest plots 15.1-15.20 in Appendix H, each row displays not the results of a single study, but rather the summary values computed when that row's study is removed from the meta-analysis. For example, the values in the first row of Figure 15.1, "(1975) FO", represent the summary computations for 104 studies, when "(1975 FO)" is excluded. No studies across outcomes significantly impacted combined effects or changed the direction of effects to a statistically significant degree.

7.4 Moderator analyses[10]

As significant heterogeneity between observed effect sizes for most outcome domains existed, univariate moderator analyses were conducted to examine possible reasons for this variation.

[10]Please contact the lead study author for a table of all significant and non-significant results from meta-regressions.

Moderator variables were defined *a priori* to conducting the current meta-analysis (see Table 6). All statistically significant results are reported in text below. Please see Tables 1-26 in Appendix I for all results.

The results of the moderator analysis should be interpreted with caution. Given the small number of studies and the unequal numbers of effect sizes in subgroups, the moderator analysis should be considered an exploratory exercise. The possibility of type 1 error due to the large number of variables explored should also be considered. Often, there were several key processes listed in an individual study. Each study was revisited to identify the single key process. However, there were still often insufficient numbers of studies per outcome to investigate the number of covariates in order to make meaningful comparisons.

More primary research and more robust reporting of empirical findings from evaluations is needed. The strength of conducting a mixed-methods review is that given the limitations of the quantitative moderator analysis, the findings can be supplemented with the findings of the qualitative synthesis.

Country

The USA, compared to the rest of the world, produced greater reductions in criminal activity (β = -0.365, SE = 0.132, (95% CI -0.624, -0.105), Z = -2.76, p = .006). The rest of the world, compared to the USA produced greater reductions in externalising behaviour (β = 0.211, SE = 0.066, (95% CI 0.081, 0.341), Z = 3.18, p = .002). No other significant differences were found.

Setting of mentoring

Mega-regression indicated that there were significant differences between groups for familial outcomes, with urban settings, compared to interventions set in a combination of urban and rural settings, showing the greatest increases in familial outcomes (β = 0.293, SE = 0.139, (95% CI 0.020, 0.565), Z = 2.10, p = .036). No other significant differences were found.

Structure of mentoring intervention

Highly structured interventions showed the greatest improvements in behavioural outcomes (β = 0.220, SE = 0.070, (95% CI 0.066, 0.342), Z = 2.90, *p* = .004), internalizing behaviours (β = 0.134, SE = 0.062, (95% CI 0.012, 0.255), Z = 2.16, *p* = .031), externalizing behaviours (β = 0.175, SE = 0.055, (95% CI 0.066, 0.284), Z = 3.16, *p* = .002), substance misuse (β = 0.348, SE = 0.119, (95% CI 0.115, 0.581), Z = 2.92, *p* = .003) and peer outcomes (β = 0.807, SE = 0.176, (95% CI 0.461, 1.153), Z = 4.58, *p* < .000). Moderately structured interventions showed the greatest increases in educational attainment (β = 0.302, SE = 0.085, (95% CI 0.136, 0.469), Z = 3.57, *p* < .000). Interestingly, unstructured mentoring interventions showed the greatest increases in educational attendance (β = 1.063, SE = 0.199, (95% CI 0.673, 1.452), Z = 5.34, *p* < .000), behaviour within educational settings (β = 0.008, SE = 0.003, (95% CI 0.002, 0.014), Z = 2.47, *p* = .013) and the greatest reduction in all offending (β = 0.121, SE = 0.040, (95% CI 0.044, 0.199), Z = 3.06, *p* = .002), recidivism (β = 0.875, SE = 0.291, (95% CI 0.305, 1.445), Z = 3.01, *p* = .003) and mental health conditions (β = 0.646, SE = 0.261, (95% CI 0.135, 1.157), Z = 2.48, *p* = .013). No other significant differences were found.

Mentoring vs. mentoring plus

Mentoring interventions, compared to mentoring interventions which provide additional components, reported significantly greater increases in attitudes and beliefs (β = 0.431, SE = 0.224, (95% CI -0.007, 0.869), Z = 1.93, *p* = .053), peer outcomes (β = 1.904, SE = 0.231, (95% CI 1.451, 2.356), Z = 8.24, *p* < .000) and behavioural outcomes (β = 0.532, SE = 0.226, (95% CI 0.088, 0.975), Z = 2.35, *p* = .019). Mentoring interventions, compared to mentoring interventions which provide additional components, reported significantly greater reductions in externalising behaviours (β = 0.390, SE = 0.179, (95% CI 0.040, 0.740), Z = 2.18, *p* = .029). No other significant differences were found.

Mentoring component

For reported criminal activity, there was a difference between interventions which consisted of mentoring as its main component, which produced greater reductions in reported criminal activity, and those where mentoring was supplementary (β = 0.196, SE = 0.100, (95% CI 0.000, 0.392), Z = 2.75, *p* = .005). Similarly, interventions where mentoring was the main component provided a greater reduction in all offending (β = 0.252, SE = 0.086, (95% CI 0.084, 0.420), Z = 2.94, *p* = .003), substance misuse (β = 0.876, SE = 0.247, (95% CI 0.391, 1.361), Z = 3.54, *p* < .000), internalizing behaviours (β = 0.482, SE = 0.180, (95% CI 0.129, 0.835), Z = 2.68, *p* = .007) and externalising behaviours (β = 0.442, SE = 0.088, (95% CI 0.270, 0.615), Z = 5.03, *p* < .000). Interventions where mentoring was the main component also produced the greatest increases in educational attainment (β = 0.212, SE = 0.089, (95% CI 0.037, 0.387), Z = 2.38, *p* = .018), familial outcomes (β = 0.315, SE = 0.112, (95% CI 0.095, 0.535), Z = 2.80, *p* = .005) and peer outcomes (β = 1.533, SE = 0.474, (95% CI 0.604, 2.463), Z = 3.23, *p* = .001) than interventions where mentoring was secondary. Where mentoring was supplementary, greater increases in attitudes and beliefs (β = 1.857, SE = 0.454, (95% CI 0.967, 2.748), Z = 4.09, *p* < .000) and greater reductions in mental health conditions (β = 0.381, SE = 0.081, (95% CI 0.222, 0.540), Z = 4.70, *p* < .000) were found. No other significant differences were found.

Training of mentors

Mentors with no training produced significantly greater reductions in all offending (β = 0.226, SE = 0.038, (95% CI 0.151, 0.302), Z = 5.88, *p* < .000), reported criminal activities (β = 0.224, SE = 0.044, (95% CI 0.137, 0.311), Z = 5.04, *p* < .000), recidivism (β = 0.602, SE = 0.127, (95% CI 0.353, 0.852), Z = 4.73, *p* < .000), substance misuse (β = 0.303, SE = 0.109, (95% CI 0.091, 0.516), Z = 2.80, *p* = .005). Mentors with no training, compared to trained mentors, also produced the greatest increases in educational attendance (β = 0.204, SE = 0.041, (95% CI 0.124, 0.285), Z = 4.96, *p* < .000) and educational aspirations and attitudes (β = 0.141, SE = 0.057, (95% CI 0.029, 0.253), Z = 2.47, *p* = .014). However, mentors with training showed the greatest increase in educational attainment (β = 0.126, SE = 0.039, (95% CI 0.049, 0.202), Z = 3.23, *p* = .001) and greatest reductions in externalizing behaviours (β = 0.102, SE = 0.045, (95% CI 0.014, 0.191), Z = 2.26, *p* = .024). No other significant differences were found.

The level of risk for offending

There was a difference between individuals who were classed as high and low risk of offending in reported criminal activities, with greater improvements for higher risk individuals (β = 0.290, SE = 0.070, (95% CI 0.153, 0.427), Z = 4.14, $p < .000$). The same was true for all offending (β = 0.336, SE = 0.059, (95% CI 0.220, 0.452), Z = 5.67, $p < .000$), behavioural outcomes (β = 0.336, SE = 0.163, (95% CI 0.017, 0.656), Z = 2.07, $p = .039$), internalizing behaviours (β = 0.229, SE = 0.078, (95% CI 0.076, 0.382), Z = 2.94, $p = .003$) and substance misuse (β = 0.610, SE = 0.181, (95% CI 0.256, 0.965), Z = 3.37, $p = .001$), where high risk offender offenders showed greater reductions than lower risk individuals. Higher risk individuals, however, were significantly less likely to have increases in their attitudes and beliefs (β = -4.515, SE = 0.379, (95% CI -5.257, -3.772), Z = -11.92, $p < .000$). Individuals at a lower risk of offending showed the greatest increases in their behaviour within educational settings (β = 0.008, SE = 0.003, (95% CI 0.002, 0.014), Z = 2.46, $p = .014$) and the greatest reductions in mental health conditions (β = 0.643, SE = 0.239, (95% CI 0.175, 1.111), Z = 2.69, $p = .007$). Individuals at a medium risk of offending showed the greatest improvements in educational attendance as a result of mentoring (β = 0.309, SE = 0.106, (95% CI 0.101, 0.517), Z = 2.92, $p = .004$). No other significant differences were found.

Gender

Studies which contained samples of both males and females showed greater reductions in criminal activities, than interventions which had either males or females (β = 0.201, SE = 0.057, (95% CI 0.090, 0.312), Z = 3.54, $p < .000$). Males, compared to samples of both males and females, showed the greatest improvements in their behaviour at school (β = 0.008, SE = 0.003, (95% CI 0.020, 0.014), Z = 2.48, $p = .013$). Females, compared to samples of both males and females, showed greater reductions in and externalizing behaviours (β = 0.122, SE = 0.042, (95% CI 0.041, 0.204), Z = 2.93, $p = .003$). No other significant differences were found.

Duration

Shorter duration interventions were significantly more effective in improving externalising behaviours (β = 0.218, SE = 0.007, (95% CI 0.088, 0.349), Z = 3.29, *p* = .001), attitudes and beliefs (β = 0.492, SE = 0.226, (95% CI 0.049, 0.936), Z = -2.18, *p* = .030) and reducing substance misuse (β = 0.500, SE = 0.143, (95% CI 0.219, 0.780), Z = 3.49, *p* = .001) and recidivism (β = 0.252, SE = 0.102, (95% CI 0.052, 0.453), Z = 2.47, *p* = .014) than longer duration interventions. Longer duration mentoring interventions showed the greatest improvements in educational aspirations and attitudes (β = 0.010, SE = 0.002, (95% CI 0.005, 0.015), Z = 4.20, *p* < .000) and educational attainment (β = 0.005, SE = 0.003, (95% CI 0.000, 0.011), Z = 1.94, *p* = .052). No other significant differences were found.

Time of effect

Too few studies reported the time from the end of intervention to measurement of effects , or clearly stated their measurement period, in order to run a time of effect analysis.

Sample size

Studies with larger samples in all offending (β = 0.371, SE = 0.058, (95% CI 0.258, 0.485), Z = 6.41, *p* < .000), crime (β = 0.373, SE = 0.066, (95% CI 0.243, 0.502), Z = 5.63, *p* < .000), recidivism (β = 0.586, SE = 0.153, (95% CI 0.286, 0.886), Z = 3.83, *p* < .000), and substance misuse outcomes (β = 0.287, SE = 0.143, (95% CI 0.007, 0.567), Z = 2.01, *p* = .045) all reported smaller reductions, compared to studies with smaller samples. Similarly, smaller samples showed the greatest increases in attitudes and beliefs (β = 0.574, SE = 0.276, (95% CI 0.032, 1.115), Z = 2.08, *p* = .040), peer outcomes (β = 0.624, SE = 0.229, (95% CI 0.175, 1.074), Z = 2.72, *p* = .007), educational attainment (β = 0.135, SE = 0.055, (95% CI 0.027, 0.244), Z = 2.45, *p* = .014) and educational attendance (β = 0.213, SE = 0.107, (95% CI 0.004, 0.422), Z = 2.00, *p* = .046). No other significant differences were found. The effect of smaller samples showing larger effects may be a consequence of publication bias, where small sample studies finding no effects remain unpublished.

Intensity – frequency of mentoring per month

No significant differences were found between the frequency of mentor meetings per month on outcomes.

Intensity – duration of mentoring per meeting

Shorter durations of meetings per mentoring visit produced the greatest improvement in educational attendance (β = 2.858, SE = 1.172, (95% CI 0.561, 5.154), Z = 2.44, p = .015) and mental health outcomes (β = 0.220, SE = 0.094, (95% CI 0.037, 0.404), Z = 2.35, p = .019). No other significant differences concerning the length of meetings between mentors and mentees was found.

Age of mentee

Mega-regression indicated that there were significant differences between the age of groups, with older children showing greater decreases in all offending recidivism (β = 0.918, SE = 0.325, (95% CI 0.281, 1.555), Z = 2.83, p = .005) and reported crime (β = 0.102, SE = 0.027, (95% CI 0.049, 0.156), Z = 3.75, p < .000). Older children also showed a greater increase in positive behavioural outcomes (β = 4.784, SE = 2.054, (95% CI 0.759, 8.809), Z = 2.33, p = .020) and educational attendance (β = 0.962, SE = 0.319, (95% CI 0.336, 1.587), Z = 3.01, p = .003). Younger children showed the greatest improvement in their behaviour within educational settings (β = 0.113, SE = 0.030, (95% CI 0.054, 0.172), Z = 3.76, p < .000). No other significant differences were found.

Age of mentor

No significant differences were found between studies which reported the age of the mentors, and those which did not report the age of mentors.

Ethnicity

Mega-regression indicated that for educational attainment, samples which were partly ethnic minority, compared to samples which were majority ethnic minority, showed the greatest

improvements in educational attainment (β = 0.174, SE = 0.063, (95% CI 0.051, 0.297), Z = 2.76, p = .006) and the greatest reduction in all offending (β = 0.605, SE = 0.168, (95% CI 0.275, 0.934), Z = 3.59, p < .000) and criminal activities (β = 0.605, SE = 0.169, (95% CI 0.273, 0.936), Z = 3.58, p < .000). Samples which contained mainly ethnic minority individuals reported the greatest increases in educational attendance (β = 1.027, SE = 0.171, (95% CI 0.691, 1.363), Z = 5.99, p < .000). No other significant differences were found.

Nature of intervention

Meta-regression indicated that one-on-one, compared to either group, or a combination of one-on-one and group delivery methods, produced the greatest increase in attitudes and beliefs (β = 0.293, SE = 0.139, (95% CI 0.020, 0.565), Z = 2.10, p = .036). Group mentoring produced the greatest improvements in educational attendance (β = 0.139, SE = 0.050, (95% CI 0.041, 0.237), Z = 2.79, p = .005) and peer outcomes (β = 0.678, SE = 0.267, (95% CI 0.156, 1.201), Z = 2.54, p = .011). No other significant differences were found.

Research design

Meta-regressions indicated that interventions which utilised non-experimental, compared to experimental designs, showed greater reductions in all offending (β = 0.112, SE = 0.034, (95% CI 0.045, 0.179), Z = 3.27, p = .001), recidivism (β = 0.318, SE = 0.076, (95% CI 0.168, 0.468), Z = 4.16, p < .000) and criminal activities (β = 0.088, SE = 0.039, (95% CI 0.012, 0.164), Z = 2.26, p = .024). Non-experimental designs also reported the greatest improvements in educational attendance (β = 0.140, SE = 0.038, (95% CI 0.066, 0.214), Z = 3.71, p < .000) and educational attainment (β = 0.167, SE = 0.040, (95% CI 0.089, 0.245), Z = 4.22, p < .000). No other significant differences were found.

Mentor mentee matching

No significant differences were found between studies for interventions which utilized systematic matching of mentors and mentees and random allocation.

Type of mentors

Meta-regressions indicated that counsellors showed the greatest reductions for all offending (β = 1.175, SE = 0.184, (95% CI 0.814, 1.537), Z = 6.37, $p < .000$), substance misuse (β = 0.932, SE = 0.333, (95% CI 0.280, 1.584), Z = 2.80, $p = .005$) and for reported criminal activities (β = 1.189, SE = 0.184, (95% CI 0.827, 1.550), Z = 6.44, $p < .000$). Counsellors also produced the largest increase in positive attitudes and beliefs (β = 1.911, SE = 0.486, (95% CI 0.959, 2.862), Z = 3.93, $p < .000$). Mentors from a law enforcement background, compared to teachers, volunteers or paid mentors, were most effective at improving behavioural outcomes (β = 0.729, SE = 0.289, (95% CI 0.162, 1.295), Z = 2.52, $p = .012$). Paid mentors produced the greatest improvement in mental health outcomes (β = 1.577, SE = 0.618, (95% CI 2.788, 0.365), Z = 2.55, $p = .011$). No other significant differences between groups were found for different types of

mentors.

Setting for mentoring interventions

Meta-regressions indicated that interventions based within the criminal justice system produced the greatest reduction in all offending (β = 0.357, SE = 0.056, (95% CI 0.247, 0.467), Z = 6.38, $p < .000$) and criminal activities (β = 0.405, SE = 0.068, (95% CI 0.273, 0.538), Z = 5.99, $p < .000$). Similarly, interventions based in detention centres, compared to the community or schools, produced the greatest improvement in educational attendance (β = 0.197, SE = 0.084, (95% CI 0.034, 0.361), Z = 2.36, $p = .018$). Interventions based in schools produced the greatest reductions in recidivism (β = 0.526, SE = 0.090, (95% CI 0.350, 0.702), Z = 5.87, $p < .000$). Interventions based across multiple locations produced the greatest reductions in externalising behaviours (β = 0.184, SE = 0.064, (95% CI 0.059, 0.064), Z = 2.88, $p = .004$). Interventions based on remote sites, compared to schools or communities, reported the greatest improvements in educational attainment (β

= 0.218, SE = 0.042, (95% CI 0.135, 0.301), Z = 5.14, $p < .000$). Interventions based in the community produced the greatest improvements in peer outcomes (β = 1.129, SE = 0.195, (95% CI 0.747, 1.511), Z = 5.79, $p < .000$). No other significant differences were found.

Key processes in mentoring

Meta-regressions indicated legal interventions, compared to building supportive and non-judgemental relationships, and school level interventions, produced the greatest improvement in socio-emotional outcomes (β = 0.216, SE = 0.031, (95% CI 0.155, 0.276), Z = 6.97, $p < .000$). Mega-regression indicated that there were no further significant differences between groups for the principal mentoring process utilised during interventions.

Termination of mentoring

Meta-regressions indicated that interventions which did not have terminations of mentor mentee relationships, compared those which did, reported greater reductions in all offending (β = 0.233, SE = 0.039, (95% CI 0.156, 0.309), Z = 5.98, $p < .000$), recidivism (β = 0.444, SE = 0.077, (95% CI 0.294, 0.594), Z = 5.79, $p < .000$), criminal activities (β = 0.232, SE = 0.045, (95% CI 0.144, 0.320), Z = 5.15, $p < .000$) and substance misuse (β = 0.320, SE = 0.111, (95% CI 0.103, 0.537), Z = 2.89, $p = .004$). Similarly, interventions which did not have terminations also reported the greatest improvements in educational attendance (β = 0.208, SE = 0.041, (95% CI 0.128, 0.288), Z = 5.09, $p < .000$). No other significant differences were found.

Study quality

Meta-regression indicated high quality studies reported the greatest reductions in recidivism (β = 0.611, SE = 0.253, (95% CI 0.115, 1.107), Z = 2.42, $p = .016$), the greatest increase in educational aspirations and attitudes (β = 0.502, SE = 0.176, (95% CI 0.156, 0.847), Z = 2.85, $p = .004$) and mental health outcomes (β = 0.667, SE = 0.260, (95% CI 0.157, 1.177), Z = 2.56, $p = .010$). No other significant differences between groups were found in terms of study quality. This is likely to be due to most studies being coded as low quality.

ITT/ToT

Meta-regression indicated that a ToT approach, compared to ITT approach, reported greater reductions in all offending (β = -0.381, SE = 0.194, (95% CI -0.762, -0.000), Z = -1.96, *p* = .050), criminal activities (β = -0.378, SE = 0.191, (95% CI -0.753, -0.002), Z = -1.972, *p* = .004), poor behaviour in an education setting (β = -0.0117, SE = 0.037, (95% CI -0.189, -0.045), Z = -3.17, *p* = .002) and greater increases in social and emotional outcomes (β = -0.213, SE = 0.033, (95% CI -0.278, -0.148), Z = -6.43, *p* < .000). A ITT approach, compared to a ToT approach, reported greater improvements in mental health outcomes (β = 0.260, SE = 0.133, (95% CI 0.001, 0.521), Z = 1.96, *p* = .050). No other significant differences were found.

Comparison condition

Meta-regression indicated that alternative treatment control condition studies reported greater reductions in violence outcomes than studies which used passive controls (β = 1.149, SE = 0.277, (95% CI 0.877, 1.961), Z = 5.13, *p* < .000). No other significant differences were found.

7.5 Communicating results: Transforming effect sizes to relative change

To better communicate the meaning of the results of our meta-analyses, we used a common procedure to transform the effect sizes into a percentage relative change in the outcome. As with the odds ratios, a decrease in the following outcomes was associated with a desirable intervention effect: violence, crime and antisocial behaviour, gang involvement, recidivism and substance misuse. In contrast, an increase in the following outcomes was associated with a desirable intervention effect: attitudes and beliefs, social and emotional outcomes, behavioural outcomes, academic and school related outcomes, familial outcomes and health outcomes. The process for estimating the relative reduction or improvement from mean effect sizes is outlined in Technical Appendix F. Table 21 presents the relative change in outcomes as a result of mentoring interventions.

Table 21. Relative change in outcomes

Outcome domain	*OR*	*% change*
All offending	1.222*** (0.142-1.308)	14.2% Reduction
Violent offending	1.321** (1.081-1.614)	21.1% Reduction
Crime	1.177*** (1.092-1.270)	11.70% Reduction
Gang involvement	0.885 (0.441-1.773)	9.40% Increase[a]
Recidivism	1.468*** (1.279-1.686)	19.0% Reduction
Externalising	1.130** (1.043-1.225)	8.90% Reduction
Internalizing	1.142 (0.981-1.328)	9.60% Reduction
Attitudes and beliefs	0.929 (0.785-1.098)	5.60% Decrease[a]
Social and emotional outcomes	0.808*** (0.763-0.856)	16.80% Decrease[a]
Behavioural outcomes	0.996 (0.902-1.110)	0.30% Decrease[a]

Substance use	1.343** (1.099-1.640)	14.60% Reduction
Education - attendance	1.212*** (1.118-1.314)	9.60% Increase
Education - attainment	1.221*** (1.133-1.315)	10.0% Increase
Education – aspirations and attitudes	1.160** (1.025-1.313)	7.40% Increase
Education - behaviour	0.997 (0.970-1.025)	0.20% Decrease[a]
Familial outcomes	1.100** (1.023-1.184)	4.80% Increase
Peer outcomes	1.691*** (1.289-2.217)	25.70% Increase
Physical health outcomes	1.152** (1.031-1.287)	7.1% Decrease
Mental health outcomes	1.059 (0.894-1.254)	2.9% Decrease
Service use, attendance, and engagement	0.740 (0.422-1.297)	14.90% Decrease[b]

Note. a = indicates an undesirable intervention effect b = ambiguous outcome

8.0 Synthesis of the qualitative findings

8.1 Introduction

In this section, we present a qualitative evidence synthesis (QES) of 32 process evaluations and other qualitative studies.

8.2 Data extraction

We used a coding framework based on the conceptual elements as the foundation for a theory-based approach to conduct QES. Theoretical frameworks are useful for explaining in broad terms the possible relationships between concepts that are the subject of a review (Anderson et al., 2018).

The qualitative data was extracted from the studies and was integrated using the 'TBSR matrix'. Such an approach is systematic to minimise bias (White, 2018). An iterative process was used to extract and then cluster them into themes. This iterative allows for not only flexibility but also a comprehensive coding as data were not omitted if they don't fit narrow pre-defined themes.

From the included studies, we gathered information on the design (target group, activities, referral mechanism, setting, and any formal or informal plus activities – these findings were reported above), (ii) barriers and facilitators to participation, including factors affecting staying on or dropping out, (iii) barriers and facilitators to achieving outcomes, and (iv) illustrating causal processes. These data were extracted from effectiveness studies as well, but they were reported less frequently.

8.3 Thematic synthesis

The nature of the problem or research question being framed, the relationships determined within the framework, context and potential lines of inquiry, and the literature available all influence the choice of method used in a QES (Flemming et al., 2019).

We use thematic analysis to analyse the extracted findings. We first identified board themes from the extracted data and reviewed them by revisiting the studies. This allowed for refining the themes and capturing specific barriers and facilitators. Similarities and differences were identified and then themes were grouped.

When analysing barriers and facilitators, it is common to find that many factors serve as both a barrier and a facilitator such as mentor characteristics and mentor mentee matching which can serve as both supporting and hindering factors to implementation. This process resulted in the emergence of themes, linked to barriers and facilitators of participation and achieving outcomes.

8.4 Barriers to participation

Mentor and mentee hesitancies

There are difficulties in finding suitable mentors. Unwillingness to work with children who have offended, the location of the intervention, and the challenges associated with mentorship may all create difficulties in recruiting mentors.

In a multi-site faith-based mentoring intervention for at-risk youth, the parishes found far fewer potential mentors than required for the intervention. Only a few people from the faith-based community, were willing to mentor a young person who had already committed a crime. Mentors (volunteers) were also hesitant to commit to the intervention for the long term. This made the hiring process more difficult. The intervention was modified to group mentoring due to difficulties in finding enough adult mentors in some locations. The programme had even come to a halt in certain areas. There was also no system in place for hiring procedures (Branch, 2002).

In an evaluation of 84 mentoring projects across the UK and Wales, the unwillingness of the target groups of young people to participate was identified as the single most significant barrier to programme delivery, raising the question of how to increase the appeal of prospective programmes and interventions to them (St James Roberts et al., 2005).

Limited mentor availability

The limited availability of mentors in some areas was a problem in a community-based mentoring programme for children in the United Kingdom. The matching process for many children took longer than expected, in part due to a lack of suitable mentors in some areas (Axford et al., 2020). An initial and recurring challenge faced by the Youth Empowerment Program (YEP) has been recruiting and retaining male mentors (Coller et al., 2014).

Recruitment processes of mentors and mentees

Rigid prerequisites: In a study that evaluated multiple mentoring interventions, one of the criteria for mentees was that they had to be in 'good standing' in the institution and maintain it for the three to six months prior to release in order to continue their participation in a mentoring programme after being matched. This prevented 70% of those who could have taken part in the programme from doing so. In addition, the youth could participate only if they agreed to continue with the mentoring programme for another six months after their release (Duriez et al., 2017).

Lack of awareness of service referrals: Participants in a court-ordered mentoring programme said the programme was unknown throughout the city and that only students referred to court authorities were aware of its existence. This lack of awareness of the programme made it particularly hard for participants to navigate their referral process and access services. Similarly, authorities found it difficult to fully adhere to the mentoring programme, often citing a lack of knowledge of the key processes and steps, and an inability to ask for guidance. With both participants and authorities not fully aware of the content or processes required, the intervention was unable to be fully utilised and outcomes were not achieved to their fullest potential (Ferrer, 2018).

Lack of caregiver buy-in: One of the studies from the United States found that mentoring programmes continue to face challenges in recruiting mentors, the preventive intervention programme discusses the challenges in the recruitment of African American males who could serve as role models for African American male youths.[11] The recruitment process for a structured after school group mentoring, parental support, and community outreach programme for black African American youth in alternate education and their caregivers faced many barriers. The principal made the initial contact with families to assess potential interest in the programme and obtain permission for future contact by staff. After receiving notification of the family's interest, programme staff attempted to contact potential participants to inform them about the project and obtain informed consent. Despite initial indications of a willingness to participate on the part of families, it took several attempts to set up face-to-face meetings with both caregivers and students. Caregivers were difficult to reach in most cases because they did not return phone calls or business card messages left at their homes, refused to answer the door when at home, could not be reached at work, or did not show up for scheduled appointments (Carswell et al., 2009).

Challenges relating to the induction and retention of mentors and mentees

In the national evaluation of the Youth Justice Board's mentoring projects, only 2,278 (37 percent) of the 6,104 potential volunteers who expressed interest completed an application form. However, 1,712 (or three-quarters) of the 2,278 volunteers who completed an application form went on to complete the training course (representing 28 percent of those who initially expressed an interest). However, 136 people (8 percent) dropped out before being matched. Their reasons for leaving at this point included illness in some cases, as well as the inordinate amount of time it took for police checks to be completed and clearance to begin mentoring.

The schemes were hampered by delays in police checking. Mentors couldn't start working with young people until they were cleared, and the wait caused some mentors and young people to drop

[11]Personal communication from Advisory Group members for this review confirmed the difficulty in recruiting ethnic minority mentors in the UK setting.

out of the programme. Some schemes quickly discovered ways to reduce wait times, such as requesting background checks early in the recruitment process. One programme put volunteers on a temporary work register, which sped up the police check process (Tarling et al., 2004).

Regarding mentees, mentors from a staff mentor programme in Oregon stated that mentee induction should begin prior to the transition of the mentees from middle school to high school which may help address the issue that in the first few months of high school, nearly half of the at-risk students recruited in the eighth grade dropped out (Hayes, 1988).

In the Clark County volunteer mentoring programme, volunteers left the intervention in the middle because they did not complete the training, found full-time jobs, had health/family issues, relocated or switched jobs, or had a heavy job commitment (Anderson, 1977).

In the National Evaluation of Youth Justice Board Mentoring Schemes 2001 to 2004, only 1,744 of the 2,820 volunteers screened for the programme (62%) were matched with at least one mentee. This reflects a high rate of volunteer attrition and is cause for concern, as many potential mentors were not utilised by projects. Three major reasons for this loss were cited by the projects.

First was volunteer withdrawal, either during training, once the assignment had become clearer, or as a consequence of delays in completing training or matching volunteers with young people. Second, it could be difficult to find a suitable match between mentor and mentee; this was especially difficult for geographically dispersed projects, as it could be impossible to find a mentor who lived anywhere near a potential mentee. In other cases, as shown below, a prospective match between a mentor and a young person was made, but the young person refused to join in mentoring. Third, some projects simply drew far more volunteers than they were able to train and monitor as mentors. From the perspective of the projects, it may be more cost effective to lose potential mentors at this early stage than after a volunteer has been trained and a programme with a mentee has been established (St-James Roberts, 2005).

Matching of mentors and mentees

The first step in mentoring after hiring is the pairing/matching of the mentor and mentee. Matching mentors and mentees on the grounds of gender, race, ethnicity, and shared interests increases the chances that they relate to each other and communicate with open minds (DuBois & Rhodes, 2006). It can be challenging to recruit mentors with the same socio-economic and ethnic background as mentees.

DuBois et al. (2011) meta-analysis also found better effects for programs that matched mentors and mentees based on similarity of interests. Moderator analyses did not indicate any significant differences between interventions which matched mentors and mentees, and those which did not conduct formal matching, though this finding may reflect poor reporting in studies of the matching process.

Issues of mentor-mentee compatibility

In a faith based mentoring intervention conducted across seven sites in the USA, group mentoring and one-one adult mentoring services were provided incorporating the faith element. The matching process did not live up to the programme expectations and affected the interactions between the mentor and mentee (Branch, 2002).

In another study, the matching process left the mentees feeling disappointed. One of the mentees stated:

"*I was surprised to be matched with Cristina after being told so many times prior that I would be matched with someone who had similar interests as myself. While I've enjoyed having Cristina as my match, things have been difficult at times, as she has a very different opinion as to what's fun than I do. I'm a very active person, and she prefers to stay indoors; I enjoy sports, and she prefers*

computer game... I feel like the program should be more forthcoming in their match making" (Herrera et al., 2013:35).

In the same study (Herrera et al., 2013), the mentors also reported difficulties to participating in the mentoring relationship and truly connecting with the mentees because of poor matching.

The following are some of the criticisms from mentor interviews in which mentors describe their difficulties connecting with mentees:

"He was guarded"
"He viewed me as an authority"
"I did not feel like I was getting anywhere"
"He was not honest"
*"His attitude got worse" (*Converse & Lignugaris/Kraft, 2009:42).

Over half of the mentors in the VCU mentoring programme reported having some trouble developing a relationship with their mentees in the initial phase. The following issues were reported: 1) mentee apathy and unwillingness to participate, 2) mentees' not returning phone calls or not having telephones at home, which hampered communication, and 3) mentees having busy schedules that conflicted with planned activities (Brooks, 1995).

Failed expectations

Participants come to programmes with expectations. In a multi-component mentoring intervention for youth at high risk, the educational and employment components were judged as unsatisfactory by the participants. In-school educational interventions were often in the form of homework and computer access opportunities which do not meet the needs of children who had significant academic difficulties (Branch, 2002).

In a mentoring programme for diverting young men from gangs, mentees identified a misalignment between project expectations (in terms of outcomes) and what was realistically achievable for this cohort in terms of resources available as well as time frame (Boulton et al., 2019).

Interventions in a programme aimed at reducing drug use among pregnant and parenting teens were not well aligned with the program's goals. Career workshops were supposed to be held to teach young people how to apply for jobs, write resumes, and learn other job-related skills but no practical direct support in gaining employment or improving educational outcomes (Harmon, 1995).

Proselytising

Despite best efforts to be inclusive, evidence of proselytising young people was found in a faith-based mentoring intervention, which may have influenced their participation, or success of the intervention if they remained involved, though this issue requires further research. The staff and volunteers in faith-based interventions are largely people of faith and many of them include pastors and church officers.

One of the pastors, from a faith-based programme said, "*I would like to see them start going to church but they don't have to. It is great if they have Christians relating to them-that will help them more than proselytising"* (Branch, 2002:54).

In the words of another pastor*, "We believe that faith is the key. If a person has to change, he must do so from inside out. You need Christ or God in your life- you won't change otherwise-not money, prison or anything will do" (*Branch, 2002:55).

Fear of law enforcement authorities

In an evaluation of an intervention to prevent urban gun violence in USA, the involvement of law enforcement authorities in mentoring interventions was found to be difficult to implement. Youth in the programme stated that if they had known the police were involved, they would not have agreed to participate (Campie et al., 2017).

However, moderator analyses indicated that interventions based in the criminal justice system were most effective in reducing all offending and reported criminal activities. Similarly, interventions based in detention centres produced the greatest improvements in educational attendance. Legal interventions, compared to building supportive and non-judgemental relationships and school level interventions, produced the greatest improvement in socioemotional outcomes, furthermore, mentors from a law enforcement background, compared to teachers, volunteers or paid mentors, were most effective at improving behavioural outcomes.

Lack of perceived benefits and competing priorities

Prior involvement in other sponsored after-school activities, lack of participation by a close friend, potential interpersonal conflicts with other programme participants, and the expectation of marginal benefits perceived from existing activities were among the concerns of the youth which discouraged them from participating in a school-based mentoring intervention (Carswell, 2009).

Mentors reported finding it difficult to prioritise Project Arrive in the midst of the daily stress of their regular job responsibilities. Because mentoring is a volunteer position, schools frequently regard it as "extra" and undervalued in comparison to paid positions. One mentor described his efforts to balance his regular job and his mentoring role as follows:

"I think what doesn't work so well is that we're all so busy, and so its expected and can be challenging…But, I was thinking about it this morning, and I was like, "Do I want to do this next year?" because I am so busy" (Kuperminc et al., 2018:36).

Harassment and disrespectful behaviours by mentees

Project workers in a mentoring programme expressed serious misgivings about the 'violent', 'intolerant', 'misogynistic' and 'disrespectful' nature of some of the young people's attitudes and behaviour. Residentials were characterised by an underlying sense of chaos and tension between the young people and adults (both as project workers and mentors) (Shiner et al., 2004).

Issues of trust and confidentiality

For many, the chance to negotiate with a mentor was a novel experience that came with both risks and rewards. Young people see professionals and key workers sharing information about them as diminishing the mentoring element in some cases:

"I did feel let down by her once like I didn't know she had to tell stuff to my social worker and I told her stuff that was confidential and I didn't want anyone to know and my social worker found out and that … but it was ok in the end because she explained what the routine was and that and like she apologised and everything and it was like she didn't mean it. And like she has not done it again since that and I would tell her things that are really important" (Philip et al., 2004:25).

Transportation issues

In one of the evaluations, participants reported that staying after school to attend the programme meant taking three buses home, which took 1-1/2 hours, as opposed to the one-half hour that it took on the school bus. Bus schedules may also present a problem if buses stop running too early in the evening. Programs may need to provide alternative transportation to enable participants to attend meetings with ease (Lattimore, 1998).

YEP's initial challenges in the first five years of an intervention for youth in a school-based mentoring programme included securing transportation for the mentors to get to school. Transportation constraints were overcome by organising a carpool schedule among mentors who own vehicles and by utilising the UCLA rideshare programme (Coller, 2014).

Participants in the 'Advocate, Intervene, and Mentor' programme faced transportation challenges while travelling to and from an AIM provider location. In some cases, smaller providers lacked vans for transporting youth (Cramer et al., 2018).

Due to the county's large geographic size and the lack of frequent public transportation in rural areas, one of the challenges has been mentor mobility for mentoring programmes in rural areas of England and Wales (St-James Roberts et al., 2005).

8.5 Facilitators to participation

Mentor characteristics/qualities: Mentor characteristics that aided the participation were their patience, personality, and values, such as being non-judgemental and attentive:

"*Someone you can be open with, who understands you, someone you feel comfortable with", "people listening, people you feel you can tell things to"* (O'Dywer, 2017:45).

Using paid professional mentors resulted in better outcomes on rentry services on juvenile Offenders' recidivism (Bouffard, 2008). Moderator analyses also confirmed that paid mentors produced the greatest improvement in mental health outcomes. Mentors also contribute better if they are from helping professional backgrounds (Du Bois et al., 2002; Jarjoura et al., 2018). Indeed, moderator analyses confirmed that professional counsellors showed great reductions for all offending, substance misuse and for reported criminal activities. Counsellors also produced the largest increase in positive attitudes and beliefs.

In an evaluation of the Big Brothers and Big sisters programme, thorough volunteer screening that weeds out adults who are unlikely to keep their time commitment or who may pose a safety risk to the youths contributed to the successful implementation of the programme (Grossman, 1998).

Talking about the nature of mentoring, one of the mentors said: *"You've got to bend for these kids, meet them where they're at. It could be 9 at night, 11 in the morning"* (Cramer et al., 2018:40).

One stakeholder mentioned that mentors frequently go above and beyond their formal job responsibilities. "*I've had AIM mentors in the beginning bring kids to school every day and pick them up which is so out of the bounds of their job but so amazing to help kids figure out and understand their schedule and stuff and accompany them to appointments. I think I've seen that they go out of their way to help our client."* (Cramer et al., 2018:40).

Mentors in a school- based group mentoring programme expressed a sense of strong commitment to their groups. One mentor described her group's dedication to one another as follows:

"My group is like a little family. We spend a lot of time together. We joke around. We help each other out. You can tell when someone's having a bad day and we gather around and support that person. In the beginning, it took a while to get there. And, that's why I didn't want to let go. You know, we did all this work and they're asking to continue. And that's a good feeling." (Kuperminic et al., 2018:36).

In the words of one of the students of a mentoring programme for at risk students, *"I am a winner because I have a mentor. I like my mentor. She likes me too. She is very nice. The reason I like her is because she takes an hour out of her job just to visit me. I like to be with her because she makes me feel important. I appreciate my mentor"* (Rowland, 1992:100).

Plusone mentoring's professional qualities, volunteer mentors' commitment, and theoretical and practical integrity are all assets that contributed to successful mentoring interventions.

Mentors' non-judgmental attitude and unconditional acceptance were praised by young people. ‘‘*I can tell her [the mentor] anything, really, when I have problems, but also when I am fine, and she will listen and take it*.” (Blazek et al., 2011:37).

Mentor qualities-persistence, patience, & attentive were reported in La Cheile mentoring services:

“I liked a lot about him. He would listen, was always there, reliable, a good friend and a good help. He was just a great person to be honest” (O’Dwyer et al., 2019:161).

“I just liked the way she was, like. She talked and had a good personality. She was a nice person. I got on with her from the start” (O’Dwyer et al., 2019:161).

The importance of the mentor accepting them on their own terms was emphasised by young people who reported positive mentoring relationships. Diana identified her befriender as the first person she had met who had approached her hyperactivity positively:

“*It wasn’t confidence that made me want a befriender, it was because I needed somebody active and Susan was active. Like we went canoeing, we went to karate and stuff like that, we went to the* cinema” (Philip et al., 2004:18).

A sense of humour was frequently the key to developing and maintaining relationships, as the excerpt below suggests:

“It was great, yeah, it was really good to see him, so. Yeah, that was fantastic yeah, you know, he was one of the best befrienders that I have ever had basically, he was really funny, and somebody’s personality makes a big difference, and his personality was just so good, mm, he was funny he was, mm, he was a laugh, he saw a good side of everything, he saw a funny side of everything basically, he was always optimistic, you know, he was never moody or pessimistic or anything like that, he was always, he was just always great fun to be with ” (Philip et al., 2004:19).

Training and supporting volunteer mentors

Mentors felt safe and well-equipped to fulfil their roles after receiving relevant training and substantial support. The importance of training was emphasised in the evaluation of the Youth Justice Board's mentoring projects. Programmes spent a lot of time making sure that their volunteers were ready to work with the young people they were paired with. Schemes created their own training modules, relied on an external package (for example, the National Children's Bureau's programme), purchased training, sent volunteers to college courses, or used a blended approach.

The length of the training and how it was delivered differed. During a 12-week period, one programme had ten evening sessions. A different programme included a 30-hour initial training course followed by monthly training sessions. Other schemes compressed their training into a short period of time, such as one that trained over a non-residential weekend. Training programmes could be scheduled for specific months of the year, or they could be ongoing, with volunteers joining at any time. In total, 18 schemes provided accredited training to their mentors, and one scheme was in the process of obtaining accreditation for its training. The Open College Network provided accreditation in 14 cases. Parts of the training programme may be required, while others may be optional. Mentoring process, child protection, confidentiality, and legal topics are some examples of mentor training topics. Mentors were generally positive about the training they received (Tarling et al., 2004).

Targeted recruitment

In the YJB evaluation of mentoring programmes in England, mentoring interventions were effective in recruiting young people who possessed the targeted qualities. The mentoring projects targeted groups of young people who had offended, or were at risk of offending, and who were believed to be likely to benefit from mentoring programmes of this type. The groups were: black minority ethnic, or ‘hard to-reach’ young people and young people with literacy and numeracy needs. Over two thirds (69 percent) of mentees had past offending record. Almost 50 percent of the mentees with a known history of offending had been temporarily or permanently out from school in the previous year. The vast majority of mentees in literacy and numeracy-oriented

projects were white, the vast majority had literacy and numeracy difficulties, and many had Special Educational Needs. In contrast, the majority of mentees in 'BME projects' were black Asian or mixed-race or were members of minority groups such as asylum seekers, traveller groups, or children of former offenders.

In terms of the recruitment strategy, half of the mentees were referred by YOTs, while the other half were referred by schools, pupil referral units, social services, and other statutory and voluntary agencies.

Quantum opportunity Programme targeted economically disadvantaged youth. The eligibility requirements included: entering the ninth grade; attending a public high school in a poor neighbourhood; and living in a family receiving welfare payments (Lattimore, 1988).

Plusone mentoring effectively targeted a group of young people who are at high risk of future offending and are within the program's age range (8-14), so it is not intended to replace other specialised services where they are more appropriate. At the time of their referral, a large percentage of them (51%) had a criminal record (Blazek et al., 2011).

In the National evaluation of the Youth Justice Board's mentoring projects, schemes used a variety of advertising and other promotional methods. Newspaper advertisements and word of mouth were the two most effective methods of recruiting volunteers. Unsurprisingly, one programme discovered that, while 18 volunteers responded to a newspaper advertisement and seven heard about it through word of mouth in the first intake, word of mouth from existing mentors became a more effective method of recruitment in the second intake (Tarling et al., 2004).

Mentoring relationship

The mentoring relationship is the bedrock for mentoring. There are a range of factors acting as facilitators to the development of mentoring relationships**.**

Phases of mentoring relationship: Close relationships between mentees and mentors were one of Le Chéile mentoring's key strengths. Mentoring had phases: a relationship-building phase and a more challenging, target-oriented phase. Both were regarded as crucial by all parties.

The first phase was the most important and took precedence. It was supposed to last six to eight weeks, but it was usually longer and tailored to the individual. The focus for mentors and mentees during this phase was on getting to know one another and building trust. This was accomplished primarily through engaging in enjoyable, non-threatening activities and simply talking.

The quality of the relationship could be jeopardised if this phase is rushed, according to co-ordinators and mentors. Several coordinators stated that the activities drew mentees into mentoring in the first place, and that they only began to engage meaningfully after the activities had transitioned. They emphasised that keeping appointments was an important step for many mentees. Multiple people mentioned that mentees began to take better care of themselves and dress more formally for meetings, which they saw as a sign of progress and increased self-esteem.

Co-ordinators and mentors agreed that building trust had to give way to setting goals. They emphasised the importance of going 'softly' with target-setting and the mentoring process on its own, explaining that mentoring was about gently challenging behaviour and attitudes in a way that the mentee could handle.

When evaluating the Plusone mentoring impact, three phases of mentoring relationships were identified. The three phases were entry, engagement, and establishment.

The first two months of mentoring are usually referred to as the entry phase. The developing relationship between the young person and the mentor defines it. Most mentors said they were able to 'break the ice' with their young person after 3 or 4 weeks of contact. This includes beginning to discuss more personal issues and identifying issues that young people want to address. During this time, young people and their mentors usually set long-term goals for themselves. According to mentors and young people interviewed, this period marks a 'breakthrough' in their relationship. Some relationships may never achieve this breakthrough and remain at the ‘friendly chat’ stage.

The engagement phase is a transition stage wherein mentors and young people's activities are still centred on developing their relationship, but more emphasis is placed on the difficulties that young people identify and the process of trying to resolve them. In some cases, young people and their mentors begin to focus more on problem-solving in the second month of engagement, while in others, it may take months to establish the relationship. This phase is when the mentor and Program Manager gain enough knowledge and experience to determine whether mentoring is the best approach for the young person, as well for the young person to determine if they are satisfied with the arrangements.

The established phase of the mentoring process is defined as a period of six or more months. In most cases, six months is a reference point after which positive mentoring impacts can be seen. Significant improvements in behaviour, attitude toward offending, neighbourhood relationships, and development of skills, talents, or positive relationships were seen in the Plusone programme (Blazek et al., 2011).

The stages of mentoring relationship development described by Keller are similar to those described in our review. While relationship development is undeniably complicated, Keller claims that it follows a time sequence with a beginning, middle, and end. For the development of youth mentoring relationships, he proposed the following stages: contemplation, initiation, growth and maintenance, decline and dissolution, and redefinition (Keller, 2005).

Emotional support from mentor-mentee bonds: Referring to mentors acting as emotional supporters, one of the participants, Lee said:

"I attempted suicide. A lot. About seven times. A few months before my mom's passing and a few months after . . . This was a really dark time in my life. I have pills . . . I wouldn't do cutting . . . I don't like pain. But I was sipping pills, and I would just down them. So, yes, he basically saved me . . . He cared so much about me" (Tucker et al., 2019:269).

Mary, a 19-year-old Hispanic woman who participated in the same interventions, spoke about how her mentor helped her with emotional support. Despite her life's challenges, Mary's mentor encouraged her to be resilient and set high goals:

"My mentor was really influential in my life . . . She helped me get through bad situations like where I lived and what was going on around me . . . gangs, drugs, shootings . . . She was strong on the topic of [university]. She went to [university]" (Tucker et al., 2019:269).

Ten key themes for a successful mentor mentee relationship were identified from a community-based probation program meets regularly, liked as a person by probationer, submits regular monthly progress reports, cooperates with probation staff, contacts community agencies on behalf of probationer, participates in planned activities with probationer, formulates realistic plans for relationship, sensitive to expressed needs of probationer, available during emergencies, accurate perception of personality and attitudes of probationer (Moore et al., 1974).

The mentees were also unanimously positive. Concerning their mentors, they trusted them, formed strong bonds with them, and believed that the mentors aided them. This support was associated with improvements in the mentees in some areas, which were not evident in the non-mentored comparison group (St-James Roberts et al., 2005).

In the ‘Advocate, Intervene, Mentor’ programme irrespective as to whether their children continued to engage in criminal activity, the parents of participants felt that the mentors' unconditional support was a tremendous help to their children:

“One of the kids got locked up—they went running to help them. You don’t get that too often. To give them encouragement. Try to get them back on the right path” (Cramer, 2018:43).

One of the parent’s explained the positive impact of mentorship on her relationship with her child as follows:

“My son wouldn’t open up to me. Always so angry. I didn’t know why. After the program, he opens up now. He comes to me now” (Cramer, 2018:43).

“I was more comfortable to emotionally share myself with her. I would share my problems, or the way I felt, family issues or just anything I was going through we talked about more personal things in life. I was easier going in public. We would talk about many things” (Cramer et al., 2018:39).

“It’s given me someone to talk to about problems that I wouldn’t usually talk to my mum about – I wouldn’t speak to a counsellor about it, it’s kind of a mate’s chat … I’ve always been told don’t talk to anyone with authority” (Hanham & Tracey, 2017:124).

Many of the offenders interviewed valued the emotional support they had received from their mentor and some reported that this had helped them feel better about their future and less isolated. For example, one participant said: “*He’s settled me down and everything. Made me look at it from a different point of view.”* (Hanham & Tracey, 2017:124).

"She was just always there when I needed someone to talk to" (Hanham & Tracey, 2017:125).

Trust and reciprocity: Almost all mentor projects purposefully set out to establish a trusting relationship as the first step in the mentor programme, only introducing other goals once this is accomplished. Given the stresses in the families of many young people who offend or are at risk of offending, it is easy to see why such a relationship should be valued. The Youth Justice Board evaluation study and others have confirmed that the target groups of young people do trust their mentors, at least among those willing to engage (St-James Roberts et al., 2005).

Mentees were able to develop trust mentors through the relationship and share everything they wanted to:

"I could tell her anything, and there was a lot of things that I couldn't speak to other people including my friend and I spoke to [my mentor] about it and it helped me, because I got it all off my chest, you know speaking about it. (Young person)" (Shiner et al., 2004:42).

Reciprocity can be a useful way of establishing trust:

"I gave her the basics before I could get a bit deep – I have trouble at home with my mum and at school and this, that and the other, and she was like 'OK then'. And we spoke and stuff and then later … she told me stuff about her. Saying it made it easier for me to talk as well, because, I was like, 'OK then, she is not like a robot or anything like that. (Young person)" (Shiner et al., 2004:42).

One mentee commented on how the mentor saw her as capable of helping others, as well as trustworthy and deserving of a reciprocal relationship:

"She owns a pub and she used to let me go up and do a couple of hours waitressing and that for her as well to get like a wee bit of money as well" (Philip et al., 2004:18).

Relationships based on respect rather than authority: *"In our school structure, teachers are supposed to be higher than you, therefore you've got to respect them and they don't have to respect you, but with a mentor you have to respect them and they have to respect you, so it's completely different. (Young person)"* (Shiner et al., 2004:42).

Plusone mentoring is a youth work approach in which mentors seek to develop a relationship with young people based on a partnership, their voluntary participation, progressive empowerment, and an informal and friendly mentoring environment.

One of the mentees had a unique perspective on a befriending relationship that began with mutual respect and quickly 'gelled':

"I think it is [about] respecting her not about rules. That means that I know what Brenda wants and Brenda knows what I am expecting. That is better than setting rules … befriending wasn't really about just going places, it was sort of discussing things and problems … Brenda is like a friend, I don't really think of her just as a befriender, I think of her as a friend, you know, like a sister, you know, like somebody you could talk to, like somebody that way" (Philip et al., 2004:19).

Mentors as confidants: Mentees respected the mentor's role as a confidant all through the mentoring relationship. The excerpts below tend to confirm that the young men valued the non-hierarchical facets of their relationship with their mentors.

*"It's given me someone to talk to about problems that I wouldn't usually talk to my mum about – I wouldn't speak to a counsellor about it, it's kind of a mate's chat … I've always been told don't talk to anyone with authority. (Gui, pre-release)" (*Hanham & Tracey, 2017:124).

"They don't try and be like a boss. It's good just knowing that if I need to speak to anyone like about anything, really, I can just ring her. (Wu, 9 months post-release)" (Hanham & Tracey, 2017:124).

The mentoring process was aided by a relationship with a mentor who became a confidante and offered advice on relationships, work, health, and personal matters:

"Well I know I can trust her … I can talk to her but I know that I can't if you know what I am getting at. She always told me that if it was something really serious, she would have to mention it" (Philip et al., 2004:23).

"Yeah you could speak to her about things more than your mum, some things you could speak more about, some things you can't speak to your mum about" (Philip et al., 2004:24).

Blending mentoring with other interventions: Encountering mentees in a variety of settings such as home, schools, work and creation of customised 'transitional' plans for mentees were activities in mentoring relationships that facilitated participation (Bouffard, 2008), integration of expressive arts, in particular drama therapy and dance/movement therapy activities into the interventions were also helpful in stimulating participation (Beardall, 2008), although this was not reinforced by findings in from the moderator analysis with respect to effects on outcomes.

Incorporation of the faith framework and carrying out activities like group prayer, reading sacred texts and religious music:

"In response to the faith element of the mentoring, one of the mentees said, 'I used to be hateful, and now I am learning to pray on my own for other people, and I'm learning how to take care of

myself and interact with people more appropriately. When I get out of here, I am going to give my life to god and stop hanging out with the wrong people" (Branch, 2002:56).

Volunteers who saw mentoring as *God's work* expressed similar sentiments and showed high levels of commitment.

"My belief is that this is my purpose, my faith in God. I don't give up. A lot of people, don't want to work with these kids" (Branch, 2002:56).

Mentoring interventions which place emphasis on developing social and learning skills that enable young people to interact more effectively with their social environments differ from the traditional mentoring goal of befriending a young person in some ways. In some cases, the mentor provided basic literacy and numeracy skills, and some mentors obtained qualifications in these areas. In other cases, mentors were assisted by tutors, or projects included separate learning and assessment.

QOP case managers (mentors) referred participants to community health and mental health services, summer job programmes and local organizations that provide accommodation, food, financial assistance, and childcare services (Schrim et al., 2003).

Mentors took youth to school or appointments on a regular basis and enrolled them in programmes such as athletic leagues, gyms, drug treatment, internships, and art. Mentors also supported youth and their families during Family Court hearings, referred youth to therapists, provided food or clean clothes to youth, connected families to housing opportunities, and referred youth to occupational certification and licensure programmes.

According to one of the mentors: *"I felt like a personal trainer, we were showing them all these techniques or helping them handle things if they were having an issue or problem. A lot of times I felt like we were their personal cheerleaders and help them out as they were transitioning going through juvenile justice as they transition out of the system*" (Cramer et al., 2018:39).

Some mentees stated that their mentors were providing them with assistance obtaining work or accessing educational opportunities:

"They help me get onto everything. So, I've got appointments for jobs, I can go to that. (Reni, 3 months post-release)" (Hanham & Tracey, 2017:125).

"He enrolled into TAFE for next year … because I wasn't sure how to do it. Then he showed me, I appreciate it. (Steve, 3months post release)" (Hanham & Tracey, 2017:125).

Mentors donning various hats

Mentors as role models: In a law enforcement youth mentoring programme, the mentors acted as a role model to facilitate desired changes. According to one of the parents:

"The youth coalition program sets a good guidance and role model for them [students]. They're being good role models [teachers, law enforcement officers, and mentors]. Some of these kids although they are our kids they believe they are more experienced than us and we don't know anything. And when someone else outside the home shows them and they see other kids that have done the same things or done things that are worse or of a lesser crime, they're being shown that everyone is being held accountable for their actions. The coalition program sets up that mentor-ship in showing them this is wrong, this is the right way to do things. Even as parents we're doing the same thing but they are at the point where they [referring to the students] don't want to hear us because we are basically the biggest judges in their lives. We set up the rules of what will and will not happen and they don't feel that they must abide by them when they get to a certain age because they think they know more about life than the adult" (Ferrer, 2018:119).

In the evaluation of another mentoring prevention programme, the mentors were descried as serving as coordinators, role models, disciplinarians, brokers, and problem solvers (Beardall, 2008).

Mentors as watchdogs: During the pre-release interviews, the majority of the mentees stated that they wanted their mentors to express their concerns if the mentees displayed attitudes, thoughts, or behaviors that could jeopardize their success after release:

"I want him to keep me on track. If I have gone the other way just to tell me to pull my head in or whatever" (Tikau, pre-release) (Hanham & Tracey, 2017:124).

Mentors as guides: The mentees valued the mentors' guide-like qualities in an assessment involving mentoring for young male offenders:

*"Just different ways of thinking about things, and, like, different ways of getting out of bad situations. (Ford, pre-release)" (*Hanham & Tracey, 2017:124).

*"He's settled me down and everything. Made me look at it from a different point of view. (Boyd, 9months post-release)" (*Hanham & Tracey, 2017:124).

Mentors as confidence builders: The majority of the young offenders remarked on the mentors' motivational role and ability to raise their self-confidence and self-esteem in post-release interviews.

*"They've made me believe in myself and believe that I can actually do this. I can actually strive to succeed in life you know what I mean. They've made me believe that I am not going to go back in and I can do it. (Reni, 9 months post release)" (*Hanham & Tracey, 2017:125).

*"When I first came out, I didn't have any confidence at all coming out. I didn't know what I was getting into. My mentor and that he helped me a lot and (the coordinator of the program). They pushed me to do it and once I did it I had a lot of confidence and doing things was much easier for me. (Samson, 9 months post release)" (*Hanham & Tracey, 2017:125).

Well matched mentees and mentors

In an evaluation of mentoring experiences for youth with carrying risk profiles over half of mentors agreed that their mentee shared their interests, and the vast majority felt the program did a good job matching them with their mentee:

*"I am thrilled at how fantastic of a match was accomplished. From day one, Keisha and I have been like two peas in a pod" (*Herrera et al., 2013:35).

Matching procedures that considered the youth's, families, and volunteer's preferences, as well as the use of a professional case manager to determine which volunteer were best fit for which youth Grossman (1988).

Female mentors outperformed male mentors with both male and female mentees; female mentors paired with female mentees were highly successful. Mentors with black or minority ethnic backgrounds were more successful than white mentors in improving the family relationships of mentees with black or minority ethnic backgrounds (St-James Roberts et al., 2005)

In the evaluation of mentoring intervention for children of prisoners, one of the parents said:

"*Mr. Art and Ms. DeAngelis were the perfect match for my children. Oh, at first, I thought they were too old, but they kept up with them without a problem. To my surprise they were very active my kids were having fun, going bike riding, swimming, exercising, and going to sporting events. They taught them about different cultures, and helped with their homework, both of their grades improved. They really look forward to the time they spend with them. I strongly encourage anyone to join the mentor program it has made a huge difference in our lives*" (Bruster & Foreman, 2012:9).

According to one of the students in a mentoring programme for at-risk students, *"Lee is a nice mentor. If it was not for Lee, I would not be having good grades. Lee is like a mom to me. Lee is tall no matter how tall or short she is. She is my mentor, and she will always be my mentor. Lee is*

a kind and beautiful lady. She is a lock in my heart. I love her and I am glad she is my mentor" (Rowland, 1992:100).

It can be inferred that the appropriate matching of the young person and the mentor is one of the main factors in increasing the emotional and social skills of the mentees. Age, gender, personal interests, character, and the mentors' location or mobility were among the criteria mentioned by programme managers that contributed to successful pairing. The vast majority of participants, including mentors, young people, and Program Managers, spoke highly of the arrangements, and there had been no changes in mentoring partnerships unless the mentors had to leave the project due to personal reasons (Blazek et al., 2011).

Satisfaction and personal development of mentors

The volunteer mentors mentioned two key areas of motivation. One is the possibility of future professional advancement. Mentors in this team were students studying social work, community work, or social sciences, as well as counsellors in training. Volunteers who pursue a career in other areas where people are involved, such as the police force, marketing and sales, or entrepreneurship, expressed a desire to gain relevant skills in working with people in general and to improve their future career prospects.

The second source of volunteer motivation was to 'give something back' or 'do something for the youth.' This motivation was mentioned by several younger mentors, including young people in their early twenties who had received similar services. A significant proportion of mentors stated that the programme aided their personal development.

"*Oh, absolutely. I have learnt so much about people, young people particularly, I think in a more complex way what they must live through. It is something that my course would not teach me.' (Interview with a mentor who is in training in one of the helping professions)"* (Blazek et al., 2011:53).

8.6 Barriers to achieving outcomes

Mentee activity attenuation

Participation in a programme can wane over time, so effectiveness will diminish. In one programme, the average amount of time spent on activities decreased from 247 hours in the first year to 89 hours in the fourth, while the percentage of enrolees who did not spend any time on activities increased from 1% to 36%. Enrolees who spend less than 100 hours on QOP activities are the most dissatisfied. They reported being uninterested in QOP activities or having other after-school activities such as playing sports, working, or caring for other family members (Schrim et al., 2013). However, moderator analyses indicated shorter durations of meetings per mentoring visit produced the greatest improvement in educational attendance and mental health outcomes, which is a counterintuitive finding requiring more research to unpack it.

Grappling with mentoring complexities

In a mentoring intervention using the solution-focussed approach, the evaluation results indicate the lack of adequate skills in mentors. It is that mentors might benefit from more training in using solution-focused techniques (Axford et al., 2021). Many mentors requested further training on specific social problems that they might confront or need to address. These included drugs, child protection, sexual health, dyslexia and other learning difficulties (Tarling et al., 2004).

In the National evaluation of the Youth Justice Board's mentoring projects, A number of people said the job was more demanding or difficult than they expected. In another case, a quarter of mentors reported difficulties in handling mentee behaviours. Mentors in some cases expressed concern about being unprepared to deal with their mentee's severe needs, which included attention deficit disorder, mental health or behavioural issues, and overwhelming family issues. In certain instances, mentors felt unprepared to meet these demands (Herrera et al., 2013).

Communication and coordination issues

Throughout the Youth Justice Board UK and Wales evaluation, both projects and young people expressed concerns about service duplication and confusion, resulting in young people being

targeted by multiple voluntary and statutory institutions. The authors of the evaluation state that ironically, the scarcity of services that once defined this sector has given way to an abundance, with a lack of coherence and coordination between the provisions now posing a major impediment. They recommend that services must be administratively and legally coordinated in order for information and planning to be shared. Because of the communication barriers that exist between community projects and statutory organisations, there is also a need for formally regulated, professional services (St-James Roberts et al., 2005).

Coordination and communication between AIM providers and probation officers were ineffective, resulting in implementation issues such as unclear roles and responsibilities and a lack of transparency between the organisations. Interviews with various stakeholder groups revealed that relationships were frequently strained, with no cohesive partnership based on the program's shared vision or goals (Cramer et al., 2018).

Poor leadership and senior management

Programmes are doomed if their continuance is based on the "cult of the personality," or the leadership of one or two people. The program's leadership should be part of that staff member's job description and time made available during the day to manage the program. The school-based CAKE program deteriorated due to the perception that it was no longer important to the new principal. Partial evidence may be found in the deterioration of attendance and GPA figures from the first year of the program to its last year (Hayes, 1988).

In the RESET mentoring programme from the UK, the senior level partners did not meet the expectations. The involvement of the partners at the senior level was less than anticipated and it affected the intervention (Hazel, 2008).

In the Quantum Opportunities Program, at several pilot sites, there was a lack of buy-in. One site's coordinator reported feeling trapped in a rigid model. It was critical to have buy-in from site management when implementing a programme. This entails forging a unified vision of youth development among those key people in charge of putting the programme into action (Lattimore, 1988).

Location issues

In the evaluation of the mentoring plus intervention, the location of the project was a recurring theme in interviews with project workers. Only one of the projects had its own dedicated space. The remaining projects shared facilities with other community groups, and workers expressed concern that the projects were inaccessible and/or unappealing because they were far from where the young people lived and/or were based in unsafe and unsuitable locations (Shiner, 2004).

"I think the venue can be a problem, where we are, I think the venue ... I've heard from young people that it's not safe around here at night and stuff like that really and it's an issue for the walking home and this sort of gang culture, and territorial, you know, you're in my area ... that kind of issue as far as engagement goes (Project worker)" (Shiner, 2004:31).

The lack of space in the main school building compelled the use of space in an adjacent building for after-school programme activities in an after-school intervention. This separation from the main school building, which differed from our previous experiences implementing similar preventive intervention programmes with middle and high school students, resulted in several disruptive changes to previously established programme routines.

Because of this, students had to be relocated from one building to another on a daily basis. Students were escorted from their individual classrooms to the school's lunchroom, where they had to sign in and wait until all programme participants were assembled. When all students were present and accounted for, project staff escorted them to the annex. Keeping order among the more difficult students during this routine proved difficult, even when accompanied by mentors (Carswell, 2009).

Funding issues

Financial difficulties were viewed as a major threat to the integrity of some programmes. Some project workers believed that if funds had been available to provide additional specialised services, the programme would have been better implemented and would have had a greater impact. In more extreme cases, it was suggested that elements of the programme could not be implemented due to a lack of funding, and that short-term difficulties could have long-term consequences. By the end

of the evaluation period, four of the ten projects had decided to close, one faced an unknown future because it had completely stopped to operate, and two had left the Mentoring Plus umbrella (Shiner et al., 2004).

Short-term mentoring programmes

Program directors and mentors consistently stated that the six- to nine-month programme was very short. AIM was established as a six-month programme, with a three-month extension of services subject to approval. According to programme staff interviews, the usual pattern for AIM participants followed a "honeymoon phase," wherein youth would consistently engage with the programme, followed by a drop-off in involvement. Youth would gradually gain trust in their mentor and become more involved in their programming as a result. Mentors frequently achieved increased levels of engagement and trust with participants by the fourth to seventh month, when the youth were nearing the end of the programme.

"I don't think that it's enough time. It should be the whole time [they are in probation]. If it's 24 months it should be the whole time; I don't know what that 6–9 months is about, you're talking about juveniles, it takes more than 6 to 9 months to make a lifestyle change (Probation officer)" (Cramer et al., 2018:42).

In a national evaluation of 84 mentoring projects in England and Wales, A sizable proportion (80%) of mentees stated that they would have preferred mentoring to last longer because they valued it, or it had a positive impact on them in some way.

"I loved going out with her and stuff. I wish I could keep doing it. He spoke to me, how he wanted to be talked back to. We get on really well, and I can talk to her about anything" (St-James Roberts et al., 2005:93).

In the evaluation of the Head Start Plus mentoring programme, it was found that the programme could have achieved more with a longer life span. The programme lasted only for six weeks. (St-Roberts et al., 2005).

In the evaluation of 80 mentoring programmes in England and Wales, it was found that many interventions terminated earlier than expected (43%). The key finding was that short programmes were more likely to be terminated early than completed completely, implying that many programmes were short for this reason rather than by design (St-Roberts et al., 2005).

In a cross-site evaluation of system-involved youth it was concluded that short match durations, less than one year may not produce the desired long-term outcomes and, if terminated by the mentor, may even be another disappointment in the lives of youth with histories of unstable home situations or disrupted relationships (Hart-Johns et al., 2017).

In a study on predictors and effects of duration in youth mentoring relationships, the results indicate that self-worth and perceived scholastic competence were lower in youth who had relationships that ended within three months. Youth in short-term relationships that ended within a span of six months reported declines in several indicators of functioning, including significant increases in alcohol consumption (Grossman & Rhodes, 2002).

However, these qualitative findings are not corroborated with the quantitative analyses, which consistently found that shorter durations of interventions reported greater improvements in various outcomes. For example, shorter interventions reported greater improvements in externalising behaviours, attitudes and beliefs and reducing substance misuse and recidivism. Longer duration mentoring interventions did, however, report greater improvements in educational aspirations and attitudes and educational attainment.

Poorly managed termination of the mentoring relationship

Poorly handled endings can lead to a sense of loss, according to some participants, detracting possible benefits. During the second round of interviews for an education and mentoring project, some young people felt abandoned by the project. When their mentor moved on, some young people were angry and disappointed, with the possibility that this may negate the positive effects of the intervention (Philip et al., 2004).

Maria reflected that the intervention had come at an inopportune time for her. She was kicked out by her parents after breaking off contact with the project, began abusing a variety of substances, and became involved in a number of illegal activities. On reflection, she claimed that it was her fear of going to prison, rather than any support she received from her family or key workers, that motivated her to change this pattern.

Dealing with the loss of a mentor was difficult, and it was frequently misinterpreted as rejection. Susan's departure had been upsetting for Amanda, prompting her to reconsider the importance of the relationship:

"They were just people that I have lost, Susan, I wrote to her, but then she just disappeared. I hate people who just disappear, it is like anything in life, you put so much effort in to it, and it is like why the fuck do you put so much effort in to it and like they disappear. It is like all that effort that you put into life and it is like sometimes you don't get that much of it back. It is so stupid" (Philip et al., 2004:30,31).

Eric, who had a string of mentors over the course of the project's ten years, was more philosophical:

"I felt like it was a shame as I had got to know him really well, and you know I had got to like him a lot as a good friend, because he was someone that I had got on really well with, so I felt it was like, it was a shame, because I felt like I was losing a friend when he moved on" (Philip et al., 2004:31).

The negative effect termination of mentoring relationships has been confirmed in the quantitative analyses, with interventions which maintained mentor mentee relationships, compared those which did, reporting greater reductions in all offending, recidivism, criminal activities and substance

misuse. Similarly, interventions which did not have terminations also reported the greatest improvements in educational attendance.

8.7 Facilitators to achieving outcomes

Buy-In from teachers and other members in after school mentoring interventions

Assuming administrative and leadership responsibilities, working with advisors on wellness/prevention projects, obtaining funding, and presenting the programme to parents, teachers, and administrators were all critical to the overall process and programme success (Berdall, 2008)

In a group mentoring programme for resilience, mentors reported that having buy-in from the larger school community was beneficial in terms of supporting and reinforcing mentoring roles (Kuperminic, 2018).

Long term mentoring

Long continuity with a caring adult was a facilitator to the outcomes of a mentoring intervention (Lattimore, 1998). It provided long-term sequenced services rather than "one-shot" interventions. At each site, the same coordinator is theoretically supposed to stay with the group for the four years (in practice there was turnover in some of the pilot sites).

"*I kept trying to be the best I can be. I love and thank them for being therefore me, and being like a second mother and a father I never had" (Lattimore, 1998:26).*

Grossman & Rhodes (2002) concluded that youth in relationships that lasted at least a year or longer reported improvements in academic, psychosocial, and behavioural outcomes.

Partner agencies in Plusone appreciated that mentoring was seen as a process, not an event, and that it had the potential to make long-term improvements for the young people involved through longer-term multi-institutional engagement (Blazek et al., 2011).

Supervision of mentors

Close supervision and support of each match by a case manager who communicates frequently with the parent/guardian, volunteer, and youth, and offers assistance when needed, as problems arise. There is also training in communication, limit-setting skills, relationship building guidance, and recommendations on how to interact with young mentees (Grossman, 1988).

In Plusone mentoring implementation was entirely in the hands of programme managers. They were in charge of communicating with local referral agencies, hiring, training, and supervising volunteers, communicating with young people and their families when they were referred to the programme, and monitoring the mentoring process on an ongoing basis.

The content of the meetings was reported to the local program managers, who kept track of the mentoring relationship. Detailed monitoring and supervision of mentors was a contributing factor to the success of the intervention (Blazek et al., 2011).

According to the mentors, Le Chéile's assistance was invaluable. They were given formal supervision in groups and had the option of seeking informal guidance and advice any time. They valued supervision for overcoming loneliness and a sense of belonging, as well as for defining boundaries. They also appreciated the initial and ongoing training, as well as the meaningful relationships with co-ordinators and the fact that they could discuss any issue with them without fear of being judged. Induction training, ongoing training, group supervision, ongoing support, and overall mentoring experience all received high marks in Le Chéile's annual volunteer surveys (O'Dwyer et al., 2019).

Financial incentives

Financial incentives for participation have also been identified as facilitators to outcomes. For each hour of participation in education, development, and service activities, an hourly stipend of $ 1.00 per hour is provided, rising to $ 1.33 over the course of four years. After completing 100 hours in any of the three activity components, a completion bonus of $100 is awarded (for a total bonus of $300 per year).

All hourly stipends and bonuses earned by the associate are matched and invested for them in an interest-bearing Quantum Opportunity account for approved use, such as college or job training. Because the account earns interest, total accruals by the end of four years could exceed $5,000.

According to one of the participants: *"By doing community service, development, and educational work, I would be paid once a month, and whatever I made in that month would be put in the bank and accrue interest. The money caught my attention, but it wasn't about that. It was about helping others, and in the process earning money for my future"* (Lattimore, 1998:18).

The coordinators also received incentives and bonus payments that were directly related to the levels of participation and completion of education, development, and service activities by the associates.

In the evaluation of a preventive intervention program for urban African American youth attending an alternative education programme, it is recommended that because youth may be hesitant to extend their school day by participating in an after-school intervention programme, recruitment efforts should focus on clarifying the need for, and potential value of, the proposed intervention. Providing general information about the programme to parents and students during school orientation sessions, setting up small group meetings with students to discuss and demonstrate typical programme activities, and/or presentations by former participants about the potential benefits of programme participation are examples of such efforts. The study authors recommend that once enrolled in the programme, performance incentives should be used to promote academic achievement, foster positive behaviour, and maintain high rates of attendance (Carswell, 2009).

Leaders going an extra mile

Program administrators went above and beyond their prescribed roles in the quantum for opportunities mentoring intervention, tracking each young person's whereabouts and activities, making home visits, and motivating the youth to do it as well (Lattimore, 1988).

Multi-faceted benefits from mentoring (Mentoring having other advantages)

Positive results were most evident in measures of reunification into education and community participation. As in the case of the mentees, they tended to reduce truancy and exclusion while increasing their attendance at school and college and participation in community activities. Between the baseline and follow-up assessments, the comparison group of young people assessed had shown enhanced social exclusion and decreased educational participation, indicating that having a mentor helped to prevent this decline (St-James Roberts et al., 2005).

In a multi-site short term Quantum Opportunities Program (QOP) intervention, it was concluded that in the Cleveland site, the programme had significantly increased the likelihood of graduating from high school, significantly increased the likelihood of attending or being accepted by a college, and significantly decreased the likelihood of binge drinking (Schrim et al., 2013).

QOP enrolees reported participating in special programmes other than regular high school classes help students stay in school, make good grades, avoid drugs, prepare for work or college, and make good life decisions (Scrim et al., 2013).

The QOP provides education, development, and service activities, coupled with a sustained relationship with a peer group and a caring adult, over the four years of high school for small groups of disadvantaged teens (Lattimore, 1998).

Each participant is qualified for: 250 hours of education per year (participating in computer-assisted instruction, peer tutoring, and other activities to improve basic academic skills); 250 hours of training participating in cultural enrichment and personal development, acquiring life/family skills, planning for college or advanced technical/vocational training, and job preparation; and 250 hours of service activities—participating in community service projects, assisting with public events, and volunteering at various organisations.

"This program has helped me a lot because at one point when I had a child I did not want to go to school. The coordinator helped me to see the light. He said, "Kenyatta, you can't achieve your

goals if you just sit here and do nothing." So, I came back to school and ''lI graduated June 25, 1993" (Lattimore, 1998:53).

Mentors in violence prevention programme is a high school leadership and mentoring program that focuses on promoting gender respect and preventing harassment, sexual harassment and teen dating abuse in middle schools and high schools. By engaging high school students and alumni as mentors, the programme provides for leadership opportunities for both the mentors and mentees (Beardall, 2008).

In a law enforcement youth mentorship programme, there was significant positive impact on the mentee's school attendances. In the words of one of the mentors:

"*I do believe that the program assisted with the academics because again, we had an academic focus. They had the support they needed, and we gave them study tools, it was not just tutoring sessions it was also teaching them how to study because we only saw them once a week. We kept up with their weekly progress"* (Ferrer, 2017:122).

In of one of the evaluations, mentees felt that the mentoring programme improved their attendance and achievement in middle school. One of the mentees said, "*it was what kept him in school"* (Harry, 1988:231).

The intervention, according to the mentors, removed barriers between teachers and students. The mentors felt they acted as significant others for at-risk students, providing support, interest, and consideration, which resulted in school-related outcomes (Harry, 1988).

One of the Plusone intervention's successes was the development of emotional and social skills in young people. The majority of mentors saw significant progress in the young person they were mentoring. They, like the program managers, emphasized how young people were becoming more able to relate to and open up to others.

"You wouldn't believe if you saw him a few months ago. He would just stare to the wall. He still doesn't talk much now, but he will reply and they get on very well [he and his mentor] (Conversation with a Programme Manager about a young person)" (Blazek et al., 2011:44).

A key aspect of plusone mentoring is the positive experience of diversionary activities with mentors. This is especially true for young people who come from areas where opportunities are scarce or where their social circumstances make them difficult to obtain.

"Oh, [the young person] is excellent in football, really. I asked him why would he not join a local team but he said that he "did not wish to" and rather would play with me. I did not press but last time we talked about it, [the young person] agreed to have a look so I want to take him once it is warmer.' (Interview with a mentor)" (Blazek et al., 2011:42).

"I am aware of my problem...But when I am in our neighbourhood, I will do these things again [referring to anti-social behaviour] because there is nothing else you can do there, nowhere to Plusone mentoring evaluation 43 go...When I'm with [the mentor] it's good... But it's not enough.' (Interview with a young person)" (Blazek et al., 2011:42).

Parental /care giver engagement and involvement

Programmes were able to create strong bonds with the majority of the parents enrolled in the programme by providing case management services to families, which seemingly motivated a large number of them to consistently participate in the two-hour bimonthly family gatherings held at the school during the 7-month intervention period. Typically, more than half of the caregivers of students enrolled in the after-school programme attended the school's family gathering meetings.

Although it is normally difficult to achieve, establishing strong, positive relationships with caregivers and fostering their involvement in programme activities are especially important in the preventive intervention process because they are likely to influence youth participation in programme activities and ultimately contribute to overall programme success. In alternate education programme settings where the needs are so great, providing case management assistance to caregivers

in the utilisation of needed community resources as an additional component of a preventive intervention has the potential to establish a bond between project staff and parents, resulting in an increase in student after-school programme participation. The latter effect, on the other hand, assumes that caregivers have control, or at least influence, over their children's behaviour, which is not always the case (Carswell et al., 2009).

Mentors engaged families to reinforce positive incremental changes while working on gaining trust with participants:

"*We teach moms don't knock him three steps back when he's moving forward. So, it's like I know he's still doing these things but he's also doing things he's never done before. Like he went to school two weeks straight. Let's make it seem like the biggest thing ever"* (Cramer et al., 2018:43).

Parents appreciated that the programme provided their children with a safety net when they needed it. One parent noted the constant follow-up and support they received from mentors:

"For me it would be them still being in touch with me and my daughter and asking me do I need any help with her. Follow up stuff with her and the mentors. Nobody told me after you complete the program it was still going to be in your corner" (Cramer et al., 2018:43).

Successful partnerships (connection to services)

The plus one programme collaborated with a variety of child protection, health, education, and criminal justice agencies through local referral groups, with links to the police and education services being particularly effective. Plusone mentoring is a valuable and unique approach for partner organisations in the child protection/youth justice field, providing a service that is complementary to existing agencies (Blazek et al., 2017).

The social contact that occurred during the time spent with the staff of local juvenile justice agencies was an important aspect of the diversion programme, and it facilitated their extensive

involvement. Staff meetings, it is stated, were just as important as shared cups of coffee. The intervention outlined the value of taking an active approach in interagency relationships.

A related strategy for engaging with local officials of traditional justice system agencies was convincing them that the project would not be "here today and gone tomorrow." It was critical to the project's success that local officials saw it as a long-term dispositional option. Being present during periods of low referrals or administrative chaos in local agencies demonstrated that the Diversion Project was as concerned about juvenile delinquency as the police or juvenile court staff (Davidson et al., 1990).

The Plusone programme collaborated with a variety of child protection, health, education, and criminal justice agencies through local referral groups, with links to the police and education services being particularly effective. Plusone mentoring is a valuable and unique approach for partner organizations in the child protection/youth justice field, providing a service that is complementary to existing agencies (Blazek et al., 2011).

Formal termination of the mentoring relationship

Many young people noted a lasting effect and a continuing affection for their mentor, even where the relationship had formally ended.

In The National Evaluation of the Youth Justice Board’s mentoring projects one of the schemes took into account how to end the relationship. With the scheme's encouragement, mentors put a lot of thought and effort into the endings and spent time discussing them with the young person ahead of time.

They connected their young person with other people or resources if it was appropriate so that they did not feel alone when the mentor was no longer available. Even though the end was two months away, one mentor stated that she was planning a trip to a football game with her young person to

commemorate the occasion. The scheme also attempted to be flexible in terms of the ending, depending on the circumstances. For example, one young person's situation was so precarious that the mentor was the only constant in her life, and the relationship lasted far longer than it should have. Another programme handled the breakup of the relationship in a final session with the young person's input (Tarling et al., 2004).

8.8 Illustrating causal processes

The Campus Connections theory of change assumes that youth outcomes will be determined by both the quality of the one-to-one mentoring relationship and the youth's interactions with the setting. When Campus Connections was created, great care was taken to design the larger community context as a positive developmental setting based on Eccles and Gootman's recommendations (2002). Campus Connections pairs youth with mentors, and the dyad participates in a variety of prosocial activities in the context of a larger community of other matches and programme staff. Mentoring groups of four mentee-mentor matches - known as Mentor Families within the programme - were formed in the belief that they would strengthen the quality of the mentoring relationship while also ensuring and deepening the youth's experience of the setting, thereby improving youth outcomes. A qualitative investigation into the group experience discovered that these groups provided a place for mentors to (a) receive support and supervision, (b) mentors and mentees to belong, and (c) mentees to grow and learn (Haddock, 2020).

The findings suggest that conducting interventions outside of the court's purview may have a positive impact on recidivism. Such explanations lend support to the concepts of labelling theory (Davidson, 1987).

The ongoing relationship between the mentor and child is hypothesised to be the primary mechanism of change in the Friends of the Children intervention, which engages children early in the developmental process of problem behaviours by design. Over time, it is hypothesised that the mentoring relationship will provide a child with social support as well as the opportunity to observe, learn, and practise emotion regulation skills, which include traditional interpersonal

problem-solving skills. Second, it provides a child with opportunities that he or she would not have had otherwise, ranging from concrete opportunities such as access to academic assistance and health care to more abstract opportunities such as the opportunity to participate in enriching experiences that improve their ability to envision a positive future.

Promoting Positive Development (PYD) indicators can serve as one pathway by which supportive mentoring relationships can reduce susceptibility to emotional and behavioural problems among disadvantaged youth (Erdem et al., 2016). Over the last two decades, PYD has provided a new direction in research with at-risk adolescents by providing a strength-based theoretical perspective for understanding adolescent development (Tolan et al., 2014).

Mentors exposed to enhanced training and support are more likely to engage in the types of behaviours encouraged by the initiative, and these behaviours promote more positive, long-term relationships with their mentees, which should lead to stronger positive outcomes for youth (Jarjoura et al., 2018).

According to activity theory, shared experiences for criminal activities are just as intersubjective as those for prosocial activities; they influence the cognitions, emotions, and behaviours among those engaging in all of these activities together. Buddy system can alter the peer network of at risk adolescents through contact with lower-risk youth and thereby introduced them to a broader range of noncriminal activities, facilitating the beneficial effect (O'Donnell & Williams, 2014).

Through mentoring, young people develop a trusting relationship with an adult who is interested in them, practise communication, engage in positive leisure activities, and build self-confidence and self-esteem; this, in turn, leads to increased awareness of choice and goal-setting in terms of substance use, education/work/training, and peer groups; this, in turn, leads to the achievement of positive outcomes, most notably improved relations with parents, other family members, peers, and others (O'Dwyer et al., 2017).

A change theory for mentoring young people was created for evaluation purposes as follows: mentees develop a trusting relationship with an adult who is interested in them, develop communication skills, engage in positive leisure activities, and build self-confidence and self-esteem through mentoring; this, in turn, leads to increased awareness of choice and goal-setting; and this, in turn, leads to the achievement of positive outcomes, such as a decrease in antisocial behaviour and the development of pro-social behaviour. The evaluator and research advisory group developed the theory, which was accepted by stakeholder interviewees as a satisfactory explanation of how mentoring works. It closely resembles the existing international literature (O'Dwyer et al., 2019).

The Plusone programme merged the school, social work, police, and community models with a youth work model that emphasises community involvement and responsive practise in working with youth. Plusone mentoring is based on the theory that there are important risk factors for prospective offending that can be addressed at a young age (such as aggression and violent behaviour, disruptive family and personal relationships, self- and other-perception, low self-esteem, or challenging behaviour in the home, school, or community) (Blazek et al., 2011).

8.9 Cost effectiveness

In total, 40 studies provided information relating to the costs of mentoring interventions. These can be split into four groups of information: Cost benefit, Total cost, Cost per participant, Costs involved. Results are also summarised in Table 22.

Cost benefit

Thirteen studies provided cost effectiveness information for their mentoring intervention, with all but one identifying significant cost benefit of their interventions.

Anderson (1997) provided a simple analysis of their program costs vs. gains, indicating a net gain of over £26,887 to the County over the three-year period. The cost savings to the County, Anderson (1997) attributes, was provided largely through the many hours of volunteer time in working with youngsters in detention. Similarly, Blechman et al. (2000) estimated that over their 4-week juvenile diversion plus mentor arm saved £22,133.01 more per hundred youths than juvenile diversion plus skills training alone. Davidson et al. (2010) found for every youth referred to their 18-week intervention, there was an estimated £3,841 saving. Since its founding, MSUAP has saved the community £15,364,000. Blazek et al. (2011) estimated that the social return for each £1 of investment in Plusone mentoring ranged between £6 and £13 with the most likely return being just under £10.

Heard et al. (1990) provided a daily cost comparison to highlight the daily savings of their intervention, which costs £19.21 a day compared to £46.09 per day for institutional placement of juvenile offenders – a daily saving of £26.88. O'Dwyer (2017) estimated a social return on investment of £3.86 for every £0.89 invested in Le Cheile.

Blakeslee et al. (2018) estimated a saving of £9,679.32 per criminal justice involvement avoided. Blakeslee et al. (2018) also provided four cost benefit ratios: Arrests -£3783.39/£12,099.15 = 0.31; Misdemeanour conviction -£534.67/£7,259.49 = 0.07; Days in Jail - £65,192.52/£21,778.47 = 2.99; Days on probation - £2,771.67/£4,839.66 = 0.43. Their cost-benefit analysis shows that investment in programming like 'My Life' is at the least cost-neutral, and potentially provides a benefit of three times the public expenditure, for every day in jail that program participants avoid. Similarly, Lattimore (1998), in their 4-year QOP program, estimated a total benefit per person of £29,988.22. Their total costs were £8,142.92, producing a net benefit of £21,845.30). This translated to a benefit-cost ratio of 3.68 or £2.83 in benefits for each pound spent. Heller et al. (2015) reported higher benefit-cost ratios than Blaskeslee et al. (2018) and Lattimore (1998), with their three RCT interventions estimating benefit-cost ratios from 5-to-1 up to 30-to-1. Although Moodie and Fisher (2009) were unable to provide a cost effectiveness analysis due to a lack of outcome data, they estimated that for their intervention to break even, they would only need to avert high

risk behaviours in 1.3% of participants. Likewise, Coller et al. (2011), when commenting on cost effectiveness, mentioned 'low' cost without further analysis.

Jarjoura et al. (2018) found, for five of their eight 12-month collaboratives, the incremental cost per youth was a negative value, meaning the costs within their treatment arm were lower than their treatment as usual costs. However, in the remaining collaboratives, the incremental costs per youth were higher for the mentoring youth. Across the eight collaboratives, the incremental difference between mentored and non-mentored groups ranged from -£750.57 to £895.44.

Compared to the majority of other studies reporting cost effectiveness, St James-Roberts et al. (2005) did not find lower costs associated with their mentoring intervention. Mentor programmes proved to be more expensive than alternatives which produce similar benefits, such as the YJB education training and employment (ETE) schemes evaluated during a previous initiative. Examples of cost-effective delivery, which approach the ETE scheme figure of £2,300, per young person were found and it proved possible to identify the features of projects which led to low costs. The most important was location in a YOT premises and, presumably, all the advantages of shared accommodation, infrastructure and administrative expertise that involves.

Cost Per participant

Eight studies provided information relating to the cost per participant to partake in their mentoring interventions. This information was either reported as a daily cost, or a cost for the whole duration of a respective intervention.

Heard et al. (1990) reported a cost of £19.21 per day to mentor parents. Heller et al. (2015) reported costs per each participant, respectively within their one-year duration RCTs, of between £845.02 and £1,421.17. Alfonso et al. (2019) found that the BBBS marginal cost to serve one additional youth was £61.46 per mentor-month of BBBS mentoring (irrespective of program type). The cost to offer services for the average match duration of 19 months per marginal added youth was £1,154.60. The marginal costs per treated program participant in school-based versus community-based programs were £921.07 and £2535.83, respectively. Moodie and Fisher (2009) found a

higher cost to participants for their BBBS program in Australia, reporting a cost of £3501. Herrera et al. (2007) reported that agencies paid approximately £691.38 out of their budgets, while about £76.82 of goods and services were donated by the school and others. These costs are fairly comparable to estimates for community-based mentoring programs implemented by the same agencies. Across the 10 school-based programs, the cost ranged from £284.23 to £1,087.00 per youth per year. The average annual cost was £758.21, while the median was £817.36. Lattimore (1998) provided a detailed breakdown of their costs. Lattimore (1998) found that their cost for four years was £8,142.92 per participant, or £2,035.73 per year. Weiler et al. (2015) had the lowest cost, with a £11.52 reward for participation.

Jarjoura et al. (2018) found higher costs for implementing their mentoring condition, at £51.84 per youth per day. This equates to a mentoring per capita mean of £1,634.51, relative to the agency's traditional programming, which had a per capita mean of £1,582.93.

Total Cost

Ten studies provided information relating to the total costs of their interventions. These were either reported in terms of the budgets received, the total costs to deliver a program or the estimated cost to service a population of interest.

Bernstein et al. (2009) reported that the average intervention site served 217 students over 12-months with an annual budget of approximately £212,791.20. St James-Roberts et al. (2005) reported that the average cost of their evaluation of 80 mentoring programs, varying in length from 3 months to 1-year, per delivered programme, came to £11,903. Based on the costs per participant described above, Lattimore et al. (1998) reported their four-year intervention had a total cost of £906,476. O'Dwyer (2017) reported that the Le Cheile mentoring service, which mentoring 152 young people over 12-months, cost £970,611. Herrera et al. (2013) reported the total costs per program, across their 8 evaluated interventions, was £76,820. Schrim et al. (2003), reporting on their 5-year Quantum Opportunity Program, reported total costs of £1,138,276. Across all 8 BBBS sites involving a total of 1,139 youths, Jarjoura et al. (2008) reported the total cost to be

£1,337,032.33, translating to £167,129.04 per site. Tierney et al. (1995), also evaluating 8 BBBS sites with 1,138 youth, noted that budgets ranged largely, from £248,128 - £845,020. Roger et al. (2004), in a process evaluation of 43 schemes funded by the Youth Justice Board, found the total cost of funding these schemes for three years to be £4.5 million (or on average of £107,000 per scheme or £3,000 per scheme per year). However, the Board did not meet all costs. The arrangement was that the Board would provide 100% of the funding for the first year (to enable the schemes to concentrate on becoming operational). By the second year, schemes were expected to raise part of their costs from alternative sources. The Board contributed 60% towards the costs of the second year and 30% towards the costs of running the schemes in the third year. Taking into account funding from other sources, the cost of the mentoring initiative was £8.4 million (or £195,000 per scheme or £65,000 per scheme per year).

Moodie and Fisher (2009) provided an estimated total cost of £22,080,500 in order to service the 2,208 most vulnerable young people in Melbourne.

Costs Involved

Twenty-four studies reported information on the costs involved, although most only mentioned that 'salaries' were paid (Berry et al., 2009; Bouffard et al., 2018; Cramer et al., 2018; Duriez et al., 2017; Eddy et al., 2017; Jarjoura et al., 2018; O'Donnell & Williams, 2013), incentives were provided (Converse & Lignugaris, 2009; Davidson et al., 1990; Haddock et al., 1990; Royse, 1998), foster related costs (Heard et al., 1990) or there were various infrastructure or training related costs (Jarjoura et al., 2018; St James-Roberts et al., 2005; Tierney et al., 1995), without providing specific figures.

Where specific figures were provided, Alfonso et al. (2019) found that the cost to offer services for the average match duration of 19 months per marginal added youth was £1,154.60. Barnoski et al., (2002) reported that, on average, 25 youth per year participate and the average taxpayer cost per youth is approximately £2,304.60.

In terms of salaries or stipends, Cheng et al. (2008) reported that Mentors received a small stipend for their time and activity expenses £184.37 in total for each mentor. Whereas Clarke et al. (2009) paid mentors £69.14 for completing the training and £381.10 for each school year of mentoring, and LoSciuto et al. (1996) provided a £46.09 monthly stipend to help mentors cover expenses and make it possible for them to volunteer.

Rodriguez-Planas et al. (2010) provided youth with a stipend of £0.96 for every hour devoted explicitly to educational activities, developmental activities (excluding recreational activities), and community service. A matching amount was promised to the youth who earned a high school diploma or General Education Diploma (GED) and enrolled in post-secondary education or training. By the end of the demonstration, this represented for most youths receiving between £768.20 to £2,304 after high-school graduation and enrolment in post-secondary education.

Other studies provided tokens or incentives to complete surveys or interviews. This are likely to be costs directly involved in the research project or process evaluation of the intervention, and should be viewed from that perspective. For example, De Wit et al. (2016) provided tokens of appreciation - £15.36. Families were compensated for completion of baseline (£15.36) or 6-month assessment (£23.05). DuBois et al. (2018) incentivised individuals to fill in surveys by providing a £38.41 completion fee. Phillip et al. (2004), at the end of the first interview, gave participants a small gratuity of £10 in recognition of their time and commitment and as an encouragement to participate in a second round of interviews. They received a further gratuity of £25 at the end of the second interview. Similarly, Davidson et al. (1990) paid mentees £3.10 to complete surveys. Converse & Lignugaris (2009) provided monetary compensation of $400 for one mentee and $600 for two mentees was contingent on meeting with mentees regularly and consistently completing required reports.

Summary

In summary, the mentoring interventions identified within our sample reported they were cost effective. Out of 40 studies reporting costs, 35 studies reported a net saving to society and out of 15 studies providing comparisons to alternative provisions, all but one highlighted a direct saving

from mentoring interventions. Identifying and comparing in further detail why costs varied between studies, in relation to their varying interventional modalities, durations, intensities, and training could not be assessed further, as reporting was often limited and not fully explored, or a focus of studies included within this review.

Table 22. Cost analysis

Author and Year	Cost Benefit	Total Costs	Costs Per Participant	Costs Involved
Alfonso et al. (2019)			Results show that the BBBS marginal cost to serve one additional youth was £61.46 per mentor-month of BBBS mentoring (irrespective of program type). The cost to offer services for the average match duration of 19 months per marginal added youth was £1,154.60. The marginal costs per treated program participant in school based versus community-based programs were £921.07 and £2535.83, respectively.	The cost to offer services for the average match duration of 19 months per marginal added youth was £1,154.60
Anderson (1997)	A simple analysis of the program costs vs. gains indicates a net gain of over £26,887 to the County over the three-year period. The savings or gain to the County is provided largely through the many hours of volunteer time in working with youngsters in detention.			
Barnoski et al. (2002)				On average, 25 youth per year participate and the average taxpayer cost per youth is approximately £2,304.60.
Berry et al. (2009)				'Salary'

Bernstein et al. (2009)		The average grantee in the Impact Study served 217 students with an annual budget of approximately £212,791.40		
Blakeslee et al. (2018)	£9,679.32 per criminal justice involvement avoided. Cost benefit ratios: Arrests - £3783.39/£12,099.15 = 0.31; Misdemeanor conviction - £534.67/£7,259.49 = 0.07; Days in Jail - £65,192.52/£21,778.47 = 2.99; Days on probation - £2,771.67/£4,839.66 = 0.43. Cost-benefit analysis estimate suggests that investment in programming like My Life is at the least cost-neutral, and potentially provides a benefit of three times the public expenditure, for every day in jail that program participants avoid.			
Blazek et al. (2011)	The social return for each £1 of investment in plusone mentoring ranged between £6 and £13 with the most likely return being just under £10.			
Blechman et al. (2000)	Juvenile diversion plus mentor saved an estimated £22,133.01 per hundred youths more than juvenile diversion plus skills training			
Bouffard et al. (2008)				'Salary'
Cheng et al. (2008)				Mentors received a small stipend for their time and activity expenses £184.37 in total
Clarke et al. (2009)				The mentors were paid £69.14 for completing the training and £384.10 for each school year of mentoring.

Coller et al. (2011)	Mentioned 'low cost' without further analysis.			
Converse & Lingnugaris/Kfrat (2009)				Monetary compensation of $400 for one mentee and $600 for two mentees was contingent on meeting with mentees regularly and consistently completing required reports.
Cramer et al. (2018)				'Salary'
Davidson et al. (1990)				£3.10 to participate in interviews
Davidson et al. (2010)	For every youth referred there was a £3,841 saving. Since its founding, MSUAP has saved the community an estimated £15,364,000			
De Wit et al. (2016)				Tokens of appreciation - £15.36. Families were compensated for completion of baseline (£15.36) or 6-month assessment (£23.05)
DuBois et al. (2018)				£38.41 to complete survey
Duriez et al. (2017)				Mentors were paid a variety of salaries, hourly rates or stipends for training and time spent mentoring

Eddy et al. (2017)				'Salary'
Haddock et al. (2020)				Incentive and completion payments
Heard et al. (1990)	The £19.21 a day compares to £46.09 per day for institutional placement of juvenile offenders.		£19.21 per day to mentor parents	Fostering related costs
Heller et al. (2015)	Benefit-cost ratios for their three RCT interventions range from 5-to-1 up to 30-to-1 or more		£845.02- £1,421.17	
Herrera et al. (2007)			Agencies paid approximately £691.38 out of their budgets, while about £76.82 of goods and services were donated by the school and others. These costs are fairly comparable to estimates for CBM programs implemented by the same agencies. Across the 10 school-based programs, the cost ranged from £284.23 to £1,087.00 per youth per year. The average annual cost was £758.21, while the median was £817.36	
Herrera et al. (2013)		£76,820 per program allocated		
Jarjoura et al. (2018)	For five of the eight collaboratives, the incremental cost per youth was a negative value, meaning the costs per EG youth were lower than the costs per BG youth. In the remaining collaboratives, the incremental costs per youth were higher for the EG. Across the eight	Across all 8 sites: £1,337,032.33	£51.84, suggesting a slightly higher overall cost of implementing the enhancements (EG per capita mean = £1,634.51) relative to the agencies traditional programming (BG per	Training, salary, infrastructure, monitoring and supervision costs

	collaboratives, the incremental difference between EG and BG groups ranged from -£750.57 to £895.44		capita mean = £1,582.93)	
Lattimore (1998)	Total Benefit Per Person £29,988.22. Total Cost: £8,142.92. Net Benefit: (Benefits minus cost) £21,845.30). Benefit-cost ratio: 3.68 or £2.83 in benefits for each pound spent.	Total cost £906,476	The cost for four years was £8,142.92 per participant, or £2,035.73 per year. An hourly stipend starting at £0.77 per hour and rising (over the four years) to £102 were given for each hour of participation in the education, development and service activities. A completion bonus of £76.82 is given after completing 100 hours in any of the three activity components (for a possible total of £230.46 per year in bonuses). An Opportunity Account is created in which all hourly stipends and bonuses earned by the Associate are matched and invested for them in an interest-bearing Quantum Opportunity Account for approved use, such as college or job training. The account is interest earning, so total accruals by the end of four years could be in excess of £2,304.60.	
LoSciuto et al. (1996)				£46.09 monthly stipend to help mentors cover expenses and make it possible for them to volunteer.
Moodie & Fisher (2009)	Cost Effectiveness not possible due to lack of outcome data. To break even, the program would need to avert high-risk behaviours in only 1.3% of participants.	To service the 2,208 most vulnerable young people in Melbourne the cost would be £22,080,500	£3501	
O'Donnell & Williams (2013)				Monthly stipend, and some allowance for activities

O'Dwyer (2017)	The total value of Le Cheile's mentoring service in 2015 is calculated at £4,220,607 and costs at £970,611, giving a social return on investment of £3.86 for every £0.89 invested in Le Cheile.	£970,611		
Phillip et al. (2004)				At the end of the first interview, participants were given a small gratuity of £10 in recognition of their time and commitment and as an encouragement to participate in a second round of interviews. They received a further gratuity of £25 at the end of the second interview.
Rodriguez-Planas (2010)				Youth received a stipend of £0.96 for every hour devoted explicitly to educational activities, developmental activities (excluding recreational activities), and community service. A matching amount was promised to the youth earned a high school diploma or GED and enrolled in post-secondary education or training. By the end of the demonstration, this represented for most youths receiving between £768.20 to £2,304 after high-school graduation and enrolment in post-secondary education.
Roger et al. (2004)		In a process evaluation of 43 schemes funded by the Youth Justice Board, found the total cost of funding these schemes for three years to be £4.5 million (or on average of £107,000 per scheme or £3,000 per scheme per year).		
Royse (1998)				Incentives for mentees to Participate

Schrium et al. (2003)		QOP provided youth with three types of financial incentives to attend program activities. The first was a stipend of approximately £0.96 for every hour devoted to educational activities, developmental activities that were not purely recreational, and community service. By the end of the demonstration, accrual account balances ranged from a few hundred dollars to nearly £7,682, with most being in the range of £768.20 to £2,304.60. For each of the first four years of the demonstration, each site received a grant of £153,640 and was obliged to provide local matching funds of an equal amount, for a total budget of £307,280 per year. In the fifth year, each DOL funded site received a grant of £153,640 but no local matching funds. This totalled £1,138,276		
St James-Roberts et al. (2005)	The anticipated chief advantage of mentor programmes – low cost – was not realized. Mentor programmes proved to be more expensive than alternatives which produce similar benefits, such as the YJB education training and employment (ETE) schemes evaluated during a previous initiative. Examples of cost-effective delivery, which approach the ETE scheme figure of £2,300, per young person were found and it proved possible to identify the features of projects which led to low costs. The most important was location in a YOT premises and, presumably, all the advantages of shared accommodation, infrastructure and administrative expertise that involves.	Amount spent in 2004, cost per delivered programme £11,903		Travel and training related costs
Tierney et al. (1995)		The 8 BBBS agency in this evaluation had budgets between £248,128 - £845,020		

Tierney et al. (1995)				Training related costs
Weiler et al. (2015)			£11.52 for participation	

9.0 Authors' conclusions

9.1 Overview of Findings

The results indicate that mentoring interventions has positive effects in reducing outcomes such as violence, crime, recidivism, substance misuse, externalizing behaviors improving socioemotional outcomes, familial outcomes, peer outcomes and academic and school related outcomes. Mentoring was most effective in relation to recidivism, where interventions reduced reoffending by 20.0%, and peer outcomes, which improved by 29.4%. Several key moderating processes were identified within meta-regression, with the setting of the intervention, the extent to which it was structured, whether it was mentoring alone or mentoring with additional components, whether mentoring was the main focus or a supplementary element of the intervention, the level of risk of offending, gender, duration, sample size, the intensity of the intervention, the age of the mentee, ITT/ToT, comparison condition and ethnicity all being associated with significant differences in effects across multiple outcomes.

The findings relating to barriers to participation are presented in the following themes: mentor and mentee hesitancies, limited mentor availability, recruitment processes of mentors and mentees, lack of care giver buy-in, challenges relating to the induction and retention of mentors and mentees, mismatch between mentors and mentees, failed expectations, proselytising, fear of law enforcement authorities, lack of perceived benefits and competing priorities, harassment and disrespectful behaviours by mentees, issues of trust and confidentiality and transportation issues.

The major themes under facilitators to participation are mentor characteristics/qualities, training and supporting volunteer mentors, targeted recruitment, mentoring relationships, blending mentoring with other interventions, mentors donning various hats, well-matched mentors and mentors and satisfaction and personal development of mentors.

The barriers to outcomes are organised under the following themes: mentee activity attenuation, grappling with mentoring complexities, communication and coordination issues, poor leadership and senior management, location issues, funding issues, short-term mentoring programmes; and poorly managed termination of the mentoring relationship.

The facilitators to outcome are buy-in from teachers and other members in after school mentoring interventions, long-term mentoring, supervision of mentors, financial incentives, leaders going an extra mile, multi-faceted benefits from mentoring, parental/caregiver involvement, successful partnerships; and formal termination of the mentoring relationships are facilitators to achieving outcome.

The review's qualitative findings are in alignment with the broad applications of the following theories in adult mentoring interventions. Axford et al., (2021) examined a solution-focused theory of change in their evaluation of Chance UK's mentoring programme in improving children's behavioural and emotional outcomes. A positive future orientation is promoted through the mentoring relationship by identifying goals and steps to get there (identity development), assisting the child in reflecting on their actions and recognising effective behaviour patterns they have used to cope with challenging circumstances (cognitive development), and inspiring the child to recognise their strengths and thus build positive self-worth (social-emotional development). When these factors are combined, they produce the desired change. Many of the included studies describe mentors acting as role models. Beardall (2008), Carswell et al. (2009), Ferrer (2018), Hanham & Tracey (2017), Hazel et al. (2008), Rowland (1992) all highlight mentors' ability to serve as role models can be linked to modelling theory.

Many studies that discuss the role of mentoring relationships with children at risk or those who have offended make use of relationship theory. The qualitative findings on facilitators of participation, outcomes, and causal processes go into great detail about mentoring relationships. In the 'set it up to thrive' mentoring programme, the mentor guides the mentee through a series of

activities that will help them thrive. The first goal is to help youth find their "spark" and the second is to encourage the development of a growth mindset. The third phase entails mutual reflection on indicators and thriving, followed by goal setting and management skill development (Du Bois & Keller, 2017). This intervention could be interpreted based on resilience theory principles, which are rooted in the identification and development of protective factors. Many of these theories can be placed within the framework of a strengths-based approach, which serves as the theoretical foundation for our theory of change.

In addition to mentoring interventions being found to benefit participants across the aforementioned outcomes, they were also very cost effective, with one study (MSUAP) identifying total savings of £15,364,000.

Comparison with Previous Reviews

Only four previous published reviews have meta-analytically investigated the effectiveness of mentoring interventions for youth (DuBois et al., 2002; Dubois et al., 2011; Raposa et al., 2019; Tolan et al., 2013) and only one has focused on delinquency outcomes (Tolan et al., 2013).

DuBois et al.'s (2002) review focused on the effectiveness of mentoring programs for youth more broadly than our review. Within their moderator analyses in a random effects model, they found that academic/educational outcomes (d= 0.11) and problem/risk behaviour outcomes (d=0.21) all had small effect sizes. All these small, but positive, effect sizes are all comparable to our findings. The only difference between our findings and DuBois et al. (2002), is with their emotional/psychological outcomes (d=0.10). However, upon closer inspection, this is likely to be because their single outcome domain encompasses our multiple behavioural outcomes and social and emotional outcomes. If we were to combine these outcomes, it is likely we would also produce a similar small positive effect.

Tolan et al.'s (2013) analysis included 46 studies on four outcomes measuring delinquency or closely related outcomes of aggression, drug use, and academic functioning. Tolan's findings, as ours do, suggest mentoring for high-risk youth has a modest positive effect for delinquency and academic functioning, with similar benefits for drug use. Specifically, their 25 studies with a delinquency outcome yielded an average effect size of *SMD* = .21, their seven studies with Aggression outcome yielded an average weighted effect size of *SMD* = .29, their six studies with Drug Use outcome yielded an average weighted effect size of *SMD* = .16 and their 25 studies with Academic Achievement outcome yielded an average effect size of *SMD* = .11. Again, all these small effect sizes are comparable in magnitude and direction to our findings.

Revisiting the theory of change

Many of the above discussed theories can be examined within the framework of a strengths-based approach, which serves as the theoretical foundation for our review.

The review's qualitative findings support the potential applicability of the following theories/models of adult mentoring interventions:

- Solution-focused approach: A positive future orientation is promoted by identifying goals and then creating steps in order to facilitate achieving the set goal (identity development). The mentor then assists the child in reflecting on their actions and recognising effective behaviour patterns they have used to cope with challenging circumstances (cognitive development) and inspiring the child to recognise their strengths and thus build positive self-worth (social-emotional development) using the mentoring relationship. Combined, these factors result in the desired change. Axford et al. (2021) provides an example of how a solution-focused techniques can be incorporated in mentoring interventions.
- Labelling theory: Labelling theory, closely linked to social learning theory, is an approach in the sociology of deviance that focuses on the ways in which the agents of social control attach stigmatizing stereotypes to particular groups, and the ways in which the stigmatized change their behaviour once labelled. In the case of the mentoring interventions identified within this review, qualitative evidence suggests that taking children and adolescents out of formal court and legal proceedings, thus removing any of the associated 'criminal'

labels, and pairing them with a volunteer, may lead to positive effects (Davidson et al., 1987). It seems from the studies in this review that by removing negative labels and stereotypes, young people may be more receptive to mentors acting as role models (Beardall, 2008; Carswell et al., 2009; Ferrer, 2018; Hanham & Tracey, 2017; Hazel et al., 2008; Rowland, 1992), and more ready to observe and learn prosocial skills and behaviours from mentors, as the Friends for Mentoring programme highlights (Eddy et al., 2017).

- Activity and social learning theory: By avoiding negative labels and stereotypes, a diversionary effect can often be achieved. By avoiding negative labels and stereotypes, youth are diverted from settings and activities which may encourage anti-social and offending behaviour and encouraged to spend time with the mentor, and new social norms and interests develop as a result of engagement in mentoring. The mentor, and the mentees new peers, will reinforce positive aspects of the young person, with the intention of countering negative labels which they may have encountered in their past and allowing a young person to take change of their destiny.
- Theory of the mentoring relationship: The theories discussed above, and implied theories of change, are closely associated with modelling theory - in which the mentor could serve as a positive role model for the child and influence the child to adapt pro-social behaviours. The use of modelling theory is manifested in many included studies that discuss the role of mentoring relationships with children at risk or those who have offended. The qualitative findings on facilitators to participation, and outcome and causal processes discuss mentoring relationships in detail. In the ‘set it up to thrive’ mentoring programme, the mentor guides the youth through a set of activities that will help them thrive. The first goal is to assist youth in identifying a "spark" and the second goal is to promote the development of a growth mindset. The third phase entails mutual reflection on indicators and thriving, followed by the development of goal setting and management skills (Du Bois & Keller, 2017). Qualitative studies highlight how important the stability, quality and longevity of mentor-mentee relationships are to facilitating positive change and underpin all aspects of behavioural change (De Wit, 2016). By developing trusting relationships, mentors are able to act in accordance with resilience theory, identifying protective qualities and factors, and subsequently building upon them (Bonanno, 2004; Ungar, 2004).

It is clear from the qualitative evidence that there is no single theory which should be adopted in order to underpin a theory of change. Rather, it seems that the most effective way to facilitate change is to integrate multiple theories into an individually tailored mentoring plan. This idea is reinforced by a recent meta-analytical review on non-specific versus targeted approaches to youth mentoring, which suggested that youth mentoring programmes could have a positive outcome, especially when mentors use targeted approaches tailored to their mentees' needs (Christensen et al., 2020). When also considering the results from the meta-regressions, which showed mixed results across outcomes for different components and factors of each intervention, it also seems that each mentoring intervention should be tailored not only to individual needs, but also tailored to the specific outcome(s) an intervention seeks to improve.

9.2 Implications for research

Study design issues and descriptions

There were several design issues of the included studies in our review. The included research is particularly weak in explaining what activities actually happened in the programmes evaluated. For example, in Anderson (1977) there is little information on what exactly mentors did with children during mentoring. Chance UK, as an example, follows good practice guidance in advising mentors to agree goal-orientated activities with children, but the lack of prescribed activity makes it harder to monitor activity and link activities to outcomes. There is a lack of detailed data on the content of services as usual and if they may have produced similar effects to mentoring interventions. Such a lack of specificity in mentoring interventions was common. Studies do report that there are better outcomes from long duration and short-term mentoring programmes may produce decreased effects. However, there is not much information on the termination process.

Moreover, for a significant proportion of study descriptions, information was lacking on key intervention content, organization, and/or implementation. This state of the reporting intervention details also significantly impacted the sensitivity of our moderation analyses, and our ability to perform complete comparisons with the wider body of mentoring literature.

Due to the heterogeneity between studies, further research is needed to determine whether the findings of this review are generalizable across various types of mentoring programs. For example, compared to community-based programs, school-based mentoring programs tend to provide more opportunities for mentoring activities, increasing the 'dose' of mentoring. Caution should also be taken when applying findings from inner-city to suburban or rural populations.

Mentee self-report was a common method of assessment, leaving multiple study findings vulnerable to systematic error and recall bias (e.g., Carswell et al., 2009). Such an approach also increases the risk of social desirability bias, particularly in studies which investigate substance misuse or offending outcomes, where follow-up results may not be solely attributable to intervention effects. Assessments in more studies of mentor/mentee characteristics and mentoring outcomes that go beyond self-report questionnaires and incorporate interview or behavioural measures would add to our understanding of and confidence in conclusions about the effectiveness of mentoring in reducing offending and violent behaviours.

Several studies did not involve random assignment of mentors and youths. A greater number of rigorously controlled studies with random assignment are needed to determine the effectiveness of mentoring interventions more precisely on offending outcomes.

Implications for future studies

Although small to medium significant effect sizes were identified for multiple outcomes, the evidence base could be stronger. There is a need for further inquiry into the specific components of adult mentoring interventions, exploring what the key processes are which affect change. There is a particular need to further investigate the impact duration of interventions has on mentoring intervention outcomes, as our analysis provides mixed evidence. At present, it seems that shorter durations of interventions report greater respective increases or decreases in outcomes, which should inform future intervention design. If further studies confirm the efficacy of shorter duration interventions, this would provide another cost-effectiveness argument for the use of mentoring as

a mechanism for change in youth violence. There is also a need for process evaluations which focus on capturing mentee's perspectives and their voices, as this is a substantial gap in the current evidence base.

Reporting within studies was also often poor. A specific example of lack of reporting is in relation to attrition, which was often poorly reported and rarely analysed. Where it was investigated, attrition analyses indicated that respondents with missing data differed from the analysis samples; non-completers were older, reported lower natural mentoring relationship scores and less school attachment at baseline. In future mentoring interventions, it will be important to fully investigate the impact of attrition on effectiveness, especially in relation to the impact this has on measuring relationship quality.

Furthermore, there is also a need to conduct robust comparison studies which investigate the myriad moderating variables which were found to significantly impact the outcomes of mentoring interventions. Understanding the impact of different participant, intervention and setting characteristics will allow future interventions to be better tailored to their audience, ultimately improving their efficacy.

While meta-regression is a valid technique for exploring the possible influence of study-level variables, cautions are usually needed when interpreting findings from meta-regression due to the inherently correlational nature of the findings (i.e., a given moderator may vary with effect size due to confounding with other study characteristics not because of a causal influence of the moderator) and its nature (of relying on study-level data rather than individual level data) and the possibility of 'ecological fallacy'. Furthermore, evidence exploring the influence of characteristics of youth participants, mentors or intervention features within study through subgroup analyses or within-study comparisons of interventions with different components/features was not explored here, and this could be conducted in the future to further inform our understanding of mentoring interventions. These types of within-study comparisons potentially provide stronger evidence

about moderator intervention effects than meta-regression, as confounding by study-level variables is avoided.

The qualitative evidence is mainly obtained from mixed methods evaluations and studies that involve a wide range of stakeholders. In-depth qualitative studies are required to capture mentee experiences and perceptions. To uncover the nuances of specific processes and causalities in mentoring interventions, qualitative evidence is required.

There is a scarcity of evidence about the termination process, and follow up support, in mentoring interventions, which can be very well captured through qualitative investigations, but would also be amenable to quantitative analysis. Another programme design issue worthy of further research are incentive systems to attract mentors who better match target mentees.

9.3 Implications for policy and practice

The findings of this review support mentoring as an effective intervention process to tackle youth offending, although further high-quality research is needed to further solidify our findings. The studies identified within this review also suggest favourable cost-effectiveness of mentoring as an intervention strategy for reducing youth violence and offending, which should be taken into consideration when policy makers are looking to implement future violence reduction strategies. Interestingly, meta-regressions show that interventions which focus on mentoring as the primary and only component have greater effects on outcomes, which may provide further cost savings.

The qualitative evidence presented in this review provides extensive insight into the barriers and facilitators to participation and outcomes in mentoring interventions for children. This information might be helpful for organisations and professionals involved in mentoring intervention implementation. The section on causal processes explains the mechanisms of mentoring relationships, describing "how they might work." This can be used to build evidence-based guidance for future mentor training and the development of interventions for adult mentoring programmes. The

training practises could benefit from being more systematised, including valuing the practices/features that this review demonstrates have an impact.

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Roles and responsibilities

Monisha Lakshminarayanan: Project lead- responsible for project management, report writing, search, and screening and coding. Monisha led the qualitative analysis under the guidance of HW.

Guy Skinner: Screening, coding and report writing. Guy led the meta-analysis and quantitative analysis for the review under the guidance of HW.

Jhing Li: Effect size extraction for effectiveness studies.

Zijun Li: Effect size extraction for effectiveness studies.

Patrick H Tolan: This review is update of Tolan (2013).

David Du Bois: David provided technical support with structural equation modelling for the Campbell version of this review.

Howard White: Howard provided technical and strategic support for conducting the review, and lead on the mixed methods component. He provided overall intellectual direction for the review.

Potential conflicts of interest

Howard is Director GDN Evaluation and Evidence Synthesis Programme. As Director Of GDN, he has no role in the editorial process.

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Appendix A - Search strategy

1. **APA PsycInfo (Ovid) <1806 to January Week 4 2021>Searched 1st February 2021**

1 mentor/ or "assistance (social behavior)"/ (11060)
2 mentor*.ti,ab. (17409)
3 or/1-2 (22091)
4 (adolescen* or teen* or youth
or youths or juvenile* or "young people" or "young person*" or child*).ti,ab. (914878)
5 Early Adolescence/ or exp Predelinquent Youth/ (2438)
6 or/4-5 (914935)
7 behavior change/ or exp behavior disorders/ or exp aggressive behavior/ or exp antisocial behavior/ or exp behavior problems/ or exp criminal behavior/ or exp juvenile delinquency/ or juvenile justice/ or "Adolescent Psychology"/ or exp Adolescent Attitudes/ or exp Adolescent Psychopathology/ or exp Adolescent Psychiatry/ or Adolescent Development/ or treatment outcomes/ or Mental Health Program Evaluation/ or At Risk Populations/ (443278)
8 (delinquen* or anti-social or antisocial or "young offender*" or "young addict*" or at-risk or ((disruptive or externali* or criminal or aggressive or violen*) adj2 behavio*)).ti,ab. (127417)
9 or/7-8 (503111)
10 3 and 6 and 9 (**1229**)

2. **APA PsycExtra (Ovid) <1908 to January 11, 2020>Searched 4th February 2021**

1 mentor/ or "assistance (social behavior)"/ (1503)
2 mentor*.ti,ab. (2087)
3 or/1-2 (2504)
4 (adolescen* or teen* or youth or youths or juvenile* or "young people" or "young person*" or child*).ti,ab. (55913)
5 Early Adolescence/ or exp Predelinquent Youth/ (101)
6 or/4-5 (55914)
7 behavior change/ or exp behavior disorders/ or exp aggressive behavior/ or exp antisocial behavior/ or exp behavior problems/ or exp criminal behavior/ or exp juvenile delinquency/ or juvenile justice/ or "Adolescent Psychology"/ or exp Adolescent Attitudes/ or exp Adolescent Psychopathology/ or exp Adolescent Psychiatry/ or Adolescent Development/ or treatment outcomes/ or Mental Health Program Evaluation/ or At Risk Populations/ (36387)
8 (delinquen* or anti-social or antisocial or "young offender*" or "young addict*" or at-risk or ((substance or drug) adj2 (misuse or abuse)) or ((disruptive or externali* or criminal or aggressive or violen*) adj2 behavio*)).ti,ab. (14855)
9 or/7-8 (45551)
10 3 and 6 and 9 (**188**)

3. **Social Policy and Practice (Ovid) <202010> Searched 4th February 2021**

1 mentor*.ti,ab,sh. (1580)
2 (adolescen* or teen* or youth or youths or juvenile* or "young people" or "young person*" or child*).ti,ab,sh. (109857)
3 (delinquen* or anti-social or antisocial or "young offender*" or "young addict*" or at-risk or ((substance or drug) adj2 (misuse or abuse)) or ((disruptive or externali* or criminal or aggressive or violen*) adj2 behavio*)).ti,ab,sh. (19153)
4 1 and 2 and 3 (**188**)

4. **Econlit (Ovid) <1886 to January 21,2021>Searched 4th February 2021**

1 mentor*.ti,ab,hw. (600)
2 J13.cc. (24140)
[Annotation: Youth Subject Heading]
3 (adolescen* or teen* or youth or youths or juvenile* or "young people" or "young person*" or child*).ti,ab,hw. (44500)
4 2 or 3 (44500)
5 K42.cc. (13721)
[Annotation: Illegal Behavior and the Enforcement of Law - Subject heading]
6 (delinquen* or anti-social or antisocial or "young offender*" or "young addict*" or at-risk or ((substance or drug) adj2 (misuse or abuse)) or ((disruptive or externali* or criminal or aggressive or violen*) adj2 behavio*)).ti,ab,hw. (6875)
7 5 or 6 (20077)
8 1 and 4 and 7 (**8**)

5. **Ovid MEDLINE(R) and Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Daily and Versions(R) <1946 to February 01, 2021> Searched 4th February 2021**

1 mentors/ or mentoring/ (12664)
2 mentor*.ti,ab,kw. (17237)
3 or/1-2 (23290)
4 (adolescen* or teen* or youth or youths or juvenile* or "young people" or "young person*" or child*).ti,ab,kw. (1747384)
5 adolescent/ (2065093)
6 or/4-5 (3197595)
7 behavior/ or adolescent behavior/ or underage drinking/ or aggression/ or agonistic behavior/ or bullying/ or problem behavior/ or child behavior/ or criminal behavior/ or dangerous behavior/ or drinking behavior/ or drug-seeking behavior/ or behavior, addictive/ or "marijuana use"/ or marijuana smoking/ or social behavior/ or harassment, non-sexual/ or cyberbullying/ or social conformity/ or juvenile delinquency/ or substance-related disorders/ or alcoholic intoxication/ or binge drinking/ or cocaine-related disorders/ or inhalant abuse/ or marijuana abuse/ or substance abuse, intravenous/ or substance abuse, oral/ or risk/ or risk-taking/ or risk reduction behavior/ or

"risk evaluation and mitigation"/ or "attention deficit and disruptive behavior disorders"/ or conduct disorder/ (473596)
8 (delinquen* or anti-social or antisocial or "young offender*" or "young addict*" or at-risk or (risk* adj2 (reduc* or mitigat*)) or ((substance or drug) adj2 (misuse or abuse)) or ((disruptive or externali* or criminal or aggressive or violen* or chang* or disorder*) adj2 behavio*)).ti,ab,kw. (466421)
9 or/7-8 (863401)
10 3 and 6 and 9 (**494**)

6. **ERIC (Ebsco) – Searched 4th February 2021**

S6 S1 AND S2 AND S5 [Database – ERIC]
961
S5 S3 OR S4
152,061
S4 DE "Behavior Change" OR DE "Behavior Disorders" OR DE "Addictive Behavior" OR DE "Antisocial Behavior" OR DE "Aggression" OR DE "Bullying" OR DE "Cheating" OR DE "Crime" OR DE "Elder Abuse" OR DE "Hazing" OR DE "Sexual Harassment" OR DE "Vandalism" OR DE "Violence" OR DE "Behavior" OR DE "Behavior Patterns" OR DE "Recidivism" OR DE "Behavior Problems" OR DE "Emotional Disturbances" OR DE "Personality Problems" OR DE "Psychopathology" OR DE "Self Destructive Behavior" OR DE "Addictive Behavior"
84,986
S3 TI ((delinquen* or anti-social or antisocial or "young offender*" or "young addict*" or at-risk or (risk* N2 (reduc* or mitigat*)) or ((substance or drug) N2 (misuse or abuse)) or ((disruptive or externali* or criminal or aggressive or violen* or chang* or disorder*) N2 behavio*))) OR AB ((delinquen* or anti-social or antisocial or "young offender*" or "young addict*" or at-risk or (risk* N2 (reduc* or mitigat*)) or ((substance or drug) N2 (misuse or abuse)) or ((disruptive or externali* or criminal or aggressive or violen* or chang* or disorder*) N2 behavio*))) OR SU ((delinquen* or anti-social or antisocial or "young offender*" or "young addict*" or at-risk or (risk* N2 (reduc* or mitigat*)) or ((substance or drug) N2 (misuse or abuse)) or ((disruptive or externali* or criminal or aggressive or violen* or chang* or disorder*) N2 behavio*)))
105,617
S2 TI ((adolescen* or teen* or youth or youths or juvenile* or "young people" or "young person*" or child*)) OR AB ((adolescen* or teen* or youth or youths or juvenile* or "young people" or "young person*" or child*)) OR SU ((adolescen* or teen* or youth or youths or juvenile* or "young people" or "young person*" or child*)) OR DE "Adolescents"
433,199
S1 TI mentor* OR AB mentor* OR SU mentor* or DE "Mentors"
20,730

7. **Repec via Ebsco Discovery – Searched 4th Feb 2021**

S4 S1 AND S2 AND S3
5,372 **[Limited to Repec – 59]**

S3 TI ((delinquen* or anti-social or antisocial or "young offender*" or "young addict*" or at-risk or (risk* N2 (reduc* or mitigat*)) or ((substance or drug) N2 (misuse or abuse)) or ((disruptive or externali* or criminal or aggressive or violen* or chang* or disorder*) N2 behavio*))) OR AB ((delinquen* or anti-social or antisocial or "young offender*" or "young addict*" or at-risk or (risk* N2 (reduc* or mitigat*)) or ((substance or drug) N2 (misuse or abuse)) or ((disruptive or externali* or criminal or aggressive or violen* or chang* or disorder*) N2 behavio*))) OR SU ((delinquen* or anti-social or antisocial or "young offender*" or "young addict*" or at-risk or (risk* N2 (reduc* or mitigat*)) or ((substance or drug) N2 (misuse or abuse)) or ((disruptive or externali* or criminal or aggressive or violen* or chang* or disorder*) N2 behavio*))
12,591,244

S2 TI ((adolescen* or teen* or youth or youths or juvenile* or "young people" or "young person*" or child*)) OR AB ((adolescen* or teen* or youth or youths or juvenile* or "young people" or "young person*" or child*)) OR SU ((adolescen* or teen* or youth or youths or juvenile* or "young people" or "young person*" or child*))
13,506,659

S1 TI mentor* OR AB mentor* OR SU mentor*
284,227

8. Web of Science (Social Sciences Citation Index/ Arts & Humanities Index) – Searched 4th February 2021

4 **386**

#3 AND #2 AND #1
Indexes=SSCI, A&HCI Timespan=1970-2021

3 241,779

TS=(delinquen* or anti-social or antisocial or "young offender*" or "young addict*" or at-risk or (risk* NEAR/2 (reduc* or mitigat*)) or ((substance or drug) NEAR/2 (misuse or abuse)) or ((disruptive or externali* or criminal or aggressive or violen* or chang* or disorder*) NEAR/2 behavio*))

2 882,050

TS=(adolescen* or teen* or youth or youths or juvenile* or "young people" or "young person*" or child*)

1 13,832

TS=(mentor*)

Table 1. List of journals

S. No	Title
1	Journal of Crime & Justice
2	The Journal of Forensic Psychiatry and Psychology
3	Victims & Offenders
4	Psychology, Crime & Law
5	Journal of Offender Rehabilitation
6	Deviant Behaviour
7	Journal of School Violence
8	Journal of Aggression, Maltreatment & Trauma
9	Journal of child & adolescent substance use
10	Journal of Evidence-Based Social Work
11	Child & Youth Services
12	Journal of Abnormal Psychology
13	Psychology of Violence
14	Crime & Delinquency
15	Journal of Contemporary Crime & Justice
16	Youth Justice
17	Journal of research in crime and delinquency
18	Youth Violence and Juvenile Justice
19	Child Maltreatment
20	Child and Adolescent Psychiatry and Mental Health
21	Journal of the American Academy of Child & Adolescent Psychiatry
22	Journal of Youth and Adolescence
23	Children and Youth Services Review
24	Journal of applied social psychology

25	American Journal of community psychology
26	International Journal of Mentoring and Coaching in Education
27	Mentoring & Tutoring: Partnership in Learning
28	Journal of Gang Research
29	Journal of Social Work Practise
30	Victims & Offenders

Table 2. List of websites

S. No	Webpage
1	National Mentoring Resource Center https://nationalmentoringresourcecenter.org/
2	The Office of Juvenile Justice and Delinquency Prevention (OJJDP) https://ojjdp.ojp.gov/evidence-based-programs
3	Mentoring resource library https://www.mentoring.org/resource-library/
4	Youth global justice https://www.globalyouthjustice.org/resources/
5	The mentor network https://www.thementornetwork.com/program/juvenile-offender-programs/
6	National council for crime prevention (Sweden) https://www.bra.se/bra-in-english/home.html
7	UK Justice https://www.justice.gov.uk/
8	College of Policing catalogue http://www.college.police.uk/

9	European Monitoring Centre for Drugs and Drug Addiction (EMCDDA) http://www.emcdda.europa.eu/index.cfm
10	Incredible Years Library http://www.incredibleyears.com/research-library/
11	Criminal Justice Research Centre, University of Nottingham https://www.nottingham.ac.uk/research/groups/criminal-justice-research-centre/index.aspx
12	Institute of Criminology, University of Cambridge https://www.crim.cam.ac.uk/
13	Scottish Centre for Crime and Justice Research https://www.sccjr.ac.uk/
14	Welsh Centre for Crime and Social Justice https://wccsj.ac.uk/
15	*Prevention collaborative* https://prevention-collaborative.org/mentors-database/
16	*United Nations, library for juvenile justice* https://www.un.org/development/desa/youth/library-juvenile-justice.html

Appendix B - Screening tool for mentoring

Screening tool for the review

1.	Is the paper in English?	No Yes	Exclude Continue to q2
2.	Is the paper about an intervention intended to modify the behaviour or attitudes, either directly or indirectly, of children up to the age of 17 who are at risk?	No Yes	Exclude Continue to q3a
3.	Is the intervention on adult mentoring interventions?	No Yes	Exclude Continue to q3
3a.	Is the paper a quantitative evaluation reporting measures of eligible outcomes compared to the outcomes (1) in a comparison group (either with or without baseline outcome measures).	No Yes	Continue to q3b Continue to q4
3b.	Is the paper a qualitative process evaluation describing intervention design or implementation, or an analysis of intervention costs?	No Yes	Exclude Include (END)
4.	Do any outcome measuring externalizing, anti-social, conduct disorders or offending behaviour?	No Yes	Exclude Include

Appendix C - Coding tool

Category	Subcategory
Publication Status	· Ongoing · Completed
Region	· East Asia & Pacific · Europe & Central Asia · Latin America & Caribbean · Middle East & North Africa · South Asia · Sub Saharan Africa · America · Not mentioned
Country	
Countries by income	· Lower- Middle Income Countries · Low- Income Countries · Upper- Middle Income Countries
Settings	· Rural · Urban · Rural and Urban (Both) · Not Clear
Name of the project/ interven-tion	
Funding agency	
Duration of Intervention	· Less than 6 months · 6 months-1 year · 1-2 years · 2-3 years · More than 3 years · Unclear or not mentioned
Frequency of meetings	· More than once a week

	· Once a week · 2-3 times a month · Once a month · Less than one a month · Not clear or not mentioned
Length of meetings	· Less than one hour · Approximately one hour · 1-2 hours · Over 2 hours · Not clear or not mentioned
Structured element (the extent of direction on conduct of mentoring)*	· Highly structured · Moderately structured · Lightly structured · Unstructured · Not reported
Unit of delivery	· Individual-One to one · Group · Combined group and individual
Ages	· under 9 · 10-14 · 15-17
Gender	· Male · Female · Non-Binary · **All sexes** · Not reported
Ethnic minority	· Mainly/exclusively (80%) · Partly · None · Not clear

Risk of offending	· Low · Medium · High · Not reported
Study Design**	· Experimental design · Non- experimental design · Process evaluation or qualitative intervention study · Cost analysis
Sample Size	· Less than 100 · 100-300 size · More than 300 · Not mentioned
Recruitment/Referral mecha-nisms	· Service referral · Geographical targeting · School-based · Peer referral · Outreach · Other (state)
Key Professionals involved	· Volunteers · Paid mentors · Counsellors/ therapists · Teachers · Social workers/case managers · Probation officers · law enforcement authorities · Prison officers

Activities carried out	· Recruitment of volunteers/ staff · Training of prospective mentors · Systematic matching/pairing of mentors & mentees · Building a supportive & nondirective relationship · Engaging in open & informal conversations · Goal setting · Social & emotional skills building · Spending quality time together & engaging in fun activities · Facilitation of identity development · Family level interventions · School level interventions · Community level interventions · Legal interventions (working with the court, probation officer, prison authorities etc) · Advocacy · Networking (connection to services e.g. employment or legal services)
Setting for mentoring	· Community · Home · School · Youth centre · Project office · Other
Costs involved	· Training · Infrastructure · Salaries · Monitoring & supervision · Other · Not mentioned

Components	· Mentoring only · Mentoring primary component · Mentoring secondary component · Not clear
Intervention sub-category	**Intervention sub-category (for multi-component approaches)** · Educational and vocational interventions · Social and emotional interventions · Mental health & therapeutic interventions · Alcohol and drug related interventions · Sports and recreation · Practical life skills · Academic support/Remedial coaching · Others (specify)
Offending related outcomes	· Violence · Crime/ anti-social activities · Gang membership · Recidivism
Child-centred	· Attitudes and belief (self-concept, esteem, confidence etc) · Mental health and wellbeing, internalizing behavior and self-regulation, externalizing and risk-taking behavior, and Improved Psycho- social functioning & wellbeing · Substance use · Social outcomes & emotional outcomes (improvement in interpersonal relationships, communication, improved adjustment etc) · Cognitive development- Social Cognition and pro social behaviour · Attainment and knowledge. · Service use, attendance and engagement

	· Gang involvement
Family & Peers	· Quality of family relationships and family functioning · Improved interpersonal relationship with peers
Barriers and Facilitators to participation	
Barriers and Facilitators to Outcomes	
Attrition	● Drop out _ ● Stay on _
	● Attrition rate=
Causal Processes	
Design issues	
Implementation issues	
What CYP say	
Moderators and Confounders	● Race ● Gender ● Socio-economic background
	Any other (text box)
Long run impact/sustainability	
Costs involved (enter in info box)	● Total cost ● Cost per participant ● Cost effectiveness

Notes:
* Highly structured: Manualized programme with activities and approach prescribed for each session; Moderately structured: Recommended activities and approaches for the mentoring

programme, but not session-by-session instructions. Lightly structured: Guidelines provided for mentoring but no prescribed activities. Unstructured: training is provided but no specific requirements for conduct of mentoring.

** Mixed method designs are coded under each design used in the study

Appendix D – Critical appraisal tool

Critical appraisal tool for primary studies: effectiveness			
Item	**Description**	**Key**	**Notes**
Intervention	Is the intervention clearly named and described, including all relevant components	High: full and clear description, so that the main components and how they are delivered are clear Medium: Partial description Low: Little or no description	
Evaluation questions	Are the evaluation questions clearly stated?	High: full and clear description, so that the main components and how they are delivered are clear Medium: Partial description Low: Little or no description	
Study design	Use the study design coding	High: Experimental Medium: Non-experimental Low: Before versus after	

Outcomes	Are the outcomes clearly defined? Where appropriate do they use an existing, validated measurement tool?	High: full and clear definition using validated instruments where available (a researcher wishing to use these outcomes would have sufficient information to do so) Medium: Partial definition. May use validated instruments but without sufficient references to source. Low: Little or no definition	
Sample size (power calculation)	Do the authors report a power calculation as the basis for sample size?	High: Power calculation report and sample size meets necessary sample size Medium: Power calculation mentioned and sample size meets necessary sample size Low: No mention of power calculation.	
Attrition	Reported for endline and longest follow up.	High: Attrition within IES conservative standard	

	Calculate overall attrition and differential attrition It is often necessary to calculate from table of results. If sample size varies by outcome calculate for highest attrition.	Medium: Attrition within IES liberal standard Low: Attrition outside IES liberal standard	
Overall (including questions for all studies)	The overall score uses the weakest link in the chain principle i.e., is the lowest score on any item	High: High on all items Medium: No lower than medium on any item Low: At least one low	

Critical Appraisal tool – Process Evaluation

Questions for process evaluations (apply to implementation sections) [used for any study coded as having implementation evidence]

		High	**Medium**	**Low**		**Low**
1	Is the qualitative methodology described?	Yes		No	>> 3	
2	Is the qualitatively methodology appropriate to address the evaluation questions?	Yes	Partially	No		Insufficient detail
3	Is the recruitment or sampling strategy described?	Yes		No	>> 5	

4	Is the recruitment or sampling strategy appropriate to address the evaluation questions?	Yes	Partially	No		Insufficient detail
5	Are the researcher's own position, assumptions and possible biases outlined?	Yes	Partially	No		
6	Have ethical considerations been sufficiently considered?	Yes	Partially	No		Insufficient detail
7	Is the data analysis approach adequately described?	Yes		No	>>9	
8	Is the data analysis sufficiently rigorous?	Yes	Partially	No		
9	Are the implications or recommendations clearly based in the evidence from the study?	Yes	Partially	No		
10	Overall (including questions for all studies- The overall score uses the weakest link in the chain principle i.e., is the lowest score on any item	High: High on all items Medium: No lower than medium on any item Low: At least one low				

Appendix E - Definitions of outcomes

Outcome category	**Sub-category**	**Description**
Offending Outcomes (Outcomes that refer to things that are against the law)	Violent offending (including weapon carrying)	Violent offenses: carrying or use of weapons, use or threat of physical assault, murder or manslaughter, mugging / hold up
	Drug use/misuse	The use or misuse of substances, including both illegal drugs and legal highs. Use can vary from CYP who use drugs recreationally to those who have a diagnosed addiction. E.g., heroin, marijuana, cocaine, ecstasy
	Other offending and reoffending	Committing any other offenses (any reporting system)
Behavioural Outcomes (Outcomes that refer to the way in which someone acts)	Aggression	Hostile or violent behaviour, e.g., hitting or punching someone
	Alcohol use/misuse	CYP who participate in the underage drinking of alcohol. This can be on a continuum from CYP who use alcohol recreationally to CYP who have a recognised problem with alcohol
	Anti-social and delinquent behaviour	Offensive behaviour in public places which is not against the law (e.g., shouting and swearing, verbal abuse, minor vandalism, playing loud music).

	Bullying and online perpetration	Behaviour that is repeated or sustained that is intended to hurt or intimidate someone else. E.g., assault, teasing/name calling, making threats
	Externalising behaviour	Behaviours directed outwards, towards others. They include aggressive behaviours (e.g., fighting, assault) and rule breaking behaviours (e.g. vandalism). They are also known as 'conduct' or 'behavioural' problems. In younger children this is often called disruptive behaviour or acting out.
	Gang involvement and anti-social peers	A group of youg people who identify themselves with a common name. They spend time together and may engage in criminal activity. Also includes non-gang peers who encourage anti-social behaviour.
	Victimisation	When an individual is harmed or injured because of a criminal act
	Social skills and pro-social behaviour	Interpersonal and communication skills, acting in a kind and caring way toward others, being able to manage disagreements and conflict without violence (conflict resolution)
	Group membership and participation in community-based activities (volunteering)	Taking part in both regular and one-off community activities, such as member of a sports or dance club or group, and helping at community events

	Time use	How CYP spend their time, especially leisure time.
Psychosocial and cognitive outcomes (Psychosocial and cognitive)	Self-esteem / self-worth	Confidence in one's own worth
	Mental health / resilience	Any measure of mental health and resilience to adverse circumstances and events
	Self-control and regulation (impulsivity)	The ability to control ones behaviour, including in order to attain long-term goals. The negative counterpart is impulsivity, i.e. acting on impulse without regard for the consequences.
Attitudes and beliefs (An attitude refers to how someone thinks or feels about something whereas a belief is an acceptance that something is true)	Pro-social values	Believing it is important to act with care and concern for the feelings and welfare of others
	Attitudes to aggression and use of violence	Attitudes to aggressive and violent behaviour in themselves and in others
	Attitudes to drug use	Attitudes toward the acceptability of drug use
	Attitudes to crime and responses to crime	Attitudes toward crime and appropriate treatment of those who offend
	Attitudes to police and justice system	Attitudes toward police in general, how the police conduct their work, and to the workings of the justice system
	Attitudes to authority	Attitudes to and acceptance of authority, can be in any setting such as school or a sports club, or in general attitudes.

Protective factors	Family functioning, parenting practices and family relationships	Measures of attachment to any family member and relationships within the family. Measures of household systems and parent attitudes and behaviour), climate, cohesion and ability to meet all basic needs for example: domestic abuse/witnessing abuse, familial conflict resolution style
	Non-family adult relationships	Quality of relationship with non-family adults, e.g., formal and informal mentors
	Access to services and service linkages	Any measure of the use of social and welfare services and referrals made to these services
	Social cohesion	Measure of belief/bonds and trust within a community. (Larsen, 2014) And/or any measures of perceived safety, crime levels etc
	Safe spaces	Measures of how secure a young person feels in a particular setting
	Engagement in education and academic achievement	Attendance at school and engagement in classroom and other activities. School grades.
	Practical life skills	Skills that are of use in obtaining and keeping employment. Ability to manage own personal affairs, e.g., finances and form filling
	Sports or physical activity (e.g., dance) skills ('sports capital')	Measures of ability must specifically mention sport, or general measures of physical ability (e.g., speed and agility)

Appendix F - Technical appendices

1. Estimating an odds ratio for the before-after intervention effect: A worked example

Bodin & Leifman (2011) reported the effectiveness of an adult-to-youth mentoring program in Sweden, on children's mental health and socio-emotional 0utcomes. These calculations were carried out in MS Excel.

Two effect sizes for the differences between the experimental and control group, one at baseline (i.e., pre-test) and another after the intervention had been implemented (i.e., post-test). At baseline, the effect size was a $LnOR_{before} = 0.0108$ ($var_{before} = 0.0314$) and after the intervention the effect size was $LnOR_{after} = -0.1916$ ($var_{after} = 0.0313$), where LnOR is the natural log of the odds ratio and *var* is the variance.

The intervention effect ($LnOR_{change}$) is calculated as the difference between the effect size after the intervention and the effect size before the intervention, as outlined below. The variance is estimated as the correlation between effect sizes (assumed as 0.75) multiplied by the sum of the pre-test and post-test variances.

$$LnOR_{change} = LnOR_{after} - LnOR_{before}$$

$$var_{change} = 0.75 * (var_{before} + var_{after})$$

Thus, for Bodin et al. (2011) this means the effect size for the intervention effect is estimated as follows:

$$LnOR_{change} = -0.1916 - 0.0108$$

$$LnOR_{change} = -0.1808$$

$$var_{change} = 0.75 * (0.0314 + 0.0313)$$

$$var_{change} = 0.0470$$

The natural log can be converted to an odds ratio, using the exponential (e^{LnOR}) as this is more readily and easily interpreted. This effect size is then imported into CMA and used to compute a weighted mean effect size across all included evaluations.

2. Correcting direction of effects

Cohen's *d* is estimated using the following formula, where M_{exp} and M_{con} represent the mean scores in the experimental and control groups respectively and SD_{pooled} is the pooled standard deviation.

$$d = \frac{M_{exp} - M_{con}}{SD_{pooled}}$$

Cohen's *d* effect sizeswere transformed to an odds ratio (on the natural logarithm scale) using the following formula: LOR = *d*/0.5513 (Lipsey & Wilson, 2001; p. 201). Therefore, if the mean of an outcome, for example violence, is lower in the experimental group than in the control group, the resulting Cohen's *d* will be a minus value. Thus, the LnOR will be a minus value and the corresponding OR will be less than 1. Yet, if violence is lower in the experimental group, this is a desirable effect of a mentoring intervention programme, because violence has been reduced in the experimental group relative to the control group. The opposite is true if the outcome, for example, academic achievement, is coded so that higher scores are better (i.e., more achievement). In such cases, an odds ratio greater than 1 will represent a desirable effect of the mentoring intervention.

Thus, for consistency across outcomes, the $LnOR_{change}$ for all evaluations reporting outcomes where higher scores are undesirable (e.g., violence, antisocial behaviour) are inverted (multiplied by -1) to reverse the sign. This results in odds ratios greater than 1 representing a desirable intervention effect across all outcomes. This adjustment only applies to interventions that reported outcomes as continuous variables (i.e., means and standard deviations).

For interventions that reported outcomes as dichotomous variables, we simply inverted the 2x2 table used to estimate the odds ratio. Therefore, given the following data, the odds ratio is estimated as (AD/BC).

	Not delinquent	Delinquent
Experimental	A	B
Control	C	D

3. Transforming mean effect sizes to percentage relative change

This technical appendix uses the example of substance misuse outcomes to describe how to estimate the relative reduction from the mean odds ratio.

To transform an odds ratio to a relative change, we first assume 200 youth, evenly divided between treatment and comparison groups. That means there are 100 youth in the control group and 100 youth in the treatment group. Assuming, in this example. that 25% of youth in the control group demonstrated substance misuse, the mean effect sizes can be easily transformed to a percentage reduction in the relevant outcome.

If the odds ratio for substance misuse is 1.392, then using the table below and the formula for an OR, we can estimate the value of X. The odds ratio is estimated as: A*D/B*C, where A is the number of youth in the treatment group who do not demonstrate substance misuse, B is the number of youth in the treatment group that do demonstrate substance misuse, C is the number of youth in the control group that do not demonstrate substance misuse, and D is the number of youth in the control group that do demonstrate substance misuse.

	No substance use	sub-mis-	Substance misuse	Total
Experimental	100-x		X	100
Control	75		25	100

Therefore, the value of X is 19.32 and is calculated as follows:

$$\frac{(100-x)(25)}{(75)(x)} = 1.392$$

We can then estimate the relative reduction in substance misuse is 22.72% and is calculated as follows:

$$\frac{25-19.32}{25} \times \frac{100}{1}$$

However, the prevalence of substance misuse is likely to vary between different studies and can be influenced greatly by the type of report (e.g., self-report or observational data) or the time frame (e.g., any substance misuse in the past couple of months versus any substance misuse demonstrated ever), etc. If we were to adjust our assumption that 25% of the control group demonstrate substance misuse, the resulting relative reduction in the treatment group is not greatly affected.

For example, if we assume that 10% of the control group demonstrated substance misuse, the 2x2 table would be as follows and the value of X would be 7.36 and the relative reduction is 26.1%.

	No sub-stance misuse	Substance misuse	Total
Experimental	100-x	x	100
Control	90	10	100

The same calculation is performed for all outcomes with baseline rates of 25%, except reoffending at 50% and violent offending at 17%.

Appendix G – Forest Plots

Figure 13.1 Forest plot for observed effects for all offending outcomes

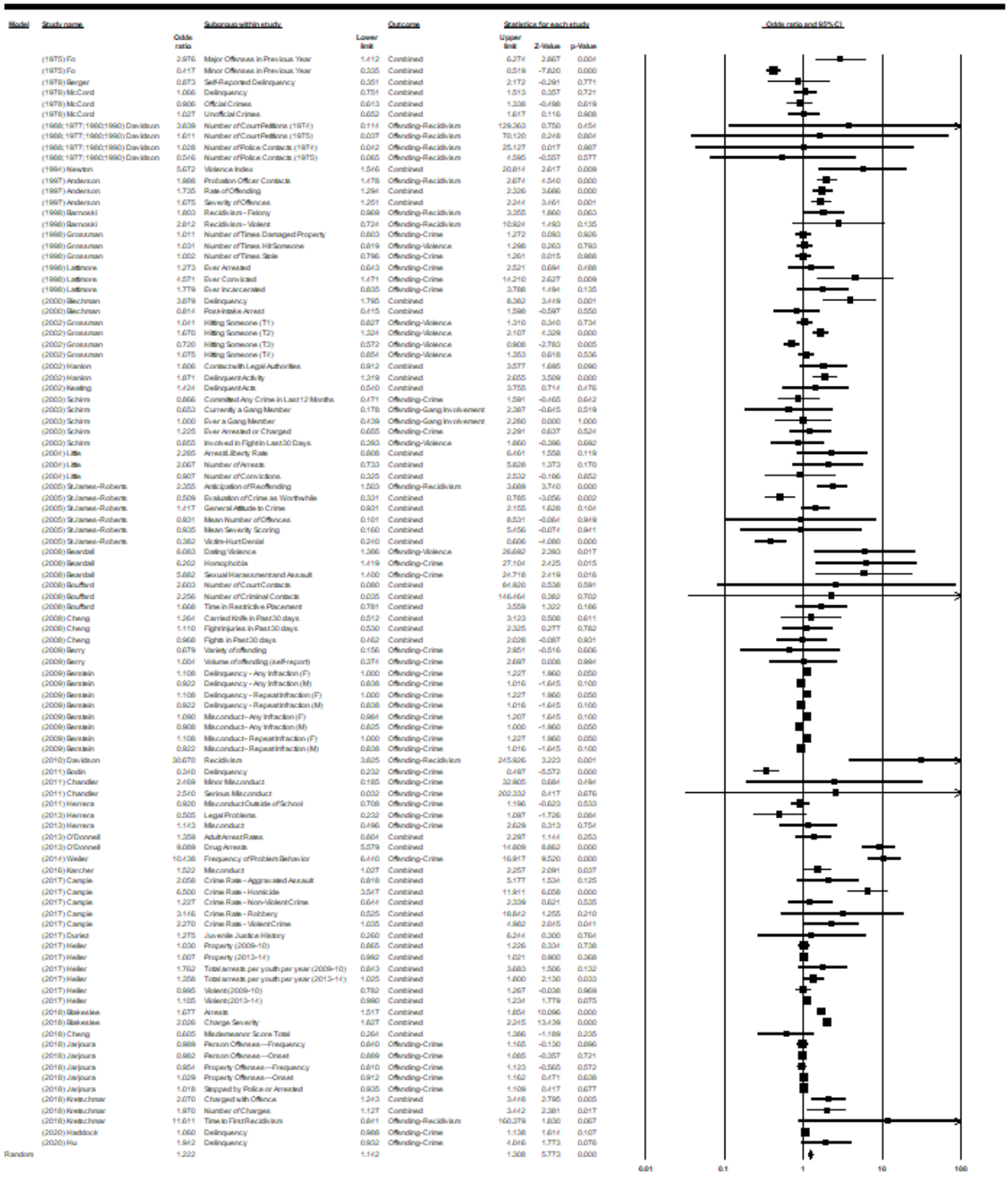
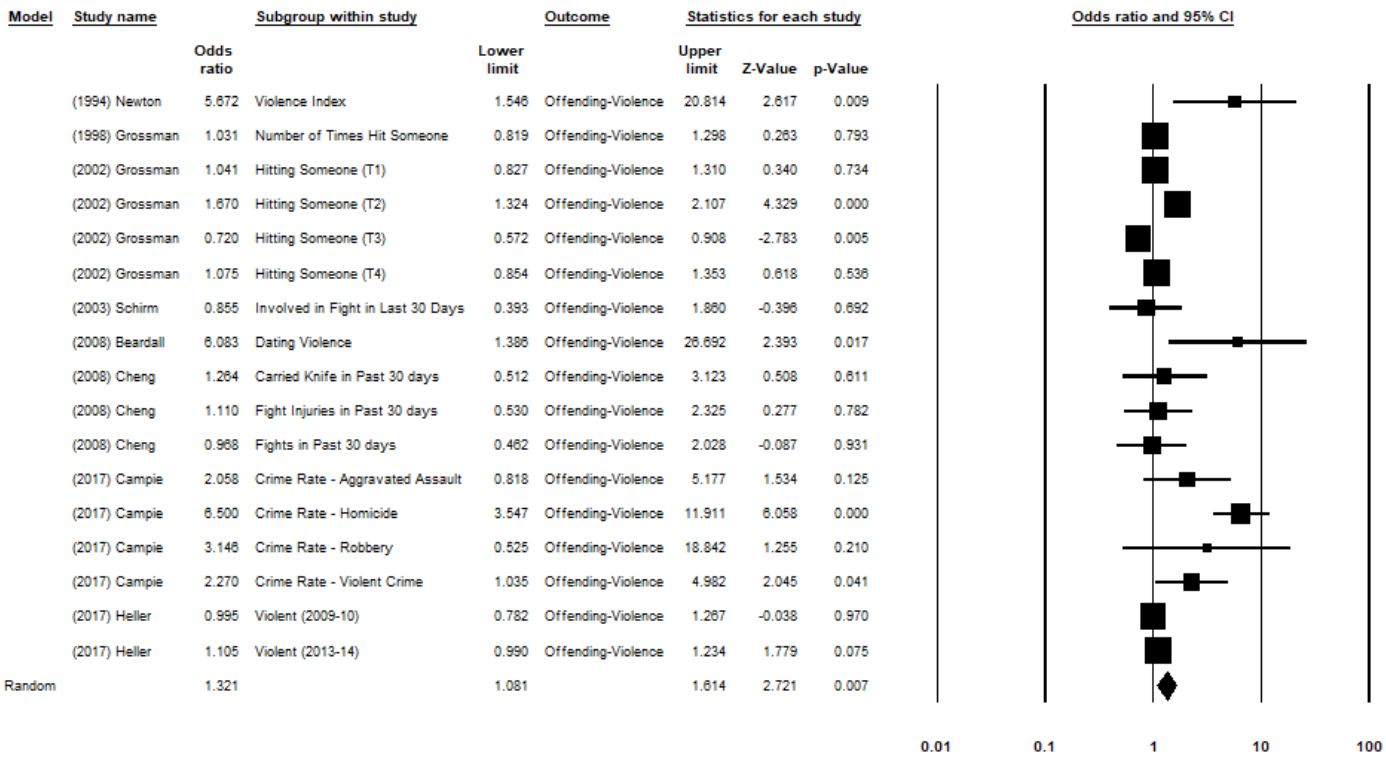


Figure 13.2 Forest plot for observed effects for violence outcomes



Model	Study name	Odds ratio	Subgroup within study	Lower limit	Outcome	Upper limit	Z-Value	p-Value
	(1994) Newton	5.672	Violence Index	1.546	Offending-Violence	20.814	2.617	0.009
	(1998) Grossman	1.031	Number of Times Hit Someone	0.819	Offending-Violence	1.298	0.263	0.793
	(2002) Grossman	1.041	Hitting Someone (T1)	0.827	Offending-Violence	1.310	0.340	0.734
	(2002) Grossman	1.670	Hitting Someone (T2)	1.324	Offending-Violence	2.107	4.329	0.000
	(2002) Grossman	0.720	Hitting Someone (T3)	0.572	Offending-Violence	0.908	-2.783	0.005
	(2002) Grossman	1.075	Hitting Someone (T4)	0.854	Offending-Violence	1.353	0.618	0.536
	(2003) Schirm	0.855	Involved in Fight in Last 30 Days	0.393	Offending-Violence	1.860	-0.396	0.692
	(2008) Beardall	6.083	Dating Violence	1.386	Offending-Violence	26.692	2.393	0.017
	(2008) Cheng	1.264	Carried Knife in Past 30 days	0.512	Offending-Violence	3.123	0.508	0.611
	(2008) Cheng	1.110	Fight Injuries in Past 30 days	0.530	Offending-Violence	2.325	0.277	0.782
	(2008) Cheng	0.968	Fights in Past 30 days	0.462	Offending-Violence	2.028	-0.087	0.931
	(2017) Campie	2.058	Crime Rate - Aggravated Assault	0.818	Offending-Violence	5.177	1.534	0.125
	(2017) Campie	6.500	Crime Rate - Homicide	3.547	Offending-Violence	11.911	6.058	0.000
	(2017) Campie	3.146	Crime Rate - Robbery	0.525	Offending-Violence	18.842	1.255	0.210
	(2017) Campie	2.270	Crime Rate - Violent Crime	1.035	Offending-Violence	4.982	2.045	0.041
	(2017) Heller	0.995	Violent (2009-10)	0.782	Offending-Violence	1.267	-0.038	0.970
	(2017) Heller	1.105	Violent (2013-14)	0.990	Offending-Violence	1.234	1.779	0.075
Random		1.321		1.081		1.614	2.721	0.007

Figure 13.3 Forest plot for observed effects for crime outcomes

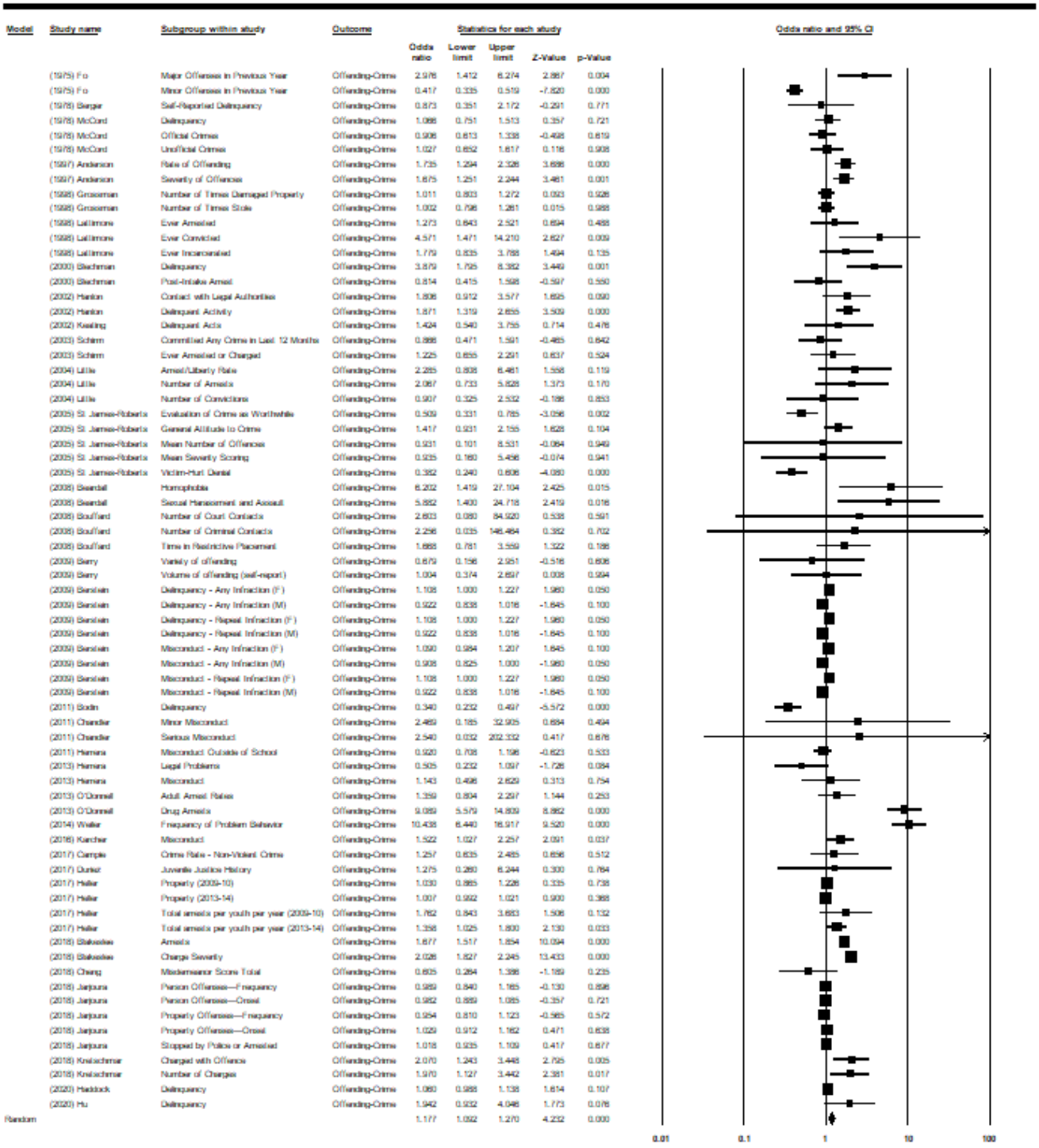


Figure 13.4 Forest plot for observed effects for gang invovement

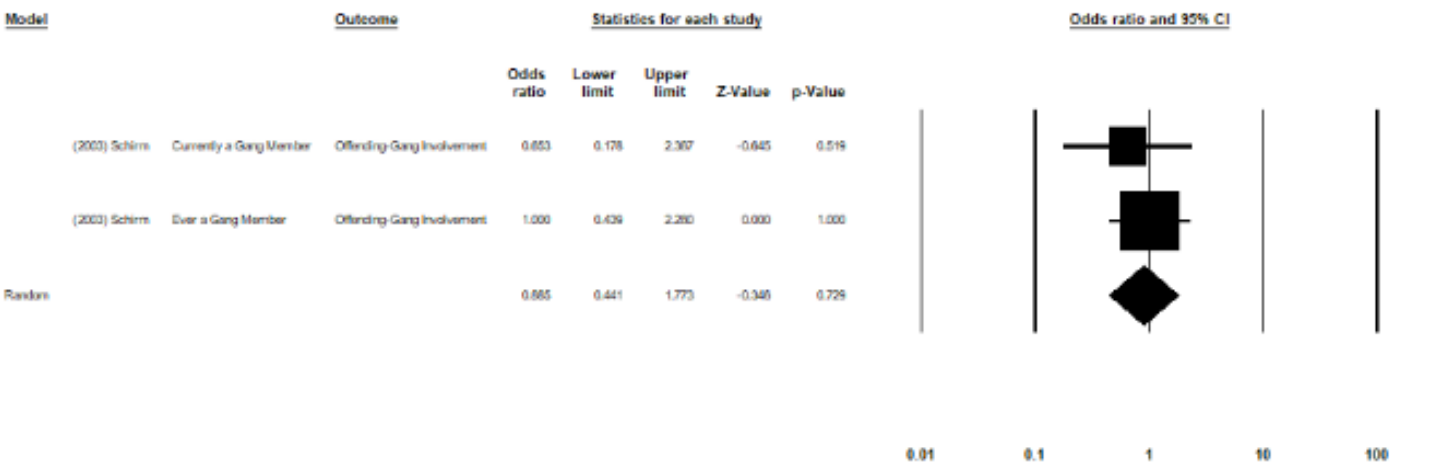


Figure 13.5 Forest plot for observed effects for recidivism outcomes

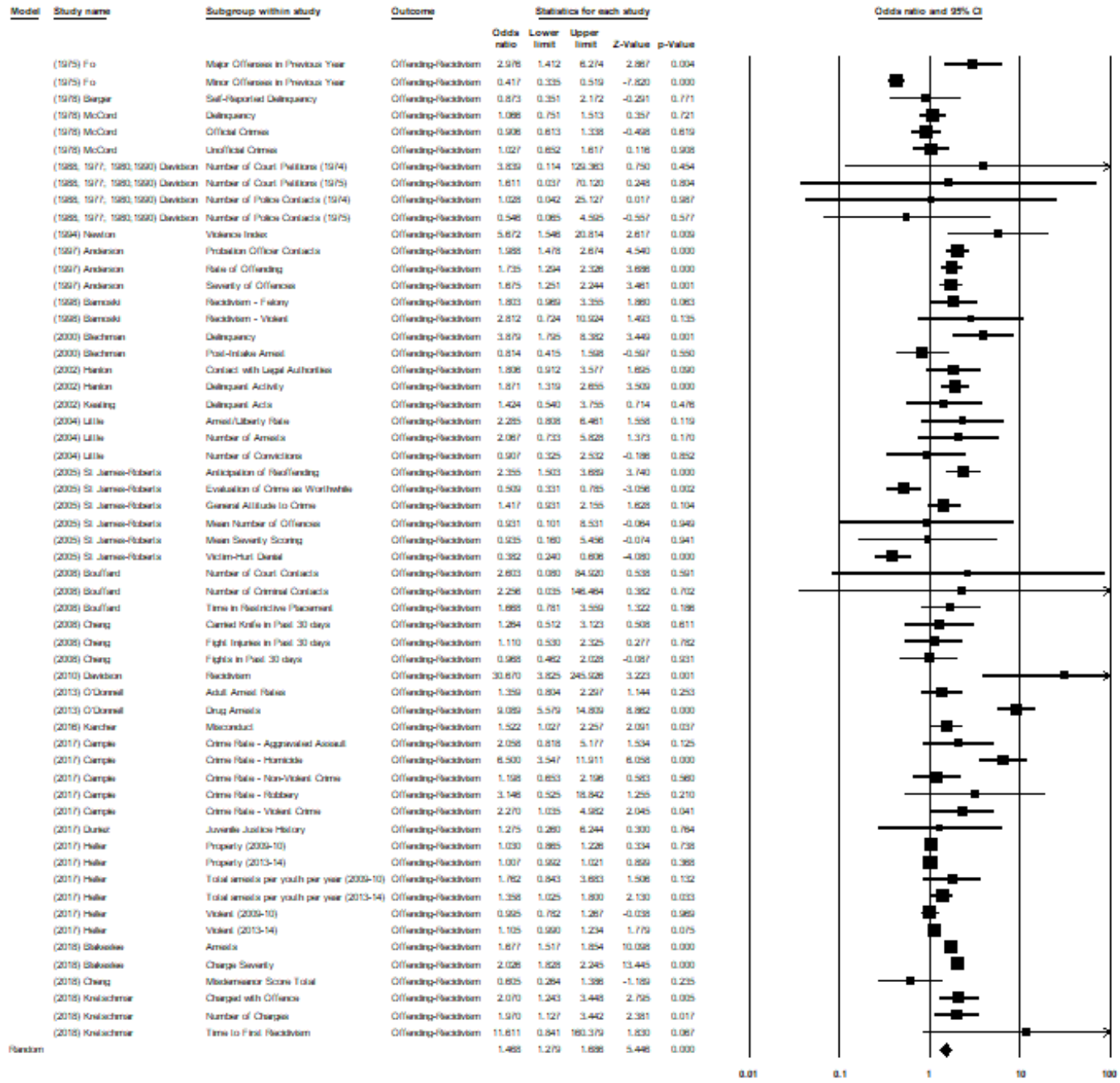


Figure 13.6 Forest plot for observed effects for externalising outcomes

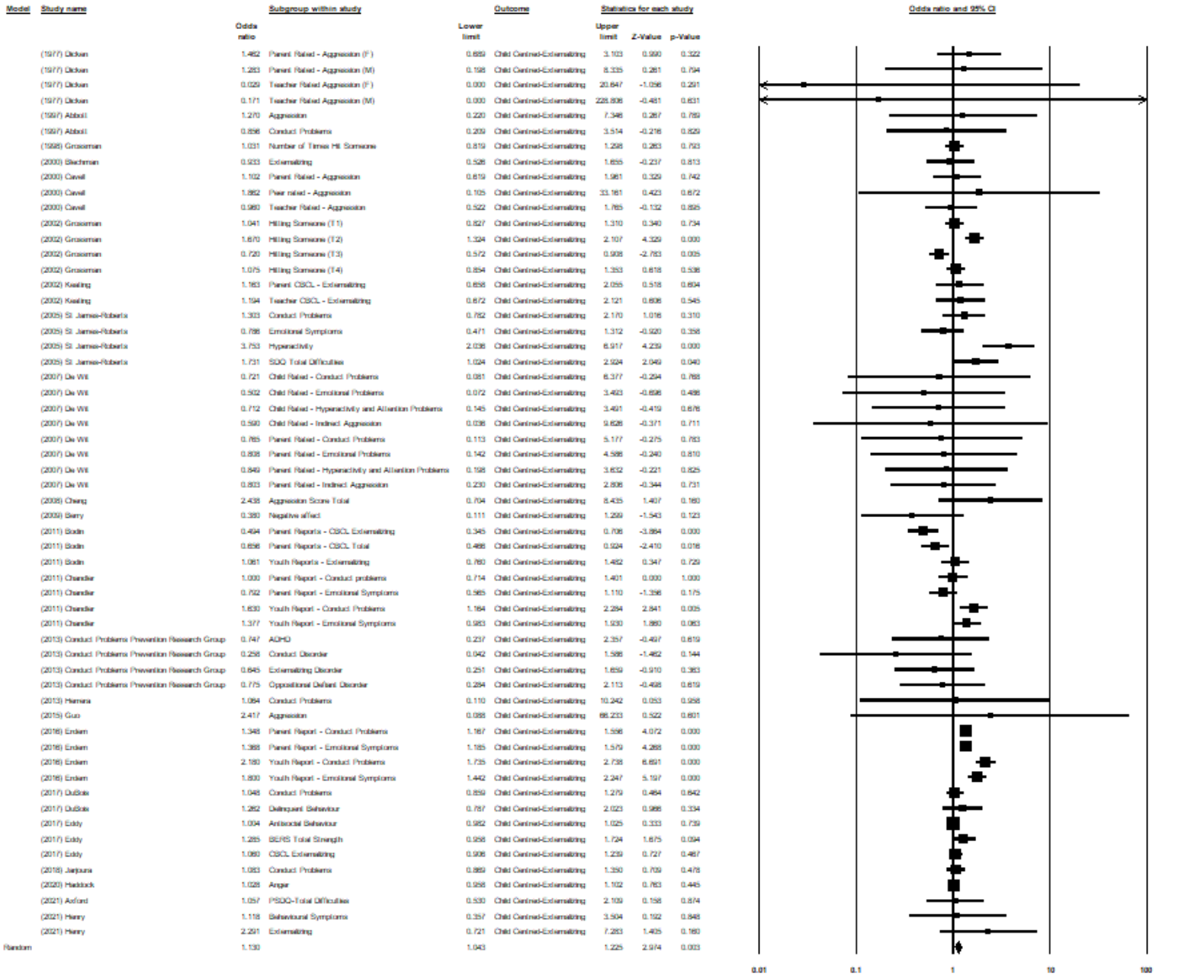


Figure 13.7 Forest plot for observed effects for internalizing outcomes

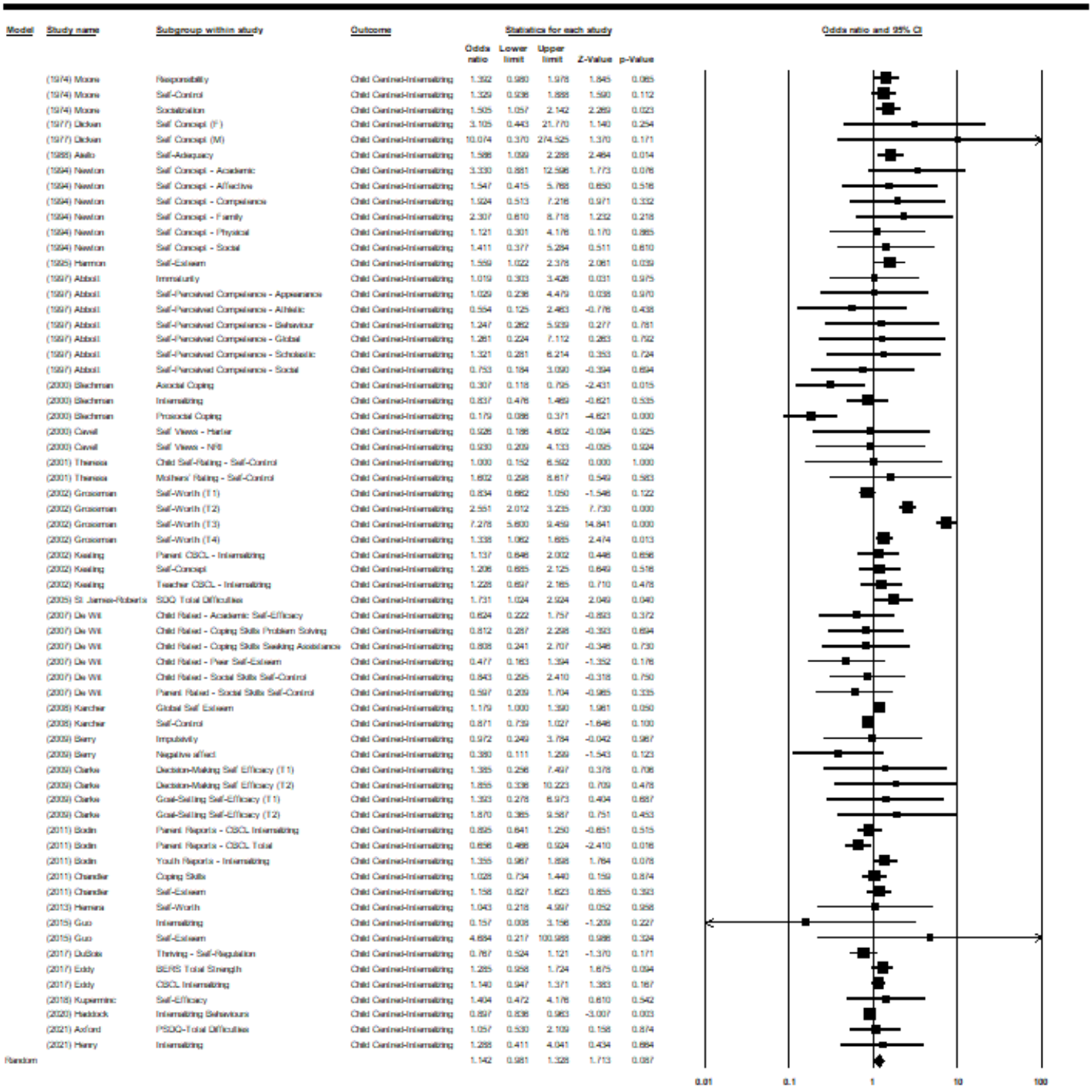


Figure 13.8 Forest plot for observed effects for attitudes and beliefs outcomes

Model	Study name	Subgroup within study	Odds ratio	Lower limit	Outcome	Upper limit	Z-Value	p-Value
	(1996) LoSciuto	Attitudes Towards Older People	1.241	1.067	Child Centred-Attitudes and Beliefs	1.442	2.808	0.005
	(1997) Abbott	Child Feeling	0.965	0.540	Child Centred-Attitudes and Beliefs	1.727	-0.119	0.906
	(1997) Abbott	Parent Feeling	1.022	0.574	Child Centred-Attitudes and Beliefs	1.819	0.074	0.941
	(1998) Royse	Self-Esteem	0.887	0.384	Child Centred-Attitudes and Beliefs	2.051	-0.280	0.780
	(2000) Cavell	Aggressive Beliefs	1.468	0.071	Child Centred-Attitudes and Beliefs	30.188	0.249	0.803
	(2000) Cavell	Hostile Attributions	0.997	0.235	Child Centred-Attitudes and Beliefs	4.231	-0.004	0.997
	(2000) Cavell	Parent Rated - Acceptance	0.945	0.209	Child Centred-Attitudes and Beliefs	4.275	-0.073	0.942
	(2000) Cavell	Peer Rated - Acceptance	1.102	0.023	Child Centred-Attitudes and Beliefs	52.375	0.049	0.961
	(2000) Cavell	Teacher Rated - Acceptance	0.961	0.220	Child Centred-Attitudes and Beliefs	4.198	-0.053	0.958
	(2001) Theresa	Child Self-Rating - Assertion	2.870	0.538	Child Centred-Attitudes and Beliefs	15.323	1.234	0.217
	(2001) Theresa	Child Self-Rating - Cooperation	2.044	0.386	Child Centred-Attitudes and Beliefs	10.819	0.841	0.401
	(2001) Theresa	Child Self-Rating - Empathy	1.460	0.268	Child Centred-Attitudes and Beliefs	7.961	0.437	0.662
	(2001) Theresa	Mothers' Rating - Empathy	0.509	0.089	Child Centred-Attitudes and Beliefs	2.908	-0.759	0.448
	(2002) Grossman	Perceived Scholastic Competence (T1)	1.115	0.886	Child Centred-Attitudes and Beliefs	1.403	0.926	0.354
	(2002) Grossman	Perceived Scholastic Competence (T2)	1.440	1.143	Child Centred-Attitudes and Beliefs	1.814	3.092	0.002
	(2002) Grossman	Perceived Scholastic Competence (T3)	1.338	1.062	Child Centred-Attitudes and Beliefs	1.685	2.474	0.013
	(2002) Grossman	Perceived Scholastic Competence (T4)	0.645	0.512	Child Centred-Attitudes and Beliefs	0.813	-3.710	0.000
	(2002) Grossman	Perceived Social Acceptance (T1)	0.930	0.739	Child Centred-Attitudes and Beliefs	1.171	-0.618	0.536
	(2002) Grossman	Perceived Social Acceptance (T2)	1.075	0.854	Child Centred-Attitudes and Beliefs	1.353	0.618	0.536
	(2002) Grossman	Perceived Social Acceptance (T3)	1.115	0.886	Child Centred-Attitudes and Beliefs	1.403	0.926	0.354
	(2002) Grossman	Perceived Social Acceptance (T4)	1.290	1.024	Child Centred-Attitudes and Beliefs	1.624	2.164	0.030
	(2002) Keating	Hopelessness	1.338	0.262	Child Centred-Attitudes and Beliefs	6.832	0.350	0.726
	(2003) Schirm	Attitude to Committing Crimes	0.819	0.400	Child Centred-Attitudes and Beliefs	1.676	-0.546	0.585
	(2003) Schirm	Attitude to Dropping Out of School	1.000	0.512	Child Centred-Attitudes and Beliefs	1.953	0.000	1.000
	(2003) Schirm	Attitude to Having a Baby While a Teenager	1.045	0.585	Child Centred-Attitudes and Beliefs	1.864	0.148	0.883
	(2003) Schirm	Attitude to Using Drugs or Alcohol Frequently	1.000	0.571	Child Centred-Attitudes and Beliefs	1.750	0.000	1.000
	(2007) De Wit	Child Rated - Social Skills Empathy	0.582	0.205	Child Centred-Attitudes and Beliefs	1.651	-1.017	0.309
	(2008) Karcher	Empathy	1.148	0.974	Child Centred-Attitudes and Beliefs	1.354	1.646	0.100
	(2008) Karcher	Hope	1.148	0.974	Child Centred-Attitudes and Beliefs	1.354	1.646	0.100
	(2008) Karcher	Mattering	1.148	0.974	Child Centred-Attitudes and Beliefs	1.354	1.646	0.100
	(2008) Karcher	Self-in-Future	0.871	0.739	Child Centred-Attitudes and Beliefs	1.027	-1.646	0.100
	(2008) Karcher	Self-in-Present	1.242	1.053	Child Centred-Attitudes and Beliefs	1.465	2.577	0.010
	(2009) Berry	Aspirations for the future	0.952	0.172	Child Centred-Attitudes and Beliefs	5.255	-0.057	0.955
	(2009) Berry	Positive outlook	1.966	0.477	Child Centred-Attitudes and Beliefs	8.103	0.936	0.349
	(2009) Berry	Self-esteem	1.468	0.541	Child Centred-Attitudes and Beliefs	3.984	0.754	0.451
	(2009) Clarke	Perceptions of Classmates Acceptance (T1)	1.121	0.186	Child Centred-Attitudes and Beliefs	6.740	0.125	0.901
	(2009) Clarke	Perceptions of Classmates Acceptance (T2)	1.654	0.280	Child Centred-Attitudes and Beliefs	9.780	0.555	0.579
	(2011) Bodin	Parent Reports - Social Competence	0.773	0.552	Child Centred-Attitudes and Beliefs	1.082	-1.498	0.134
	(2011) Bodin	Youth Report - Social Competence	1.068	0.765	Child Centred-Attitudes and Beliefs	1.491	0.385	0.700
	(2013) Herrera	Educational Expectations	1.046	0.225	Child Centred-Attitudes and Beliefs	4.866	0.057	0.954
	(2013) Herrera	Honesty	1.065	0.233	Child Centred-Attitudes and Beliefs	4.876	0.081	0.935
	(2013) Herrera	Hope	1.058	0.274	Child Centred-Attitudes and Beliefs	4.089	0.081	0.935
	(2013) Herrera	Self-Perceptions of Academic Abilities	1.054	0.203	Child Centred-Attitudes and Beliefs	5.460	0.062	0.950
	(2014) Weiler	Perception of Problem Behavior	7.797	4.309	Child Centred-Attitudes and Beliefs	14.108	6.788	0.000
	(2015) Weiler	Perception of Problem behavior	0.001	0.001	Child Centred-Attitudes and Beliefs	0.002	-19.861	0.000
	(2017) Duriez	Values, Beliefs, and Attitudes	1.415	0.262	Child Centred-Attitudes and Beliefs	7.659	0.403	0.687
	(2018) Kuperminc	Empathy	1.000	0.341	Child Centred-Attitudes and Beliefs	2.933	0.000	1.000
	(2020) Haddock	Future Orientation	0.617	0.575	Child Centred-Attitudes and Beliefs	0.663	-13.182	0.000
	(2020) Haddock	Meaning in Life	0.985	0.918	Child Centred-Attitudes and Beliefs	1.056	-0.427	0.669
	(2020) Haddock	Self-Efficacy	0.573	0.533	Child Centred-Attitudes and Beliefs	0.617	-15.066	0.000
Random			0.929	0.785		1.098	-0.863	0.388

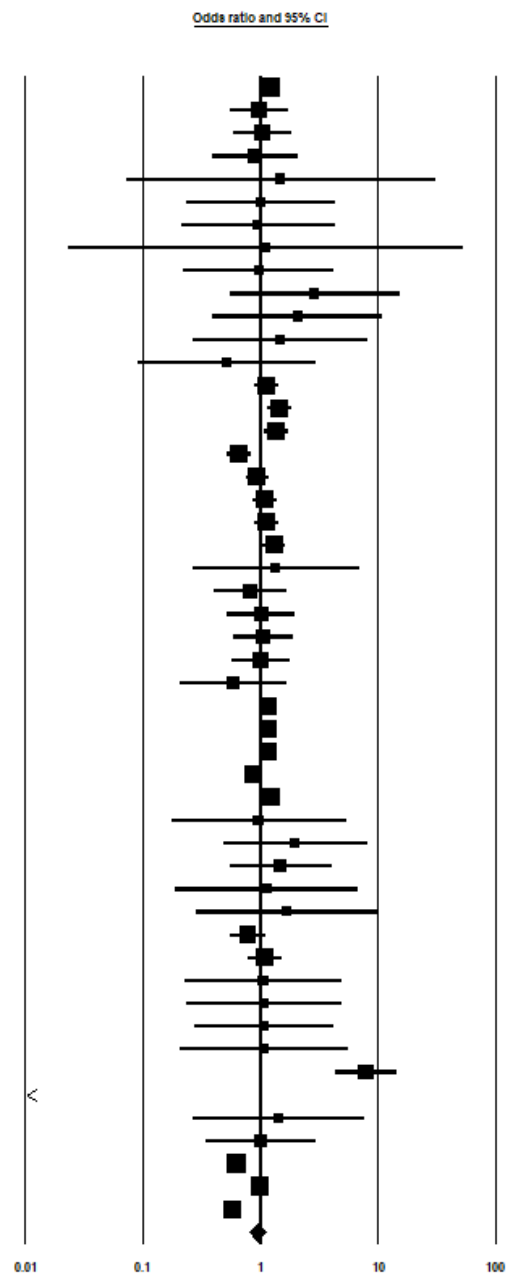


Figure 13.9 Forest plot for observed effects for social and emotional outcomes

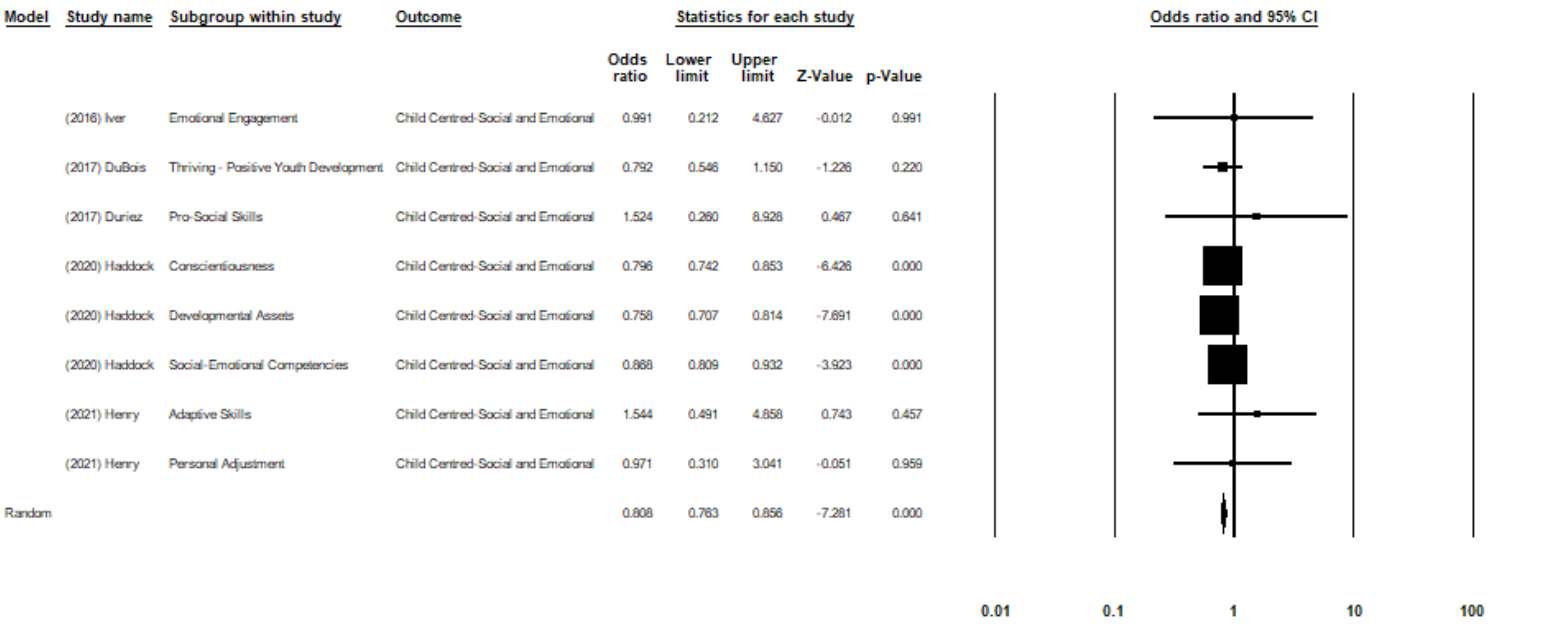


Figure 13.10 Forest plot for observed effects for behavioural outcomes

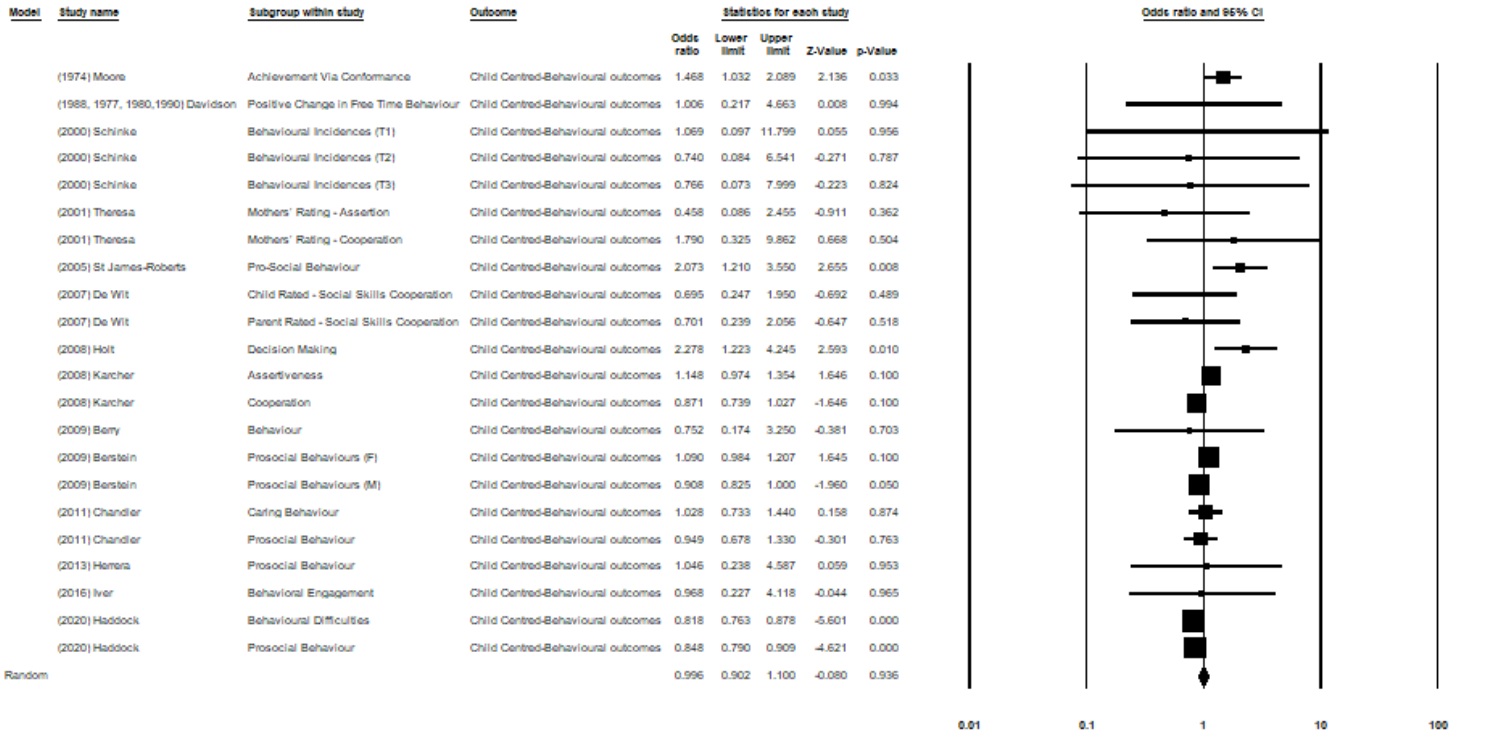


Figure 13.11 Forest plot for observed effects for substance use outcomes

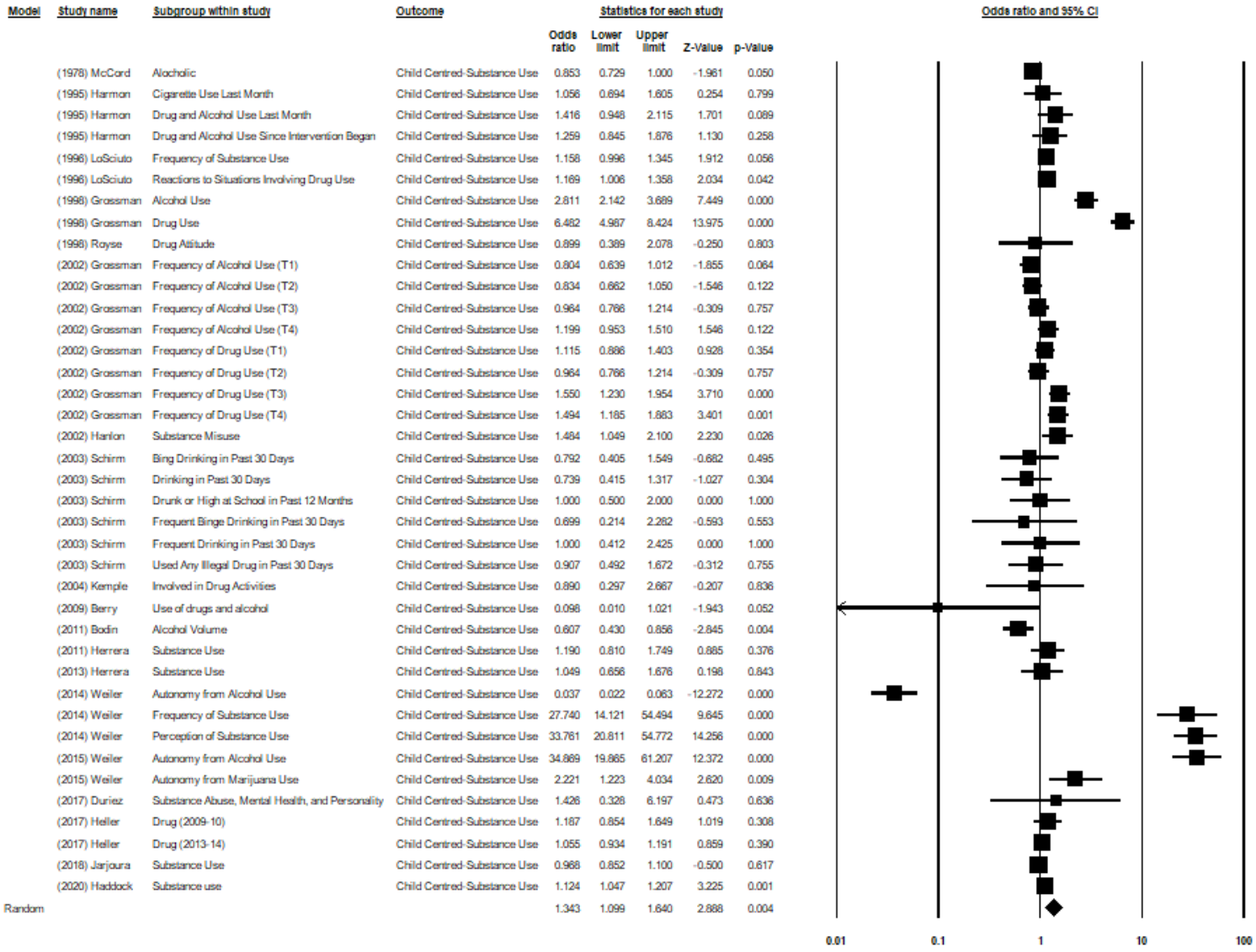


Figure 13.12 Forest plot for observed effects for education – attendance

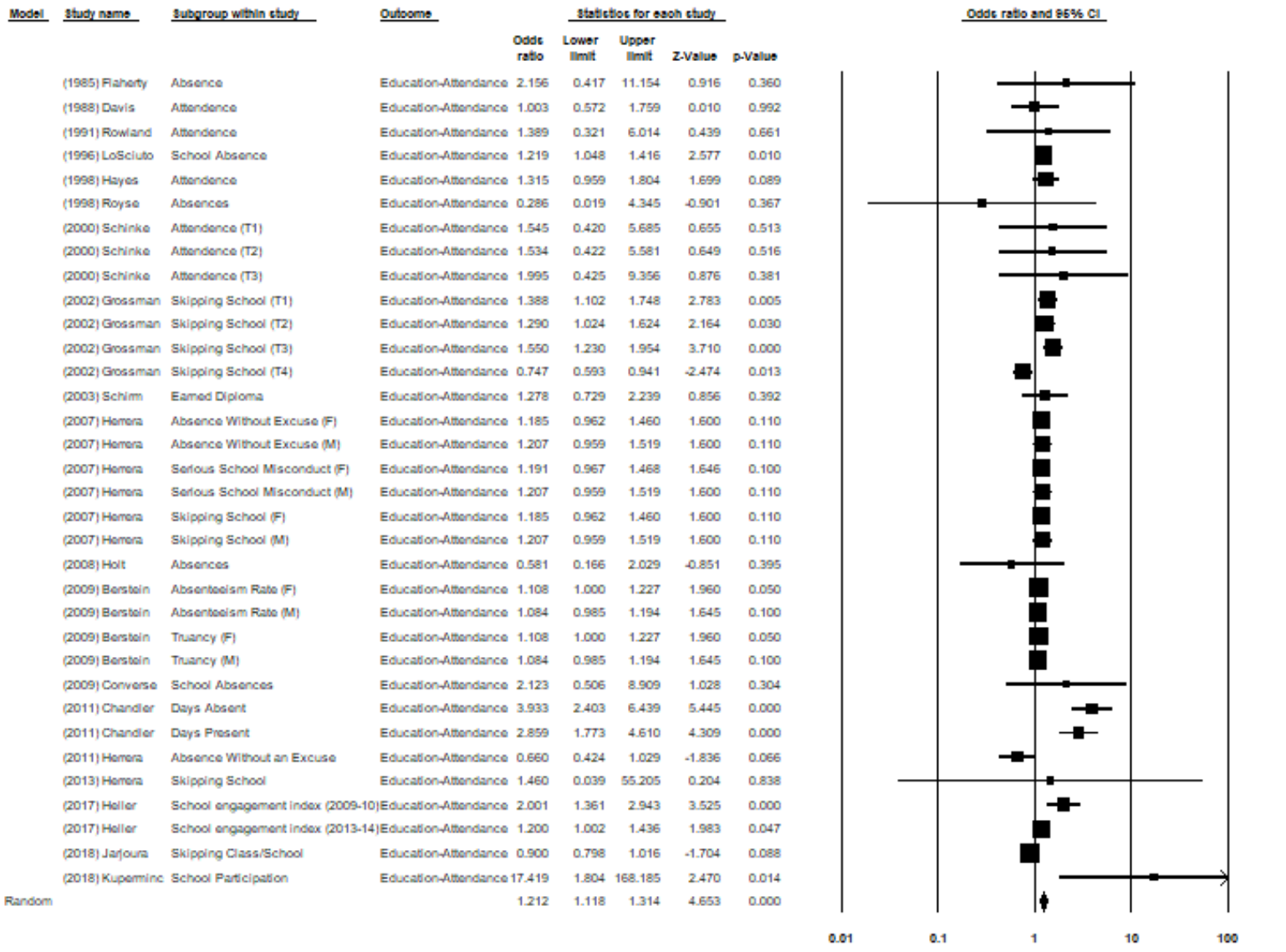
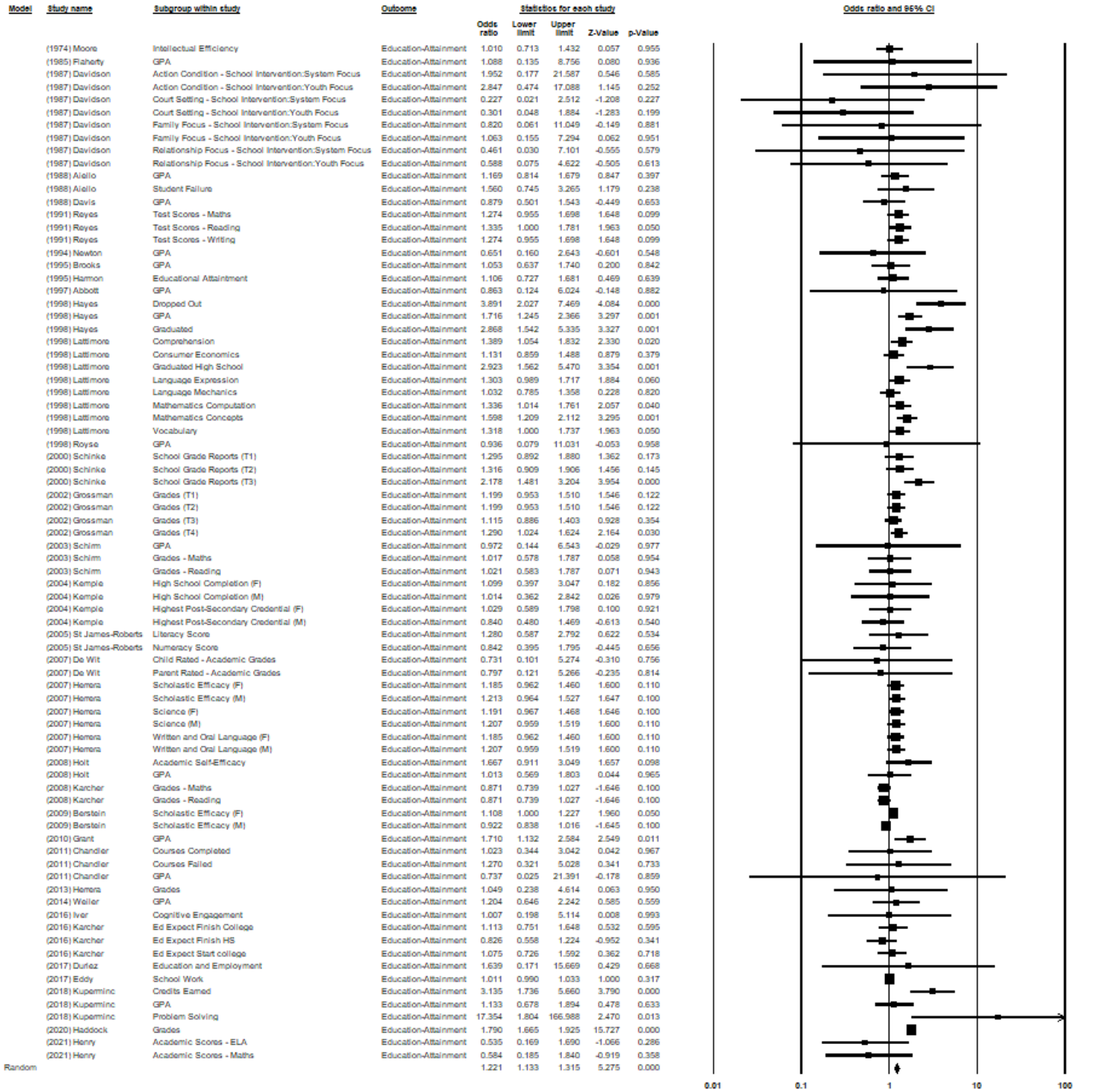


Figure 13.13 Forest plot for observed effects for education – attainment



Model	Study name	Subgroup within study	Outcome	Odds ratio	Lower limit	Upper limit	Z-Value	p-Value
	(1974) Moore	Intellectual Efficiency	Education-Attainment	1.010	0.713	1.432	0.057	0.955
	(1985) Flaherty	GPA	Education-Attainment	1.088	0.135	8.756	0.080	0.936
	(1987) Davidson	Action Condition - School Intervention:System Focus	Education-Attainment	1.952	0.177	21.587	0.546	0.585
	(1987) Davidson	Action Condition - School Intervention:Youth Focus	Education-Attainment	2.847	0.474	17.088	1.145	0.252
	(1987) Davidson	Court Setting - School Intervention:System Focus	Education-Attainment	0.227	0.021	2.512	-1.208	0.227
	(1987) Davidson	Court Setting - School Intervention:Youth Focus	Education-Attainment	0.301	0.048	1.884	-1.283	0.199
	(1987) Davidson	Family Focus - School Intervention:System Focus	Education-Attainment	0.820	0.061	11.049	-0.149	0.881
	(1987) Davidson	Family Focus - School Intervention:Youth Focus	Education-Attainment	1.063	0.155	7.294	0.062	0.951
	(1987) Davidson	Relationship Focus - School Intervention:System Focus	Education-Attainment	0.461	0.030	7.101	-0.555	0.579
	(1987) Davidson	Relationship Focus - School Intervention:Youth Focus	Education-Attainment	0.588	0.075	4.622	-0.505	0.613
	(1988) Aiello	GPA	Education-Attainment	1.169	0.814	1.679	0.847	0.397
	(1988) Aiello	Student Failure	Education-Attainment	1.560	0.745	3.265	1.179	0.238
	(1988) Davis	GPA	Education-Attainment	0.879	0.501	1.543	-0.449	0.653
	(1991) Reyes	Test Scores - Maths	Education-Attainment	1.274	0.955	1.698	1.648	0.099
	(1991) Reyes	Test Scores - Reading	Education-Attainment	1.335	1.000	1.781	1.963	0.050
	(1991) Reyes	Test Scores - Writing	Education-Attainment	1.274	0.955	1.698	1.648	0.099
	(1994) Newton	GPA	Education-Attainment	0.651	0.160	2.643	-0.601	0.548
	(1995) Brooks	GPA	Education-Attainment	1.053	0.637	1.740	0.200	0.842
	(1995) Harmon	Educational Attainment	Education-Attainment	1.106	0.727	1.681	0.469	0.639
	(1997) Abbott	GPA	Education-Attainment	0.863	0.124	6.024	-0.148	0.882
	(1998) Hayes	Dropped Out	Education-Attainment	3.891	2.027	7.469	4.084	0.000
	(1998) Hayes	GPA	Education-Attainment	1.716	1.245	2.366	3.297	0.001
	(1998) Hayes	Graduated	Education-Attainment	2.868	1.542	5.335	3.327	0.001
	(1998) Lattimore	Comprehension	Education-Attainment	1.389	1.054	1.832	2.330	0.020
	(1998) Lattimore	Consumer Economics	Education-Attainment	1.131	0.859	1.488	0.879	0.379
	(1998) Lattimore	Graduated High School	Education-Attainment	2.923	1.562	5.470	3.354	0.001
	(1998) Lattimore	Language Expression	Education-Attainment	1.303	0.989	1.717	1.884	0.060
	(1998) Lattimore	Language Mechanics	Education-Attainment	1.032	0.785	1.358	0.228	0.820
	(1998) Lattimore	Mathematics Computation	Education-Attainment	1.336	1.014	1.761	2.057	0.040
	(1998) Lattimore	Mathematics Concepts	Education-Attainment	1.598	1.209	2.112	3.295	0.001
	(1998) Lattimore	Vocabulary	Education-Attainment	1.318	1.000	1.737	1.963	0.050
	(1998) Royse	GPA	Education-Attainment	0.936	0.079	11.031	-0.053	0.958
	(2000) Schinke	School Grade Reports (T1)	Education-Attainment	1.295	0.892	1.880	1.362	0.173
	(2000) Schinke	School Grade Reports (T2)	Education-Attainment	1.316	0.909	1.906	1.456	0.145
	(2000) Schinke	School Grade Reports (T3)	Education-Attainment	2.178	1.481	3.204	3.954	0.000
	(2002) Grossman	Grades (T1)	Education-Attainment	1.199	0.953	1.510	1.546	0.122
	(2002) Grossman	Grades (T2)	Education-Attainment	1.199	0.953	1.510	1.546	0.122
	(2002) Grossman	Grades (T3)	Education-Attainment	1.115	0.886	1.403	0.928	0.354
	(2002) Grossman	Grades (T4)	Education-Attainment	1.290	1.024	1.624	2.164	0.030
	(2003) Schirm	GPA	Education-Attainment	0.972	0.144	6.543	-0.029	0.977
	(2003) Schirm	Grades - Maths	Education-Attainment	1.017	0.578	1.787	0.058	0.954
	(2003) Schirm	Grades - Reading	Education-Attainment	1.021	0.583	1.787	0.071	0.943
	(2004) Kemple	High School Completion (F)	Education-Attainment	1.099	0.397	3.047	0.182	0.856
	(2004) Kemple	High School Completion (M)	Education-Attainment	1.014	0.362	2.842	0.026	0.979
	(2004) Kemple	Highest Post-Secondary Credential (F)	Education-Attainment	1.029	0.589	1.798	0.100	0.921
	(2004) Kemple	Highest Post-Secondary Credential (M)	Education-Attainment	0.840	0.480	1.469	-0.613	0.540
	(2005) St James-Roberts	Literacy Score	Education-Attainment	1.280	0.587	2.792	0.622	0.534
	(2005) St James-Roberts	Numeracy Score	Education-Attainment	0.842	0.395	1.795	-0.445	0.656
	(2007) De Wit	Child Rated - Academic Grades	Education-Attainment	0.731	0.101	5.274	-0.310	0.756
	(2007) De Wit	Parent Rated - Academic Grades	Education-Attainment	0.797	0.121	5.266	-0.235	0.814
	(2007) Hemera	Scholastic Efficacy (F)	Education-Attainment	1.185	0.962	1.460	1.600	0.110
	(2007) Hemera	Scholastic Efficacy (M)	Education-Attainment	1.213	0.964	1.527	1.647	0.100
	(2007) Hemera	Science (F)	Education-Attainment	1.191	0.967	1.468	1.646	0.100
	(2007) Hemera	Science (M)	Education-Attainment	1.207	0.959	1.519	1.600	0.110
	(2007) Hemera	Written and Oral Language (F)	Education-Attainment	1.185	0.962	1.460	1.600	0.110
	(2007) Hemera	Written and Oral Language (M)	Education-Attainment	1.207	0.959	1.519	1.600	0.110
	(2008) Holt	Academic Self-Efficacy	Education-Attainment	1.667	0.911	3.049	1.657	0.098
	(2008) Holt	GPA	Education-Attainment	1.013	0.569	1.803	0.044	0.965
	(2008) Karcher	Grades - Maths	Education-Attainment	0.871	0.739	1.027	-1.646	0.100
	(2008) Karcher	Grades - Reading	Education-Attainment	0.871	0.739	1.027	-1.646	0.100
	(2009) Berstein	Scholastic Efficacy (F)	Education-Attainment	1.108	1.000	1.227	1.960	0.050
	(2009) Berstein	Scholastic Efficacy (M)	Education-Attainment	0.922	0.838	1.016	-1.645	0.100
	(2010) Grant	GPA	Education-Attainment	1.710	1.132	2.584	2.549	0.011
	(2011) Chandler	Courses Completed	Education-Attainment	1.023	0.344	3.042	0.042	0.967
	(2011) Chandler	Courses Failed	Education-Attainment	1.270	0.321	5.028	0.341	0.733
	(2011) Chandler	GPA	Education-Attainment	0.737	0.025	21.391	-0.178	0.859
	(2013) Hemera	Grades	Education-Attainment	1.049	0.238	4.614	0.063	0.950
	(2014) Weller	GPA	Education-Attainment	1.204	0.646	2.242	0.585	0.559
	(2016) Iver	Cognitive Engagement	Education-Attainment	1.007	0.198	5.114	0.008	0.993
	(2016) Karcher	Ed Expect Finish College	Education-Attainment	1.113	0.751	1.648	0.532	0.595
	(2016) Karcher	Ed Expect Finish HS	Education-Attainment	0.826	0.558	1.224	-0.952	0.341
	(2016) Karcher	Ed Expect Start college	Education-Attainment	1.075	0.726	1.592	0.362	0.718
	(2017) Duñez	Education and Employment	Education-Attainment	1.639	0.171	15.669	0.429	0.668
	(2017) Eddy	School Work	Education-Attainment	1.011	0.990	1.033	1.000	0.317
	(2018) Kuperminc	Credits Earned	Education-Attainment	3.135	1.736	5.660	3.790	0.000
	(2018) Kuperminc	GPA	Education-Attainment	1.133	0.678	1.894	0.478	0.633
	(2018) Kuperminc	Problem Solving	Education-Attainment	17.354	1.804	166.988	2.470	0.013
	(2020) Haddock	Grades	Education-Attainment	1.790	1.665	1.925	15.727	0.000
	(2021) Henry	Academic Scores - ELA	Education-Attainment	0.535	0.169	1.690	-1.066	0.286
	(2021) Henry	Academic Scores - Maths	Education-Attainment	0.584	0.185	1.840	-0.919	0.358
Random				1.221	1.133	1.315	5.275	0.000

Figure 13.14 Forest plot for observed effects for education – aspirations and attitudes

Model	Study name	Subgroup within study	Outcome	Odds ratio	Lower limit	Upper limit	Z-Value	p-Value
	(1985) Flaherty	Attitude	Education-Aspirations and Attitudes	1.000	0.184	5.423	0.000	1.000
	(1987) Davidson	Action Condition - Job Seeking Activities	Education-Aspirations and Attitudes	2.242	0.243	20.724	0.712	0.477
	(1987) Davidson	Court Setting - Job Seeking Activities	Education-Aspirations and Attitudes	0.450	0.038	5.318	-0.633	0.527
	(1987) Davidson	Family Focus - Job Seeking Activities	Education-Aspirations and Attitudes	0.895	0.082	9.806	-0.091	0.928
	(1987) Davidson	Relationship Focus - Job Seeking Activities	Education-Aspirations and Attitudes	0.450	0.038	5.318	-0.633	0.527
	(1995) Brooks	Attitudes Towards College	Education-Aspirations and Attitudes	0.855	0.529	1.382	-0.639	0.523
	(1995) Brooks	Educational Aspirations	Education-Aspirations and Attitudes	1.213	0.750	1.962	0.788	0.431
	(1995) Harmon	Educational Aspirations	Education-Aspirations and Attitudes	1.014	0.667	1.541	0.063	0.950
	(1995) Harmon	Occupational Aspirations	Education-Aspirations and Attitudes	1.106	0.651	1.881	0.374	0.708
	(1996) LoSciuto	Attitudes Towards School	Education-Aspirations and Attitudes	1.172	1.009	1.363	2.076	0.038
	(1998) Hayes	Commitment to Work	Education-Aspirations and Attitudes	1.716	1.245	2.366	3.297	0.001
	(1998) Hayes	Reactions to teachers	Education-Aspirations and Attitudes	1.716	1.245	2.366	3.297	0.001
	(1998) Hayes	Satisfaction with School	Education-Aspirations and Attitudes	1.530	1.113	2.104	2.617	0.009
	(1998) Lattimore	Occupational Knowledge	Education-Aspirations and Attitudes	1.123	0.853	1.477	0.825	0.409
	(2002) Grossman	Value of School (T1)	Education-Aspirations and Attitudes	0.834	0.662	1.050	-1.546	0.122
	(2002) Grossman	Value of School (T2)	Education-Aspirations and Attitudes	1.338	1.062	1.685	2.474	0.013
	(2002) Grossman	Value of School (T3)	Education-Aspirations and Attitudes	0.930	0.739	1.171	-0.618	0.536
	(2002) Grossman	Value of School (T4)	Education-Aspirations and Attitudes	1.494	1.185	1.883	3.401	0.001
	(2007) De Wit	Child Rated - Quality of Relationship with Teacher	Education-Aspirations and Attitudes	0.653	0.080	5.341	-0.398	0.691
	(2007) De Wit	Parent Rated - Quality of Relationship with Teacher	Education-Aspirations and Attitudes	0.679	0.083	5.585	-0.360	0.719
	(2008) Holt	School Belonging	Education-Aspirations and Attitudes	1.667	0.911	3.049	1.657	0.098
	(2008) Karcher	Connectedness to School	Education-Aspirations and Attitudes	1.148	0.974	1.354	1.646	0.100
	(2008) Karcher	Connectedness to Teachers	Education-Aspirations and Attitudes	0.871	0.739	1.027	-1.646	0.100
	(2009) Clarke	Perception of Teacher Support (T1)	Education-Aspirations and Attitudes	1.076	0.190	6.085	0.083	0.934
	(2009) Clarke	Perception of Teacher Support (T2)	Education-Aspirations and Attitudes	1.584	0.283	8.855	0.524	0.601
	(2009) Converse	School Connectedness	Education-Aspirations and Attitudes	2.084	0.066	66.203	0.416	0.677
	(2011) Chandler	School Attachment	Education-Aspirations and Attitudes	1.219	0.870	1.707	1.149	0.251
	(2016) Karcher	Connectedness to Future	Education-Aspirations and Attitudes	0.904	0.610	1.338	-0.506	0.613
	(2016) Karcher	Connectedness to School	Education-Aspirations and Attitudes	1.086	0.733	1.608	0.411	0.681
	(2016) Karcher	Connectedness to Teachers	Education-Aspirations and Attitudes	1.198	0.809	1.775	0.903	0.366
	(2016) Karcher	Plan Find a Job	Education-Aspirations and Attitudes	0.953	0.643	1.411	-0.241	0.809
	(2016) Karcher	Plan Success at Work	Education-Aspirations and Attitudes	0.758	0.512	1.123	-1.380	0.167
	(2020) Haddock	Academic Aspirations	Education-Aspirations and Attitudes	1.712	1.593	1.840	14.600	0.000
Random				1.160	1.025	1.313	2.357	0.018

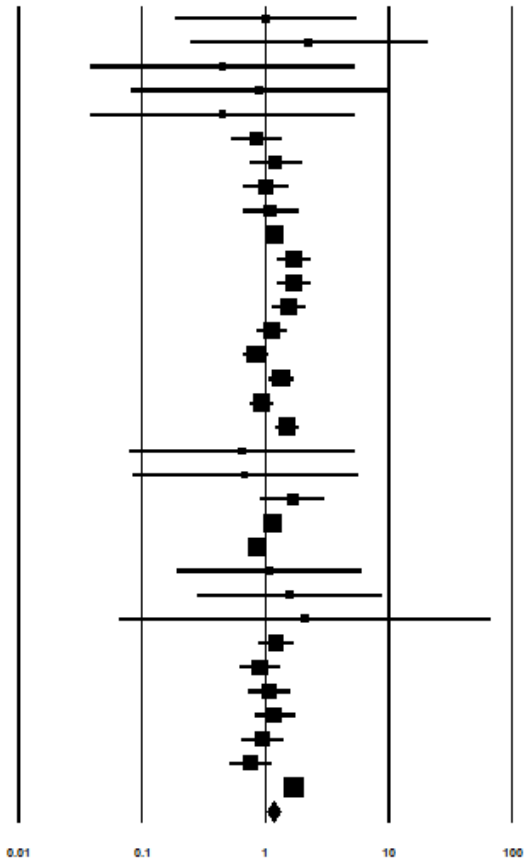
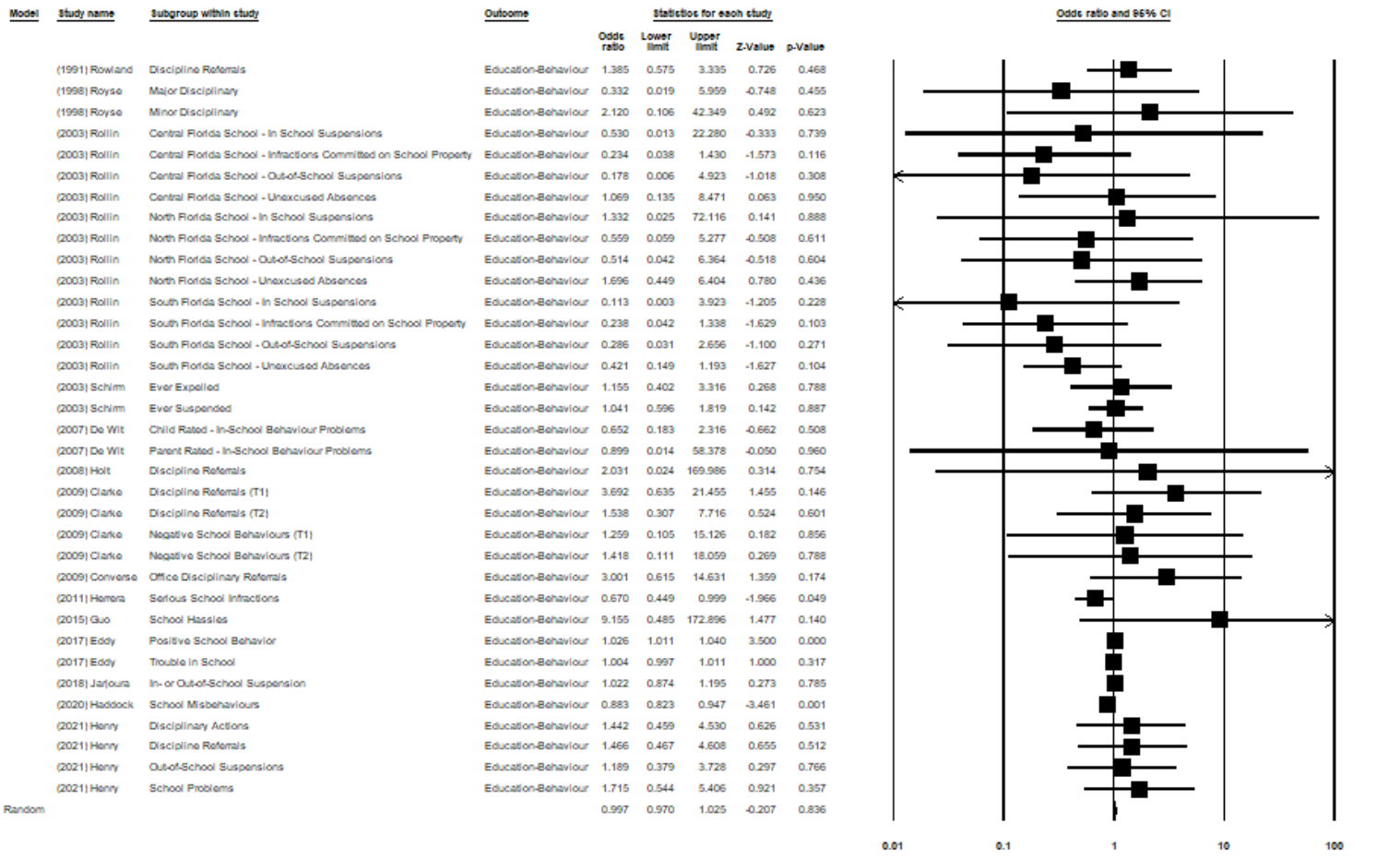


Figure 13.15 Forest plot for observed effects for education - behaviour



Model	Study name	Subgroup within study	Outcome	Odds ratio	Lower limit	Upper limit	Z-Value	p-Value
	(1991) Rowland	Discipline Referrals	Education-Behaviour	1.385	0.575	3.335	0.726	0.468
	(1998) Royse	Major Disciplinary	Education-Behaviour	0.332	0.019	5.959	-0.748	0.455
	(1998) Royse	Minor Disciplinary	Education-Behaviour	2.120	0.106	42.349	0.492	0.623
	(2003) Rollin	Central Florida School - In School Suspensions	Education-Behaviour	0.530	0.013	22.280	-0.333	0.739
	(2003) Rollin	Central Florida School - Infractions Committed on School Property	Education-Behaviour	0.234	0.038	1.430	-1.573	0.116
	(2003) Rollin	Central Florida School - Out-of-School Suspensions	Education-Behaviour	0.178	0.006	4.923	-1.018	0.308
	(2003) Rollin	Central Florida School - Unexcused Absences	Education-Behaviour	1.069	0.135	8.471	0.063	0.950
	(2003) Rollin	North Florida School - In School Suspensions	Education-Behaviour	1.332	0.025	72.116	0.141	0.888
	(2003) Rollin	North Florida School - Infractions Committed on School Property	Education-Behaviour	0.559	0.059	5.277	-0.508	0.611
	(2003) Rollin	North Florida School - Out-of-School Suspensions	Education-Behaviour	0.514	0.042	6.364	-0.518	0.604
	(2003) Rollin	North Florida School - Unexcused Absences	Education-Behaviour	1.696	0.449	6.404	0.780	0.436
	(2003) Rollin	South Florida School - In School Suspensions	Education-Behaviour	0.113	0.003	3.923	-1.205	0.228
	(2003) Rollin	South Florida School - Infractions Committed on School Property	Education-Behaviour	0.238	0.042	1.338	-1.629	0.103
	(2003) Rollin	South Florida School - Out-of-School Suspensions	Education-Behaviour	0.286	0.031	2.656	-1.100	0.271
	(2003) Rollin	South Florida School - Unexcused Absences	Education-Behaviour	0.421	0.149	1.193	-1.627	0.104
	(2003) Schirm	Ever Expelled	Education-Behaviour	1.155	0.402	3.316	0.268	0.788
	(2003) Schirm	Ever Suspended	Education-Behaviour	1.041	0.596	1.819	0.142	0.887
	(2007) De Wit	Child Rated - In-School Behaviour Problems	Education-Behaviour	0.652	0.183	2.316	-0.662	0.508
	(2007) De Wit	Parent Rated - In-School Behaviour Problems	Education-Behaviour	0.899	0.014	58.378	-0.050	0.960
	(2008) Holt	Discipline Referrals	Education-Behaviour	2.031	0.024	169.986	0.314	0.754
	(2009) Clarke	Discipline Referrals (T1)	Education-Behaviour	3.692	0.635	21.455	1.455	0.146
	(2009) Clarke	Discipline Referrals (T2)	Education-Behaviour	1.538	0.307	7.716	0.524	0.601
	(2009) Clarke	Negative School Behaviours (T1)	Education-Behaviour	1.259	0.105	15.126	0.182	0.856
	(2009) Clarke	Negative School Behaviours (T2)	Education-Behaviour	1.418	0.111	18.059	0.269	0.788
	(2009) Converse	Office Disciplinary Referrals	Education-Behaviour	3.001	0.615	14.631	1.359	0.174
	(2011) Herrera	Serious School Infractions	Education-Behaviour	0.670	0.449	0.999	-1.966	0.049
	(2015) Guo	School Hassles	Education-Behaviour	9.155	0.485	172.896	1.477	0.140
	(2017) Eddy	Positive School Behavior	Education-Behaviour	1.026	1.011	1.040	3.500	0.000
	(2017) Eddy	Trouble in School	Education-Behaviour	1.004	0.997	1.011	1.000	0.317
	(2018) Jarjoura	In- or Out-of-School Suspension	Education-Behaviour	1.022	0.874	1.195	0.273	0.785
	(2020) Haddock	School Misbehaviours	Education-Behaviour	0.883	0.823	0.947	-3.461	0.001
	(2021) Henry	Disciplinary Actions	Education-Behaviour	1.442	0.459	4.530	0.626	0.531
	(2021) Henry	Discipline Referrals	Education-Behaviour	1.466	0.467	4.608	0.655	0.512
	(2021) Henry	Out-of-School Suspensions	Education-Behaviour	1.189	0.379	3.728	0.297	0.766
	(2021) Henry	School Problems	Education-Behaviour	1.715	0.544	5.406	0.921	0.357
Random				0.997	0.970	1.025	-0.207	0.836

Figure 13.16 Forest plot for observed effects for familial outcomes

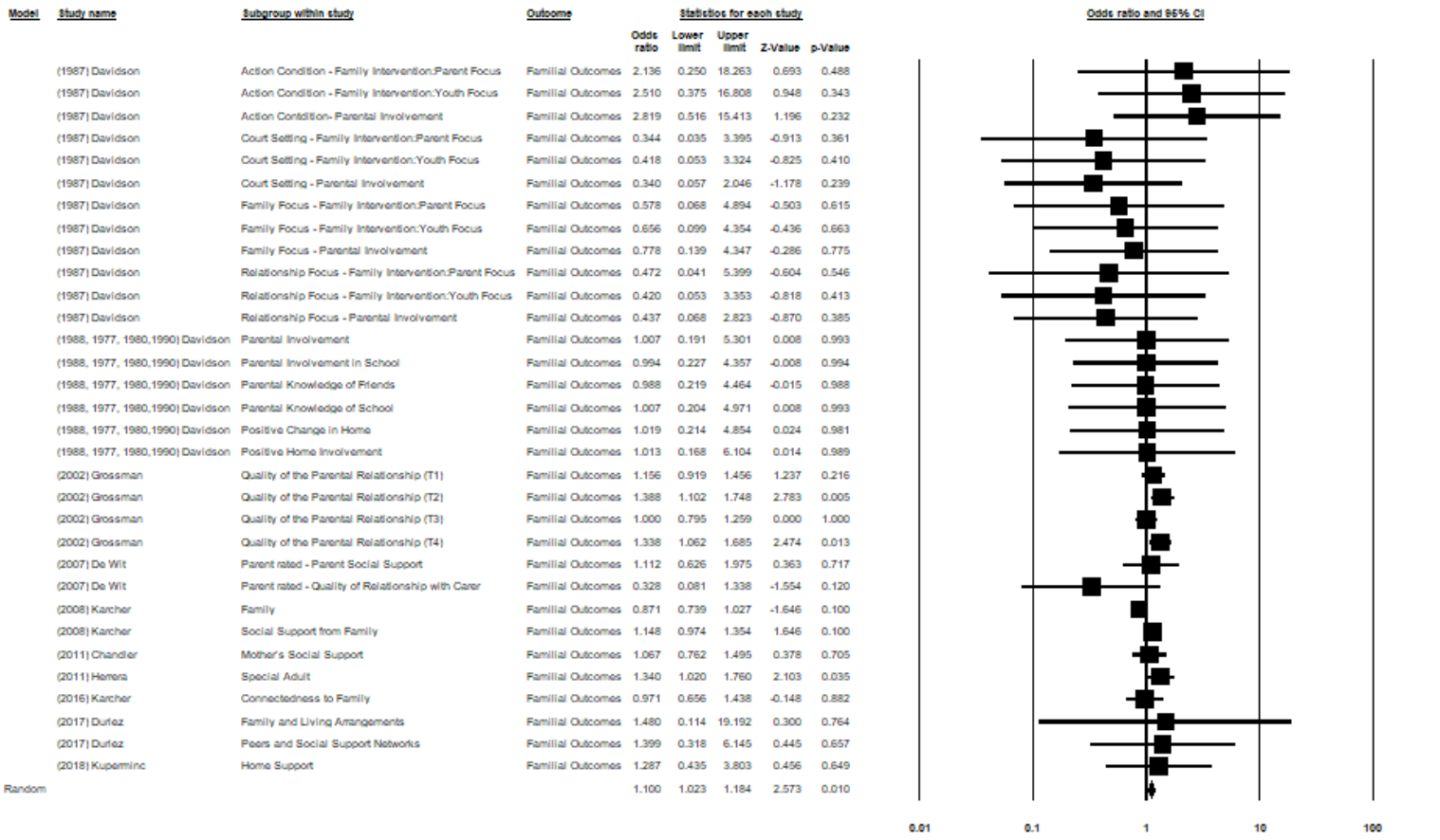


Figure 13.17 Forest plot for observed effects for peer outcomes

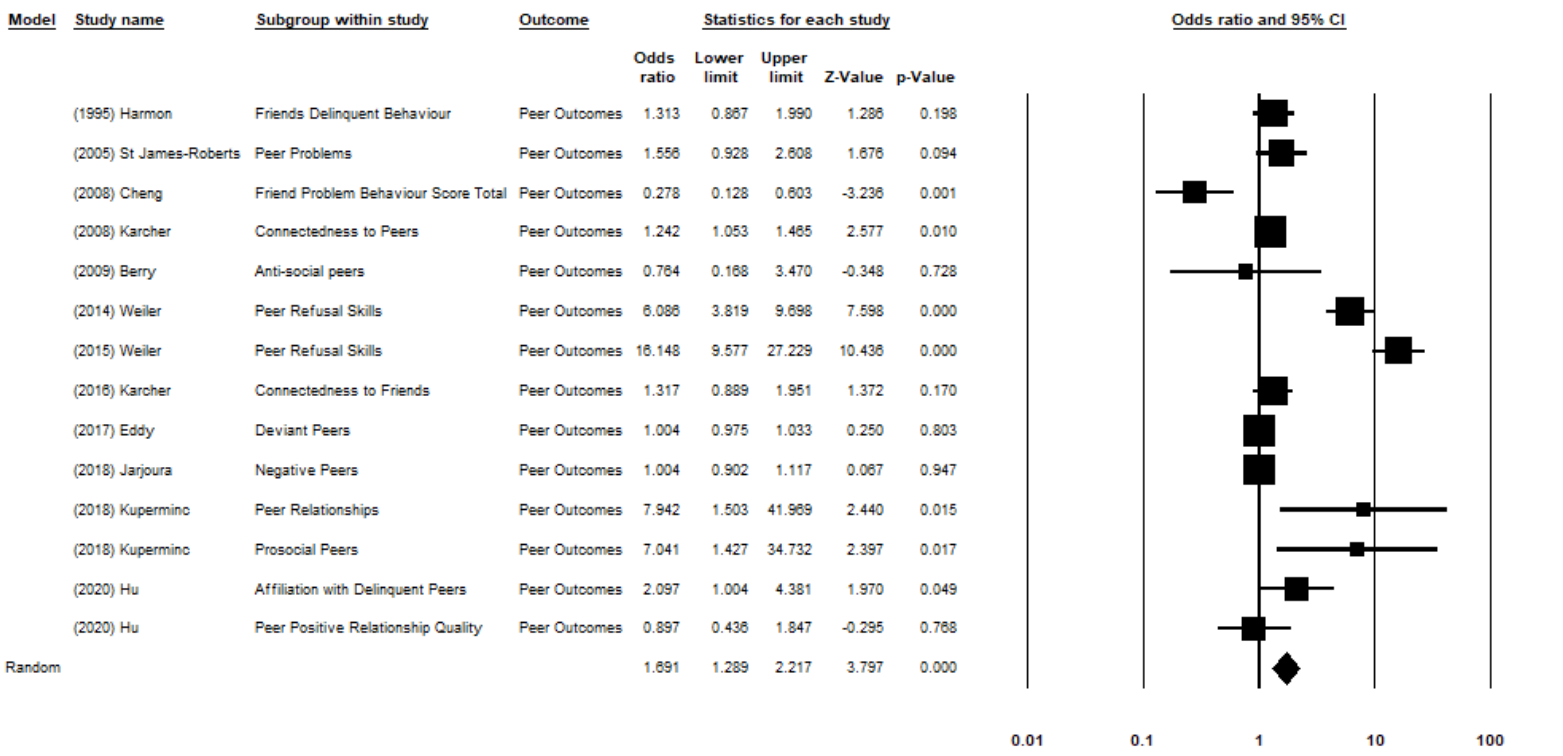


Figure 13.18 Forest plot for observed effects for physical health outcomes

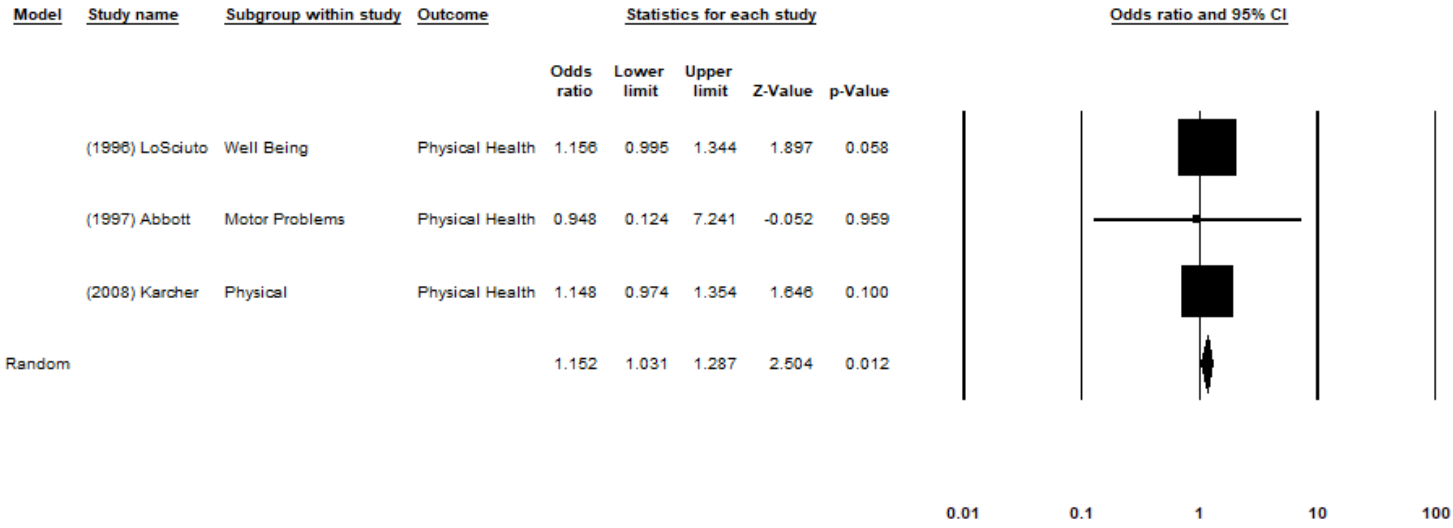


Figure 13.19 Forest plot for observed effects for mental health outcomes

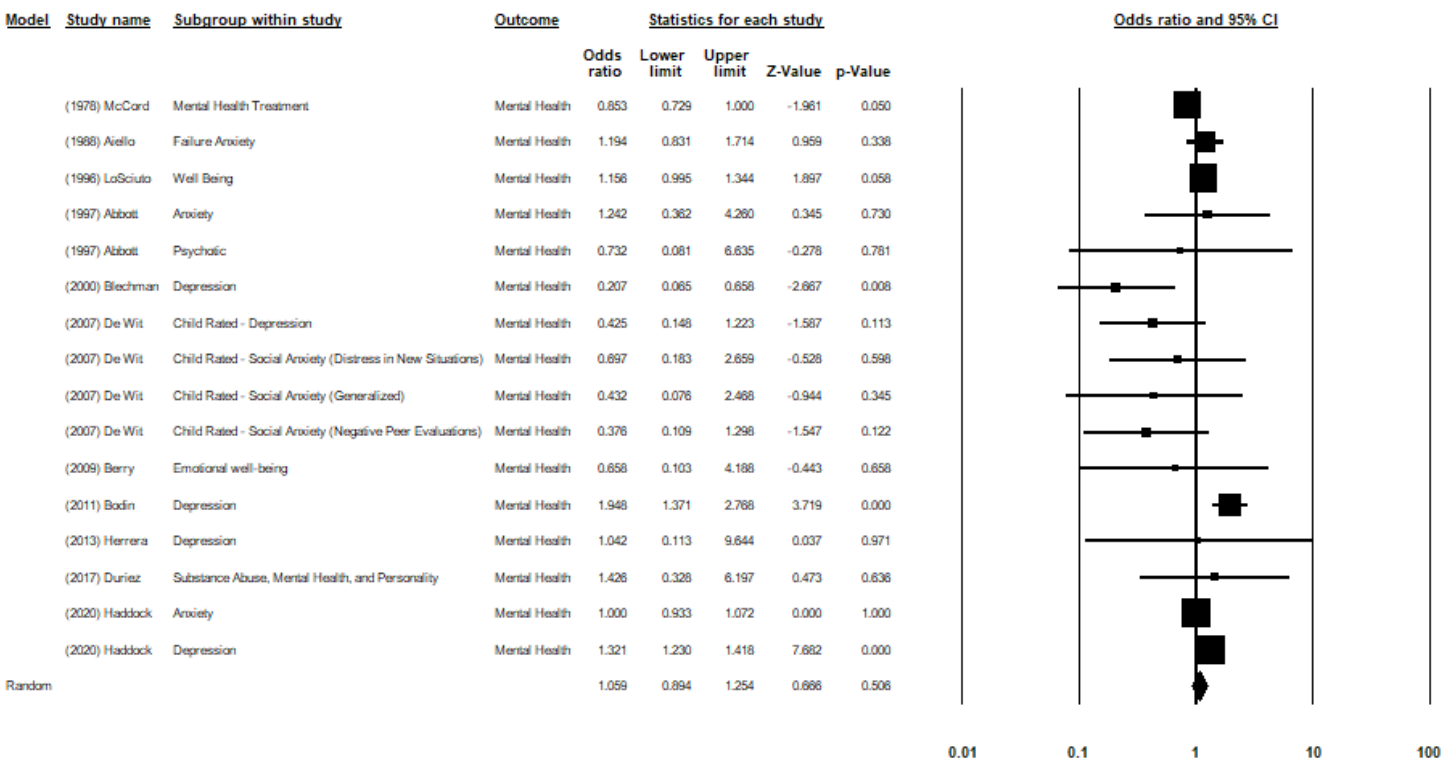
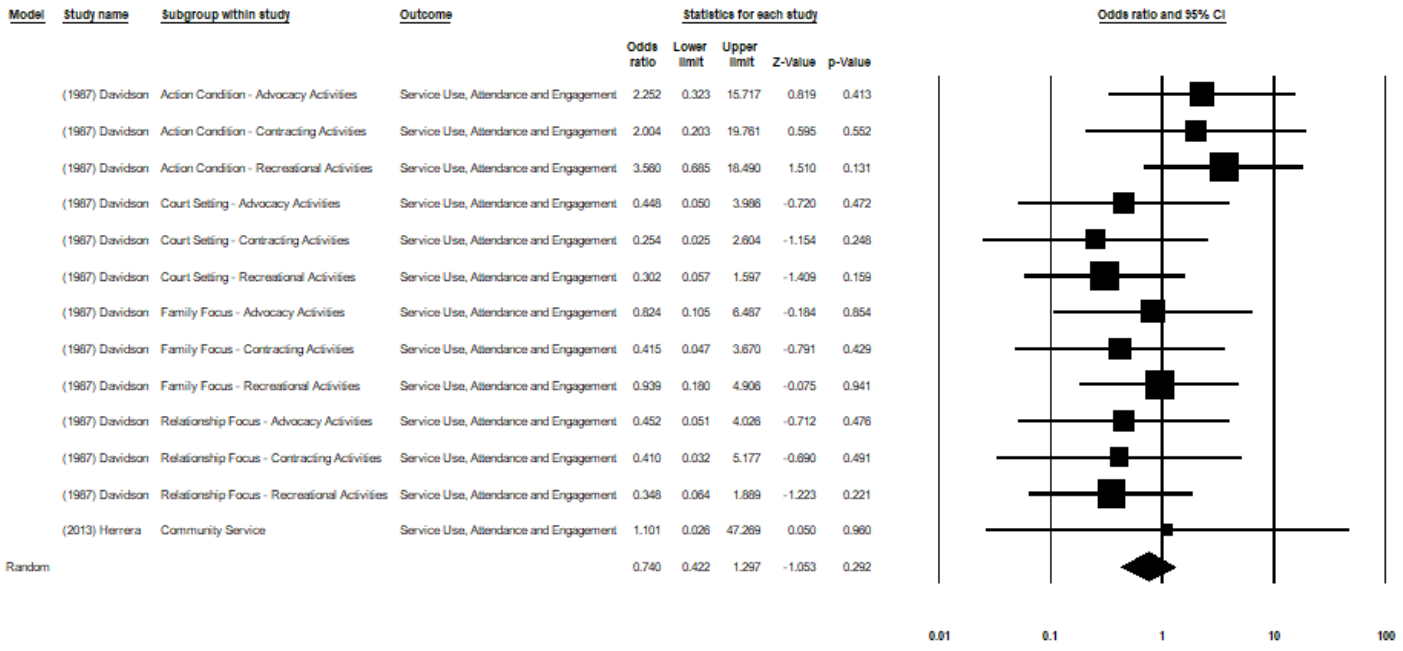


Figure 13.20 Forest plot for observed effects for service use, attendance, and engagement outcomes



Appendix H – One study removed forest plots

Figure 15.1 Forest plot for one study removed - all offending outcomes

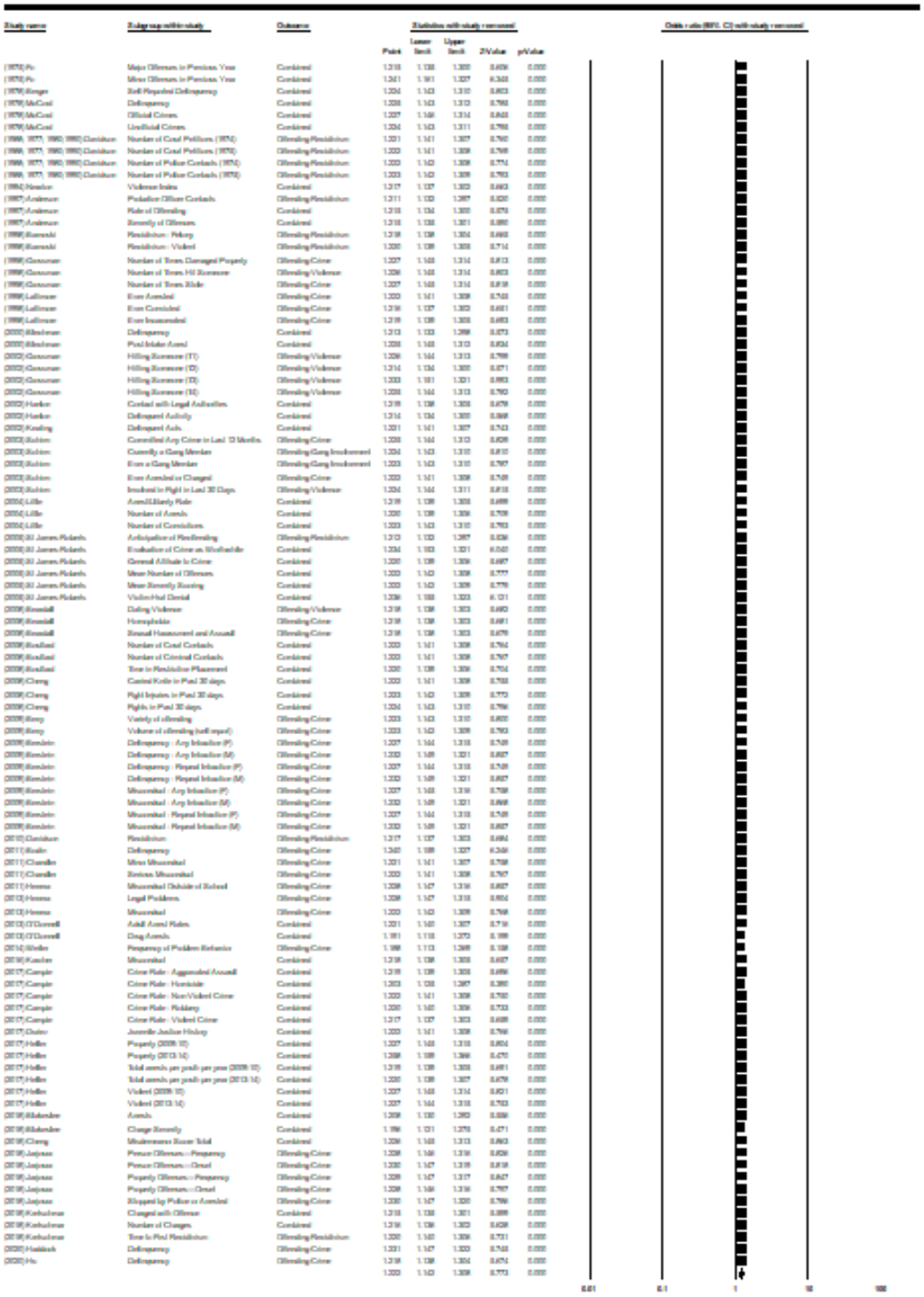


Figure 15.2 Forest plot for one study removed - violence outcomes

Study name	Subgroup within study	Outcome	Statistics with study removed				
			Point	Lower limit	Upper limit	Z-Value	p-Value
(1994) Newton	Violence Index	Offending-Violence	1.277	1.049	1.554	2.435	0.015
(1998) Grossman	Number of Times Hit Someone	Offending-Violence	1.371	1.099	1.711	2.793	0.005
(2002) Grossman	Hitting Someone (T1)	Offending-Violence	1.370	1.098	1.710	2.784	0.005
(2002) Grossman	Hitting Someone (T2)	Offending-Violence	1.281	1.043	1.574	2.363	0.018
(2002) Grossman	Hitting Someone (T3)	Offending-Violence	1.392	1.139	1.702	3.226	0.001
(2002) Grossman	Hitting Someone (T4)	Offending-Violence	1.366	1.094	1.706	2.754	0.006
(2003) Schirm	Involved in Fight in Last 30 Days	Offending-Violence	1.348	1.097	1.656	2.839	0.005
(2008) Beardall	Dating Violence	Offending-Violence	1.284	1.054	1.564	2.480	0.013
(2008) Cheng	Carried Knife in Past 30 days	Offending-Violence	1.325	1.079	1.628	2.685	0.007
(2008) Cheng	Fight Injuries in Past 30 days	Offending-Violence	1.334	1.085	1.641	2.731	0.006
(2008) Cheng	Fights in Past 30 days	Offending-Violence	1.343	1.092	1.651	2.791	0.005
(2017) Campie	Crime Rate - Aggravated Assault	Offending-Violence	1.301	1.061	1.594	2.532	0.011
(2017) Campie	Crime Rate - Homicide	Offending-Violence	1.160	0.988	1.363	1.810	0.070
(2017) Campie	Crime Rate - Robbery	Offending-Violence	1.308	1.069	1.599	2.611	0.009
(2017) Campie	Crime Rate - Violent Crime	Offending-Violence	1.289	1.052	1.578	2.451	0.014
(2017) Heller	Violent (2009-10)	Offending-Violence	1.373	1.102	1.711	2.828	0.005
(2017) Heller	Violent (2013-14)	Offending-Violence	1.396	1.091	1.786	2.656	0.008
			1.321	1.081	1.614	2.721	0.007

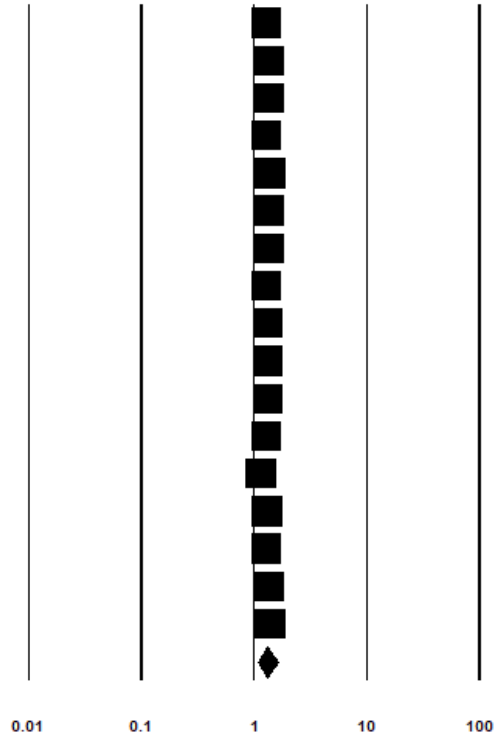


Figure 15.3 Forest plot for one study removed - crime outcomes

Study name	Subgroup within study	Outcome	Statistics with study removed				
			Point	Lower limit	Upper limit	Z-Value	p-Value
(1975) Fo	Major Offenses in Previous Year	Offending-Crime	1.169	1.084	1.261	4.039	0.000
(1975) Fo	Minor Offenses in Previous Year	Offending-Crime	1.202	1.116	1.294	4.876	0.000
(1978) Berger	Self-Reported Delinquency	Offending-Crime	1.179	1.093	1.272	4.263	0.000
(1978) McCord	Delinquency	Offending-Crime	1.180	1.093	1.274	4.238	0.000
(1978) McCord	Official Crimes	Offending-Crime	1.183	1.096	1.277	4.307	0.000
(1978) McCord	Unofficial Crimes	Offending-Crime	1.180	1.093	1.273	4.251	0.000
(1997) Anderson	Rate of Offending	Offending-Crime	1.168	1.082	1.260	3.993	0.000
(1997) Anderson	Severity of Offences	Offending-Crime	1.169	1.083	1.261	4.010	0.000
(1998) Grossman	Number of Times Damaged Property	Offending-Crime	1.182	1.095	1.276	4.269	0.000
(1998) Grossman	Number of Times Stole	Offending-Crime	1.182	1.095	1.277	4.274	0.000
(1998) Lattimore	Ever Arrested	Offending-Crime	1.177	1.091	1.270	4.196	0.000
(1998) Lattimore	Ever Convicted	Offending-Crime	1.171	1.086	1.263	4.093	0.000
(1998) Lattimore	Ever Incarcerated	Offending-Crime	1.174	1.088	1.266	4.137	0.000
(2000) Blechman	Delinquency	Offending-Crime	1.167	1.082	1.258	4.002	0.000
(2000) Blechman	Post-Intake Arrest	Offending-Crime	1.181	1.095	1.275	4.296	0.000
(2002) Hanlon	Contact with Legal Authorities	Offending-Crime	1.173	1.087	1.266	4.120	0.000
(2002) Hanlon	Delinquent Activity	Offending-Crime	1.167	1.082	1.259	3.986	0.000
(2002) Keating	Delinquent Acts	Offending-Crime	1.176	1.090	1.269	4.196	0.000
(2003) Schirm	Committed Any Crime in Last 12 Months	Offending-Crime	1.181	1.095	1.275	4.290	0.000
(2003) Schirm	Ever Arrested or Charged	Offending-Crime	1.177	1.091	1.270	4.201	0.000
(2004) Little	Arrest/Liberty Rate	Offending-Crime	1.174	1.088	1.266	4.147	0.000
(2004) Little	Number of Arrests	Offending-Crime	1.174	1.089	1.267	4.158	0.000
(2004) Little	Number of Convictions	Offending-Crime	1.179	1.093	1.272	4.253	0.000
(2005) St James-Roberts	Evaluation of Crime as Worthwhile	Offending-Crime	1.192	1.105	1.286	4.529	0.000
(2005) St James-Roberts	General Attitude to Crime	Offending-Crime	1.174	1.088	1.267	4.127	0.000
(2005) St James-Roberts	Mean Number of Offences	Offending-Crime	1.178	1.092	1.270	4.236	0.000
(2005) St James-Roberts	Mean Severity Scoring	Offending-Crime	1.178	1.092	1.271	4.238	0.000
(2005) St James-Roberts	Victim-Hurt Denial	Offending-Crime	1.195	1.108	1.289	4.620	0.000
(2008) Beardall	Homophobia	Offending-Crime	1.172	1.087	1.264	4.127	0.000
(2008) Beardall	Sexual Harassment and Assault	Offending-Crime	1.172	1.087	1.264	4.125	0.000
(2008) Bouffard	Number of Court Contacts	Offending-Crime	1.177	1.091	1.270	4.221	0.000
(2008) Bouffard	Number of Criminal Contacts	Offending-Crime	1.177	1.091	1.270	4.225	0.000
(2008) Bouffard	Time in Restrictive Placement	Offending-Crime	1.174	1.089	1.267	4.150	0.000
(2009) Berry	Variety of offending	Offending-Crime	1.179	1.093	1.272	4.261	0.000
(2009) Berry	Volume of offending (self-report)	Offending-Crime	1.178	1.092	1.271	4.241	0.000
(2009) Berstein	Delinquency - Any Infraction (F)	Offending-Crime	1.182	1.093	1.277	4.197	0.000
(2009) Berstein	Delinquency - Any Infraction (M)	Offending-Crime	1.188	1.099	1.284	4.323	0.000
(2009) Berstein	Delinquency - Repeat Infraction (F)	Offending-Crime	1.182	1.093	1.277	4.197	0.000
(2009) Berstein	Delinquency - Repeat Infraction (M)	Offending-Crime	1.188	1.099	1.284	4.323	0.000
(2009) Berstein	Misconduct - Any Infraction (F)	Offending-Crime	1.182	1.094	1.278	4.208	0.000
(2009) Berstein	Misconduct - Any Infraction (M)	Offending-Crime	1.188	1.099	1.284	4.335	0.000
(2009) Berstein	Misconduct - Repeat Infraction (F)	Offending-Crime	1.182	1.093	1.277	4.197	0.000
(2009) Berstein	Misconduct - Repeat Infraction (M)	Offending-Crime	1.188	1.099	1.284	4.323	0.000
(2011) Bodin	Delinquency	Offending-Crime	1.200	1.113	1.293	4.761	0.000
(2011) Chandler	Minor Misconduct	Offending-Crime	1.177	1.091	1.269	4.214	0.000
(2011) Chandler	Serious Misconduct	Offending-Crime	1.177	1.091	1.270	4.225	0.000
(2011) Herrera	Misconduct Outside of School	Offending-Crime	1.184	1.097	1.278	4.320	0.000
(2013) Herrera	Legal Problems	Offending-Crime	1.184	1.098	1.278	4.375	0.000
(2013) Herrera	Misconduct	Offending-Crime	1.178	1.092	1.271	4.223	0.000
(2013) O'Donnell	Adult Arrest Rates	Offending-Crime	1.175	1.089	1.268	4.161	0.000
(2013) O'Donnell	Drug Arrests	Offending-Crime	1.141	1.061	1.228	3.560	0.000
(2014) Weller	Frequency of Problem Behavior	Offending-Crime	1.138	1.059	1.224	3.511	0.000
(2016) Karcher	Misconduct	Offending-Crime	1.172	1.086	1.265	4.091	0.000
(2017) Campie	Crime Rate - Non-Violent Crime	Offending-Crime	1.177	1.091	1.270	4.199	0.000
(2017) Duriez	Juvenile Justice History	Offending-Crime	1.177	1.091	1.270	4.223	0.000
(2017) Heller	Property (2009-10)	Offending-Crime	1.182	1.095	1.277	4.258	0.000
(2017) Heller	Property (2013-14)	Offending-Crime	1.209	1.101	1.327	3.980	0.000
(2017) Heller	Total arrests per youth per year (2009-10)	Offending-Crime	1.174	1.088	1.266	4.136	0.000
(2017) Heller	Total arrests per youth per year (2013-14)	Offending-Crime	1.174	1.088	1.267	4.112	0.000
(2018) Blakeslee	Arrests	Offending-Crime	1.161	1.078	1.250	3.951	0.000
(2018) Blakeslee	Charge Severity	Offending-Crime	1.147	1.069	1.230	3.829	0.000
(2018) Cheng	Misdemeanor Score Total	Offending-Crime	1.183	1.096	1.276	4.330	0.000
(2018) Jarjoura	Person Offenses—Frequency	Offending-Crime	1.184	1.096	1.279	4.284	0.000
(2018) Jarjoura	Person Offenses—Onset	Offending-Crime	1.186	1.097	1.282	4.278	0.000
(2018) Jarjoura	Property Offenses—Frequency	Offending-Crime	1.185	1.097	1.280	4.308	0.000
(2018) Jarjoura	Property Offenses—Onset	Offending-Crime	1.183	1.095	1.279	4.252	0.000
(2018) Jarjoura	Stopped by Police or Arrested	Offending-Crime	1.186	1.096	1.283	4.243	0.000
(2018) Kretschmar	Charged with Offence	Offending-Crime	1.169	1.083	1.261	4.027	0.000
(2018) Kretschmar	Number of Charges	Offending-Crime	1.170	1.085	1.263	4.061	0.000
(2020) Haddock	Delinquency	Offending-Crime	1.186	1.095	1.284	4.200	0.000
(2020) Hu	Delinquency	Offending-Crime	1.173	1.087	1.265	4.116	0.000
			1.177	1.092	1.270	4.232	0.000

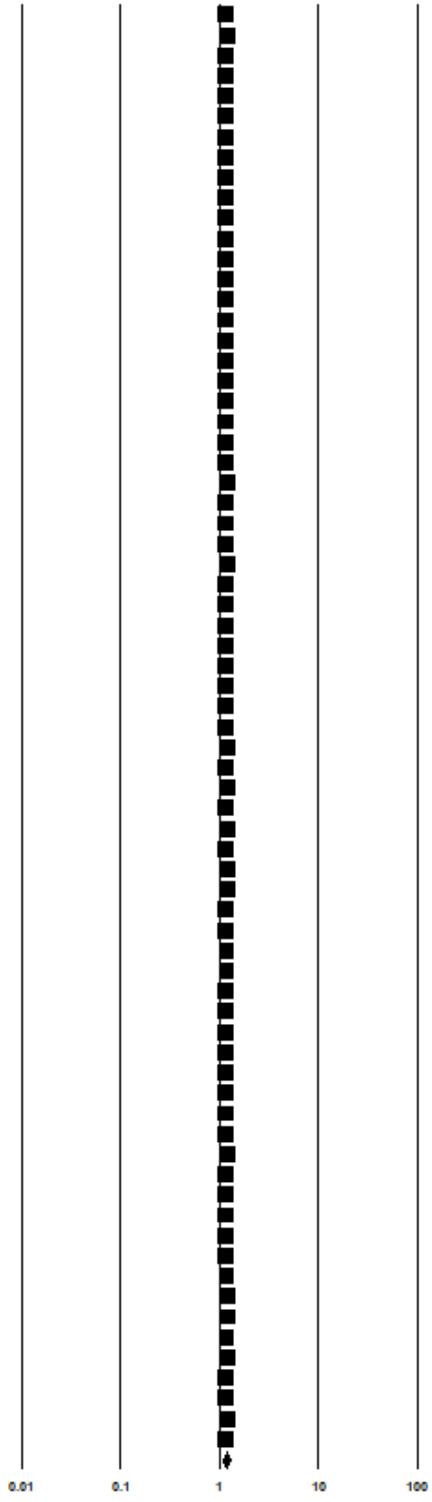


Figure 15.4 Forest plot for one study removed - gang involvement

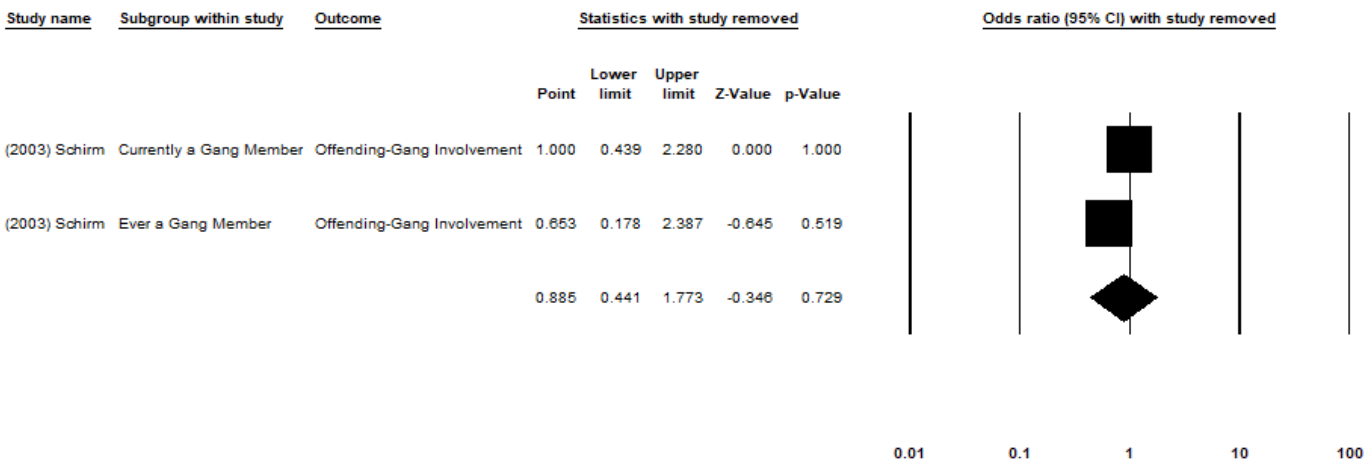
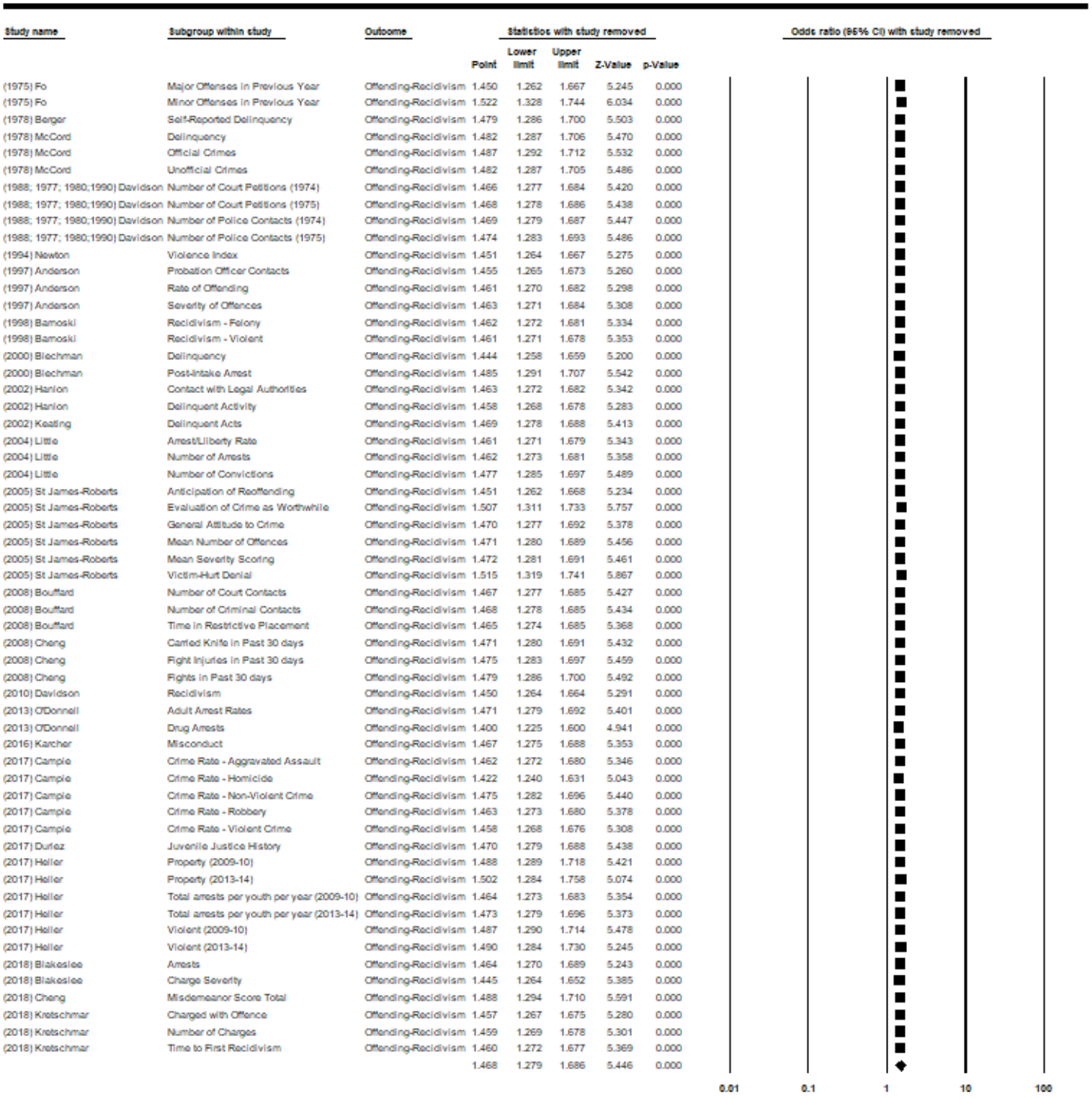


Figure 15.5 Forest plot for one study removed - recidivism outcomes



Study name	Subgroup within study	Outcome	Statistics with study removed				
			Point	Lower limit	Upper limit	Z-Value	p-Value
(1975) Fo	Major Offenses in Previous Year	Offending-Recidivism	1.450	1.262	1.667	5.245	0.000
(1975) Fo	Minor Offenses in Previous Year	Offending-Recidivism	1.522	1.328	1.744	6.034	0.000
(1978) Berger	Self-Reported Delinquency	Offending-Recidivism	1.479	1.286	1.700	5.503	0.000
(1978) McCord	Delinquency	Offending-Recidivism	1.482	1.287	1.706	5.470	0.000
(1978) McCord	Official Crimes	Offending-Recidivism	1.487	1.292	1.712	5.532	0.000
(1978) McCord	Unofficial Crimes	Offending-Recidivism	1.482	1.287	1.705	5.486	0.000
(1988; 1977; 1980;1990) Davidson	Number of Court Petitions (1974)	Offending-Recidivism	1.466	1.277	1.684	5.420	0.000
(1988; 1977; 1980;1990) Davidson	Number of Court Petitions (1975)	Offending-Recidivism	1.468	1.278	1.686	5.438	0.000
(1988; 1977; 1980;1990) Davidson	Number of Police Contacts (1974)	Offending-Recidivism	1.469	1.279	1.687	5.447	0.000
(1988; 1977; 1980;1990) Davidson	Number of Police Contacts (1975)	Offending-Recidivism	1.474	1.283	1.693	5.486	0.000
(1994) Newton	Violence Index	Offending-Recidivism	1.451	1.264	1.667	5.275	0.000
(1997) Anderson	Probation Officer Contacts	Offending-Recidivism	1.455	1.265	1.673	5.260	0.000
(1997) Anderson	Rate of Offending	Offending-Recidivism	1.461	1.270	1.682	5.298	0.000
(1997) Anderson	Severity of Offences	Offending-Recidivism	1.463	1.271	1.684	5.308	0.000
(1998) Barnoski	Recidivism - Felony	Offending-Recidivism	1.462	1.272	1.681	5.334	0.000
(1998) Barnoski	Recidivism - Violent	Offending-Recidivism	1.461	1.271	1.678	5.353	0.000
(2000) Blechman	Delinquency	Offending-Recidivism	1.444	1.258	1.659	5.200	0.000
(2000) Blechman	Post-Intake Arrest	Offending-Recidivism	1.485	1.291	1.707	5.542	0.000
(2002) Hanlon	Contact with Legal Authorities	Offending-Recidivism	1.463	1.272	1.682	5.342	0.000
(2002) Hanlon	Delinquent Activity	Offending-Recidivism	1.458	1.268	1.678	5.283	0.000
(2002) Keating	Delinquent Acts	Offending-Recidivism	1.469	1.278	1.688	5.413	0.000
(2004) Little	Arrest/Liberty Rate	Offending-Recidivism	1.461	1.271	1.679	5.343	0.000
(2004) Little	Number of Arrests	Offending-Recidivism	1.462	1.273	1.681	5.358	0.000
(2004) Little	Number of Convictions	Offending-Recidivism	1.477	1.285	1.697	5.489	0.000
(2005) St James-Roberts	Anticipation of Reoffending	Offending-Recidivism	1.451	1.262	1.668	5.234	0.000
(2005) St James-Roberts	Evaluation of Crime as Worthwhile	Offending-Recidivism	1.507	1.311	1.733	5.757	0.000
(2005) St James-Roberts	General Attitude to Crime	Offending-Recidivism	1.470	1.277	1.692	5.378	0.000
(2005) St James-Roberts	Mean Number of Offences	Offending-Recidivism	1.471	1.280	1.689	5.456	0.000
(2005) St James-Roberts	Mean Severity Scoring	Offending-Recidivism	1.472	1.281	1.691	5.461	0.000
(2005) St James-Roberts	Victim-Hurt Denial	Offending-Recidivism	1.515	1.319	1.741	5.867	0.000
(2008) Bouffard	Number of Court Contacts	Offending-Recidivism	1.467	1.277	1.685	5.427	0.000
(2008) Bouffard	Number of Criminal Contacts	Offending-Recidivism	1.468	1.278	1.685	5.434	0.000
(2008) Bouffard	Time in Restrictive Placement	Offending-Recidivism	1.465	1.274	1.685	5.368	0.000
(2008) Cheng	Carried Knife in Past 30 days	Offending-Recidivism	1.471	1.280	1.691	5.432	0.000
(2008) Cheng	Fight Injuries in Past 30 days	Offending-Recidivism	1.475	1.283	1.697	5.459	0.000
(2008) Cheng	Fights in Past 30 days	Offending-Recidivism	1.479	1.286	1.700	5.492	0.000
(2010) Davidson	Recidivism	Offending-Recidivism	1.450	1.264	1.664	5.291	0.000
(2013) O'Donnell	Adult Arrest Rates	Offending-Recidivism	1.471	1.279	1.692	5.401	0.000
(2013) O'Donnell	Drug Arrests	Offending-Recidivism	1.400	1.225	1.600	4.941	0.000
(2016) Karcher	Misconduct	Offending-Recidivism	1.467	1.275	1.688	5.353	0.000
(2017) Campie	Crime Rate - Aggravated Assault	Offending-Recidivism	1.462	1.272	1.680	5.346	0.000
(2017) Campie	Crime Rate - Homicide	Offending-Recidivism	1.422	1.240	1.631	5.043	0.000
(2017) Campie	Crime Rate - Non-Violent Crime	Offending-Recidivism	1.475	1.282	1.696	5.440	0.000
(2017) Campie	Crime Rate - Robbery	Offending-Recidivism	1.463	1.273	1.680	5.378	0.000
(2017) Campie	Crime Rate - Violent Crime	Offending-Recidivism	1.458	1.268	1.676	5.308	0.000
(2017) Duriez	Juvenile Justice History	Offending-Recidivism	1.470	1.279	1.688	5.438	0.000
(2017) Heller	Property (2009-10)	Offending-Recidivism	1.488	1.289	1.718	5.421	0.000
(2017) Heller	Property (2013-14)	Offending-Recidivism	1.502	1.284	1.758	5.074	0.000
(2017) Heller	Total arrests per youth per year (2009-10)	Offending-Recidivism	1.464	1.273	1.683	5.354	0.000
(2017) Heller	Total arrests per youth per year (2013-14)	Offending-Recidivism	1.473	1.279	1.696	5.373	0.000
(2017) Heller	Violent (2009-10)	Offending-Recidivism	1.487	1.290	1.714	5.478	0.000
(2017) Heller	Violent (2013-14)	Offending-Recidivism	1.490	1.284	1.730	5.245	0.000
(2018) Blakeslee	Arrests	Offending-Recidivism	1.464	1.270	1.689	5.243	0.000
(2018) Blakeslee	Charge Severity	Offending-Recidivism	1.445	1.264	1.652	5.385	0.000
(2018) Cheng	Misdemeanor Score Total	Offending-Recidivism	1.488	1.294	1.710	5.591	0.000
(2018) Kretschmar	Charged with Offence	Offending-Recidivism	1.457	1.267	1.675	5.280	0.000
(2018) Kretschmar	Number of Charges	Offending-Recidivism	1.459	1.269	1.678	5.301	0.000
(2018) Kretschmar	Time to First Recidivism	Offending-Recidivism	1.460	1.272	1.677	5.369	0.000
			1.468	1.279	1.686	5.446	0.000

Odds ratio (95% CI) with study removed

0.01 0.1 1 10 100

Figure 15.6 Forest plot for one study removed - externalising

Study name	Subgroup within study	Outcome	Statistics with study removed				
			Point	Lower limit	Upper limit	Z-Value	p-Value
(1977) Dicken	Parent Rated - Aggression (F)	Child Centred-Externalizing	1.127	1.040	1.223	2.897	0.004
(1977) Dicken	Parent Rated - Aggression (M)	Child Centred-Externalizing	1.130	1.042	1.225	2.958	0.003
(1977) Dicken	Teacher Rated Aggression (F)	Child Centred-Externalizing	1.131	1.043	1.226	2.988	0.003
(1977) Dicken	Teacher Rated Aggression (M)	Child Centred-Externalizing	1.130	1.043	1.225	2.974	0.003
(1997) Abbott	Aggression	Child Centred-Externalizing	1.130	1.042	1.225	2.958	0.003
(1997) Abbott	Conduct Problems	Child Centred-Externalizing	1.131	1.043	1.226	2.983	0.003
(1998) Grossman	Number of Times Hit Someone	Child Centred-Externalizing	1.134	1.043	1.232	2.963	0.003
(2000) Blachman	Externalizing	Child Centred-Externalizing	1.133	1.045	1.229	3.008	0.003
(2000) Cavell	Parent Rated - Aggression	Child Centred-Externalizing	1.130	1.042	1.226	2.950	0.003
(2000) Cavell	Peer rated - Aggression	Child Centred-Externalizing	1.130	1.042	1.225	2.957	0.003
(2000) Cavell	Teacher Rated - Aggression	Child Centred-Externalizing	1.133	1.044	1.229	2.995	0.003
(2002) Grossman	Hitting Someone (T1)	Child Centred-Externalizing	1.133	1.043	1.231	2.955	0.003
(2002) Grossman	Hitting Someone (T2)	Child Centred-Externalizing	1.115	1.029	1.208	2.662	0.008
(2002) Grossman	Hitting Someone (T3)	Child Centred-Externalizing	1.149	1.060	1.247	3.357	0.001
(2002) Grossman	Hitting Someone (T4)	Child Centred-Externalizing	1.132	1.042	1.230	2.928	0.003
(2002) Keating	Parent CBCL - Externalizing	Child Centred-Externalizing	1.130	1.041	1.225	2.932	0.003
(2002) Keating	Teacher CBCL - Externalizing	Child Centred-Externalizing	1.129	1.041	1.225	2.924	0.003
(2005) St James-Roberts	Conduct Problems	Child Centred-Externalizing	1.127	1.039	1.223	2.884	0.004
(2005) St James-Roberts	Emotional Symptoms	Child Centred-Externalizing	1.137	1.048	1.234	3.092	0.002
(2005) St James-Roberts	Hyperactivity	Child Centred-Externalizing	1.114	1.030	1.205	2.705	0.007
(2005) St James-Roberts	SDQ Total Difficulties	Child Centred-Externalizing	1.122	1.035	1.217	2.798	0.005
(2007) De Wit	Child Rated - Conduct Problems	Child Centred-Externalizing	1.131	1.043	1.226	2.980	0.003
(2007) De Wit	Child Rated - Emotional Problems	Child Centred-Externalizing	1.132	1.044	1.227	3.001	0.003
(2007) De Wit	Child Rated - Hyperactivity and Attention Problems	Child Centred-Externalizing	1.131	1.043	1.227	2.992	0.003
(2007) De Wit	Child Rated - Indirect Aggression	Child Centred-Externalizing	1.131	1.043	1.226	2.979	0.003
(2007) De Wit	Parent Rated - Conduct Problems	Child Centred-Externalizing	1.131	1.043	1.226	2.981	0.003
(2007) De Wit	Parent Rated - Emotional Problems	Child Centred-Externalizing	1.131	1.043	1.226	2.981	0.003
(2007) De Wit	Parent Rated - Hyperactivity and Attention Problems	Child Centred-Externalizing	1.131	1.043	1.226	2.982	0.003
(2007) De Wit	Parent Rated - Indirect Aggression	Child Centred-Externalizing	1.132	1.044	1.227	2.993	0.003
(2008) Cheng	Aggression Score Total	Child Centred-Externalizing	1.127	1.039	1.221	2.901	0.004
(2009) Berry	Negative affect	Child Centred-Externalizing	1.135	1.047	1.230	3.084	0.002
(2011) Bodin	Parent Reports - CBCL Externalizing	Child Centred-Externalizing	1.155	1.067	1.250	3.571	0.000
(2011) Bodin	Parent Reports - CBCL Total	Child Centred-Externalizing	1.147	1.058	1.244	3.320	0.001
(2011) Bodin	Youth Reports - Externalizing	Child Centred-Externalizing	1.132	1.043	1.229	2.954	0.003
(2011) Chandler	Parent Report - Conduct problems	Child Centred-Externalizing	1.134	1.044	1.231	2.993	0.003
(2011) Chandler	Parent Report - Emotional Symptoms	Child Centred-Externalizing	1.141	1.052	1.239	3.165	0.002
(2011) Chandler	Youth Report - Conduct Problems	Child Centred-Externalizing	1.119	1.032	1.214	2.725	0.006
(2011) Chandler	Youth Report - Emotional Symptoms	Child Centred-Externalizing	1.124	1.036	1.220	2.804	0.005
(2013) Conduct Problems Prevention Research Group	ADHD	Child Centred-Externalizing	1.132	1.044	1.228	3.006	0.003
(2013) Conduct Problems Prevention Research Group	Conduct Disorder	Child Centred-Externalizing	1.133	1.046	1.228	3.048	0.002
(2013) Conduct Problems Prevention Research Group	Externalizing Disorder	Child Centred-Externalizing	1.134	1.046	1.230	3.050	0.002
(2013) Conduct Problems Prevention Research Group	Oppositional Defiant Disorder	Child Centred-Externalizing	1.133	1.044	1.228	3.012	0.003
(2013) Herrera	Conduct Problems	Child Centred-Externalizing	1.130	1.042	1.225	2.966	0.003
(2015) Guo	Aggression	Child Centred-Externalizing	1.130	1.042	1.225	2.957	0.003
(2016) Erdem	Parent Report - Conduct Problems	Child Centred-Externalizing	1.121	1.033	1.217	2.738	0.006
(2016) Erdem	Parent Report - Emotional Symptoms	Child Centred-Externalizing	1.121	1.033	1.216	2.733	0.006
(2016) Erdem	Youth Report - Conduct Problems	Child Centred-Externalizing	1.105	1.025	1.191	2.596	0.009
(2016) Erdem	Youth Report - Emotional Symptoms	Child Centred-Externalizing	1.111	1.027	1.202	2.634	0.008
(2017) DuBois	Conduct Problems	Child Centred-Externalizing	1.133	1.043	1.232	2.940	0.003
(2017) DuBois	Delinquent Behaviour	Child Centred-Externalizing	1.128	1.039	1.224	2.888	0.004
(2017) Eddy	Antisocial Behaviour	Child Centred-Externalizing	1.131	1.027	1.245	2.502	0.012
(2017) Eddy	BERS Total Strength	Child Centred-Externalizing	1.126	1.037	1.222	2.824	0.005
(2017) Eddy	CBCL Externalizing	Child Centred-Externalizing	1.133	1.041	1.232	2.905	0.004
(2018) Jarjoura	Conduct Problems	Child Centred-Externalizing	1.132	1.041	1.230	2.919	0.004
(2020) Haddock	Anger	Child Centred-Externalizing	1.131	1.032	1.240	2.632	0.008
(2021) Axford	PSDQ-Total Difficulties	Child Centred-Externalizing	1.131	1.043	1.227	2.965	0.003
(2021) Henry	Behavioural Symptoms	Child Centred-Externalizing	1.130	1.042	1.226	2.960	0.003
(2021) Henry	Externalizing	Child Centred-Externalizing	1.127	1.039	1.221	2.897	0.004
			1.130	1.043	1.225	2.974	0.003

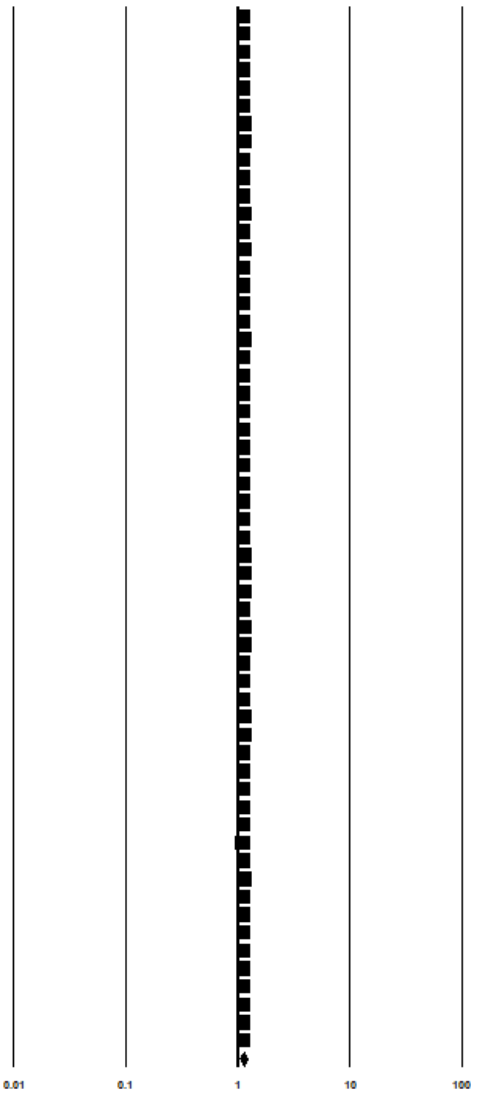
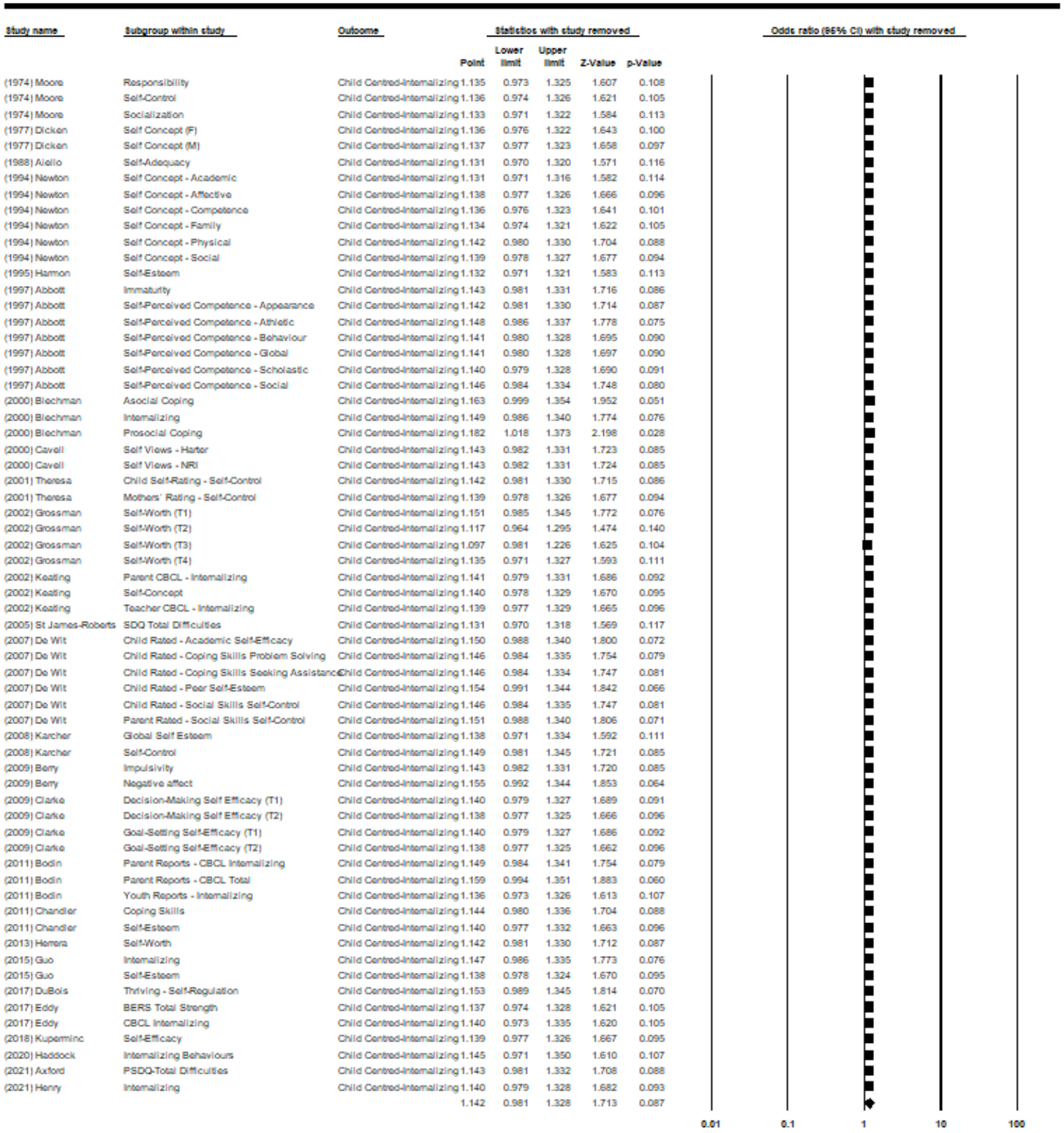


Figure 15.7 Forest plot for one study removed - internalizing



Study name	Subgroup within study	Outcome	Statistics with study removed				
			Point	Lower limit	Upper limit	Z-Value	p-Value
(1974) Moore	Responsibility	Child Centred-Internalizing	1.135	0.973	1.325	1.607	0.108
(1974) Moore	Self-Control	Child Centred-Internalizing	1.136	0.974	1.326	1.621	0.105
(1974) Moore	Socialization	Child Centred-Internalizing	1.133	0.971	1.322	1.584	0.113
(1977) Dicken	Self Concept (F)	Child Centred-Internalizing	1.136	0.976	1.322	1.643	0.100
(1977) Dicken	Self Concept (M)	Child Centred-Internalizing	1.137	0.977	1.323	1.658	0.097
(1988) Aiello	Self-Adequacy	Child Centred-Internalizing	1.131	0.970	1.320	1.571	0.116
(1994) Newton	Self Concept - Academic	Child Centred-Internalizing	1.131	0.971	1.316	1.582	0.114
(1994) Newton	Self Concept - Affective	Child Centred-Internalizing	1.138	0.977	1.326	1.666	0.096
(1994) Newton	Self Concept - Competence	Child Centred-Internalizing	1.136	0.976	1.323	1.641	0.101
(1994) Newton	Self Concept - Family	Child Centred-Internalizing	1.134	0.974	1.321	1.622	0.105
(1994) Newton	Self Concept - Physical	Child Centred-Internalizing	1.142	0.980	1.330	1.704	0.088
(1994) Newton	Self Concept - Social	Child Centred-Internalizing	1.139	0.978	1.327	1.677	0.094
(1995) Harmon	Self-Esteem	Child Centred-Internalizing	1.132	0.971	1.321	1.583	0.113
(1997) Abbott	Immaturity	Child Centred-Internalizing	1.143	0.981	1.331	1.716	0.086
(1997) Abbott	Self-Perceived Competence - Appearance	Child Centred-Internalizing	1.142	0.981	1.330	1.714	0.087
(1997) Abbott	Self-Perceived Competence - Athletic	Child Centred-Internalizing	1.148	0.986	1.337	1.778	0.075
(1997) Abbott	Self-Perceived Competence - Behaviour	Child Centred-Internalizing	1.141	0.980	1.328	1.695	0.090
(1997) Abbott	Self-Perceived Competence - Global	Child Centred-Internalizing	1.141	0.980	1.328	1.697	0.090
(1997) Abbott	Self-Perceived Competence - Scholastic	Child Centred-Internalizing	1.140	0.979	1.328	1.690	0.091
(1997) Abbott	Self-Perceived Competence - Social	Child Centred-Internalizing	1.146	0.984	1.334	1.748	0.080
(2000) Blechman	Asocial Coping	Child Centred-Internalizing	1.163	0.999	1.354	1.952	0.051
(2000) Blechman	Internalizing	Child Centred-Internalizing	1.149	0.986	1.340	1.774	0.076
(2000) Blechman	Prosocial Coping	Child Centred-Internalizing	1.182	1.018	1.373	2.198	0.028
(2000) Cavell	Self Views - Harter	Child Centred-Internalizing	1.143	0.982	1.331	1.723	0.085
(2000) Cavell	Self Views - NRI	Child Centred-Internalizing	1.143	0.982	1.331	1.724	0.085
(2001) Theresa	Child Self-Rating - Self-Control	Child Centred-Internalizing	1.142	0.981	1.330	1.715	0.086
(2001) Theresa	Mothers' Rating - Self-Control	Child Centred-Internalizing	1.139	0.978	1.326	1.677	0.094
(2002) Grossman	Self-Worth (T1)	Child Centred-Internalizing	1.151	0.985	1.345	1.772	0.076
(2002) Grossman	Self-Worth (T2)	Child Centred-Internalizing	1.117	0.964	1.295	1.474	0.140
(2002) Grossman	Self-Worth (T3)	Child Centred-Internalizing	1.097	0.981	1.226	1.625	0.104
(2002) Grossman	Self-Worth (T4)	Child Centred-Internalizing	1.135	0.971	1.327	1.593	0.111
(2002) Keating	Parent CBCL - Internalizing	Child Centred-Internalizing	1.141	0.979	1.331	1.686	0.092
(2002) Keating	Self-Concept	Child Centred-Internalizing	1.140	0.978	1.329	1.670	0.095
(2002) Keating	Teacher CBCL - Internalizing	Child Centred-Internalizing	1.139	0.977	1.329	1.665	0.096
(2005) St James-Roberts	SDQ Total Difficulties	Child Centred-Internalizing	1.131	0.970	1.318	1.569	0.117
(2007) De Wit	Child Rated - Academic Self-Efficacy	Child Centred-Internalizing	1.150	0.988	1.340	1.800	0.072
(2007) De Wit	Child Rated - Coping Skills Problem Solving	Child Centred-Internalizing	1.146	0.984	1.335	1.754	0.079
(2007) De Wit	Child Rated - Coping Skills Seeking Assistance	Child Centred-Internalizing	1.146	0.984	1.334	1.747	0.081
(2007) De Wit	Child Rated - Peer Self-Esteem	Child Centred-Internalizing	1.154	0.991	1.344	1.842	0.066
(2007) De Wit	Child Rated - Social Skills Self-Control	Child Centred-Internalizing	1.146	0.984	1.335	1.747	0.081
(2007) De Wit	Parent Rated - Social Skills Self-Control	Child Centred-Internalizing	1.151	0.988	1.340	1.806	0.071
(2008) Karcher	Global Self Esteem	Child Centred-Internalizing	1.138	0.971	1.334	1.592	0.111
(2008) Karcher	Self-Control	Child Centred-Internalizing	1.149	0.981	1.345	1.721	0.085
(2009) Berry	Impulsivity	Child Centred-Internalizing	1.143	0.982	1.331	1.720	0.085
(2009) Berry	Negative affect	Child Centred-Internalizing	1.155	0.992	1.344	1.853	0.064
(2009) Clarke	Decision-Making Self Efficacy (T1)	Child Centred-Internalizing	1.140	0.979	1.327	1.689	0.091
(2009) Clarke	Decision-Making Self Efficacy (T2)	Child Centred-Internalizing	1.138	0.977	1.325	1.666	0.096
(2009) Clarke	Goal-Setting Self-Efficacy (T1)	Child Centred-Internalizing	1.140	0.979	1.327	1.686	0.092
(2009) Clarke	Goal-Setting Self-Efficacy (T2)	Child Centred-Internalizing	1.138	0.977	1.325	1.662	0.096
(2011) Bodin	Parent Reports - CBCL Internalizing	Child Centred-Internalizing	1.149	0.984	1.341	1.754	0.079
(2011) Bodin	Parent Reports - CBCL Total	Child Centred-Internalizing	1.159	0.994	1.351	1.883	0.060
(2011) Bodin	Youth Reports - Internalizing	Child Centred-Internalizing	1.136	0.973	1.326	1.613	0.107
(2011) Chandler	Coping Skills	Child Centred-Internalizing	1.144	0.980	1.336	1.704	0.088
(2011) Chandler	Self-Esteem	Child Centred-Internalizing	1.140	0.977	1.332	1.663	0.096
(2013) Herrera	Self-Worth	Child Centred-Internalizing	1.142	0.981	1.330	1.712	0.087
(2015) Guo	Internalizing	Child Centred-Internalizing	1.147	0.986	1.335	1.773	0.076
(2015) Guo	Self-Esteem	Child Centred-Internalizing	1.138	0.978	1.324	1.670	0.095
(2017) DuBois	Thriving - Self-Regulation	Child Centred-Internalizing	1.153	0.989	1.345	1.814	0.070
(2017) Eddy	BERS Total Strength	Child Centred-Internalizing	1.137	0.974	1.328	1.621	0.105
(2017) Eddy	CBCL Internalizing	Child Centred-Internalizing	1.140	0.973	1.335	1.620	0.105
(2018) Kuperminc	Self-Efficacy	Child Centred-Internalizing	1.139	0.977	1.326	1.667	0.095
(2020) Haddock	Internalizing Behaviours	Child Centred-Internalizing	1.145	0.971	1.350	1.610	0.107
(2021) Axford	PSDQ-Total Difficulties	Child Centred-Internalizing	1.143	0.981	1.332	1.708	0.088
(2021) Henry	Internalizing	Child Centred-Internalizing	1.140	0.979	1.328	1.682	0.093
			1.142	0.981	1.328	1.713	0.087

Odds ratio (95% CI) with study removed

0.01 0.1 1 10 100

Figure 15.8 Forest plot for one study removed - attitudes and beliefs outcomes

Study name	Subgroup within study	Outcome	Statistics with study removed				
			Point	Lower limit	Upper limit	Z-Value	p-Value
(1996) LoSciuto	Attitudes Towards Older People	Child Centred-Attitudes and Beliefs	0.920	0.774	1.092	-0.954	0.340
(1997) Abbott	Child Feeling	Child Centred-Attitudes and Beliefs	0.928	0.783	1.100	-0.863	0.388
(1997) Abbott	Parent Feeling	Child Centred-Attitudes and Beliefs	0.927	0.782	1.098	-0.879	0.380
(1998) Royse	Self-Esteem	Child Centred-Attitudes and Beliefs	0.930	0.784	1.101	-0.845	0.398
(2000) Cavell	Aggressive Beliefs	Child Centred-Attitudes and Beliefs	0.928	0.784	1.097	-0.877	0.381
(2000) Cavell	Hostile Attributions	Child Centred-Attitudes and Beliefs	0.928	0.784	1.099	-0.867	0.386
(2000) Cavell	Parent Rated - Acceptance	Child Centred-Attitudes and Beliefs	0.929	0.784	1.099	-0.861	0.389
(2000) Cavell	Peer Rated - Acceptance	Child Centred-Attitudes and Beliefs	0.928	0.785	1.098	-0.866	0.387
(2000) Cavell	Teacher Rated - Acceptance	Child Centred-Attitudes and Beliefs	0.928	0.784	1.099	-0.863	0.388
(2001) Theresa	Child Self-Rating - Assertion	Child Centred-Attitudes and Beliefs	0.921	0.778	1.090	-0.963	0.336
(2001) Theresa	Child Self-Rating - Cooperation	Child Centred-Attitudes and Beliefs	0.923	0.780	1.092	-0.932	0.351
(2001) Theresa	Child Self-Rating - Empathy	Child Centred-Attitudes and Beliefs	0.926	0.782	1.095	-0.900	0.368
(2001) Theresa	Mothers' Rating - Empathy	Child Centred-Attitudes and Beliefs	0.933	0.788	1.104	-0.809	0.419
(2002) Grossman	Perceived Scholastic Competence (T1)	Child Centred-Attitudes and Beliefs	0.923	0.778	1.096	-0.912	0.362
(2002) Grossman	Perceived Scholastic Competence (T2)	Child Centred-Attitudes and Beliefs	0.916	0.772	1.086	-1.015	0.310
(2002) Grossman	Perceived Scholastic Competence (T3)	Child Centred-Attitudes and Beliefs	0.918	0.774	1.089	-0.985	0.325
(2002) Grossman	Perceived Scholastic Competence (T4)	Child Centred-Attitudes and Beliefs	0.940	0.791	1.116	-0.709	0.478
(2002) Grossman	Perceived Social Acceptance (T1)	Child Centred-Attitudes and Beliefs	0.929	0.782	1.103	-0.843	0.399
(2002) Grossman	Perceived Social Acceptance (T2)	Child Centred-Attitudes and Beliefs	0.924	0.778	1.098	-0.898	0.369
(2002) Grossman	Perceived Social Acceptance (T3)	Child Centred-Attitudes and Beliefs	0.923	0.778	1.096	-0.912	0.362
(2002) Grossman	Perceived Social Acceptance (T4)	Child Centred-Attitudes and Beliefs	0.919	0.774	1.090	-0.970	0.332
(2002) Keating	Hopelessness	Child Centred-Attitudes and Beliefs	0.926	0.782	1.096	-0.894	0.371
(2003) Schirm	Attitude to Committing Crimes	Child Centred-Attitudes and Beliefs	0.931	0.786	1.104	-0.822	0.411
(2003) Schirm	Attitude to Dropping Out of School	Child Centred-Attitudes and Beliefs	0.927	0.782	1.099	-0.872	0.383
(2003) Schirm	Attitude to Having a Baby While a Teenager	Child Centred-Attitudes and Beliefs	0.926	0.781	1.098	-0.885	0.376
(2003) Schirm	Attitude to Using Drugs or Alcohol Frequently	Child Centred-Attitudes and Beliefs	0.927	0.782	1.099	-0.873	0.383
(2007) De Wit	Child Rated - Social Skills Empathy	Child Centred-Attitudes and Beliefs	0.935	0.790	1.108	-0.776	0.438
(2008) Karcher	Empathy	Child Centred-Attitudes and Beliefs	0.922	0.776	1.096	-0.921	0.357
(2008) Karcher	Hope	Child Centred-Attitudes and Beliefs	0.922	0.776	1.096	-0.921	0.357
(2008) Karcher	Mattering	Child Centred-Attitudes and Beliefs	0.922	0.776	1.096	-0.921	0.357
(2008) Karcher	Self-in-Future	Child Centred-Attitudes and Beliefs	0.931	0.782	1.107	-0.810	0.418
(2008) Karcher	Self-in-Present	Child Centred-Attitudes and Beliefs	0.920	0.775	1.092	-0.955	0.340
(2009) Berry	Aspirations for the future	Child Centred-Attitudes and Beliefs	0.929	0.784	1.099	-0.862	0.389
(2009) Berry	Positive outlook	Child Centred-Attitudes and Beliefs	0.922	0.779	1.091	-0.946	0.344
(2009) Berry	Self-esteem	Child Centred-Attitudes and Beliefs	0.922	0.779	1.092	-0.939	0.348
(2009) Clarke	Perceptions of Classmates Acceptance (T1)	Child Centred-Attitudes and Beliefs	0.927	0.784	1.098	-0.875	0.381
(2009) Clarke	Perceptions of Classmates Acceptance (T2)	Child Centred-Attitudes and Beliefs	0.925	0.781	1.095	-0.908	0.364
(2011) Bodin	Parent Reports - Social Competence	Child Centred-Attitudes and Beliefs	0.934	0.787	1.108	-0.783	0.434
(2011) Bodin	Youth Report - Social Competence	Child Centred-Attitudes and Beliefs	0.925	0.779	1.097	-0.896	0.370
(2013) Herrera	Educational Expectations	Child Centred-Attitudes and Beliefs	0.928	0.784	1.098	-0.871	0.384
(2013) Herrera	Honesty	Child Centred-Attitudes and Beliefs	0.928	0.784	1.098	-0.873	0.382
(2013) Herrera	Hope	Child Centred-Attitudes and Beliefs	0.927	0.783	1.098	-0.874	0.382
(2013) Herrera	Self-Perceptions of Academic Abilities	Child Centred-Attitudes and Beliefs	0.928	0.784	1.098	-0.871	0.384
(2014) Weiler	Perception of Problem Behavior	Child Centred-Attitudes and Beliefs	0.882	0.748	1.041	-1.483	0.138
(2015) Weiler	Perception of Problem behavior	Child Centred-Attitudes and Beliefs	1.065	0.935	1.214	0.946	0.344
(2017) Duriez	Values, Beliefs, and Attitudes	Child Centred-Attitudes and Beliefs	0.926	0.782	1.096	-0.897	0.369
(2018) Kuperminc	Empathy	Child Centred-Attitudes and Beliefs	0.928	0.783	1.099	-0.869	0.385
(2020) Haddock	Future Orientation	Child Centred-Attitudes and Beliefs	0.942	0.789	1.124	-0.666	0.506
(2020) Haddock	Meaning in Life	Child Centred-Attitudes and Beliefs	0.927	0.771	1.115	-0.803	0.422
(2020) Haddock	Self-Efficacy	Child Centred-Attitudes and Beliefs	0.944	0.795	1.122	-0.654	0.513
			0.929	0.785	1.098	-0.863	0.388

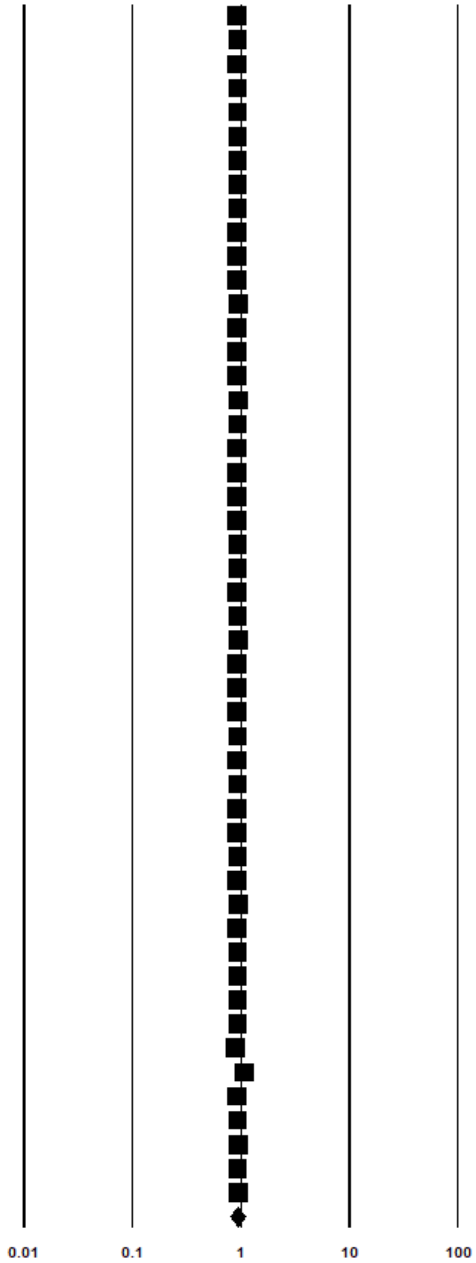
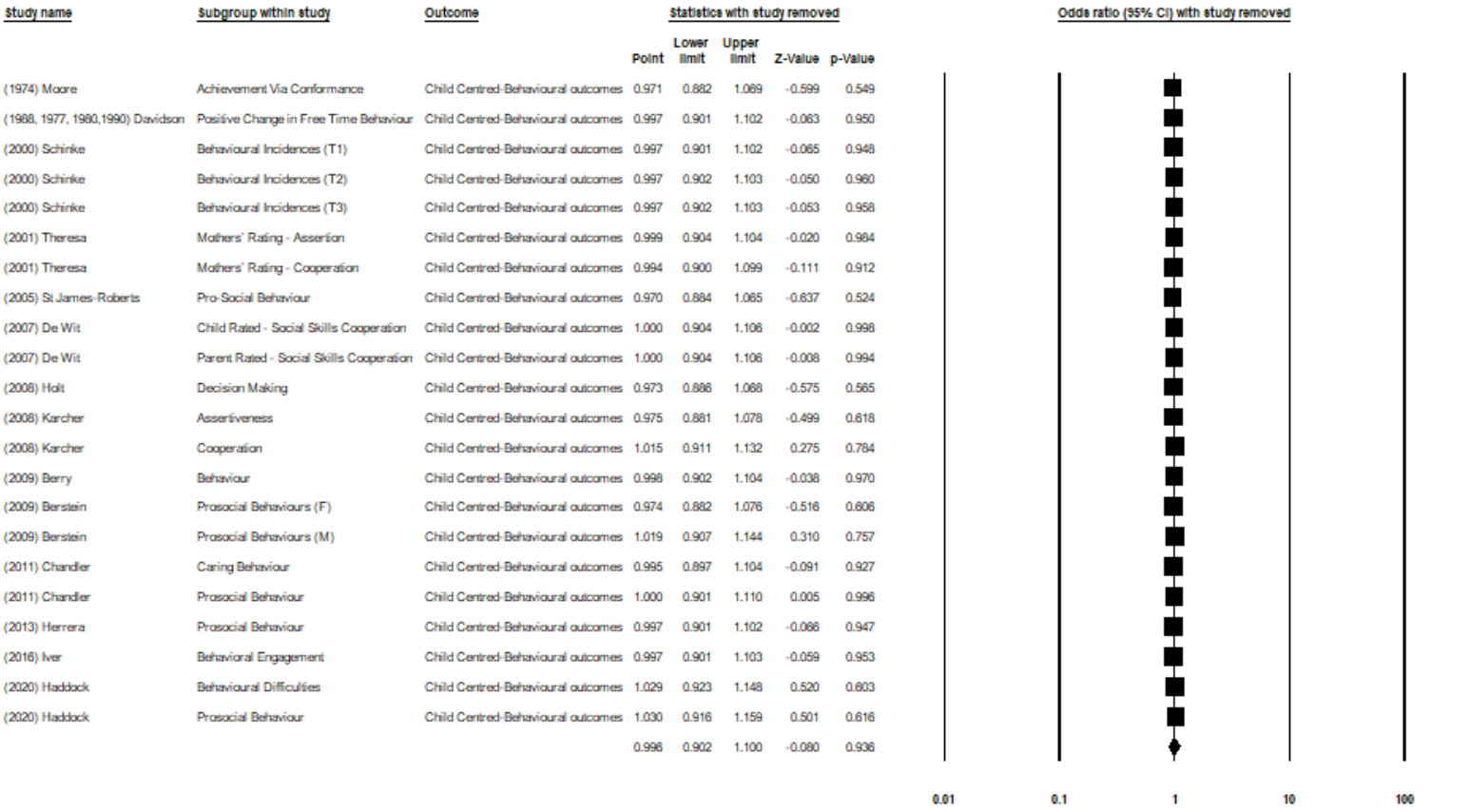


Figure 15.9 Forest plot for one study removed - socioemotional outcomes

Figure 15.10 Forest plot for one study removed - behavioural outcomes



Study name	Subgroup within study	Outcome	Statistics with study removed				
			Point	Lower limit	Upper limit	Z-Value	p-Value
(1974) Moore	Achievement Via Conformance	Child Centred-Behavioural outcomes	0.971	0.882	1.069	-0.599	0.549
(1968, 1977, 1980,1990) Davidson	Positive Change in Free Time Behaviour	Child Centred-Behavioural outcomes	0.997	0.901	1.102	-0.063	0.950
(2000) Schinke	Behavioural Incidences (T1)	Child Centred-Behavioural outcomes	0.997	0.901	1.102	-0.065	0.948
(2000) Schinke	Behavioural Incidences (T2)	Child Centred-Behavioural outcomes	0.997	0.902	1.103	-0.050	0.960
(2000) Schinke	Behavioural Incidences (T3)	Child Centred-Behavioural outcomes	0.997	0.902	1.103	-0.053	0.958
(2001) Theresa	Mothers' Rating - Assertion	Child Centred-Behavioural outcomes	0.999	0.904	1.104	-0.020	0.984
(2001) Theresa	Mothers' Rating - Cooperation	Child Centred-Behavioural outcomes	0.994	0.900	1.099	-0.111	0.912
(2005) St James-Roberts	Pro-Social Behaviour	Child Centred-Behavioural outcomes	0.970	0.884	1.065	-0.637	0.524
(2007) De Wit	Child Rated - Social Skills Cooperation	Child Centred-Behavioural outcomes	1.000	0.904	1.106	-0.002	0.998
(2007) De Wit	Parent Rated - Social Skills Cooperation	Child Centred-Behavioural outcomes	1.000	0.904	1.106	-0.008	0.994
(2008) Holt	Decision Making	Child Centred-Behavioural outcomes	0.973	0.886	1.068	-0.575	0.565
(2008) Karcher	Assertiveness	Child Centred-Behavioural outcomes	0.975	0.881	1.078	-0.499	0.618
(2008) Karcher	Cooperation	Child Centred-Behavioural outcomes	1.015	0.911	1.132	0.275	0.784
(2009) Berry	Behaviour	Child Centred-Behavioural outcomes	0.998	0.902	1.104	-0.038	0.970
(2009) Berstein	Prosocial Behaviours (F)	Child Centred-Behavioural outcomes	0.974	0.882	1.076	-0.516	0.606
(2009) Berstein	Prosocial Behaviours (M)	Child Centred-Behavioural outcomes	1.019	0.907	1.144	0.310	0.757
(2011) Chandler	Caring Behaviour	Child Centred-Behavioural outcomes	0.995	0.897	1.104	-0.091	0.927
(2011) Chandler	Prosocial Behaviour	Child Centred-Behavioural outcomes	1.000	0.901	1.110	0.005	0.996
(2013) Herrera	Prosocial Behaviour	Child Centred-Behavioural outcomes	0.997	0.901	1.102	-0.066	0.947
(2016) Iver	Behavioral Engagement	Child Centred-Behavioural outcomes	0.997	0.901	1.103	-0.059	0.953
(2020) Haddock	Behavioural Difficulties	Child Centred-Behavioural outcomes	1.029	0.923	1.148	0.520	0.603
(2020) Haddock	Prosocial Behaviour	Child Centred-Behavioural outcomes	1.030	0.916	1.159	0.501	0.616
			0.996	0.902	1.100	-0.080	0.936

Figure 15.11 Forest plot for one study removed - substance use outcomes

Study name	Subgroup within study	Outcome	Statistics with study removed				
			Point	Lower limit	Upper limit	Z-Value	p-Value
(1978) McCord	Alocholic	Child Centred-Substance Use	1.361	1.106	1.675	2.913	0.004
(1995) Harmon	Cigarette Use Last Month	Child Centred-Substance Use	1.351	1.102	1.657	2.899	0.004
(1995) Harmon	Drug and Alcohol Use Last Month	Child Centred-Substance Use	1.340	1.093	1.643	2.820	0.005
(1995) Harmon	Drug and Alcohol Use Since Intervention Began	Child Centred-Substance Use	1.345	1.097	1.649	2.850	0.004
(1996) LoSciuto	Frequency of Substance Use	Child Centred-Substance Use	1.348	1.093	1.663	2.789	0.005
(1996) LoSciuto	Reactions to Situations Involving Drug Use	Child Centred-Substance Use	1.348	1.093	1.662	2.786	0.005
(1998) Grossman	Alcohol Use	Child Centred-Substance Use	1.313	1.075	1.605	2.662	0.008
(1998) Grossman	Drug Use	Child Centred-Substance Use	1.280	1.063	1.543	2.601	0.009
(1998) Royse	Drug Attitude	Child Centred-Substance Use	1.354	1.106	1.657	2.934	0.003
(2002) Grossman	Frequency of Alcohol Use (T1)	Child Centred-Substance Use	1.363	1.111	1.673	2.967	0.003
(2002) Grossman	Frequency of Alcohol Use (T2)	Child Centred-Substance Use	1.362	1.109	1.672	2.953	0.003
(2002) Grossman	Frequency of Alcohol Use (T3)	Child Centred-Substance Use	1.356	1.104	1.665	2.902	0.004
(2002) Grossman	Frequency of Alcohol Use (T4)	Child Centred-Substance Use	1.347	1.096	1.655	2.835	0.005
(2002) Grossman	Frequency of Drug Use (T1)	Child Centred-Substance Use	1.350	1.099	1.658	2.856	0.004
(2002) Grossman	Frequency of Drug Use (T2)	Child Centred-Substance Use	1.356	1.104	1.665	2.902	0.004
(2002) Grossman	Frequency of Drug Use (T3)	Child Centred-Substance Use	1.336	1.088	1.641	2.770	0.006
(2002) Grossman	Frequency of Drug Use (T4)	Child Centred-Substance Use	1.338	1.090	1.643	2.778	0.005
(2002) Hanlon	Substance Misuse	Child Centred-Substance Use	1.339	1.092	1.641	2.802	0.005
(2003) Schirm	Bing Drinking in Past 30 Days	Child Centred-Substance Use	1.359	1.110	1.664	2.970	0.003
(2003) Schirm	Drinking in Past 30 Days	Child Centred-Substance Use	1.363	1.113	1.669	2.993	0.003
(2003) Schirm	Drunk or High at School in Past 12 Months	Child Centred-Substance Use	1.352	1.104	1.655	2.915	0.004
(2003) Schirm	Frequent Binge Drinking in Past 30 Days	Child Centred-Substance Use	1.356	1.108	1.658	2.960	0.003
(2003) Schirm	Frequent Drinking in Past 30 Days	Child Centred-Substance Use	1.350	1.103	1.653	2.912	0.004
(2003) Schirm	Used Any Illegal Drug in Past 30 Days	Child Centred-Substance Use	1.355	1.107	1.660	2.939	0.003
(2004) Kemple	Involved in Drug Activities	Child Centred-Substance Use	1.351	1.105	1.654	2.927	0.003
(2009) Berry	Use of drugs and alcohol	Child Centred-Substance Use	1.363	1.116	1.666	3.036	0.002
(2011) Bodin	Alcohol Volume	Child Centred-Substance Use	1.374	1.122	1.682	3.071	0.002
(2011) Herrera	Substance Use	Child Centred-Substance Use	1.347	1.099	1.652	2.864	0.004
(2013) Herrera	Substance Use	Child Centred-Substance Use	1.351	1.103	1.656	2.903	0.004
(2014) Weiler	Autonomy from Alcohol Use	Child Centred-Substance Use	1.473	1.225	1.772	4.115	0.000
(2014) Weiler	Frequency of Substance Use	Child Centred-Substance Use	1.253	1.033	1.520	2.286	0.022
(2014) Weiler	Perception of Substance Use	Child Centred-Substance Use	1.234	1.028	1.480	2.258	0.024
(2015) Weiler	Autonomy from Alcohol Use	Child Centred-Substance Use	1.238	1.027	1.494	2.237	0.025
(2015) Weiler	Autonomy from Marijuana Use	Child Centred-Substance Use	1.326	1.083	1.623	2.732	0.006
(2017) Duriez	Substance Abuse, Mental Health, and Personality	Child Centred-Substance Use	1.342	1.097	1.641	2.862	0.004
(2017) Heller	Drug (2009-10)	Child Centred-Substance Use	1.347	1.098	1.653	2.859	0.004
(2017) Heller	Drug (2013-14)	Child Centred-Substance Use	1.352	1.092	1.673	2.772	0.006
(2018) Jarjoura	Substance Use	Child Centred-Substance Use	1.355	1.097	1.675	2.819	0.005
(2020) Haddock	Substance use	Child Centred-Substance Use	1.347	1.072	1.693	2.553	0.011
			1.343	1.099	1.640	2.888	0.004

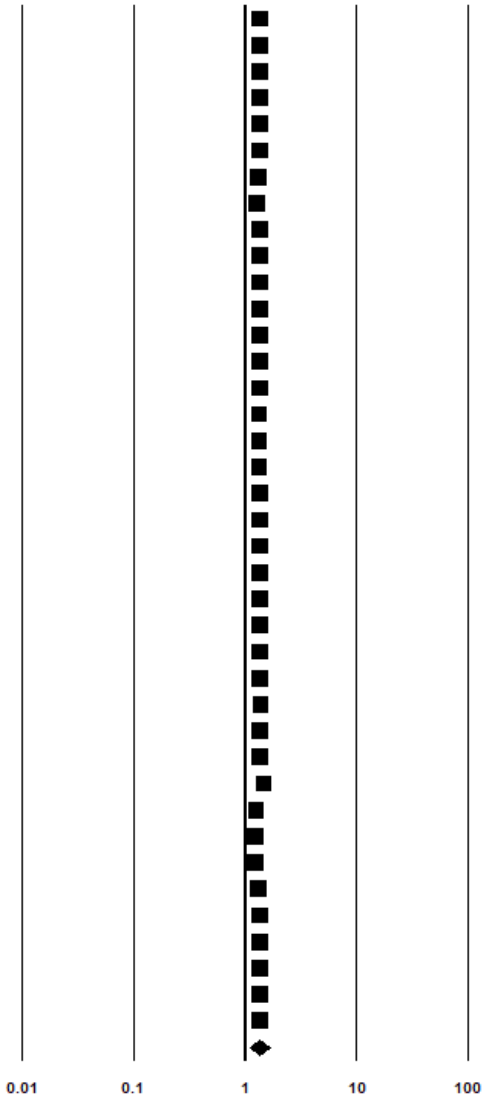


Figure 15.12 Forest plot for one study removed - education – attendance

Study name	Subgroup within study	Outcome	Statistics with study removed				
			Point	Lower limit	Upper limit	Z-Value	p-Value
(1985) Flaherty	Absence	Education-Attendance	1.210	1.116	1.313	4.609	0.000
(1988) Davis	Attendence	Education-Attendance	1.216	1.120	1.320	4.674	0.000
(1991) Rowland	Attendence	Education-Attendance	1.212	1.117	1.314	4.624	0.000
(1996) LoSciuto	School Absence	Education-Attendance	1.214	1.115	1.321	4.463	0.000
(1998) Hayes	Attendence	Education-Attendance	1.209	1.113	1.313	4.496	0.000
(1998) Royse	Absences	Education-Attendance	1.213	1.119	1.316	4.681	0.000
(2000) Schinke	Attendence (T1)	Education-Attendance	1.211	1.116	1.314	4.612	0.000
(2000) Schinke	Attendence (T2)	Education-Attendance	1.211	1.116	1.314	4.612	0.000
(2000) Schinke	Attendence (T3)	Education-Attendance	1.210	1.116	1.313	4.608	0.000
(2002) Grossman	Skipping School (T1)	Education-Attendance	1.204	1.109	1.308	4.412	0.000
(2002) Grossman	Skipping School (T2)	Education-Attendance	1.209	1.112	1.314	4.466	0.000
(2002) Grossman	Skipping School (T3)	Education-Attendance	1.197	1.104	1.298	4.348	0.000
(2002) Grossman	Skipping School (T4)	Education-Attendance	1.233	1.140	1.334	5.215	0.000
(2003) Schirm	Earned Diploma	Education-Attendance	1.211	1.116	1.315	4.580	0.000
(2007) Herrera	Absence Without Excuse (F)	Education-Attendance	1.214	1.117	1.321	4.529	0.000
(2007) Herrera	Absence Without Excuse (M)	Education-Attendance	1.213	1.116	1.319	4.523	0.000
(2007) Herrera	Serious School Misconduct (F)	Education-Attendance	1.214	1.116	1.321	4.524	0.000
(2007) Herrera	Serious School Misconduct (M)	Education-Attendance	1.213	1.116	1.319	4.523	0.000
(2007) Herrera	Skipping School (F)	Education-Attendance	1.214	1.117	1.321	4.529	0.000
(2007) Herrera	Skipping School (M)	Education-Attendance	1.213	1.116	1.319	4.523	0.000
(2008) Holt	Absences	Education-Attendance	1.215	1.121	1.318	4.714	0.000
(2009) Berstein	Absenteeism Rate (F)	Education-Attendance	1.223	1.121	1.335	4.506	0.000
(2009) Berstein	Absenteeism Rate (M)	Education-Attendance	1.225	1.122	1.338	4.529	0.000
(2009) Berstein	Truancy (F)	Education-Attendance	1.223	1.121	1.335	4.506	0.000
(2009) Berstein	Truancy (M)	Education-Attendance	1.225	1.122	1.338	4.529	0.000
(2009) Converse	School Absences	Education-Attendance	1.210	1.116	1.312	4.600	0.000
(2011) Chandler	Days Absent	Education-Attendance	1.177	1.095	1.264	4.434	0.000
(2011) Chandler	Days Present	Education-Attendance	1.186	1.099	1.280	4.381	0.000
(2011) Herrera	Absence Without an Excuse	Education-Attendance	1.226	1.132	1.328	4.984	0.000
(2013) Herrera	Skipping School	Education-Attendance	1.212	1.117	1.315	4.637	0.000
(2017) Heller	School engagement index (2009-10)	Education-Attendance	1.193	1.102	1.291	4.360	0.000
(2017) Heller	School engagement index (2013-14)	Education-Attendance	1.214	1.116	1.321	4.501	0.000
(2018) Jarjoura	Skipping Class/School	Education-Attendance	1.230	1.135	1.333	5.063	0.000
(2018) Kuperminc	School Participation	Education-Attendance	1.206	1.114	1.305	4.633	0.000
			1.212	1.118	1.314	4.653	0.000

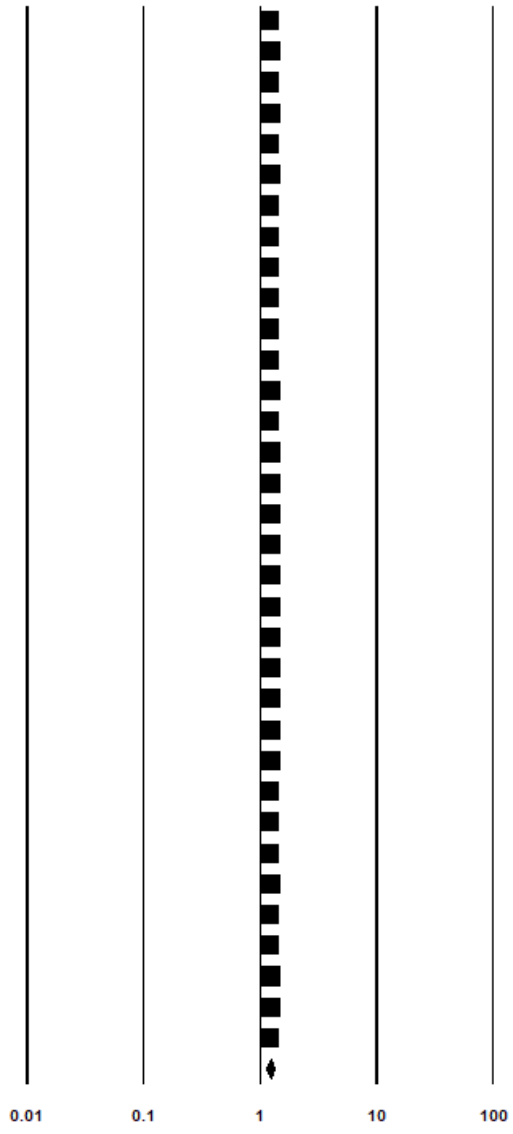


Figure 15.13 Forest plot for one study removed - education – attainment

Study name	Subgroup within study	Outcome	Statistics with study removed					Odds ratio (95% CI) with study removed
			Point	Lower limit	Upper limit	Z-Value	p-Value	
(1974) Moore	Intellectual Efficiency	Education-Attainment	1.225	1.136	1.320	5.930	0.000	
(1985) Flaherty	GPA	Education-Attainment	1.221	1.134	1.315	5.270	0.000	
(1987) Davidson	Action Condition - School Intervention:System Focus	Education-Attainment	1.220	1.133	1.314	5.257	0.000	
(1987) Davidson	Action Condition - School Intervention:Youth Focus	Education-Attainment	1.219	1.132	1.313	5.234	0.000	
(1987) Davidson	Court Setting - School Intervention:System Focus	Education-Attainment	1.223	1.135	1.317	5.316	0.000	
(1987) Davidson	Court Setting - School Intervention:Youth Focus	Education-Attainment	1.223	1.136	1.317	5.332	0.000	
(1987) Davidson	Family Focus - School Intervention:System Focus	Education-Attainment	1.221	1.134	1.315	5.276	0.000	
(1987) Davidson	Family Focus - School Intervention:Youth Focus	Education-Attainment	1.221	1.134	1.315	5.270	0.000	
(1987) Davidson	Relationship Focus - School Intervention:System Focus	Education-Attainment	1.222	1.134	1.316	5.288	0.000	
(1987) Davidson	Relationship Focus - School Intervention:Youth Focus	Education-Attainment	1.222	1.134	1.316	5.291	0.000	
(1988) Aiello	GPA	Education-Attainment	1.222	1.133	1.317	5.233	0.000	
(1988) Aiello	Student Failure	Education-Attainment	1.218	1.131	1.313	5.203	0.000	
(1988) Davis	GPA	Education-Attainment	1.225	1.137	1.320	5.333	0.000	
(1991) Reyes	Test Scores - Maths	Education-Attainment	1.220	1.131	1.315	5.182	0.000	
(1991) Reyes	Test Scores - Reading	Education-Attainment	1.218	1.130	1.313	5.161	0.000	
(1991) Reyes	Test Scores - Writing	Education-Attainment	1.220	1.131	1.315	5.182	0.000	
(1994) Newton	GPA	Education-Attainment	1.223	1.135	1.317	5.307	0.000	
(1995) Brooks	GPA	Education-Attainment	1.223	1.135	1.318	5.280	0.000	
(1995) Harmon	Educational Attainment	Education-Attainment	1.223	1.134	1.318	5.281	0.000	
(1997) Abbott	GPA	Education-Attainment	1.221	1.134	1.315	5.278	0.000	
(1998) Hayes	Dropped Out	Education-Attainment	1.205	1.122	1.300	5.048	0.000	
(1998) Hayes	GPA	Education-Attainment	1.213	1.126	1.308	5.076	0.000	
(1998) Hayes	Graduated	Education-Attainment	1.211	1.124	1.303	5.074	0.000	
(1998) LaBrmore	Comprehension	Education-Attainment	1.217	1.129	1.312	5.141	0.000	
(1998) LaBrmore	Consumer Economics	Education-Attainment	1.223	1.134	1.318	5.298	0.000	
(1998) LaBrmore	Graduated High School	Education-Attainment	1.210	1.124	1.303	5.074	0.000	
(1998) LaBrmore	Language Expression	Education-Attainment	1.219	1.131	1.314	5.168	0.000	
(1998) LaBrmore	Language Mechanics	Education-Attainment	1.225	1.136	1.321	5.288	0.000	
(1998) LaBrmore	Mathematics Computation	Education-Attainment	1.218	1.130	1.313	5.156	0.000	
(1998) LaBrmore	Mathematics Concepts	Education-Attainment	1.214	1.126	1.308	5.088	0.000	
(1998) LaBrmore	Vocabulary	Education-Attainment	1.219	1.131	1.314	5.163	0.000	
(1998) Reyes	GPA	Education-Attainment	1.221	1.134	1.315	5.273	0.000	
(2000) Schinke	School Grade Reports (T1)	Education-Attainment	1.219	1.131	1.314	5.193	0.000	
(2000) Schinke	School Grade Reports (T2)	Education-Attainment	1.219	1.131	1.314	5.186	0.000	
(2000) Schinke	School Grade Reports (T3)	Education-Attainment	1.209	1.123	1.301	5.032	0.000	
(2002) Grossman	Grades (T1)	Education-Attainment	1.221	1.133	1.317	5.197	0.000	
(2002) Grossman	Grades (T2)	Education-Attainment	1.221	1.133	1.317	5.197	0.000	
(2002) Grossman	Grades (T3)	Education-Attainment	1.223	1.134	1.319	5.236	0.000	
(2002) Grossman	Grades (T4)	Education-Attainment	1.219	1.131	1.314	5.161	0.000	
(2003) Schirm	GPA	Education-Attainment	1.221	1.134	1.315	5.274	0.000	
(2003) Schirm	Grades - Maths	Education-Attainment	1.223	1.135	1.318	5.289	0.000	
(2003) Schirm	Grades - Reading	Education-Attainment	1.223	1.135	1.318	5.288	0.000	
(2004) Kemple	High School Completion (F)	Education-Attainment	1.221	1.134	1.316	5.269	0.000	
(2004) Kemple	High School Completion (M)	Education-Attainment	1.222	1.134	1.316	5.278	0.000	
(2004) Kemple	Highest Post-Secondary Credential (F)	Education-Attainment	1.223	1.135	1.318	5.298	0.000	
(2004) Kemple	Highest Post-Secondary Credential (M)	Education-Attainment	1.226	1.138	1.321	5.349	0.000	
(2005) St. James-Roberts	Literacy Score	Education-Attainment	1.220	1.133	1.315	5.241	0.000	
(2005) St. James-Roberts	Numeracy Score	Education-Attainment	1.224	1.136	1.319	5.321	0.000	
(2007) De Wit	Child Rated - Academic Grades	Education-Attainment	1.222	1.134	1.316	5.284	0.000	
(2007) De Wit	Parent Rated - Academic Grades	Education-Attainment	1.221	1.134	1.316	5.282	0.000	
(2007) Hamre	Scholastic Efficacy (F)	Education-Attainment	1.222	1.133	1.316	5.195	0.000	
(2007) Hamre	Scholastic Efficacy (M)	Education-Attainment	1.221	1.132	1.317	5.190	0.000	
(2007) Hamre	Science (F)	Education-Attainment	1.222	1.133	1.317	5.193	0.000	
(2007) Hamre	Science (M)	Education-Attainment	1.221	1.132	1.317	5.193	0.000	
(2007) Hamre	Written and Oral Language (F)	Education-Attainment	1.222	1.133	1.316	5.195	0.000	
(2007) Hamre	Written and Oral Language (M)	Education-Attainment	1.221	1.132	1.317	5.193	0.000	
(2008) Hull	Academic Self-Efficacy	Education-Attainment	1.217	1.130	1.311	5.168	0.000	
(2008) Hull	GPA	Education-Attainment	1.223	1.135	1.318	5.290	0.000	
(2008) Karcher	Grades - Maths	Education-Attainment	1.232	1.142	1.328	5.409	0.000	
(2008) Karcher	Grades - Reading	Education-Attainment	1.232	1.142	1.328	5.409	0.000	
(2009) Bierstein	Scholastic Efficacy (F)	Education-Attainment	1.225	1.133	1.323	5.122	0.000	
(2009) Bierstein	Scholastic Efficacy (M)	Education-Attainment	1.231	1.140	1.329	5.284	0.000	
(2010) Grant	GPA	Education-Attainment	1.214	1.127	1.308	5.108	0.000	
(2011) Chandler	Courses Completed	Education-Attainment	1.222	1.134	1.316	5.276	0.000	
(2011) Chandler	Courses Failed	Education-Attainment	1.221	1.133	1.315	5.259	0.000	
(2011) Chandler	GPA	Education-Attainment	1.221	1.134	1.315	5.275	0.000	
(2013) Hamre	Grades	Education-Attainment	1.221	1.134	1.315	5.272	0.000	
(2014) Wiebe	GPA	Education-Attainment	1.221	1.133	1.315	5.244	0.000	
(2016) Ivar	Cognitive Engagement	Education-Attainment	1.221	1.134	1.315	5.274	0.000	
(2016) Karcher	Ed Expect: Finish College	Education-Attainment	1.223	1.134	1.316	5.257	0.000	
(2016) Karcher	Ed Expect: Finish HS	Education-Attainment	1.228	1.140	1.324	5.393	0.000	
(2016) Karcher	Ed Expect: Start college	Education-Attainment	1.223	1.135	1.318	5.271	0.000	
(2017) Dunlap	Education and Employment	Education-Attainment	1.220	1.133	1.314	5.259	0.000	
(2017) Eddy	School Work	Education-Attainment	1.228	1.135	1.329	5.112	0.000	
(2018) Kuperminc	Credits Earned	Education-Attainment	1.209	1.123	1.301	5.050	0.000	
(2018) Kuperminc	GPA	Education-Attainment	1.222	1.134	1.317	5.256	0.000	
(2018) Kuperminc	Problem Solving	Education-Attainment	1.217	1.131	1.310	5.225	0.000	
(2020) Haddock	Grades	Education-Attainment	1.191	1.125	1.261	5.983	0.000	
(2021) Henry	Academic Scores - ELA	Education-Attainment	1.224	1.137	1.319	5.348	0.000	
(2021) Henry	Academic Scores - Maths	Education-Attainment	1.224	1.136	1.318	5.336	0.000	
			1.221	1.133	1.315	5.275	0.000	

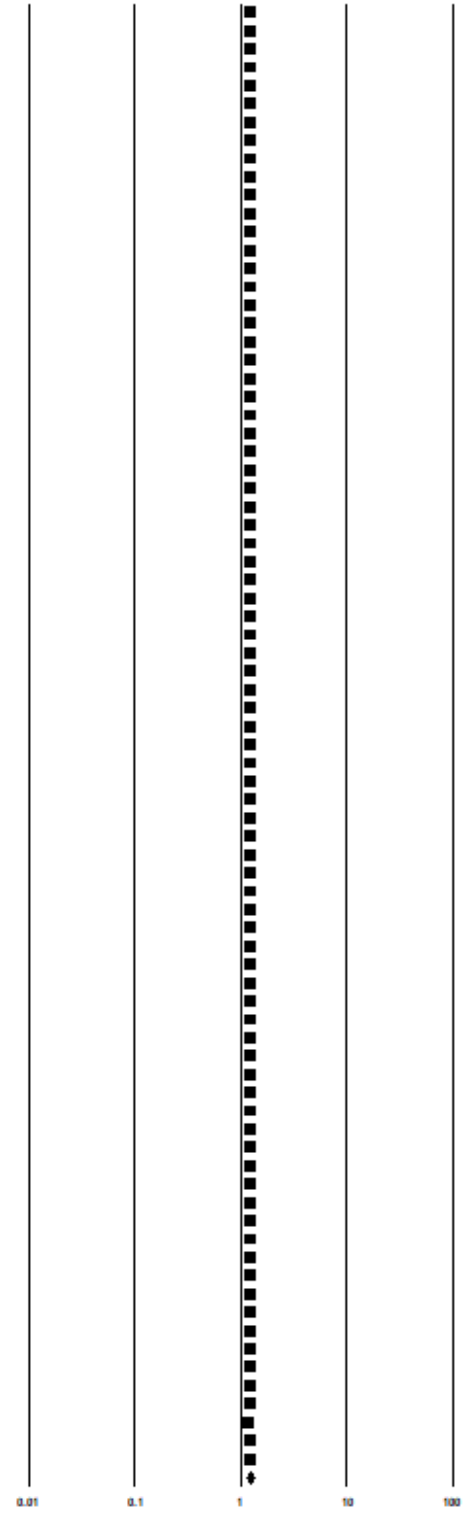


Figure 15.14 Forest plot for one study removed - education – aspirations and attitudes

Study name	Subgroup within study	Outcome	Statistics with study removed				
			Point	Lower limit	Upper limit	Z-Value	p-Value
(1985) Flaherty	Attitude	Education-Aspirations and Attitudes	1.161	1.025	1.315	2.354	0.019
(1987) Davidson	Action Condition - Job Seeking Activities	Education-Aspirations and Attitudes	1.158	1.023	1.311	2.315	0.021
(1987) Davidson	Court Setting - Job Seeking Activities	Education-Aspirations and Attitudes	1.163	1.027	1.317	2.387	0.017
(1987) Davidson	Family Focus - Job Seeking Activities	Education-Aspirations and Attitudes	1.161	1.025	1.315	2.356	0.018
(1987) Davidson	Relationship Focus - Job Seeking Activities	Education-Aspirations and Attitudes	1.163	1.027	1.317	2.387	0.017
(1995) Brooks	Attitudes Towards College	Education-Aspirations and Attitudes	1.172	1.034	1.329	2.482	0.013
(1995) Brooks	Educational Aspirations	Education-Aspirations and Attitudes	1.159	1.021	1.315	2.277	0.023
(1995) Harman	Educational Aspirations	Education-Aspirations and Attitudes	1.166	1.028	1.323	2.381	0.017
(1995) Harman	Occupational Aspirations	Education-Aspirations and Attitudes	1.162	1.024	1.318	2.330	0.020
(1996) LoSciuto	Attitudes Towards School	Education-Aspirations and Attitudes	1.159	1.015	1.323	2.178	0.029
(1998) Hayes	Commitment to Work	Education-Aspirations and Attitudes	1.140	1.004	1.295	2.027	0.043
(1998) Hayes	Reactions to teachers	Education-Aspirations and Attitudes	1.140	1.004	1.295	2.027	0.043
(1998) Hayes	Satisfaction with School	Education-Aspirations and Attitudes	1.146	1.008	1.302	2.088	0.037
(1998) Lattimore	Occupational Knowledge	Education-Aspirations and Attitudes	1.162	1.022	1.321	2.293	0.022
(2002) Grossman	Value of School (T1)	Education-Aspirations and Attitudes	1.182	1.046	1.338	2.673	0.008
(2002) Grossman	Value of School (T2)	Education-Aspirations and Attitudes	1.151	1.011	1.311	2.127	0.033
(2002) Grossman	Value of School (T3)	Education-Aspirations and Attitudes	1.174	1.036	1.331	2.505	0.012
(2002) Grossman	Value of School (T4)	Education-Aspirations and Attitudes	1.145	1.006	1.303	2.051	0.040
(2007) De Wit	Child Rated - Quality of Relationship with Teacher	Education-Aspirations and Attitudes	1.163	1.027	1.316	2.377	0.017
(2007) De Wit	Parent Rated - Quality of Relationship with Teacher	Education-Aspirations and Attitudes	1.162	1.027	1.316	2.375	0.018
(2008) Holt	School Belonging	Education-Aspirations and Attitudes	1.150	1.014	1.304	2.174	0.030
(2008) Karcher	Connectedness to School	Education-Aspirations and Attitudes	1.160	1.017	1.323	2.219	0.026
(2008) Karcher	Connectedness to Teachers	Education-Aspirations and Attitudes	1.182	1.049	1.332	2.741	0.006
(2009) Clarke	Perception of Teacher Support (T1)	Education-Aspirations and Attitudes	1.161	1.025	1.315	2.347	0.019
(2009) Clarke	Perception of Teacher Support (T2)	Education-Aspirations and Attitudes	1.159	1.023	1.312	2.318	0.020
(2009) Converse	School Connectedness	Education-Aspirations and Attitudes	1.159	1.024	1.313	2.335	0.020
(2011) Chandler	School Attachment	Education-Aspirations and Attitudes	1.158	1.019	1.316	2.244	0.025
(2016) Karcher	Connectedness to Future	Education-Aspirations and Attitudes	1.172	1.033	1.329	2.470	0.014
(2016) Karcher	Connectedness to School	Education-Aspirations and Attitudes	1.163	1.025	1.321	2.334	0.020
(2016) Karcher	Connectedness to Teachers	Education-Aspirations and Attitudes	1.159	1.020	1.316	2.268	0.023
(2016) Karcher	Plan Find a Job	Education-Aspirations and Attitudes	1.169	1.031	1.327	2.429	0.015
(2016) Karcher	Plan Success at Work	Education-Aspirations and Attitudes	1.180	1.043	1.336	2.619	0.009
(2020) Haddock	Academic Aspirations	Education-Aspirations and Attitudes	1.133	1.035	1.242	2.689	0.007
			1.160	1.025	1.313	2.357	0.018

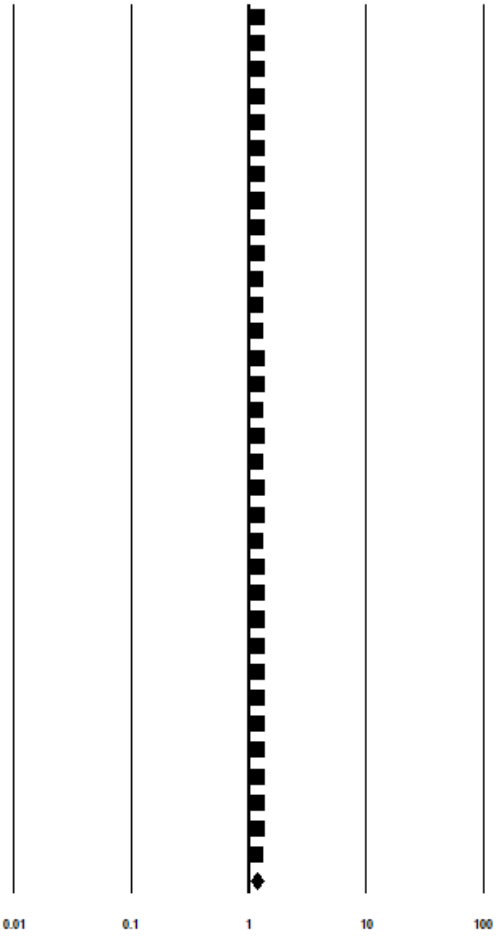


Figure 15.15 Forest plot for one study removed - education – behaviour

Study name	Subgroup within study	Outcome	Statistics with study removed				
			Point	Lower limit	Upper limit	Z-Value	p-Value
(1991) Rowland	Discipline Referrals	Education-Behaviour	0.996	0.969	1.024	-0.251	0.802
(1998) Royse	Major Disciplinary	Education-Behaviour	0.997	0.970	1.025	-0.218	0.827
(1998) Royse	Minor Disciplinary	Education-Behaviour	0.997	0.969	1.025	-0.244	0.807
(2003) Rollin	Central Florida School - In School Suspensions	Education-Behaviour	0.997	0.969	1.025	-0.242	0.809
(2003) Rollin	Central Florida School - Infractions Committed on School Property	Education-Behaviour	0.999	0.973	1.025	-0.112	0.911
(2003) Rollin	Central Florida School - Out-of-School Suspensions	Education-Behaviour	0.997	0.971	1.025	-0.196	0.844
(2003) Rollin	Central Florida School - Unexcused Absences	Education-Behaviour	0.996	0.969	1.025	-0.249	0.803
(2003) Rollin	North Florida School - In School Suspensions	Education-Behaviour	0.996	0.969	1.025	-0.249	0.803
(2003) Rollin	North Florida School - Infractions Committed on School Property	Education-Behaviour	0.997	0.969	1.025	-0.232	0.817
(2003) Rollin	North Florida School - Out-of-School Suspensions	Education-Behaviour	0.997	0.969	1.025	-0.232	0.817
(2003) Rollin	North Florida School - Unexcused Absences	Education-Behaviour	0.997	0.970	1.024	-0.241	0.810
(2003) Rollin	South Florida School - In School Suspensions	Education-Behaviour	0.998	0.971	1.025	-0.177	0.860
(2003) Rollin	South Florida School - Infractions Committed on School Property	Education-Behaviour	0.999	0.973	1.025	-0.100	0.920
(2003) Rollin	South Florida School - Out-of-School Suspensions	Education-Behaviour	0.997	0.971	1.025	-0.183	0.855
(2003) Rollin	South Florida School - Unexcused Absences	Education-Behaviour	0.999	0.973	1.025	-0.084	0.933
(2003) Schirm	Ever Expelled	Education-Behaviour	0.996	0.969	1.025	-0.253	0.800
(2003) Schirm	Ever Suspended	Education-Behaviour	0.996	0.969	1.025	-0.256	0.798
(2007) De Wit	Child Rated - In-School Behaviour Problems	Education-Behaviour	0.997	0.970	1.025	-0.216	0.829
(2007) De Wit	Parent Rated - In-School Behaviour Problems	Education-Behaviour	0.996	0.969	1.025	-0.248	0.804
(2008) Holt	Discipline Referrals	Education-Behaviour	0.996	0.969	1.025	-0.247	0.805
(2009) Clarke	Discipline Referrals (T1)	Education-Behaviour	0.998	0.972	1.024	-0.177	0.860
(2009) Clarke	Discipline Referrals (T2)	Education-Behaviour	0.996	0.969	1.025	-0.247	0.805
(2009) Clarke	Negative School Behaviours (T1)	Education-Behaviour	0.996	0.969	1.025	-0.250	0.803
(2009) Clarke	Negative School Behaviours (T2)	Education-Behaviour	0.996	0.969	1.025	-0.249	0.803
(2009) Converse	Office Disciplinary Referrals	Education-Behaviour	0.997	0.971	1.024	-0.191	0.848
(2011) Herrera	Serious School Infractions	Education-Behaviour	1.001	0.977	1.026	0.071	0.943
(2015) Guo	School Hassles	Education-Behaviour	0.998	0.972	1.024	-0.164	0.869
(2017) Eddy	Positive School Behavior	Education-Behaviour	0.958	0.890	1.031	-1.149	0.251
(2017) Eddy	Trouble in School	Education-Behaviour	0.963	0.881	1.054	-0.816	0.415
(2018) Jarjoura	In- or Out-of-School Suspension	Education-Behaviour	0.996	0.968	1.024	-0.302	0.762
(2020) Haddock	School Misbehaviours	Education-Behaviour	1.011	1.000	1.023	1.969	0.049
(2021) Henry	Disciplinary Actions	Education-Behaviour	0.996	0.969	1.025	-0.249	0.804
(2021) Henry	Discipline Referrals	Education-Behaviour	0.997	0.969	1.025	-0.248	0.804
(2021) Henry	Out-of-School Suspensions	Education-Behaviour	0.996	0.969	1.025	-0.253	0.800
(2021) Henry	School Problems	Education-Behaviour	0.997	0.970	1.024	-0.236	0.813
			0.997	0.970	1.025	-0.207	0.836

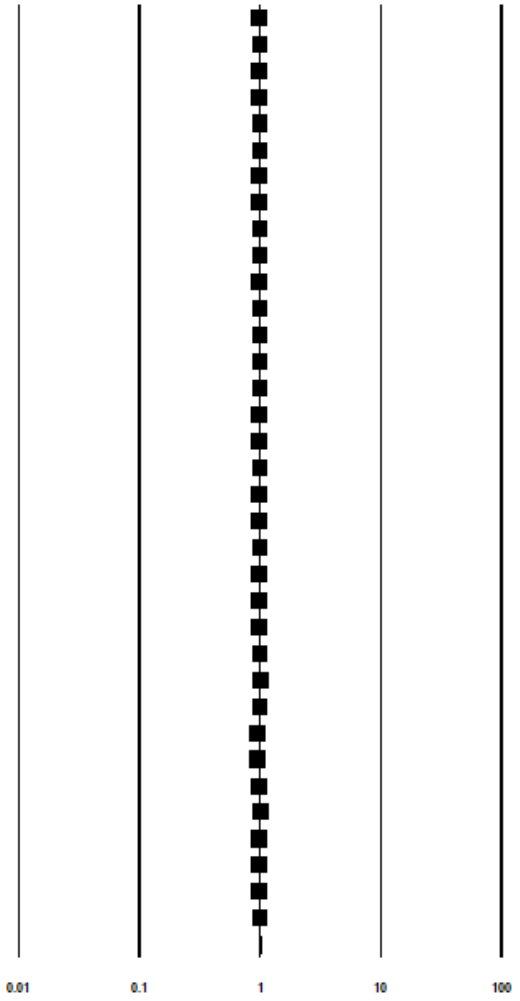


Figure 15.16 Forest plot for one study removed - familial outcomes

Study name	Subgroup within study	Outcome	Statistics with study removed				
			Point	Lower limit	Upper limit	Z-Value	p-Value
(1987) Davidson	Action Condition - Family Intervention:Parent Focus	Familial Outcomes	1.100	1.022	1.183	2.551	0.011
(1987) Davidson	Action Condition - Family Intervention:Youth Focus	Familial Outcomes	1.099	1.022	1.182	2.539	0.011
(1987) Davidson	Action Contdition- Parental Involvement	Familial Outcomes	1.098	1.021	1.182	2.524	0.012
(1987) Davidson	Court Setting - Family Intervention:Parent Focus	Familial Outcomes	1.102	1.024	1.185	2.604	0.009
(1987) Davidson	Court Setting - Family Intervention:Youth Focus	Familial Outcomes	1.102	1.024	1.185	2.604	0.009
(1987) Davidson	Court Setting - Parental Involvement	Familial Outcomes	1.103	1.025	1.186	2.623	0.009
(1987) Davidson	Family Focus - Family Intervention:Parent Focus	Familial Outcomes	1.101	1.024	1.184	2.592	0.010
(1987) Davidson	Family Focus - Family Intervention:Youth Focus	Familial Outcomes	1.101	1.024	1.185	2.592	0.010
(1987) Davidson	Family Focus - Parental Involvement	Familial Outcomes	1.101	1.024	1.184	2.588	0.010
(1987) Davidson	Relationship Focus - Family Intervention:Parent Focus	Familial Outcomes	1.101	1.024	1.184	2.592	0.010
(1987) Davidson	Relationship Focus - Family Intervention:Youth Focus	Familial Outcomes	1.102	1.024	1.185	2.604	0.009
(1987) Davidson	Relationship Focus - Parental Involvement	Familial Outcomes	1.102	1.024	1.185	2.609	0.009
(1988, 1977, 1980,1990) Davidson	Parental Involvement	Familial Outcomes	1.101	1.023	1.184	2.575	0.010
(1988, 1977, 1980,1990) Davidson	Parental Involvement in School	Familial Outcomes	1.101	1.023	1.184	2.577	0.010
(1988, 1977, 1980,1990) Davidson	Parental Knowledge of Friends	Familial Outcomes	1.101	1.023	1.184	2.577	0.010
(1988, 1977, 1980,1990) Davidson	Parental Knowledge of School	Familial Outcomes	1.101	1.023	1.184	2.576	0.010
(1988, 1977, 1980,1990) Davidson	Positive Change in Home	Familial Outcomes	1.101	1.023	1.184	2.575	0.010
(1988, 1977, 1980,1990) Davidson	Positive Home Involvement	Familial Outcomes	1.101	1.023	1.184	2.575	0.010
(2002) Grossman	Quality of the Parental Relationship (T1)	Familial Outcomes	1.094	1.013	1.182	2.300	0.021
(2002) Grossman	Quality of the Parental Relationship (T2)	Familial Outcomes	1.072	0.993	1.158	1.786	0.074
(2002) Grossman	Quality of the Parental Relationship (T3)	Familial Outcomes	1.112	1.030	1.201	2.713	0.007
(2002) Grossman	Quality of the Parental Relationship (T4)	Familial Outcomes	1.077	0.997	1.163	1.889	0.059
(2007) De Wit	Parent rated - Parent Social Support	Familial Outcomes	1.100	1.022	1.184	2.548	0.011
(2007) De Wit	Parent rated - Quality of Relationship with Carer	Familial Outcomes	1.104	1.026	1.188	2.657	0.008
(2008) Karcher	Family	Familial Outcomes	1.165	1.074	1.264	3.682	0.000
(2008) Karcher	Social Support from Family	Familial Outcomes	1.089	1.004	1.181	2.057	0.040
(2011) Chandler	Mother's Social Support	Familial Outcomes	1.102	1.023	1.187	2.552	0.011
(2011) Herrera	Special Adult	Familial Outcomes	1.084	1.005	1.169	2.087	0.037
(2016) Karcher	Connectedness to Family	Familial Outcomes	1.105	1.026	1.190	2.647	0.008
(2017) Durlez	Family and Living Arrangements	Familial Outcomes	1.100	1.023	1.183	2.566	0.010
(2017) Durlez	Peers and Social Support Networks	Familial Outcomes	1.100	1.022	1.183	2.554	0.011
(2018) Kuperminc	Home Support	Familial Outcomes	1.100	1.022	1.183	2.548	0.011
			1.100	1.023	1.184	2.573	0.010

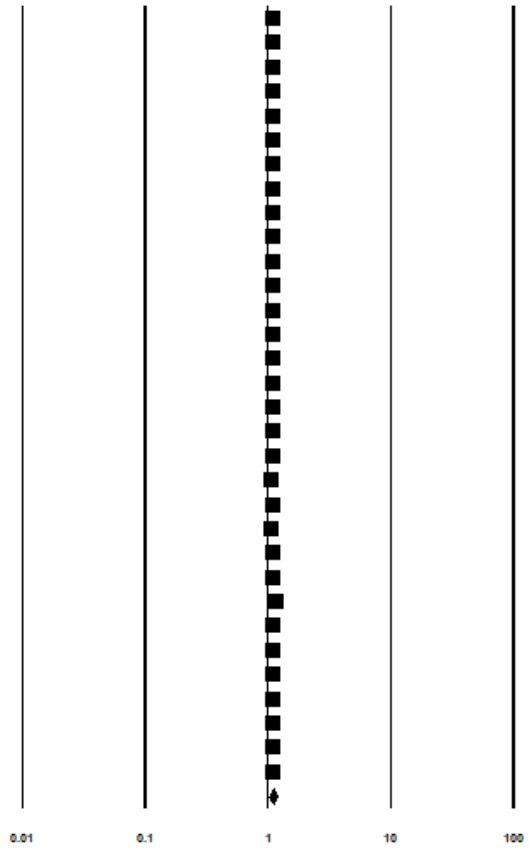


Figure 15.17 Forest plot for one study removed - peer outcomes

Study name	Subgroup within study	Outcome	Statistics with study removed				
			Point	Lower limit	Upper limit	Z-Value	p-Value
(1995) Harmon	Friends Delinquent Behaviour	Peer Outcomes	1.735	1.302	2.314	3.756	0.000
(2005) St James-Roberts	Peer Problems	Peer Outcomes	1.704	1.283	2.265	3.676	0.000
(2008) Cheng	Friend Problem Behaviour Score Total	Peer Outcomes	1.885	1.432	2.481	4.522	0.000
(2008) Karcher	Connectedness to Peers	Peer Outcomes	1.769	1.294	2.420	3.570	0.000
(2009) Berry	Anti-social peers	Peer Outcomes	1.726	1.311	2.273	3.887	0.000
(2014) Weiler	Peer Refusal Skills	Peer Outcomes	1.482	1.152	1.906	3.058	0.002
(2015) Weiler	Peer Refusal Skills	Peer Outcomes	1.353	1.095	1.672	2.806	0.005
(2016) Karcher	Connectedness to Friends	Peer Outcomes	1.736	1.301	2.317	3.750	0.000
(2017) Eddy	Deviant Peers	Peer Outcomes	1.852	1.218	2.817	2.881	0.004
(2018) Jarjoura	Negative Peers	Peer Outcomes	1.842	1.248	2.719	3.077	0.002
(2018) Kuperminc	Peer Relationships	Peer Outcomes	1.634	1.245	2.144	3.542	0.000
(2018) Kuperminc	Prosocial Peers	Peer Outcomes	1.634	1.245	2.145	3.541	0.000
(2020) Hu	Affiliation with Delinquent Peers	Peer Outcomes	1.667	1.261	2.205	3.584	0.000
(2020) Hu	Peer Positive Relationship Quality	Peer Outcomes	1.765	1.332	2.340	3.953	0.000
			1.691	1.289	2.217	3.797	0.000

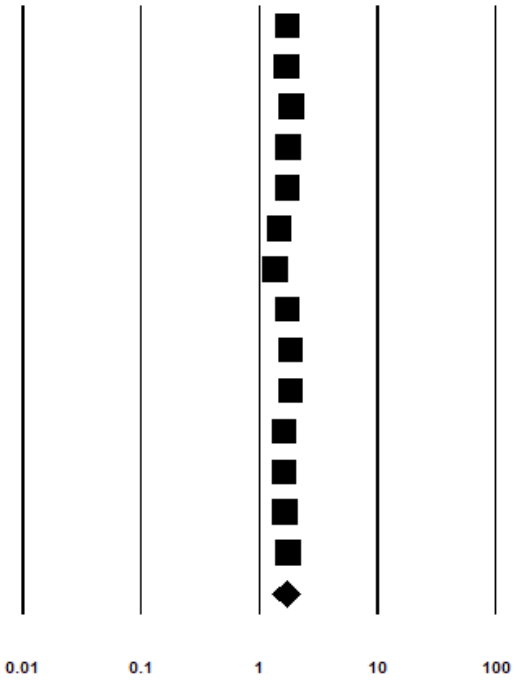


Figure 15.18 Forest plot for one study removed - physical health outcome

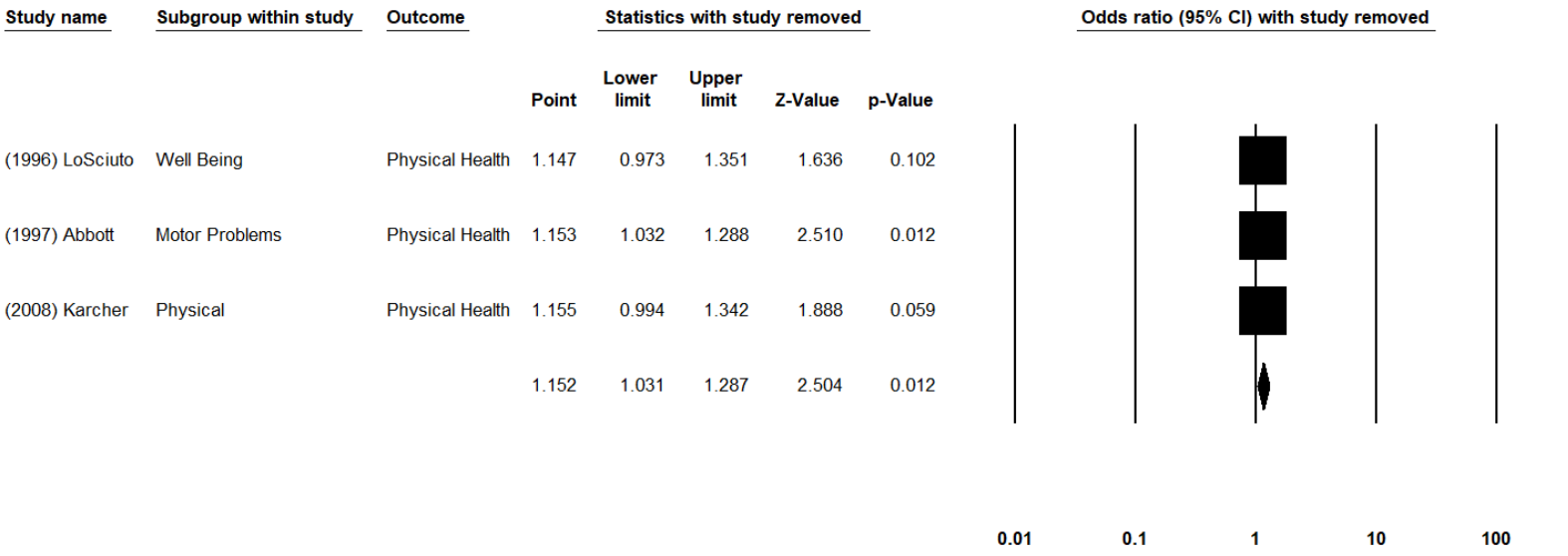


Figure 15.19 Forest plot for one study removed - mental health outcome

Study name	Subgroup within study	Outcome	Statistics with study removed				
			Point	Lower limit	Upper limit	Z-Value	p-Value
(1978) McCord	Mental Health Treatment	Mental Health	1.108	0.926	1.324	1.120	0.263
(1988) Aiello	Failure Anxiety	Mental Health	1.043	0.870	1.250	0.452	0.651
(1996) LoSciuto	Well Being	Mental Health	1.031	0.846	1.256	0.300	0.764
(1997) Abbott	Anxiety	Mental Health	1.055	0.889	1.253	0.612	0.540
(1997) Abbott	Psychotic	Mental Health	1.061	0.894	1.258	0.676	0.499
(2000) Blechman	Depression	Mental Health	1.097	0.933	1.289	1.118	0.264
(2007) De Wit	Child Rated - Depression	Mental Health	1.083	0.915	1.281	0.926	0.355
(2007) De Wit	Child Rated - Social Anxiety (Distress in New Situations)	Mental Health	1.065	0.898	1.264	0.724	0.469
(2007) De Wit	Child Rated - Social Anxiety (Generalized)	Mental Health	1.068	0.901	1.265	0.757	0.449
(2007) De Wit	Child Rated - Social Anxiety (Negative Peer Evaluations)	Mental Health	1.079	0.912	1.277	0.889	0.374
(2009) Berry	Emotional well-being	Mental Health	1.063	0.896	1.260	0.697	0.486
(2011) Bodin	Depression	Mental Health	0.997	0.842	1.180	-0.035	0.972
(2013) Herrera	Depression	Mental Health	1.058	0.892	1.255	0.650	0.516
(2017) Duriez	Substance Abuse, Mental Health, and Personality	Mental Health	1.054	0.888	1.251	0.604	0.546
(2020) Haddock	Anxiety	Mental Health	1.047	0.847	1.294	0.423	0.672
(2020) Haddock	Depression	Mental Health	1.016	0.852	1.212	0.177	0.860
			1.059	0.894	1.254	0.666	0.506

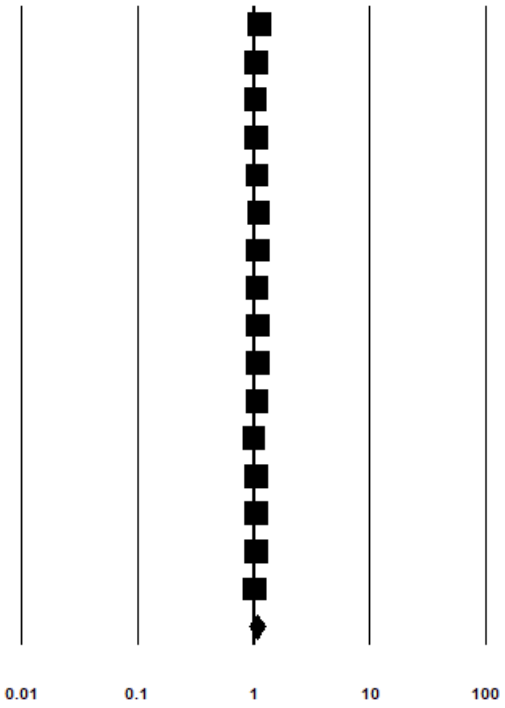
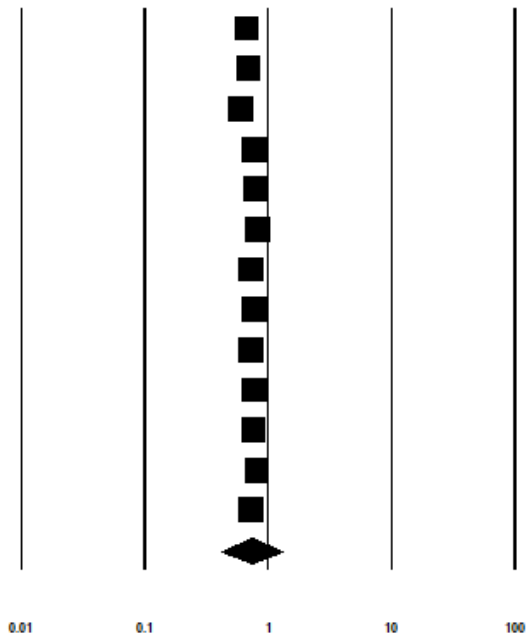


Figure 15.20 Forest plot for one study removed - service use, attendance, and engagement outcomes

Study name	Subgroup within study	Outcome	Statistics with study removed				
			Point	Lower limit	Upper limit	Z-Value	p-Value
(1987) Davidson	Action Condition - Advocacy Activities	Service Use, Attendance and Engagement	0.868	0.372	1.201	-1.347	0.178
(1987) Davidson	Action Condition - Contracting Activities	Service Use, Attendance and Engagement	0.694	0.389	1.238	-1.237	0.216
(1987) Davidson	Action Condition - Recreational Activities	Service Use, Attendance and Engagement	0.602	0.331	1.093	-1.667	0.095
(1987) Davidson	Court Setting - Advocacy Activities	Service Use, Attendance and Engagement	0.766	0.429	1.370	-0.898	0.369
(1987) Davidson	Court Setting - Contracting Activities	Service Use, Attendance and Engagement	0.790	0.443	1.409	-0.798	0.425
(1987) Davidson	Court Setting - Recreational Activities	Service Use, Attendance and Engagement	0.830	0.457	1.506	-0.614	0.539
(1987) Davidson	Family Focus - Advocacy Activities	Service Use, Attendance and Engagement	0.733	0.409	1.314	-1.042	0.297
(1987) Davidson	Family Focus - Contracting Activities	Service Use, Attendance and Engagement	0.771	0.431	1.378	-0.879	0.379
(1987) Davidson	Family Focus - Recreational Activities	Service Use, Attendance and Engagement	0.717	0.395	1.302	-1.093	0.275
(1987) Davidson	Relationship Focus - Advocacy Activities	Service Use, Attendance and Engagement	0.766	0.428	1.389	-0.900	0.368
(1987) Davidson	Relationship Focus - Contracting Activities	Service Use, Attendance and Engagement	0.763	0.429	1.356	-0.923	0.356
(1987) Davidson	Relationship Focus - Recreational Activities	Service Use, Attendance and Engagement	0.812	0.448	1.472	-0.686	0.493
(2013) Herrera	Community Service	Service Use, Attendance and Engagement	0.733	0.416	1.293	-1.073	0.283
			0.740	0.422	1.297	-1.053	0.292



Appendix I – Meta-regression results

Table 1. Country moderator analyses

Outcome	β	SE	95% CI	Z	*p*
All offending	-0.186	0.123	-0.428-0.055	-1.51	0.131
Violence*	-	-	-	-	-
Crime	-0.363	0.132	-0.624- -0.105	-2.75	0.006
Gang involvement*	-	-	-	-	-
Recidivism	0.044	0.191	-0.330-0.418	0.23	0.817
Externalizing	0.211	0.066	0.081-0.341	3.18	0.002
Internalizing	-0.147	0.169	-0.479-0.184	-0.87	0.384
Attitudes and Beliefs	-0.012	0.263	-0.529-0.504	-0.05	0.963
Social and Emotional Outcomes*	-	-	-	-	-
Behavioural outcomes	0.265	0.228	-0.182-0.712	1.16	0.246
Substance misuse	-0.814	0.552	-1.895-0.268	-1.47	0.140
Education – attendance*	-	-	-	-	-
Education - attainment	-0.017	0.291	-0.587-0.553	-0.06	0.953
Education – Aspirations and Attitudes	-0.407	0.781	-1.938-1.124	-0.52	0.602
Education - behaviour	-0.401	0.619	-1.615-0.813	-0.65	0.517
Familial outcomes	-0.068	0.271	-0.600-0.463	-0.25	0.801
Peer outcomes	0.271	0.431	-0.574-1.115	0.63	0.530
Physical health outcomes*	-	-	-	-	-
Mental health outcomes	0.090	0.208	-0.318-0.498	0.43	0.664
Service use, Attendance, and Engagement*	-	-	-	-	-

N.b * = Too few categories.

Table 2. Setting of mentoring moderator analyses

Outcome	β	SE	95% CI	Z	*p*
All offending	-0.290	0.406	-1.086-0.506	-0.71	0.475
Violence	-0.157	0.397	-0.935-0.621	-0.40	0.692
Crime	-2.90	0.402	-1.077-0.497	-0.72	0.470
Gang involvement*	-	-	-	-	-
Recidivism	0.197	0.194	-0.183-0.576	1.02	0.310
Externalizing	0.062	1.179	-2.250-2.373	0.05	0.958
Internalizing	0.042	0.813	-1.551-1.635	0.05	0.959
Attitudes and Beliefs	0.054	0.521	-0.968-1.076	0.10	0.917
Social and Emotional Outcomes*	-	-	-	-	-
Behavioural outcomes	0.045	0.773	-1.470-1.559	0.06	0.954
Substance misuse	0.047	0.951	-1.816-1.910	0.05	0.960
Education - attendance	0.379	1.869	-3.284-4.041	0.20	0.840
Education - attainment	0.048	0.769	-1.460-1.555	0.06	0.951
Education – Aspirations and Attitudes	0.017	0.197	-0.370-0.404	0.09	0.930
Education - behaviour	2.214	1.499	-0.724-5.153	1.48	0.140
Familial outcomes	0.293	0.139	0.020-0.565	2.10	0.036
Peer outcomes	0.442	0.495	-0.529-1.413	0.89	0.372
Physical health outcomes*	-	-	-	-	-
Mental health outcomes	0.042	1.168	-2.248-2.331	0.04	0.972
Service use, Attendance, and Engagement*	-	-	-	-	-

N.b * = Too few categories.

Table 3. Structure of mentoring intervention moderator analyses

Outcome	β	SE	95% CI	Z	*p*
All offending	0.121	0.040	0.044-0.199	3.06	0.002
Violence	0.077	0.084	-0.088-0.241	0.91	0.361
Crime	0.113	0.045	0.024-0.201	2.50	0.012
Gang involvement*	-	-	-	-	-
Recidivism	0.875	0.291	0.305-1.445	3.01	0.003
Externalizing	0.175	0.055	0.066-0.284	3.16	0.002
Internalizing	0.134	0.062	0.012-0.255	2.16	0.031
Attitudes and Beliefs	-0.048	0.094	-0.232-0.137	-0.51	0.613
Social and Emotional Outcomes	-0.153	0.177	-0.501-0.195	-0.86	0.389
Behavioural outcomes	0.220	0.070	0.066-0.342	2.90	0.004
Substance misuse	0.348	0.119	0.115-0.581	2.92	0.004
Education - attendance	1.063	0.199	0.673-1.452	5.34	0.000
Education - attainment	0.302	0.085	0.136-0.469	3.57	0.000
Education – Aspirations and Attitudes	0.081	0.050	-0.016-0.179	1.63	0.102
Education - behaviour	0.008	0.003	0.002-0.014	2.47	0.013
Familial outcomes	0.242	0.655	-1.042-1.526	0.37	0.712
Peer outcomes	0.807	0.176	0.461-1.153	4.58	0.000
Physical health outcomes*	-	-	-	-	-
Mental health outcomes	0.646	0.261	0.135-1.157	2.48	0.013
Service use, Attendance, and Engagement*	-	-	-	-	-

N.b * = Too few categories.

Table 4. Mentoring vs mentoring plus moderator analyses

Outcome	β	SE	95% CI	Z	*p*
All offending	-0.040	0.122	-0.278-0.199	-0.33	0.744
Violence	0.146	0.278	-0.398-0.690	0.53	0.599
Crime	-0.218	0.143	-0.499-0.063	-1.53	0.129
Gang involvement*	-	-	-	-	-
Recidivism	0.330	0.216	-0.093-0.753	1.53	0.126
Externalizing	0.390	0.179	0.040-0.740	2.18	0.029
Internalizing	0.343	0.238	-0.122-0.809	1.44	0.149
Attitudes and Beliefs	0.431	0.224	-0.007-0.869	1.93	0.053
Social and Emotional Outcomes*	-	-	-	-	-
Behavioural outcomes	0.532	0.226	0.088-0.975	2.35	0.019
Substance misuse	-0.004	0.337	-0.664-0.657	-0.01	0.992
Education - attendance	0.119	0.125	-0.125-0.363	0.96	0.339
Education - attainment	0.175	0.115	-0.050-0.400	1.52	0.128
Education – Aspirations and Attitudes	0.192	0.229	-0.256-0.641	0.84	0.401
Education - behaviour	0.121	0.175	-0.223-0.464	0.69	0.491
Familial outcomes*	-	-	-	-	-
Peer outcomes	1.904	0.231	1.451-2.356	8.24	0.000
Physical health outcomes*	-	-	-	-	-
Mental health outcomes	0.117	0.279	-0.430-0.663	0.42	0.675
Service use, Attendance, and Engagement*	-	-	-	-	-

N.b * = Too few categories.

Table 5. Mentoring component moderator analyses

Outcome	β	SE	95% CI	Z	*p*
All offending	0.252	0.086	0.084-0.420	2.94	0.003
Violent offences	0.130	0.199	-0.260-0.520	0.65	0.513
Violence and aggression					
Crime	0.196	0.100	0.000-0.392	1.96	0.050
Gang involvement*	-	-	-	-	-
Recidivism	0.278	0.156	-0.027-0.584	1.78	0.074
Externalizing	0.442	0.088	0.270-0.615	5.03	0.000
Internalizing	0.482	0.180	0.129-0.835	2.68	0.007
Attitudes and Beliefs	1.857	0.454	0.967-2.748	4.09	0.000
Social and Emotional Outcome*	-	-	-	-	-
Behavioural outcomes	-0.130	0.144	-0.413-0.153	-0.90	0.367
Substance misuse	0.876	0.247	0.391-1.361	3.54	0.000
Education - attendance	0.161	0.103	-0.041-0.362	1.56	0.118
Education - attainment	0.212	0.089	0.037-0.387	2.38	0.018
Education – Aspirations and Attitudes	0.260	0.145	-0.024-0.544	1.79	0.073
Education - behaviour	0.047	0.114	-0.176-0.271	0.42	0.677
Familial outcomes	0.315	0.112	0.095-0.535	2.80	0.005
Peer outcomes	1.533	0.474	0.604-2.463	3.23	0.001
Physical health outcomes*	-	-	-	-	-
Mental health outcomes	0.381	0.081	0.222-0.540	4.70	0.000
Service use, Attendance, and Engagement*	-	-	-	-	-

N.b * = Too few categories.

Table 6. Training of mentors moderator analyses

Outcome	β	SE	95% CI	Z	*p*
All offending	0.226	0.038	0.151-0.302	5.88	0.000
Violence*	-	-	-	-	-
Crime	0.224	0.044	0.137-0.311	5.04	0.000
Gang involvemet*	-	-	-	-	-
Recidivism	0.602	0.127	0.353-0.852	4.73	0.000
Externalizing	0.102	0.045	0.014-0.191	2.26	0.024
Internalizing	0.130	0.080	-0.027-0.288	1.62	0.105
Attitudes and Beliefs	-0.070	0.086	-0.239-0.100	-0.81	0.420
Social and Emotional Outcomes	0.009	0.194	-0.370-0.388	0.05	0.963
Behavioural outcomes	-0.030	0.048	-0.123-0.063	-0.64	0.524
Substance misuse	0.303	0.109	0.091-0.516	2.80	0.005
Education - attendance	0.204	0.041	0.124-0.285	4.96	0.000
Education - attainment	0.126	0.039	0.049-0.202	3.23	0.001
Education – Aspirations and Attitudes	0.141	0.057	0.029-0.253	2.47	0.014
Education - behaviour	-0.004	0.015	-0.033-0.024	-0.30	0.762
Familial outcomes	-0.193	0.242	-0.667-0.281	-0.80	0.424
Peer outcomes	0.201	0.443	-0.666-1.069	0.46	0.649
Physical health outcomes*	-	-	-	-	-
Mental health outcomes	0.053	0.087	-0.118-0.224	0.60	0.546
Service use, Attendance, and Engagement*	-	-	-	-	-

N.b * = Too few categories.

Table 7. Level of risk for offending moderator analyses

Outcome	β	SE	95% CI	Z	*p*
All offending	0.336	0.059	0.220-0.452	5.67	0.000
Violence	0.268	0.142	-0.011-0.547	1.88	0.060
Crime	0.290	0.070	0.153-0.427	4.14	0.000
Gang involvement*	-	-	-	-	-
Recidivism*	-	-	-	-	-
Externalizing	0.115	0.087	-0.056-0.285	1.31	0.189
Internalizing	0.229	0.078	0.076-0.382	2.94	0.003
Attitudes and Beliefs	-4.515	0.379	-5.257- -3.772	-11.92	0.000
Social and Emotional Outcomes*	-	-	-	-	-
Behavioural outcomes	0.336	0.163	0.017-0.656	2.07	0.039
Substance misuse	0.610	0.181	0.256-0.965	3.37	0.001
Education - attendance	0.309	0.106	0.101-0.517	2.92	0.004
Education - attainment	0.079	0.068	-0.053-0.212	1.25	0.213
Education – Aspirations and Attitudes	-0.045	0.110	-0.261-0.171	-0.41	0.685
Education - behaviour	0.008	0.003	0.002-0.014	2.46	0.014
Familial outcomes	-0.066	0.127	-0.315-0.183	-0.52	0.604
Peer outcomes	0.465	0.422	-0.362-1.293	1.10	0.270
Physical health outcomes*	-	-	-	-	-
Mental health outcomes	0.643	0.239	0.175-1.111	2.69	0.007
Service use, Attendance, and Engagement*	-	-	-	-	-

N.b * = Too few categories.

Table 8. Gender moderator analyses

Outcome	β	SE	95% CI	Z	*p*
All offending*	-	-	-	-	-
Violence	0.133	0.109	-0.080-0.346	1.22	0.222
Crime	0.201	0.057	0.090-0.312	3.54	0.000
Gang involvement*	-	-	-	-	-
Recidivism	-0.110	0.154	-0.412-0.192	-0.71	0.476
Externalizing	0.122	0.042	0.041-0.204	2.93	0.003
Internalizing	0.125	0.085	-0.042-0.292	1.47	0.143
Attitudes and Beliefs	-0.083	0.090	-0.260-0.094	-0.92	0.356
Social and Emotional Outcomes	0.417	0.415	-0.396-1.229	1.00	0.315
Behavioural outcomes	-0.029	0.062	-0.151-0.094	-0.46	0.646
Substance misuse	-0.330	0.373	-1.060-0.401	-0.88	0.376
Education - attendance	-0.097	0.112	-0.317-0.124	-0.86	0.390
Education - attainment	-0.080	0.137	-0.348-0.189	-0.58	0.560
Education – Aspirations and Attitudes*	-	-	-	-	-
Education - behaviour	0.008	0.003	0.020-0.014	2.48	0.013
Familial outcomes*	-	-	-	-	-
Peer outcomes	-0.269	0.424	-1.100-0.563	-0.63	0.526
Physical health outcomes*	-	-	-	-	-
Mental health outcomes	0.106	0.094	-0.077-0.290	1.14	0.255
Service use, Attendance, and Engagement*	-	-	-	-	-

N.b * = Too few categories.

Table 9. Duration moderator analyses

Outcome	β	SE	95% CI	Z	*p*
All offending	0.098	0.052	-0.004-0.200	1.89	0.058
Violence	0.124	0.113	-0.099-0.346	1.09	0.276
Crime	0.060	0.060	-0.057-0.177	1.01	0.313
Gang involvement*	-	-	-	-	-
Recidivism	0.252	0.102	0.052-0.453	2.47	0.014
Externalizing	0.218	0.007	0.088-0.349	3.29	0.001
Internalizing	0.082	0.150	-0.211-0.375	0.55	0.584
Attitudes and Beliefs	0.492	0.226	0.049-0.936	-2.18	0.030
Social and Emotional Outcomes	-0.041	0.299	-0.626-0.544	-0.14	0.892
Behavioural outcomes	0.132	0.075	-0.015-0.280	1.76	0.078
Substance misuse	0.500	0.143	0.219-0.780	3.49	0.001
Education - attendance	0.106	0.064	-0.019-0.230	1.66	0.097
Education - attainment	0.005	0.003	0.000-0.011	1.94	0.052
Education – Aspirations and Attitudes	0.010	0.002	0.005-0.015	4.20	0.000
Education - behaviour	-0.002	0.073	-0.146-0.141	-0.03	0.974
Familial outcomes	0.072	0.072	-0.069-0.213	0.99	0.320
Peer outcomes	-0.011	0.019	-0.048-0.025	-0.61	0.541
Physical health outcomes*	-	-	-	-	-
Mental health outcomes	0.088	0.158	-0.222-0.398	0.55	0.580
Service use, Attendance, and Engagement*	-	-	-	-	-

N.b * = Too few categories.

Table 10. Time of effect moderator analyses

Outcome	β	SE	95% CI	Z	*p*
All offending*	-	-	-	-	-
Violence*	-	-	-	-	-
Crime*	-	-	-	-	-
Gang involvement*	-	-	-	-	-
Recidivism*	-	-	-	-	-
Externalizing*	-	-	-	-	-
Internalizing*	-	-	-	-	-
Attitudes and Beliefs*	-	-	-	-	-
Social and Emotional Outcomes*	-	-	-	-	-
Behavioural outcomes*	-	-	-	-	-
Substance misuse*	-	-	-	-	-
Education – attendance*	-	-	-	-	-
Education – attainment*	-	-	-	-	-
Education – Aspirations and Attitudes*	-	-	-	-	-
Education – behaviour*	-	-	-	-	-
Familial outcomes*	-	-	-	-	-
Peer outcomes*	-	-	-	-	-
Physical health outcomes*	-	-	-	-	-
Mental health outcomes*	-	-	-	-	-
Service use, Attendance, and Engagement*	-	-	-	-	-

N.b * = Too few categories.

Table 11. Sample size moderator analyses

Outcome	β	SE	95% CI	Z	*p*
All offending	0.371	0.058	0.258-0.485	6.41	0.000
Violence	0.292	0.158	-0.018-0.602	1.85	0.065
Crime	0.373	0.066	0.243-0.502	5.63	0.000
Gang involvement*	-	-	-	-	-
Recidivism	0.586	0.153	0.286-0.886	3.83	0.000
Externalizing	0.051	0.059	-0.065-0.167	0.86	0.389
Internalizing	0.042	0.094	-0.142-0.227	0.45	0.653
Attitudes and Beliefs	0.574	0.276	0.032-1.115	2.08	0.040
Social and Emotional Outcomes	0.216	0.392	-0.552-0.984	0.55	0.581
Behavioural outcomes	-0.076	0.088	-0.249-0.098	-0.85	0.393
Substance misuse	0.287	0.143	0.007-0.567	2.01	0.045
Education - attendance	0.213	0.107	0.004-0.422	2.00	0.046
Education - attainment	0.135	0.055	0.027-0.244	2.45	0.014
Education – Aspirations and Attitudes	0.139	0.095	-0.047-0.326	1.46	0.143
Education - behaviour	0.011	0.021	-0.029-0.052	0.55	0.584
Familial outcomes	-0.060	0.086	-0.230-0.109	-0.69	0.487
Peer outcomes	0.624	0.229	0.175-1.074	2.72	0.007
Physical health outcomes*	-	-	-	-	-
Mental health outcomes	-0.059	0.181	-0.414	0.297	-0.32
Service use, Attendance, and Engagement*	-	-	-	-	-

N.b * = Too few categories.

Table 12. Intensity – frequency of mentoring per month moderator analyses

Outcome	β	SE	95% CI	Z	*p*
All offending	-0.093	0.154	-0.396-0.209	-0.60	0.545
Violence	0.092	0.345	-0.585-0.769	0.27	0.790
Crime	-0.114	0.179	-0.464-0.237	-0.64	0.525
Gang involvement*	-	-	-	-	-
Recidivism	-0.159	0.231	-0.612-0.295	-0.68	0.493
Externalizing	0.060	0.191	-0.314-0.435	0.31	0.753
Internalizing	0.436	0.254	-0.061-0.933	1.72	0.086
Attitudes and Beliefs	-0.196	0.222	-0.632-0.240	-0.88	0.378
Social and Emotional Outcomes	2.210	3.258	-4.176-8.597	0.68	0.498
Behavioural outcomes	-0.397	0.280	-0.946-0.152	-1.42	0.157
Substance misuse	0.462	0.439	-0.398-1.322	1.05	0.292
Education - attendance	0.195	0.308	-0.409-0.799	0.63	0.527
Education - attainment	0.100	0.274	-0.436-0.636	0.37	0.715
Education – Aspirations and Attitudes	-0.114	0.309	-0.719-0.492	-0.37	0.713
Education - behaviour	-0.987	0.780	-2.516-0.541	-1.27	0.206
Familial outcomes	0.997	0.759	-0.490-2.484	1.31	0.189
Peer outcomes	0.470	0.500	-0.509-1.449	0.94	0.347
Physical health outcomes*	-	-	-	-	-
Mental health outcomes	0.248	0.255	-0.252-0.749	0.97	0.331
Service use, Attendance, and Engagement*	-	-	-	-	-

N.b * = Too few categories.

Table 13. Intensity – duration of mentoring per meeting moderator analyses

Outcome	β	SE	95% CI	Z	*p*
All offending	0.108	0.093	-0.073-0.290	1.17	0.242
Violence	0.167	0.186	-0.197-0.532	0.90	0.369
Crime	0.060	0.060	-0.057-0.177	1.01	0.313
Gang involvement*	-	-	-	-	-
Recidivism	0.060	0.042	-0.022-0.141	1.43	0.152
Externalizing	0.492	0.422	-0.336-1.319	1.17	0.244
Internalizing	0.126	0.606	-1.061-1.314	0.21	0.835
Attitudes and Beliefs	0.084	0.738	-1.361-1.530	0.11	0.909
Social and Emotional Outcomes	0.202	0.414	-0.610-1.014	0.49	0.627
Behavioural outcomes	-0.033	0.739	-1.482-1.416	-0.04	0.965
Substance misuse	0.131	0.407	-0.666-0.929	0.32	0.747
Education - attendance	2.858	1.172	0.561-5.154	2.44	0.015
Education - attainment	-0.582	0.462	-1.488-0.324	-1.26	0.208
Education – Aspirations and Attitudes	0.006	0.128	-0.245-0.257	0.05	0.963
Education - behaviour	0.433	0.287	-0.130-0.995	1.51	0.132
Familial outcomes	0.252	0.554	-0.834-1.338	0.45	0.649
Peer outcomes	-1.794	1.476	-4.687-1.099	-1.22	0.224
Physical health outcomes*	-	-	-	-	-
Mental health outcomes	0.220	0.094	0.037-0.404	2.35	0.019
Service use, Attendance, and Engagement*	-	-	-	-	-

N.b * = Too few categories.

Table 14. Age of mentee moderator analyses

Outcome	β	SE	95% CI	Z	*p*
All offending	0.918	0.325	0.281-1.555	2.83	0.005
Violence	0.626	0.914	-1.165-2.417	0.68	0.493
Crime	0.102	0.027	0.049-0.156	3.75	0.000
Gang involvement*	-	-	-	-	-
Recidivism	-0.133	0.710	-1.524-1.258	-0.19	0.851
Externalizing	0.149	0.212	-0.268-0.565	0.70	0.484
Internalizing	0.427	0.434	-0.424-1.279	0.98	0.325
Attitudes and Beliefs	1.032	0.661	-0.264-2.328	1.56	0.119
Social and Emotional Outcomes	0.503	0.735	-0.937-1.943	0.68	0.494
Behavioural outcomes	4.784	2.054	0.759-8.809	2.33	0.020
Substance misuse	0.060	0.798	-1.505-1.624	0.07	0.941
Education - attendance	0.962	0.319	0.336-1.587	3.01	0.003
Education - attainment	-0.383	0.243	-0.859-0.092	-1.58	0.114
Education – Aspirations and Attitudes	0.024	0.034	-0.044-0.091	0.69	0.492
Education - behaviour	0.113	0.030	0.054-0.172	3.76	0.000
Familial outcomes	-0.085	0.449	-0.966-0.795	-0.19	0.850
Peer outcomes	-0.387	0.951	-2.251-1.477	-0.41	0.684
Physical health outcomes*	-	-	-	-	-
Mental health outcomes	0.077	0.838	-1.566-1.720	0.09	0.926
Service use, Attendance, and Engagement*	-	-	-	-	-

N.b * = Too few categories.

Table 15. Age of mentor moderator analyses

Outcome	β	SE	95% CI	Z	*p*
All offending	-0.063	0.080	-0.219-0.094	-0.78	0.435
Violence	0.191	0.118	-0.040-0.422	1.62	0.104
Crime	-0.074	0.094	-0.258-0.111	-0.78	0.434
Gang involvement*	-	-	-	-	-
Recidivism	0.589	0.992	-1.356-2.534	0.59	0.553
Externalizing	0.105	0.057	-0.007-0.218	1.83	0.067
Internalizing	0.025	0.082	-0.135-0.185	0.31	0.760
Attitudes and Beliefs	-0.133	0.102	-0.33-0.067	-1.30	0.193
Social and Emotional Outcomes	0.635	0.903	-1.136-2.405	0.70	0.483
Behavioural outcomes	-0.030	0.048	-0.124-0.064	-0.63	0.531
Substance misuse	-0.309	0.229	-0.757-0.139	-1.35	0.176
Education - attendance	-0.085	0.100	-0.281-0.110	-0.86	0.390
Education - attainment	-0.045	0.096	-0.233-0.142	-0.47	0.636
Education – Aspirations and Attitudes	-0.176	0.123	-0.417-0.065	-1.43	0.152
Education - behaviour	-0.505	0.456	-1.398-0.388	-1.11	0.268
Familial outcomes	0.033	0.050	-0.065-0.130	0.65	0.513
Peer outcomes	-0.318	0.280	-0.867-0.232	-1.13	0.258
Physical health outcomes*	-	-	-	-	-
Mental health outcomes	0.053	0.088	-0.119-0.225	0.60	0.547
Service use, Attendance, and Engagement*	-	-	-	-	-

N.b * = Too few categories.

Table 16. Ethnicity moderator analyses

Outcome	β	SE	95% CI	Z	*p*
All offending	0.605	0.168	0.275-0.934	3.59	0.000
Violence*	-	-	-	-	-
Crime	0.605	0.169	0.273-0.936	3.58	0.000
Gang involvement*	-	-	-	-	-
Recidivism	0.570	0.303	-0.023-1.163	1.88	0.060
Externalizing	0.144	0.126	-0.104-0.391	1.14	0.254
Internalizing	0.149	0.215	-0.272-0.569	0.69	0.488
Attitudes and Beliefs	0.140	0.177	-0.208-0.487	0.79	0.431
Social and Emotional Outcomes	0.421	0.903	-1.349-2.191	0.47	0.641
Behavioural outcomes	-0.009	0.085	-0.175-0.158	-0.10	0.918
Substance misuse	0.146	0.387	-0.612-0.904	0.38	0.706
Education - attendance	1.027	0.171	0.691-1.363	5.99	0.000
Education - attainment	0.174	0.063	0.051-0.297	2.76	0.006
Education – Aspirations and Attitudes	0.075	0.130	-0.180-0.330	0.57	0.566
Education - behaviour	0.502	0.455	-0.391-1.395	1.10	0.270
Familial outcomes	0.009	0.056	-0.100-0.119	0.17	0.866
Peer outcomes	0.217	0.483	-0.730-1.164	0.45	0.654
Physical health outcomes*	-	-	-	-	-
Mental health outcomes	0.355	0.775	-1.165-1.874	0.46	0.647
Service use, Attendance, and Engagement*	-	-	-	-	-

N.b * = Too few categories.

Table 17. Nature of intervention moderator analyses

Outcome	β	SE	95% CI	Z	*p*
All offending	0.092	0.047	-0.001-0.185	1.94	0.521
Violence	0.150	0.189	-0.220-0.520	0.80	0.427
Crime	0.070	0.050	-0.027-0.168	1.41	0.159
Gang involvement*	-	-	-	-	-
Recidivism	0.125	0.100	-0.071-0.322	1.25	0.211
Externalizing	0.178	0.131	-0.078-0.434	1.36	0.174
Internalizing	0.442	0.342	-0.229-1.113	1.29	0.197
Attitudes and Beliefs	1.956	0.281	1.404-2.508	6.95	0.000
Social and Emotional Outcomes	0.421	0.903	-1.349-2.192	0.47	0.641
Behavioural outcomes	0.039	0.074	-0.105-0.184	0.53	0.594
Substance misuse	-0.192	0.261	-0.703-0.319	-0.74	0.461
Education - attendance	0.139	0.050	0.041-0.237	2.79	0.005
Education - attainment	0.108	0.058	-0.006-0.222	1.86	0.063
Education – Aspirations and Attitudes	0.050	0.202	-0.345-0.446	0.25	0.804
Education - behaviour	0.020	0.080	-0.136-0.177	0.26	0.798
Familial outcomes	0.350	0.654	-0.933-1.632	0.53	0.593
Peer outcomes	0.678	0.267	0.156-1.201	2.54	0.011
Physical health outcomes*	-	-	-	-	-
Mental health outcomes	-0.116	0.224	-0.555-0.322	-0.52	0.603
Service use, Attendance, and Engagement*	-	-	-	-	-

N.b * = Too few categories.

Table 18. Research design moderator analyses

Outcome	β	SE	95% CI	Z	*p*
All offending	0.112	0.034	0.045-0.179	3.27	0.001
Violence	0.100	0.071	-0.040-0.239	1.40	0.160
Crime	0.088	0.039	0.012-0.164	2.26	0.024
Gang involvement*	-	-	-	-	-
Recidivism	0.318	0.076	0.168-0.468	4.16	0.000
Externalizing	0.043	0.043	-0.041-0.126	1.00	0.318
Internalizing	-0.231	0.177	-0.579-0.117	-1.30	0.193
Attitudes and Beliefs	0.009	0.090	-0.168-0.185	0.10	0.923
Social and Emotional Outcomes	0.203	0.788	-1.342-1.748	0.26	0.796
Behavioural outcomes	0.002	0.055	-0.106-0.110	0.04	0.971
Substance misuse	0.127	0.107	-0.081-0.336	1.20	0.232
Education - attendance	0.140	0.038	0.066-0.214	3.71	0.000
Education - attainment	0.167	0.040	0.089-0.245	4.22	0.000
Education – Aspirations and Attitudes	0.102	0.074	-0.043-0.246	1.38	0.168
Education - behaviour	0.001	0.012	-0.023-0.025	0.09	0.932
Familial outcomes	-0.127	0.153	-0.427-0.173	-0.83	0.406
Peer outcomes	0.148	0.092	-0.031-0.327	1.62	0.106
Physical health outcomes*	-	-	-	-	-
Mental health outcomes	0.096	0.083	-0.068-0.259	1.15	0.251
Service use, Attendance, and Engagement*	-	-	-	-	-

N.b * = Too few categories.

Table 19. Mentor mentee matching moderator analyses

Outcome	β	SE	95% CI	Z	*p*
All offending	0.019	0.302	-0.574-0.611	0.06	0.950
Violence	-0.146	0.265	-0.666-0.374	-0.55	0.582
Crime	-0.221	0.272	-0.754-0.311	-0.81	0.415
Gang involvement*	-	-	-	-	-
Recidivism	0.164	0.174	-0.176-0.504	0.95	0.344
Externalizing	-0.025	0.098	-0.217-0.167	-0.26	0.798
Internalizing	0.236	0.200	-0.156-0.627	1.18	0.238
Attitudes and Beliefs	0.569	0.449	-0.312-1.449	1.27	0.206
Social and Emotional Outcomes	0.431	0.232	-0.024-0.886	1.86	0.063
Behavioural outcomes	0.271	0.182	-0.086-0.628	1.49	0.137
Substance misuse	0.244	0.252	-0.249-0.737	0.97	0.332
Education - attendance	0.667	0.474	-0.262-1.595	1.41	0.159
Education - attainment	0.862	0.497	-0.113-1.836	1.73	0.083
Education – Aspirations and Attitudes	0.314	0.861	-1.373-2.001	0.36	0.715
Education - behaviour	0.739	0.477	-0.196-1.674	1.55	0.122
Familial outcomes	0.340	0.612	-0.859-1.540	0.56	0.578
Peer outcomes	0.852	0.475	-0.079-1.782	1.79	0.073
Physical health outcomes*	-	-	-	-	-
Mental health outcomes	0.215	0.123	-0.027-0.457	1.74	0.082
Service use, Attendance, and Engagement*	-	-	-	-	-

N.b * = Too few categories.

Table 20. Type of mentor moderator analyses

Outcome	β	SE	95% CI	Z	*p*
All offending	1.175	0.184	0.814-1.537	6.37	0.000
Violence	0.564	1.219	-1.826-2.953	0.46	0.644
Crime	1.189	0.184	0.827-1.550	6.44	0.000
Gang involvement*	-	-	-	-	-
Recidivism	0.612	0.327	-0.029-1.254	1.87	0.062
Externalizing	0.882	1.701	-2.452-4.217	0.52	0.604
Internalizing	-0.189	1.153	-2.449-2.071	-0.16	0.870
Attitudes and Beliefs	1.911	0.486	0.959-2.862	3.93	0.000
Social and Emotional Outcomes	0.421	0.903	-1.349-2.191	0.47	0.641
Behavioural outcomes	0.729	0.289	0.162-1.295	2.52	0.012
Substance misuse	0.932	0.333	0.280-1.584	2.80	0.005
Education - attendance	0.345	0.260	-0.164-0.854	1.33	0.184
Education - attainment	0.186	0.376	-0.551-0.922	0.49	0.621
Education – Aspirations and Attitudes	-0.192	0.138	-0.462-0.079	-1.39	0.165
Education - behaviour	2.214	1.499	-0.724-5.153	1.48	0.140
Familial outcomes	0.350	0.654	-0.932-1.631	0.53	0.593
Peer outcomes	1.806	0.973	-0.102-3.714	1.86	0.064
Physical health outcomes*	-	-	-	-	-
Mental health outcomes	1.577	0.618	0.365-2.788	2.55	0.011
Service use, Attendance, and Engagement*	-	-	-	-	-

N.b * = Too few categories.

Table 21. Setting for mentoring intervention moderator analyses

Outcome	β	SE	95% CI	Z	*p*
All offending	0.357	0.056	0.247-0.467	6.36	0.000
Violence	-0.157	0.397	-0.935-0.621	-0.40	0.692
Crime	0.405	0.068	0.273-0.538	5.99	0.000
Gang involvement*	-	-	-	-	-
Recidivism	0.526	0.090	0.350-0.702	5.87	0.000
Externalizing	0.184	0.064	0.059-0.309	2.88	0.004
Internalizing	0.082	0.111	-0.136-0.300	0.74	0.460
Attitudes and Beliefs	-0.081	0.108	-0.292-0.131	-0.75	0.455
Social and Emotional Outcomes	-0.204	0.191	-0.577-0.170	-1.07	0.286
Behavioural outcomes	0.162	0.153	-0.138-0.463	1.06	0.290
Substance misuse	-0.261	0.546	-1.331-0.809	-0.48	0.6332
Education - attendance	0.197	0.084	0.034-0.361	2.36	0.018
Education - attainment	0.218	0.042	0.135-0.301	5.14	0.000
Education – Aspirations and Attitudes	0.063	0.062	-0.058-0.184	1.02	0.306
Education - behaviour	-0.012	0.228	-0.458-0.434	-0.05	0.958
Familial outcomes	-0.097	0.074	-0.243-0.049	-1.30	0.194
Peer outcomes	1.129	0.195	0.747-1.511	5.79	0.000
Physical health outcomes*	-	-	-	-	-
Mental health outcomes	-0.178	0.131	-0.434-0.079	-1.36	0.175
Service use, Attendance, and Engagement*	-	-	-	-	-

N.b * = Too few categories.

Table 22. Key processes in mentoring moderator analyses

Outcome	β	SE	95% CI	Z	*p*
All offending	0.042	0.102	-0.159-0.253	0.41	0.682
Violence	0.119	0.121	-0.118-0.357	0.98	0.325
Crime	0.042	0.105	-0.163-0.248	0.41	0.685
Gang involvement*	-	-	-	-	-
Recidivism	0.347	0.336	-0.312-1.006	1.03	0.302
Externalizing	0.080	0.255	-0.421-0.580	0.31	0.755
Internalizing	-0.797	0.596	-1.965-0.371	-1.34	0.181
Attitudes and Beliefs	-0.204	0.115	-0.430-0.022	-1.77	0.078
Social and Emotional Outcomes	0.216	0.031	0.155-0.276	6.97	0.000
Behavioural outcomes	0.006	0.785	-1.533-1.545	0.01	0.994
Substance misuse	-0.033	0.711	-1.426-1.361	-0.05	0.963
Education - attendance	-0.069	0.174	-0.411-0.273	-0.40	0.693
Education - attainment	-0.002	0.145	-0.287-0.282	-0.02	0.988
Education – Aspirations and Attitudes	-0.032	0.141	-0.308-0.245	-0.23	0.821
Education - behaviour	0.022	0.080	-0.136-0.179	0.27	0.787
Familial outcomes	-0.021	0.171	-0.357-0.315	-0.12	0.904
Peer outcomes	0.129	0.353	-0.562-0.820	0.37	0.714
Physical health outcomes*	-	-	-	-	-
Mental health outcomes	0.253	0.132	-0.006-0.512	1.91	0.056
Service use, Attendance, and Engagement*	-	-	-	-	-

N.b * = Too few categories.

Table 23. Termination of mentoring moderator analyses

Outcome	β	SE	95% CI	Z	*p*
All offending	0.233	0.039	0.156-0.309	5.98	0.000
Violence*	-	-	-	-	-
Crime	0.232	0.045	0.144-0.320	5.15	0.000
Gang involvement*	-	-	-	-	-
Recidivism	0.444	0.077	0.294-0.594	5.79	0.000
Externalizing	0.020	0.043	-0.064-0.104	0.47	0.637
Internalizing	0.134	0.080	-0.023-0.290	1.67	0.095
Attitudes and Beliefs	-0.072	0.088	-0.245-0.101	-0.82	0.412
Social and Emotional Outcomes	0.009	0.194	-0.370-0.388	0.05	0.960
Behavioural outcomes	-0.030	0.048	-0.124-0.064	-0.63	0.531
Substance misuse	0.320	0.111	0.103-0.537	2.89	0.004
Education - attendance	0.208	0.041	0.128-0.288	5.09	0.000
Education - attainment	-0.200	0.152	-0.499-0.098	-1.31	0.189
Education – Aspirations and Attitudes	-0.223	0.158	-0.532-0.086	-1.42	0.157
Education - behaviour	-0.004	0.015	-0.033-0.024	-0.30	0.764
Familial outcomes	-0.096	0.195	-0.479-0.286	-0.49	0.622
Peer outcomes	-0.440	0.433	-1.288-0.409	-1.02	0.310
Physical health outcomes*	-	-	-	-	-
Mental health outcomes	0.053	0.088	-0.119-0.225	0.60	0.547
Service use, Attendance, and Engagement*	-	-	-	-	-

N.b * = Too few categories.

Table 24. Study quality moderator analyses

Outcome	β	SE	95% CI	Z	*p*
All offending	0.034	0.068	-0.100-0.167	0.49	0.623
Violence	0.099	0.078	-0.055-0.253	1.26	0.208
Crime	0.033	0.069	-0.102-0.168	0.48	0.633
Gang involvement*	-	-	-	-	-
Recidivism	0.611	0.253	0.115-1.107	2.42	0.016
Externalizing	-0.146	0.113	-0.366-0.075	-1.29	0.196
Internalizing	-0.019	0.237	-0.483-0.445	-0.08	0.935
Attitudes and Beliefs	-0.096	0.355	-0.790-0.599	-0.27	0.787
Social and Emotional Outcomes	0.202	0.414	-0.609-1.012	0.49	0.626
Behavioural outcomes	-0.006	0.101	-0.205-0.193	-0.06	0.954
Substance misuse	-0.258	0.437	-1.114-0.598	-0.59	0.555
Education - attendance	0.074	0.066	-0.055-0.203	1.12	0.261
Education - attainment	-0.120	0.132	-0.379-0.138	-0.91	0.361
Education – Aspirations and Attitudes	0.502	0.176	0.156-0.847	2.85	0.004
Education - behaviour	0.047	0.079	-0.109-0.203	0.59	0.553
Familial outcomes	0.157	0.554	-0.929-1.243	0.28	0.777
Peer outcomes	0.004	0.603	-1.179-1.186	0.01	0.995
Physical health outcomes*	-	-	-	-	-
Mental health outcomes	0.667	0.260	0.157-1.177	2.56	0.010
Service use, Attendance, and Engagement*	-	-	-	-	-

N.b * = Too few categories.

Table 25. ITT/ToT moderator analyses

Outcome	β	SE	95% CI	Z	*p*
All offending	-0.381	0.194	-0.762- -0.00	-1.96	0.050
Violence	-	-	-	-	-
Crime	-0.378	0.191	-0.753- -0.002	-1.97	0.004
Gang involvement*	-	-	-	-	-
Recidivism	-	-	-	-	-
Externalizing	-0.145	0.119	-0.379-0.089	-1.21	0.225
Internalizing	-0.024	0.167	-0.351-0.302	-0.15	0.884
Attitudes and Beliefs	-0.077	0.149	-0.370-0.216	-0.52	0.606
Social and Emotional Outcomes	-0.213	0.033	-0.278- -0.148	-6.43	0.000
Behavioural outcomes	-0.108	0.063	-0.231-0.015	-1.72	0.086
Substance misuse	-0.181	0.475	-1.113-0.750	-0.38	0.703
Education - attendance	-	-	-	-	-
Education - attainment	0.073	0.117	-0.156-0.302	0.62	0.533
Education – Aspirations and Attitudes	0.189	0.151	-0.106-0.485	1.26	0.208
Education - behaviour	-0.117	0.037	-0.189- -0.045	-3.17	0.002
Familial outcomes	-0.001	0.059	-0.116-0.116	-0.01	0.999
Peer outcomes	0.217	0.474	-0.712-1.146	0.64	0.647
Physical health outcomes*	-	-	-	-	-
Mental health outcomes	0.260	0.133	0.001-0.521	1.96	0.050
Service use, Attendance, and Engagement*	-	-	-	-	-

N.b * = Too few categories.

Table 26. Comparison condition moderator analyses

Outcome	β	SE	95% CI	Z	*p*
All offending	0.350	0.181	-0.005-0.705	1.93	0.054
Violence	1.419	0.277	0.877-1.961	5.13	0.000
Crime	-0.452	0.239	-0.921-0.016	-1.89	0.059
Gang involvement*	-	-	-	-	-
Recidivism	0.422	0.234	-0.036-0.880	1.81	0.071
Externalizing	-0.488	0.580	-1.625-0.648	-0.84	0.400
Internalizing	-0.495	0.539	-1.552-0.562	-0.92	0.359
Attitudes and Beliefs	-0.070	0.312	-0.682-0.542	-0.23	0.822
Social and Emotional Outcomes	-0.233	0.197	-0.618-0.153	-1.18	0.237
Behavioural outcomes	0.324	0.237	-0.142-0.789	1.36	0.173
Substance misuse	-	-	-	-	-
Education - attendance	-	-	-	-	-
Education - attainment	-0.062	0.610	-1.257-1.133	-0.10	0.919
Education – Aspirations and Attitudes	-0.427	1.116	-2.614-1.761	-0.38	0.702
Education - behaviour	-0.428	0.647	-1.697-0.841	-0.66	0.508
Familial outcomes	0.098	0.137	-0.170-0.365	0.71	0.475
Peer outcomes	-	-	-	-	-
Physical health outcomes*	-	-	-	-	-
Mental health outcomes	-0.695	0.402	-1.483-0.093	-1.73	0.084
Service use, Attendance, and Engagement*	-	-	-	-	-

N.b * = Too few categories.

Appendix J – Possible studies published after our search date

Further searches were conducted using the same search terms and databases listed in Appendix A from 1st February 2021 to 26th June 2022. The following number of results were produced in each database:

APA PsycInfo (Ovid)

3 and 6 and 9 (**121**)

APA PsycExtra (Ovid)

3 and 6 and 9 (**88**)

Social Policy and Practice (Ovid)

1 and 2 and 3 (**18**)

Econlit (Ovid)

1 and 4 and 7 (**0**)

Ovid MEDLINE(R) and Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Daily and Versions(R)

3 and 6 and 9 (**91**)

ERIC (Ebsco)

S1 AND S2 AND S5 [Database – ERIC] (**101**)

Repec via Ebsco Discovery

S1 AND S2 AND S3 5,372 **[Limited to Repec – 9]**

Web of Science (Social Sciences Citation Index/ Arts & Humanities Index)

3 AND #2 AND #1 (**72**)

We also searched for further mentoring interventions listed in the National Mentoring Resource Center Database from to 26th June 2022.

The following studies fit our inclusion criteria after our search end date:

- There is a long-term follow-up report from the Karcher (2008) trial, which is forthcoming in the NIJ Criminal Justice Reference Service data base.
- There has been an update of the Quantum Opportunities Program RCT study – forthcoming in the National Mentoring Resource Center (https://nationalmentoringresourcecenter.org/research-tools/evidence-reviews/mentoring-program-reviews/)
- There has been an updated evaluation of 'Great Life Mentoring' – retrieved from: https://crimesolutions.ojp.gov/ratedprograms/646#eb
- There has been an updated evaluation of 'Chance UK' – retrieved from: https://crimesolutions.ojp.gov/ratedprograms/729#ar
- There has been a new evaluation of 'Project Arrive' – retrieved from: https://crimesolutions.ojp.gov/ratedprograms/685#em