A SCOPING REVIEW OF PARENTING AND FAMILY-BASED INTERVENTIONS FOR SEVERE AND PERSISTENT CONDUCT PROBLEMS IN CHILDREN AND ADOLESCENTS AGED 10-17

A thesis submitted in the partial fulfilment of the requirements for the Degree of

Master of Science in Child and Family Psychology

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2021-2022

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Acknowledgements

The current review would not have been possible without the support and contribution from the following people. Firstly, to my supervisors, Professor Michael Tarren-Sweeney and Professor Aron Shlonsky, thank you so much for the opportunity, support, and guidance throughout this project.

To Michael, I am beyond thankful for your continuous support, encouragement, and invaluable feedback throughout this journey. Your enthusiasm for the project is inspiring and I am so grateful for this opportunity. To Aron, thank you for your time, practical knowledge, feedback, and methodological guidance throughout the project. I am grateful for our crash course which has helped me grow my database searching skills. To Professor Bryce McLeod and Dr Aaron Hogue, thank you for your invaluable input during the initial stages of the project.

To Samantha Watson, my project buddy and the review's second author - this project would not have been achievable without you. I am always thankful to have worked alongside the best for this project. Your efficiency and attention to detail are very admirable.

To my beloved friends, Jiyian, Victor, and Gawin - thank you for the constant check-ins, encouragements, food gatherings, and game nights to help keep my social life alive. I am beyond grateful for the aroha.

To my loving partner, Raunaq - thank you so much for your endless love, support, and patience throughout this journey. Thank you for being my rock, chaiwala, and self-doubt challenger. I am so lucky to have you.

Finally, to my family in Malaysia- thank you for the constant video call check-ins, words of wisdom, and motivation you have given me throughout the year. My deepest gratitude for the opportunities and the unconditional love and faith you have in me. This thesis is dedicated to you.

Abstract

Research to date has focused on evaluating the effectiveness of either parenting or family-based interventions for children and adolescents with severe and persistent conduct problems. The only systematic review that has included both family-based and parenting interventions for children and adolescents of this nature was carried out more than 20 years ago. An update on this topic is necessary to account for the effectiveness studies carried out in the past 20 years. The present scoping review aimed to (1) identify and summarise all available high-quality research studies (RCTs) that have evaluated the effectiveness of both parenting and family-based interventions in reducing severe and persistent conduct problems among children aged 10-17, (2) identify the individual common elements embedded in these interventions, and (3) determine the feasibility of a network meta-analysis. A scoping review methodology was used to conduct a comprehensive search on the following electronic databases: PsycINFO, MEDLINE, and ERIC. Two independent reviewers screened 2608 titles and abstracts for eligibility. Twenty-five RCTs met eligibility for the review. A total of nine distinct parenting and family-based interventions were identified, with Multisystemic Therapy (MST) being the most frequently used intervention for children and adolescents with severe and persistent conduct problems. The findings of the current review support the use of Multisystemic Therapy, Functional Family Therapy, Treatment Foster Care, Parent Training, and Behaviour Contracting and Advocacy in reducing severe and persistent conduct problems in children and adolescents aged 10 to 17. However, significant challenges with intervention implementation were identified. These are discussed in light of issues with implementation fidelity and the common elements approach of implementing interventions.

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Chapter One: Introduction

1.0 Overview

Conduct problems are challenging behavioural problems in childhood and adolescence. They are defined by ongoing patterns of antisocial, aggressive, dishonest, delinquent, defiant, and disruptive behaviours that cause significant distress and injury to others (AGCP, 2009). Adolescence is a critical developmental period where children's problem behaviours may escalate and transform into more severe and complex forms of conduct problems (i.e., delinquency), due to the increased demands and expectations from peers, school, society, and the legal system. Although children may manifest occasional conduct problems in adolescence, their misconduct become clinically relevant when they are recurrent, severe, and persistent.

The estimated prevalence of children and adolescents with severe conduct problems in western countries is 5 to 10 per cent (Fergusson et al., 2011; Loeber et al., 2000). This suggests that at least 40,000 children and adolescents under the age of 17 years in New Zealand display elevated forms of conduct problems.

Research into the development of conduct problems in childhood and adolescence has been extensive. Numerous risks factors, including both dispositional (i.e., temperamental characteristics, cognitive vulnerabilities) and contextual (i.e., peer influences, family dysfunction) risk factors, have been linked to the development of severe conduct problems in children and adolescents (Dandreaux & Frick, 2009; Dodge & Pettit, 2003; Frick, 2006). Notably, family and parenting factors such as inconsistent/harsh parental discipline, intra-family conflicts, poor parental supervision were found to be one of the most robust predictors of conduct problem outcomes in children and adolescents (Fergusson et al., 1994; Frick, 2012; Hawes & Dadds, 2005).

Many parenting and family-based interventions have been suggested for the management and intervention for children and adolescents with severe conduct problems. These range from Parent Management Training (PMT) to more intensive interventions such as Multi-Systemic Therapy (MST) and Wraparound Services. These interventions target the child's ecological systems by focusing on aspects of parenting and/or family interactions that may be contributing to and maintaining children and adolescents' conduct problems (Dodge & Pettit, 2003; Hawes & Dadds, 2005; Johnson et al., 2017; Woolfenden et al., 2001).

The effectiveness of parenting and family-based interventions for this population of children and adolescents must be continually evaluated. Particularly, the effectiveness of these interventions in mitigating both short and long-term adverse outcomes, considering the potential impact and cost it may incur on society. To date, there has been only one systematic review of the effectiveness of parenting and family-based interventions for reducing child and adolescent conduct problems and/or delinquency (Woolfenden et al., 2001) . Given this review is now 20 years out-of-date, governments and agencies presently lack adequate evidence to guide policy and service design - there is an urgent need for an updated systematic review. To address this gap, a scoping review was conducted to answer the following research question:

What parenting and family-based interventions have been rigorously evaluated for their effectiveness in reducing severe and persistent conduct problems and/or related outcomes (e.g., reoffending) among 10-17-year olds?

1.1 Terminologies

The terminologies used to describe children and adolescents with severe conduct problems have been varied. Some of these terms include *chronic antisocial behaviours, conduct disordered, delinquency, disruptive behaviours, challenging behaviours, severe behaviour difficulties* and so on (Church, 2003; Dodge & Pettit, 2003).

1.1.1 Psychiatric Definitions

In psychiatry, the terms Conduct Disorder (CD) and Conduct-dissocial Disorder are used to define children with severe and persistent forms of conduct problems. The American Psychiatric Association's Diagnostic Statistical Manual of Mental Disorders (DSM-V) defines Conduct Disorder (CD) as a repetitive and persistent form of behaviours that violates age-appropriate societal norms, rules, and the basic rights of others (American Psychiatric Association, 2013). Similarly, the World Health Organisation's International Classification of Diseases (ICD-11) defines Conduct-dissocial Disorder as a severe and recurrent pattern of antisocial behaviours characterised by aggression towards people or animals, destruction of property, deceitfulness or theft, and serious violations of rules (World Health Organization, 2019). Conduct disorder is to be differentiated from Oppositional Defiant Disorder (ODD), as behaviours of CD are typically more severe and highly related to criminal behaviour (American Psychiatric Association, 2013, pp. 469-475). This psychiatric/medical framework tend to view children and adolescents' conduct problem outcomes categorically- a child either has conduct disorder or does not.

1.1.2 Socio-legal Definitions

In law, sociology, and criminology, the term delinquency is more commonly used to describe children and adolescents whose severe conduct problems extend to illegal conduct. Delinquency is defined as the persistent violation of the law or engagement in criminal behaviours by a young person who is under the legal age of adulthood (Murray & Farrington, 2010; Sampson, 2001). It is commonly measured by official records of arrests, convictions, or self-report offending. The outcome of conduct problems under this socio-legal framework is also categorical- a child is either a delinquent or not.

1.1.3 Behavioural Definitions

Psychologists and educationalists who work within a behavioural or social learning framework (especially in schools and disability settings) tend to frame conduct problems using behavioural terms, such as “antisocial behaviours”, “challenging behaviours”, “emotional and behavioural difficulties”, and “severe behaviour difficulties” (Church, 2003; Fergusson et al., 2011). Behavioural researchers tend to view children and adolescents’ conduct problems through a social learning paradigm, taking into consideration the contexts and conditions in which children’s conduct problems might have developed and been inadvertently reinforced. This paradigm takes a dimensional approach in defining children and adolescents’ conduct problems, such that they range on a continuum of severity, in contrast to being categorically classified. The idea is that children and adolescents manifest varying degrees of antisocial behaviours, instead of whether they present with antisocial behaviours or not.

1.1.4 Severe and Persistent Conduct Problems

Because conduct problems are diverse and differ in the way they are conceptualised and operationalised across various fields of research and disciplines, the term *severe and persistent conduct problems* is proposed and used throughout this thesis to accommodate the complexity and diversity in defining children’s conduct, delinquent, or antisocial manifestations of behaviour, and to emphasise the severity of problem behaviour in this population of children and adolescents.

1.2 The Development of Severe and Persistent Conduct Problems

There has been a substantial body of research into the development of conduct problems in children and adolescents. However, most of the focus has been on identifying risk factors that place young people at risk of developing conduct problems. These have been established to be dispositional risk factors such as neurocognitive deficits (i.e., deficits in

executive functioning, neurotransmitter dysregulation), personality predispositions (i.e., impulsivity), temperamental vulnerabilities (i.e., poor emotional regulation) and contextual risk factors such as harsh and ineffective parenting practices, poor parental monitoring supervision, early childhood adversities, and so on (Dodge & Pettit, 2003; Frick, 2012; Frick, 2006; Hill, 2002).

Although a variety and diversity of risk factors have been identified in the literature, it has been more challenging for researchers to integrate these factors into causal theories that can explain the complex processes involved in the development of severe and persistent conduct problems in children and adolescents (Dandreaux & Frick, 2009; Frick, 2012; Frick, 2006; Raine, 2002).

1.2.1 The Ecological-Transactional Framework

Bronfenbrenner's ecological systems model is an important conceptual framework when considering the developmental processes associated with severe and persistent conduct problems in children and adolescents. The model highlights the significance and influence of environmental contexts, especially a child's immediate environment, in shaping their developmental trajectory.

The ecological systems framework places a child in the centre of its surrounding environmental systems. It describes five nested environmental systems: the (i) microsystem, (ii) mesosystem, (iii) exosystem, (iv) macrosystem, and (iv) the chronosystem (i.e., the influence of time), that are organised according to their proximity and strength of influence on the developing child (Bronfenbrenner & Morris, 2006). The microsystem, for instance, is closest in distance and has the strongest and most direct impact on the developing child.

A pivotal concept of this theory is the idea of *proximal processes*, defined as the frequent, enduring, and reciprocal forms of interactions or relationships that occur between the child and its environmental contexts (Bronfenbrenner & Morris, 2006). An example of

proximal processes is the consistent patterns of interaction between a parent-child dyad in the immediate microsystem.

The ecological-transactional framework is important in this context for two reasons. First, it provides a solid foundational framework for considering all possible factors within each layer of the child's ecological system that may have a role in the development of severe conduct problems in children. Second, it highlights the importance of considering and intervening on factors that are most directly impacting and influencing the developing child, that is, parent and family factors within the child's immediate microsystem.

1.2.2 Family and Parenting Mechanisms

Social Learning. Children learn to behave by observing and interacting with their social environments (Bandura, 1971). For many years, Patterson and colleagues at the Oregon Social Learning Centre (OSLC) have examined the developmental pathways of severe and persistent antisocial behaviours in children within the context of family interactions and processes (Fisher & Gilliam, 2012; Patterson et al., 2002; Reid et al., 2002). The question pertains to what and how parenting and/or family factors contribute to the early development of antisocial behaviours and later, more severe forms of conduct problems in children and adolescents.

Harsh, coercive, and inconsistent parenting practices were found to be one of the most significant risk factors associated with the development of severe conduct problems in children and adolescents (Scaramella & Leve, 2004; Snyder et al., 2005; Waller et al., 2012). Patterson's coercion model is particularly relevant in this context as it provides a detailed description of how children's early antisocial behaviours can be inadvertently reinforced by harsh and coercive family interactions. In addition, it also describes how repeated coercive family exchanges may lead to the progressive worsening and escalation of aggressive

antisocial behaviours and later conduct problems in young people (Patterson, 2002; Snyder & Stoolmiller, 2002).

A classic example of a coercive family interaction begins with a noncompliant child who responds to a parental directive by exhibiting low-level forms of antisocial behaviours (i.e., whining, crying, aggression). In return, parents respond with anger, hostility, and harsh disciplinary actions, which then elicits higher levels of child negativity and aggression. This coercive cycle continues and progressively intensifies until eventually, one party 'wins'. If the child 'wins', their aggression is reinforced and they have learnt to gain control through aggressive and aversive antisocial behaviours. If the parent 'wins', their harsh and coercive parenting is reinforced. In either situation, high levels of aggression, hostility, and coercive antisocial behaviours are inadvertently modelled and encouraged in the child instead of prosocial behaviours. Thus, the child learns this pattern of relating to others in the family, which is likely to be generalised and carried over to interactions with others outside of the family environment (i.e., school).

As the coercive interactions become more entrenched in the family environment, an escalation in the intensity of these negative interactions may occur. Escalation is used as a tactic to induce capitulation, especially when a previous effective method in gaining control becomes ineffective, or when a coercive exchange becomes extended (Snyder & Stoolmiller, 2002). In these situations, children's tantrums may intensify and escalate to hitting, intimidating, or even physical attacks. Over time and through these repeated experiences, these escalated forms of antisocial behaviours may again be reinforced, leading to more serious forms of conduct problems in children.

Family systems. From a family systems standpoint, children and adolescents' conduct problems are seen as a consequence of dysfunctional patterns of interaction and socialisation within the family unit or system (Carr, 2016; Fosco & LoBraico, 2019). In

addition to the social learning aspect discussed above, other family system factors that are important to consider in the context of the severe and persistent conduct problems include the intergenerational transmission of conduct-related problems and parenting factors such as parental supervision, involvement, disciplinary strategy, and family warmth and engagement.

It has been suggested that children with delinquent and antisocial behaviours frequently come from families with criminal and offending backgrounds (Farrington, 2010). Longitudinal studies such as the Cambridge Study in Delinquent Development and the Pittsburgh Youth Study have consistently demonstrated the link between having a convicted family member (especially fathers) and the subsequent offending and delinquent behaviours in boys (Farrington et al., 2006; Loeber et al., 2008). There are two possible explanations. First is that this intergenerational transmission of conduct-related problems is part of a bigger socioeconomic picture, such as poverty (Farrington, 2010). In this case, children are socialised to offend. Another possible explanation is that family members (i.e., male siblings) can mutually influence each other, perhaps by encouraging or modelling each other's antisocial behaviours. For example, in the Cambridge Study, approximately 20 per cent of boys who had brothers of their age were found to be convicted for a crime co-committed with their male siblings (Reiss Jr & Farrington, 1991).

Apart from intergenerational factors, parenting practices characterised by low warmth and affection, low involvement, and lax disciplinary strategies were also found to be associated with severe and persistent conduct problems in children and adolescents (Farrington, 2010; Fisher & Gilliam, 2012; Fosco & LoBraico, 2019). Poor parental supervision, in particular, was found to be one of the most robust and replicable predictors of delinquency and antisocial behaviours in children and adolescents (Dishion & McMahon, 1998).

Another aspect of family interaction that has been linked to conduct problems is poor family engagement and communication (Fosco & LoBraico, 2019). It is suggested that children and adolescents with serious conduct problems often have high levels of conflict with their parents or family members. These conflicts are also likely to be unresolved due to the lack of effective communication and problem-solving skills within the family (Smith & Stern, 1997). Moreover, these unresolved conflicts may lead to a coercive cycle of interaction within the family, where high levels of tension and conflict are maintained, thus likely to perpetuate and reinforce children's conduct problems.

Attachment. Serious conduct problems often have their origins in early childhood (DeKlyen & Speltz, 2001). The attachment theory provides another framework for understanding how early parent-child attachment relationships may affect important aspects of child development, such as emotional regulation, self-concept, theory of mind, empathy, all of which are relevant to the development of severe and persistent conduct problems in children and adolescents (Weinfield et al., 2008).

The attachment theory describes the early formation of an attachment system/ relationship between infants and their caregivers that is designed to provide safety, comfort, and encourage exploration (Bowlby, 1980). However, the quality of this attachment relationship is dependent on the child's perception and experience of the caregiver's availability, sensitivity, and consistency as a source of comfort or protection when the need arises (Thompson, 2008).

In addition to safety and exploration, attachment relationships form the basis for the development of an internalised representation of the self and others ("internal working model"). The idea is that young children construct beliefs and expectations about the self and others through their subjective experiences of caregiving. These internalised beliefs and expectations are later thought to become generalised and influence how children behave and

interpret their wider interpersonal relationships across the lifespan (Fearon et al., 2010; Thompson, 2008).

The quality of attachment relationships can be broadly divided into two categories: *secure attachment* and *insecure attachment*. Children classified as having a secure attachment are likely to have experienced caregivers who are warm, sensitive, and responsive, especially when they are distressed. They are confident with their caregiver's responsiveness and availability and thus form representations of the self as effective and worthy of care. Conversely, children with an *insecure attachment* have not experienced this consistent availability, responsiveness, and comfort from their caregivers in stressful situations. They are likely to view the world as unpredictable and hold a negative representation of the self and others (Weinfield et al., 2008).

There are three general classifications of insecure attachment: *avoidant, resistant (anxious/ambivalent),* and *disorganised/disoriented*. Infants classified as *insecure-avoidant* are associated with caregivers who are physically and/or emotionally distanced, insensitive and rejecting (Weinfield et al., 2008). The child experiences a caregiver who is rigid, emotionally unavailable, and thus develop patterns of behaviour and emotional response that are minimised or suppressed. On the other hand, infants classified as *insecure-resistant (anxious/ambivalent)* are thought to have experienced caregivers who are unpredictable and inconsistent. Children of this attachment pattern often present as clingy, intense, or angry towards their caregivers. They are also likely to exhibit heightened emotional reactivity in stressful situations to ensure a consistent response from their caregivers (Cassidy, 1994; Kochanska, 2001).

Children classified as *disorganised* are characterised by their inability to maintain a coherent attachment strategy during stressful conditions (Guttmann-Steinmetz & Crowell, 2006; Weinfield et al., 2008). It is thought that children with disorganised patterns of

attachment have not developed consistent ways of comprehending and signalling their feelings and needs due to their disturbing experiences of care (i.e., maltreatment). Therefore, they exhibit dysregulated emotions and behaviours marked by confusion, fearfulness, and contradictory approach combined with avoidance behaviours towards their caregivers in the face of distress (Guttmann-Steinmetz & Crowell, 2006; McIntosh, 2006). Sroufe (2005) highlighted that disorganised attachment is strongly predicted by child maltreatment (i.e., physical abuse), caregiver intrusiveness, and caregivers' preoccupation with unresolved loss or trauma.

Although insecure patterns of attachment do not directly account for conduct problems, the marked deviated forms of affect expression and regulation may function as a significant risk and precursor for future socio-emotional and behavioural problems (Cassidy, 1994; Frick et al., 2003; Guttmann-Steinmetz & Crowell, 2006; Moss et al., 2006; Vando et al., 2007; Weinfield et al., 2008). Further, children with insecure patterns of attachment are also thought to have an increased risk for severe behavioural problems due to their negatively biased self-concept arising from their less than ideal early caregiving experiences. They are thought to be more fearful, mistrusting, angry, and thus more susceptible to negative social processing processes such as hostile attributional biases and reactive aggression, both of which are linked to aggressive antisocial behaviours in children (DeKlyen & Speltz, 2001; Guttmann-Steinmetz & Crowell, 2006; McElwain et al., 2008).

Childhood maltreatment. Perhaps of more clinical interest is the role of early adverse childhood experiences (i.e., aberrant attachment, maltreatment) in the development of severe and persistent conduct problems in children. Prior research has consistently demonstrated the link between maltreatment and later conduct problems in children. For instance, Burnette et al. (2012) found child maltreatment to be a strong predictor of antisocial behaviour and Ryan et al. (2013) found prolonged child maltreatment to be linked to more

severe and persistent conduct problem outcomes such as recidivism. Other studies have highlighted the role of aberrant attachment development and maltreatment in predicting later mental health problems and externalising disorders in children and adolescents (Cyr et al., 2010; Duschinsky & Solomon, 2017; Fearon et al., 2010; Newman & Mares, 2007).

In response to this, several developmental mechanisms have been proposed to explain how early adverse childhood experiences might be associated with the development of severe conduct problems in children, with considerable attention focusing on the impact of maltreatment on early neurodevelopment and the development of the theory of mind and empathy.

Exposure to maltreatment in childhood (i.e., trauma and neglect) can significantly impact a child's neurodevelopment. More specifically, children's early experiences of trauma and neglect can profoundly alter and disrupt the development of neural structures and networks required for normative emotional and behavioural functioning (Perry, 2008). In support of this notion, neuroimaging studies have found functional and structural abnormalities in the brains of maltreated children, particularly in the cortical and subcortical areas (i.e., the limbic system) of the brain that are responsible for the regulation of arousal, fear, emotions, and behaviour (Newman et al., 2015).

In addition to brain structures, prior studies have also indicated the possibility of an abnormal stress response system in maltreated children. It is suggested that maltreated children may have a hypersensitive hypothalamic-pituitary-adrenal (HPA) axis due to their early and chronic exposure to stressful environments and relationships. The excessive and prolonged release of stress hormones (i.e., cortisol, noradrenaline) is thought to result in neurotoxicity and affect the development of brain structures such as the hippocampus, amygdala, and the reticular activation system (RAS), all of which are critical for emotional and behavioural regulation (De Bellis, 2001; McCrory et al., 2012; Perry, 2008).

Moreover, children with histories of maltreatment were also found to have functional differences in the prefrontal cortex areas of the brain (i.e., the anterior cingulate cortex ACC) (Kim-Spoon et al., 2021). For instance, Bruce et al. (2013) found higher activation of the ACC in maltreated children compared to non-maltreated children during an inhibitory control task, implicating that children who have experienced neglectful/abusive care may have significant difficulties with behavioural regulation and inhibitory control, both of which are important characteristics of children with severe and persistent conduct problems (Perry et al., 2018).

Other than emotional and behavioural dysregulation, children with early experiences of abuse and neglect were found to have significant difficulties with emotional recognition and social-emotional cognition (Pollak et al., 2000). It is indicated that maltreated children may have a poor understanding of the emotions of others (i.e., empathy, theory of mind) due to their early aberrant caregiving experiences (Cicchetti et al., 2003; Locher et al., 2014; Pears & Fisher, 2005; Szpak & Białecka-Pikul, 2020). Several studies have documented the link between children's deficits in empathy/theory of mind and severe and persistent conduct problems, with considerable focus on the callous-unemotional characteristics in this population of children (Arango Tobón et al., 2018; Frick et al., 2003; Sebastian et al., 2012; Sharp, 2008).

Theory of mind (ToM) is defined as one's capacity to recognise and understand that others may hold different emotions, beliefs, and desires than the self (Wellman & Upso, 2014). Affective ToM is closely related to empathy, which involves the capacity to understand the subjective intentions and feelings of others (Locher et al., 2014). Children and adolescents with severe and persistent conduct problems are believed to have impaired or inadequate development of empathy and affective ToM, indicated by their continuous

violation of rules and the rights of others, despite it causing significant harm and trauma to others (Sharp, 2008).

The development of empathy and ToM is suggested to be nurtured from early caregiving interactions (i.e., attachment experiences). Children start to explore and predict the minds, intentions, and behaviours of their caregivers through daily reciprocal interactions and processes such as joint attention. These enduring interactions act as precursors for the development of emotional understanding, ToM, and empathy in children (Pears & Fisher, 2005). However, in the case of maltreatment, such reciprocal interactions are likely to be erratic, limited, or even absent, thus undermining the development of empathy and theory of mind in children. Moreover, it is suggested that maltreating caregivers are likely to be emotionally unresponsive, inconsistent, and unstable, thus making it confusing for children to predict and understand parental expressions of emotions (Cicchetti et al., 2003). Further, it is asserted that in maltreating families, ToM-promoting interactions (e.g., reasoning, affectionate comfort-giving) and discussions of emotions are infrequent or absent, which further limits the opportunities for the development of empathy and ToM in this population of children (Cicchetti et al., 2003; O'Reilly & Peterson, 2015).

1.3 Parenting and Family-Based Interventions

Considering the role of parents and family systems in the initiation, maintenance, and possible escalation of conduct problems, many parenting and family-based interventions have been recommended for the treatment and management of children and adolescents with severe conduct problems. These include but are not limited to Multisystemic Therapy, Family Therapy, Wraparound, Parent Management Training, and Treatment Foster Care. In general, these interventions aim to target parent-child patterns of relations and interactions, behavioural management, and other factors within the child's ecological systems that may be maintaining their problem behaviours.

1.3.1 Multisystemic Therapy

Multisystemic therapy (MST) is an intensive and multifaceted intervention programme for children and adolescents with serious behavioural problems and at high risk of out-of-home placements (Henggeler & Schaeffer, 2019). MST is derived from the social-ecological framework and aims to address factors within the child's ecological system (i.e., family, school, community etc) that may be contributing to their problem behaviour. MST is operated under nine treatment principles and may include components such as improving parenting skills, family relations, youth involvement with deviant peers, youth school performance and so on. MST is highly individualised and delivered by a team of professionals who provide 24 hours a day, 7 days a week intensive support for youths and their families.

1.3.2 Functional Family Therapy

Functional Family Therapy (FFT) is a brief family-based intervention for children and adolescents with emotional and behavioural problems. FFT is guided by five core theoretical principles and is based on the premise that youth conduct problems are symptoms of dysfunctional relations and interactional patterns within the family unit. Thus, the main goal of FFT is to establish and maintain new healthy and functional patterns of interactions within the family, which would subsequently reduce the frequency and severity of conduct problems in children and adolescents. The full description and components of FFT can be found at Sexton (2019).

1.3.3 Parent Management Training

Parent Management Training-Oregon Model (PMTO) is a parent training programme based on the principles of Social Interactional Learning (SIL). The programme aims to improve parenting practices by teaching parents behavioural management skills to reduce ineffective and coercive interactions with their children. PMTO includes five core

components: skill encouragement, discipline, monitoring, problem-solving skills, and positive involvement. These core components are further facilitated by three supporting components: emotional identification and regulation, clear directions, and effective communication skills (Forgatch & Kjøbli, 2016).

1.3.4 Wraparound Services

Wraparound (WA) is a holistic and intensive intervention service for children and adolescents with serious emotional and behavioural problems. It is child-centred, highly individualised, and maintained by a dedicated team of professionals and non-professionals (i.e., facilitators) who "wrap around" the child and their families by providing intensive assessment, support, and interventions to achieve the set goals by children and their families. The WA model follows ten core principles: family voice and choice, natural supports, team-based, collaboration, community-based, culturally competent, strength-based, individualised, unconditional, and outcome-based (Bruns et al., 2008).

1.3.5 Treatment Foster Care Oregon

Treatment Foster Care Oregon (TFCO), formerly known as Multidimensional Treatment Foster Care (MTFC) is a family-based intervention developed at the Oregon Social Learning Centre (OSLC) for children and adolescents with significant behavioural problems (Chamberlain et al., 2002). This treatment programme differs from other forms of parenting or family-based interventions in that it involves the recruitment and training of community families who provide foster placements for the youths. These foster families are highly trained and supervised to provide a structured and therapeutic living environment that is ecologically similar to the youth's home environments. While the youths are in foster placements, their biological families (or other caregivers) are involved in family therapy and/or other behavioural management programmes. Components of the MTFC are multifaceted and operate across multiple settings, including the MTFC homes, schools, and

community settings. The main goal of MTFC is to systematically change the youth's social environment to reduce antisocial behaviours and encourage pro-social behaviours. The full description and components of the MTFC model can be found at Fisher and Chamberlain (2000).

1.4 The Current Literature

Several studies have systematically reviewed the effectiveness of different family-based and parenting interventions for children and adolescents with serious antisocial problem behaviours (Bakker et al., 2017; Chamberlain & Rosicky, 1995; Pol et al., 2017; Waddell et al., 2018). For example, Dretzke and colleagues (2009) conducted a systematic review and meta-analysis to examine the clinical effectiveness of different parenting programmes in treating children and adolescents with conduct problems. They performed a meta-analysis with the statistical pooled results of 24 randomised controlled trials (RCTs) that used child-behaviour outcome measures such as the Child Behavioural Checklist CBCL and Eyberg Child Behaviour Inventory ECBI. The authors concluded that parenting interventions were effective in reducing conduct problems in children, but the question of 'how effective' remains unclear.

Another systematic review examined the effectiveness of family-based and parenting interventions in children and adolescents with conduct disorder and delinquency aged 10-17 (Woolfenden et al., 2001). The authors found that family-based and parenting interventions were effective in reducing the mean amount of time children/adolescents spent in institutions (i.e., prison, detention) and also in reducing the risk of a juvenile delinquent being re-arrested post-intervention. However, there were no other significant improvements in psychosocial outcomes such as child/adolescent behaviours, academic performance, family relations, or parental functioning post-intervention. The authors concluded that family and parenting

interventions are effective in reducing the amount of time juvenile delinquents spend in institutions which may be cost-saving.

A recent Swedish systematic review and meta-analysis examined the effects of Treatment Foster Care Oregon (TFCO) on delinquent adolescents (Åström et al., 2020). The authors found moderate effectiveness of TFCO in reducing the risks of future criminal behaviour and the number of days in locked settings, compared to standard forms of group care (i.e., residential homes, institutional care). Moreover, TFCO was also found to be more cost-saving than group care due to the reduced length of time adolescents are spending in locked settings, which is beneficial from a societal point of view.

1.5 The Present Review

There have been several systematic reviews of either family-based or parenting interventions in the management and treatment of children and adolescents with severe and persistent conduct problems. However, the only systematic review that has included both family-based and parenting interventions for children and adolescents of this nature is the Woolfenden et al (2001) review, carried out more than 20 years ago. An updated review is necessary, to account for the effectiveness studies carried out in the past 20 years. More importantly, given the growing emphasis on evidence-based interventions (EBI) in this field, it is essential that new research findings and information are available and provided for decision-makers.

The primary aim of the present scoping review was to identify and summarise all available high-quality research studies (RCTs) that have evaluated the effectiveness of parenting and family-based interventions in reducing severe and persistent conduct problems among children aged 10-17. The present scoping review was also conducted to estimate the feasibility for carrying out: (i) a systematic review of the common elements in parenting and family-based interventions; (ii) a network meta-analysis.

The common elements approach has emerged as an alternative method of implementing interventions with high levels of flexibility compared to conventional manualised treatments (Chorpita et al., 2007). Common elements, also known as core components or practice elements, are distinct and "distilled" clinical components used within a larger intervention manual (Chorpita et al., 2005). It is based on the premise that empirically supported treatments often share similar basic clinical techniques, for instance, "social skills training" or "relaxation". A network meta-analysis of common elements will be beneficial in providing information on the comparative effectiveness of all relevant interventions.

The present review aims to address the following research questions:

1. What parenting and family-based interventions have been rigorously evaluated for their effectiveness in reducing severe and persistent conduct problems and/or related outcomes (e.g., offending) among 10-17-year olds?
2. Which studies identify common elements or core components?
3. What is the feasibility of carrying out a network meta-analysis of high-quality intervention trials to identify the effectiveness of individual common elements in decreasing conduct problems and/or related outcomes?

Chapter 2: Methods

This review was conducted following the scoping review guidelines (Arksey & O'Malley, 2005; Colquhoun et al., 2014; Levac et al., 2010) and the Preferred Reporting Items for Systematic Reviews and Meta-Analyses Extension for Scoping Reviews (PRISMA-ScR) checklist, guidelines and explanation (Tricco et al., 2018).

2.1 Protocol and registration

The methodological protocol for this study was drafted in line with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses Protocols (PRISMA-P; Shamseer et al. (2015), the Preferred Reporting Items for Systematic Reviews and Meta-Analyses Extension for Scoping Reviews PRISMA- ScR, and iteratively revised by our research team. The protocol follows Arksey and O'Malley (2005) methodological framework for scoping studies, with revisions from Levac et al. (2010). It describes six stages of research: (1) identifying the research questions; (2) identifying relevant studies; (3) study selection; (4) charting the data; (5) collating, summarizing, and reporting the results; and (6) consultation. The final protocol was submitted to the Open Science Framework on the 27th of January 2022 (see Appendix A for study protocol).

2.2 Study Eligibility

Details of study eligibility were described using the PICOTS framework in Table 1. Studies were eligible for this review if they included:

- An experimental and controlled group with randomisation
- Children and adolescents who meet our definition of “severe and persistent” level of conduct problems
- Our target age population (i.e., age 10 to 17 years)
- Pre and post-test measure of offending and/or conduct problems
- Interventions that address parental and/or family system factors

Studies were excluded if:

- 40% of the participants fell outside of the age range of interest
- Studies focused on mild to moderate behavioural problems (i.e., not severe and persistent conduct problems)
- Studies targeted children and adolescents with oppositional defiant characteristics as they do not meet the threshold of more severe conduct problems
- Interventions primarily focused on children or adolescents with sexual or substance-use offences, as they are often specialised treatment approaches.

2.3 Information Sources

Electronic literature searches were conducted on the following databases: ERIC, PsycINFO, and MEDLINE. These databases were chosen in consultation with the author's supervisors, due to their coverage of literature that is relevant to the current review. No restrictions were placed on publication year as the goal is to conduct a comprehensive search of the literature. No limits were applied on the language and country of publication.

2.4 Search Strategy

The search strategies were drafted by two primary authors of the scoping review, in consultation with their secondary supervisor. The development of search terms was an iterative process to ensure that a balance between breadth, comprehensiveness, and feasibility is achieved (Levac et al., 2010).

First, a search of index terms was conducted through PsycINFO APA Thesaurus of Psychological Index Term. This was done to maximise the comprehensiveness and precision of subject searches across the databases. The following terms were searched: 'antisocial', 'conduct disorder', and 'family therapy'. Related index terms such as 'externalizing symptoms', 'gangs', 'crime', and 'structural family therapy' were identified through this process and were included as search terms for the review.

Table 1

PICOTS Framework for Determining Study Eligibility

Criteria	Determinants
Population	Children and/or adolescents between age 10 to 17 who exhibit a "severe and persistent" level of conduct problems, for example: - DSM or ICD diagnosis of conduct disorder - Clinically indicated scores on standardised measures of conduct problems, or structured/semi-structured psychiatric interviews - Youth offending history >60% of study participants must be in the 10-17 age range.
Intervention	Individualised or group-based programs, treatments, or interventions that target or involve parenting and/or family system factors (i.e., familial relationships and patterns of interaction). Interventions must either have a protocol, manual, or a description of the specific intervention components
Comparison	Treatment as usual (i.e., treatment the individual would have received in the absence of parenting and/or family-based intervention), another intervention type (i.e., individual CBT), no intervention, or a wait-list control (i.e., those waiting to be included in an intervention)
Outcome	Studies must include at least one primary outcome measure of youth behaviour Primary outcomes of youth behaviour, based on either: - Data from the legal system (i.e., administrative records of re-offending, re-imprisonment, or other sentencing such as probation, community service, court-ordered diversions to behavioural or substance use treatment) - Self-report or parent-report psychometric measurements of behaviour; - Interviews, survey questionnaires with youth or others (i.e., teachers, parents) or from direct observations Secondary outcomes of youth behaviour, such as - Family functioning; - Youth and parental mental health; - Sibling relationships; - Peer relations; - School functioning
Timing	Outcome measures must be assessed pre and post-intervention.
Settings	Programs, treatments, or interventions delivered in clinical, juvenile justice, or community settings
Study design	Randomised controlled trials (RCTs)

The search terms were organised into four categories to represent each component of our scoping review topic. These are (i) intervention terms (i.e., 'family therapy'), (ii) age terms (i.e., 'adolescent'), (iii) conduct problem terms (i.e., 'delinquent'), and (iv) study design terms (i.e., 'RCT'). Both authors and their secondary supervisor discussed and collated terms that were commonly used in this field of research. Additionally, terms that arose during the search process such as 'criminal behaviour', were considered and used to formulate the final search terms list.

Field searches of subject headings, titles and abstracts were conducted for each database. Truncations were used, where relevant, to capture the variations of word endings (i.e., 'behavio*' retrieves 'behaviour', 'behavior', 'behavioural', and 'behavioral'). In addition, proximity operators (i.e., n2, adj3) were used to increase the specificity of the search in each database. Inbuilt age limiters on PsycINFO (school age (6-12 years); adolescence (13-17 years)) were also applied during the search to target the population of interest. All search terms were adjusted to match the specific format and inbuilt search tool for each database (i.e., field codes).

Pilot searches were conducted on PsycINFO on three different occasions (16th,23rd, and 25th November 2021). The two review authors revised and refined the final search terms list on each occasion. The final search was performed on the 3rd of December, 2021 (see Appendix B for a full summary of the search strategy).

2.5 Study Selection

2.5.1 Screening round 1: Titles and abstracts

Studies retrieved during the final search were collated and imported to Covidence, a web-based software platform that streamlines the production of research reviews (Covidence Systematic Review Software, 2021). Two review authors independently screened the titles and abstracts of all potential studies retrieved from the search (n=2608), as recommended in

the PRISMA-P guidelines (Shamseer et al., 2015). The goal is to eliminate studies that are irrelevant to our scoping review objectives and research questions.

If both reviewers assessed that a study met the inclusion criteria, the full text of the study was then retrieved for a review. If the eligibility of a study is unclear at the title/abstract screening stage, the full-text study was retrieved to determine selection. In the case of disagreement between the reviewers on study eligibility, a third reviewer (the thesis primary supervisor) was available to discuss any conflicts that were not resolved through meetings and discussions between the two reviewers.

There were 112 instances of disagreement between the reviewers in the title and abstract screening phase. These were all discussed and resolved during meetings between the two author reviewers. Any obstacles or uncertainties during the screening process were also discussed via a Zoom meeting with the two review supervisors.

2.5.2 Screening round 2: Full-text assessment

The second part of study selection involves the full-retrieval of eligible studies identified from the title and abstracts scan. The two reviewers independently retrieved and assessed the full-text studies for final inclusion and extraction. References from the original Cochrane review, Woolfenden et al. (2001), were also included for the full-text review. Disagreements were discussed and resolved through in-person meetings between the two reviewers. Reasons for each excluded study is documented and detailed (see Appendix C). A PRISMA flowchart of the study selection process and decisions at each stage of the review is illustrated in Figure 1.

2.6 Reference Checking

To improve the comprehensiveness of the search procedure, the reference lists for all the included studies were scanned by the two reviewers. Any other identified studies were screened against the inclusion criteria and the PICOTS table. The review authors also

scanned through recent meta-analyses and systematic reviews (Åström et al., 2020; Littell et al., 2021) to identify potential studies. No additional studies were identified through the reference-checking procedure.

2.7 Data Charting and Data Items

Before conducting the final search, a data charting form (see Appendix D) was developed by the two review authors, following the Cochrane data extraction template guidelines (Higgins & Cochrane, 2019). The data extraction form was reviewed by the authors' thesis supervisors with no further refinements required. The form was designed to capture, where possible, the (i) study methods (i.e., study design, the aim of the study), (ii) participant characteristics (i.e., age range, conduct problem/offending), (iii) intervention characteristics (i.e., intervention type, duration), (iv) outcome measures (i.e., type of outcomes, psychometrics used), (v) discussion on common elements, (vi) study strengths and limitations, and (vii) key conclusions of the study.

The two review authors independently extracted data for the first three included studies and evaluated the consistency in data charting and extraction. Discrepancies and disagreements were discussed and resolved between the two reviewers. There were no major discrepancies in data charting between the two reviewers, except for the level of details included in the data extraction forms. The thesis author independently extracted half of the included studies (n=19) and a second reviewer independently extracted the remaining studies (n=20).

2.8 Quality Assessment

The methodological quality of the included studies was assessed using the Joanna Briggs Institute (JBI) Critical Appraisal Checklist for Randomised Controlled Trials (Joanna Briggs Institute, 2017). The purpose was to assess the possibility of bias in study design, sample selection, reporting, and analysis for each included study (Tufanaru et al., 2017). The

full critical appraisal checklist assesses 13 methodological domains (see Appendix E). The thesis author independently appraised half of the included studies (n=19) and a second reviewer independently appraised the remaining studies (n=20).

Chapter 3: Results

3.1 Study Selection

The search strategy yielded 2608 records for abstract and title screening. 1791 records were identified on the PsycINFO database, 519 from MEDLINE, and 298 from ERIC. Eight studies from Woolfenden et al. (2001) were also included for full-text assessment.

After 566 duplicates were removed, 37 studies met the inclusion criteria for the review (see Appendix F). Within the 37 studies, 12 were follow-up studies related to another study of the same trial included in the review. These were treated as a single study. This yields 25 independent studies for the review. See Figure 2: Flow chart of the study selection process.

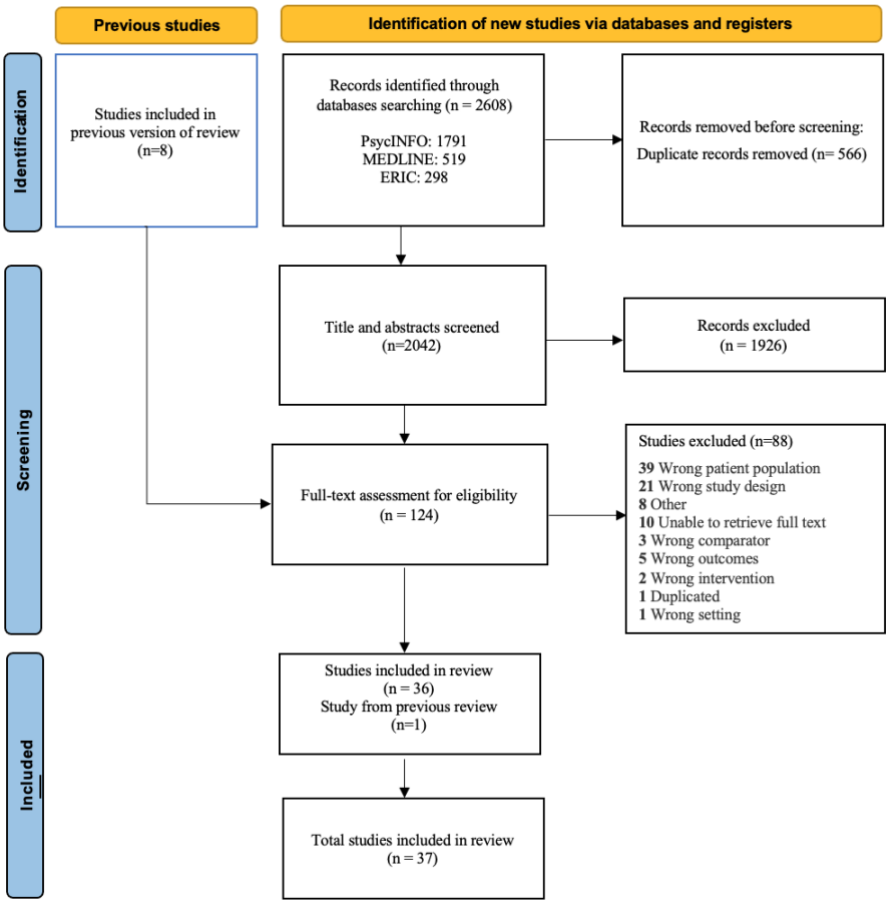

Figure 1. PRISMA Flow-chart of the Study Selection Process

3.2 Study Characteristics

The included studies were conducted between 1983 to 2021 in seven countries. Eighteen studies were conducted in the USA, three studies in the UK, two in Sweden, and one each in the Netherlands, Norway, Singapore, and Germany. All studies were journal articles that were published in English. Sixteen studies included cases referred by the juvenile justice or youth offending services, two had referrals from child welfare services, one received cases from the family court, one received referrals from schools, one included youths who were dually involved with the juvenile justice and child welfare services, and four studies included youths and families referred from multiple service sectors. All included studies were randomised controlled trials, although the randomisation method for some studies was unclear. A summary of the 25 study trials is detailed in Table 2.

3.3 Sample Characteristics

Study sample sizes varied from 35 (Westermark et al., 2011) to 303 (Fonagy et al., 2018; Fonagy et al., 2020). Participants were predominantly males in all studies. Almost all studies included both male and female participants, except for two studies that included only male participants (Bank et al., 1991; Gottfredson et al., 2018), and one that only involved female participants (Leve et al., 2005).

The ethnic composition of the samples varied considerably across the studies, with White/Caucasian youths and families comprising 19.4% to 95% of the samples, and Black/Afro-Caribbean comprising 2% to 80.6%. Most of the study participants were of socioeconomically disadvantaged backgrounds. Many studies included samples who were juvenile offenders or delinquents (n=17), met criteria for a DSM-IV-TR diagnosis of conduct disorder (n=5), and three studies involved youths with serious antisocial behaviours. Specific participant characteristics are summarised in Table 3.

Table 2

Summary of Characteristics of Included Studies

Study name	Author (s)	Country	Service Sector (referral source)	Intervention	Comparison conditions	Randomisation method
Netherlands Study	Asscher (2014; 2013; 2018);Dekovic et al (2012); Manders et al (2013)	Netherlands	Primary health care (GP); child social workers; court-ordered; self-referrals	MST	TAU 53% family-based interventions; 21% individual treatment;14% no treatment; 7% individual treatment & family counselling; 4% juvenile detention facility	Computerised randomisation program
FBT Study	Azrin (2001)	USA	Juvenile detention centre; judges; probation officers; school administrators	FBT	Individual Cognitive Problem Solving (ICPS) Focusing on cognitive component (behavioural features not utilised)	Coin toss
Parent Training Study	Bank (1991)	Germany	Juvenile court	Parent Training	Community control treatment Intensive family therapy; group therapy; drug counselling as needed	n/s
The Missouri Delinquency Project Study	Borduin (1995); Schaeffer & Borduin (2005); Sawyer & Borduin (2011)	USA	Juvenile court	MST	Individual therapy Focused on personal, family, educational issues	Coin toss
London Study	Butler et al (2011)	UK	Local youth offending services	MST	Youth Offending Treatment (YOT) Help with re-engaging in education; substance misuse problems and anger management; social problem-solving skills; violent offending	Stochastic minimisation program (MINIM)
Juvenile Delinquency Task Force Implementation Committee (JDIC) Study	Carney & Buttell (2003)	USA	Court-ordered	Wraparound Services	Conventional Services services provided by the juvenile court system: individual and/or family counselling; alcohol/drug treatment; court diversion programs; intensive tutoring/school programs; recreation programs; residential treatment; outreach/home-based services; runaway	n/s

Study name	Author (s)	Country	Service Sector (referral source)	Intervention	Comparison conditions	Randomisation method
					temporary shelter; mentoring programs; petty theft program	
MTFC Study	Chamberlain & Reid (1998); Eddy et al (2004)	USA	Juvenile court	MTFC	Community-based Group care Positive peer culture approach (PPC); individual social & cognitive programs; eclectic & behavioural management; reality therapy; 55% attended some family therapy sessions	n/s
WA Care Coordination Study	Coldiron et al (2019)	USA	Department of juvenile justice and Department of children and families (child welfare services)- dually involved youths	Wraparound Care Coordination	TAU only – Child welfare related services; juvenile probation services; case management services	Stratified randomisation
MDFT Study	Dakof et al (2015)	USA	Juvenile drug court	MDFT	Adolescent Group Therapy (AGT) Intervention based on Cognitive Behavioural Therapy (CBT) and motivational interviewing (MI)	Urn randomisation
FEI Study	Dembo et al (2000; 2001)	USA	Juvenile court	FEI	Extended Services Intervention (ESI) Monthly phone contacts and referral to other services as appropriate	n/s
Adolescent Diversion Project Study	Emshoff & Blakely (1983)	USA	Juvenile court	Behavioural Contracting and Advocacy	TAU Probationary services	n/s
The Systemic Therapy for At Risk Teens (START) Study	Fonagy et al (2018; 2020)	UK	Social services; youth offending teams; schools; child and adolescent mental health services (CAMHS); voluntary service	MST	Management as usual Support to re-engage with education; anger management; victim awareness programmes	Automated, 24 h telephone randomisation service and stochastic minimisation
Singaporean Study	Gan et al (2021)	Singapore	Juvenile court	FFT	TAU Probation services that address offences or family-related needs	Randomisation based on the online number generator

Study name	Author (s)	Country	Service Sector (referral source)	Intervention	Comparison conditions	Randomisation method
FFT-G Study	Gottfredson et al (2018)	USA	Juvenile justice and family court	FFT-G (gang)	Family Therapy Treatment Programme (FTTP) Similar to FFT but non-manualised and not rigorously evaluated	Computer-generated randomisation
First MST Study	Henggeler et al (1992)	USA	Department of youth services	MST	TAU – Department of youth services Stipulation focused (i.e., curfew, school attendance, participation with other agencies)	n/s
Charleston Study	Henggeler et al (1997)	USA	Department of juvenile justice	MST	TAU – Department of youth services Probation services (referrals to other social agencies as appropriate)	n/s
Community-based FFT Study	Hogue et al (2015)	USA	Community referral network: high schools; family service agencies; community youth programs	FFT	Usual Care- Other Cognitive behavioural therapy (CBT); motivational interviewing (MI); drug counselling interventions	Urn randomisation
UK Study	Humayun et al (2017)	UK	Youth offending services; crime prevention; youth support services	FFT	Management as usual Help with education, employment, substance misuse, anger management, sexual health, mental health, social skills, reparation programs, victim awareness programs	Random number generator employing constrained adaptive randomisation
MTFC Study	Leve et al (2005); Chamberlain et al (2007)	USA	Juvenile court	MTFC	Group care (GC) Behavioural or eclectic or family-style therapeutic approaches	n/s
Norwegian Study	Ogden et al (2004)	Norway	Municipal child welfare services	MST	Usual child welfare services Individual child counselling, parent training, promoting involvement in prosocial activities	Weighted randomisation procedure

Study name	Author (s)	Country	Service Sector (referral source)	Intervention	Comparison conditions	Randomisation method
Indiana Study	Sexton et al (2010)	USA	Juvenile justice system	FFT	TAU Probational services (weekly checking, supervision, education, and guidance)	Stratified randomisation 1:1 assignment
Swedish MST Study	Sundell et al (2008)	Sweden	Child welfare services	MST	TAU Individual counselling; family therapy; mentorships by nonprofessional volunteers; residential care; aggression replacement treatments; special education services; addiction treatment; no services	Computer-generated randomisation
Ohio Study	Timmons-Mitchell et al (2006)	USA	Family court	MST	TAU Anger management; drug/alcohol counsellors; individual & family therapies	Coin flip
Nashville Study	Weiss et al (2013)	USA	Junior & Senior high schools	MST	Service as usual (SAU) Behaviourally focused classroom management plan by the school	n/s
Swedish MTFC study	Westermark et al (2011)	Sweden	Social agencies	MTFC	TAU Residential care; foster care; home-based interventions	System of drawing lots

Note: n/s = not stated

Table 3

Participant Characteristics of the Included Studies

Author (s)	Intervention	n	Presenting problem(s)	Age range	Gender	Ethnicity	Socioeconomic descriptors
Asscher et al (2013); Asscher et al (2014); Asscher et al (2018); Dekovic et al (2012); Manders et al (2013)	MST	256	Severe and violent antisocial behaviour	12 to 18	188 males 88 females	55% Dutch; 45% Ethnic minority (Moroccan & Surinamese background)	50% mothers and 36 % fathers were unemployed; 45% of the families experienced financial strains and more than half of the families (56 %) lived below minimum income levels
Azrin et al (2001)	FBT	56	DSM-IV diagnosis of Conduct Disorder plus Substance Abuse/ Dependence	12 to 17	46 males 10 females	N=44 Caucasian; n=9 Hispanic; n=1 African American; n=2 Other	Median gross family income per year is $44,000; 25% youths lived in single-parent families
Bank et al (1991)	Parent Training	55	Repeated youth offender	n/s (mean age 14); no older than age 16	55 males	n/s	Majority parents had the equivalent of high school education; 38% youths from father-absent homes
Borduin (1995); Schaeffer & Borduin (2004); Sawyer & Borduin (2011)	MST	176	Adolescent offender with at least 2 arrests for violent or serious crimes	12 to 17	119 males 57 females	70% White; 30% African American	68.8% of the families were of lower socioeconomic status (class IV or V); 47% youths lived in single-parent families
Butler et al (2011)	MST	108	Young offenders with consecutive referrals	13 to 17	89 males 19 females	N=37 White British/European; n=35 Black African/Afro-Caribbean; n=5 Asian; n=26 Mixed/Other	Youths come from socio-economically disadvantaged families; 31% parents had left school with no academic qualifications; 40% had no vocational qualifications; 54% parents with no income
Carney & Buttell (2003)	Wraparound	141	Delinquent youth	n/s (mean age 14.8)	87 males 54 females	48%African American; 51% Caucasian; 1% Biracial	Fathers absent in 62% of the homes
Chamberlain & Reid (1998); Eddy et al (2004)	MTFC	79	History of serious and chronic delinquency	12 to 17	79 males	85% White; 6% Black; 6% Hispanic; 3% Native American;	>50% youths from single-parent families; ±30% of youths have parents convicted of crime

Author (s)	Intervention	n	Presenting problem(s)	Age range	Gender	Ethnicity	Socioeconomic descriptors
Coldiron et al (2019)	Wraparound Care Coordination	47	Dually involved youth-juvenile justice and child welfare services	14 to 19	31 males 16 females	N=30 Black non-Hispanic; n=12 White, non-Hispanic; n=5 Hispanic	Most youth had lived in two to three (range = 1–17) different licensed child welfare placements since being removed from their home
Dakof et al (2015)	MDFT	112	Youth offenders	13 to 18	100 males 12 females	59% Hispanic; 35% African American; 6% Other	Parents' median yearly income $20,000; 54.5% youths from single-mother families
Dembo et al (2000); Dembo et al (2001)	FEI	303	Youth offenders	11 to 18	167 males 136 females	59% Anglo; 39% African American; 2% Other	50% resided with their mothers only; low to moderate socioeconomic families
Emshoff & Blakely (1983)	Behavioural Contracting &Advocacy	73	Committed serious misdemeanours or non-serious felonies	n/s (mean age 14.5)	49 males 24 females	±2/3 White	n/s
Fonagy et al (2018); Fonagy et al (2020)	MST	684	Moderate to severe antisocial behaviours (78% met DSM-IV criteria for diagnosis of conduct disorder)	11 to 17	342 males 342 females	N=535 White British/European; n=71 Black African/Afro-Caribbean; n=16 Asian; n=51 Mixed/Other	±75% annual family income < £20,000
Gan et al (2021)	FFT	120	Youths sentenced to probation	13 to 18	107 males 13 females	n/s	90% families resided in government-subsidised public housing; 45.8% from low-income families that are eligible for government-funded social assistance
Gottfredson et al (2018)	FFT-G	129	Juvenile Justice involved youth at risk of gang involvement	11 to 17	129 males	80% African American; 19% Hispanic/Latino	Families were disproportionately of lower income; median household income $17,500; 44% had a household income below $13,000
Henggeler et al (1992)	MST	84	Serious juvenile offenders	n/s (mean age 15.2)	65 males 19 females	56% African American; 42% Caucasian; 2% Hispanic American	n/s
Henggeler et al (1997)	MST	155	Violent or chronic juvenile offenders	11 to 17	127 males 28 females	80.6% African American; 19.4% Caucasian	Median annual family income between $5000- $10,000

Author (s)	Intervention	n	Presenting problem(s)	Age range	Gender	Ethnicity	Socioeconomic descriptors
Hogue et al (2015)	FFT	205	53% Met criteria for Conduct Disorder (DSM-IV-TR)	12 to 18	107 males 98 females	59% Hispanic American, 21% African American; 15% Multiracial; 6% Others	66% single parent family; 64% caregivers employed; 51% family ever investigated by child welfare
Humayun et al (2017)	FFT	111	Antisocial behaviour (sentenced for offending; police contact)	10 to 17	78 males 33 females	90% White British	Most youths lived with single (55%), unemployed (57%) carers, 85% of whom were the youth's biological mother; 60% carers had no education beyond the age of 16
Leve et al (2005), Chamberlain et al (2007)	MTFC	81	Chronic delinquency	13 to 17	81 females	74% Caucasian; 12% Native American; 9% Hispanic; 2% African American; 1 % Asian; 2% mixed ethnic heritage	68% of the girls had been residing in a single-parent family, and 32% of the girls lived in families with an income of less than $10,000
Ogden et al (2004)	MST	100	Serious antisocial behaviour	12 to 17	63 males 37 females	95% Norwegian background	n/s
Sexton et al (2010)	FFT	917	Juvenile offenders adjudicated for crime and sentenced to probation	13 to 17	724 males 193 females	78% White; 10% African American; 5% Asian; 3% Native American; 4% non-identified	n/s
Sundell et al (2008)	MST	156	Diagnosis of Conduct Disorder (DSM-IV-TR)	12 to 17	95 males 61 females	N=30 Asian heritage; n=25 European outside of Scandinavia; n=14 African heritage	67% youths lived in a single-parent home. Of the mothers, 18% had a college education and 51% were unemployed; Of the families involved, 61% lived entirely or in part on social welfare grants
Timmons-Mitchell et al (2006)	MST	93	Felony conviction; current/history of probation	n/s (mean age 15.1 years)	73 males 20 F	77.5% European American; 15.5% African American; 4.2% Hispanic American; 2.8% Biracial	n/s

Author (s)	Intervention	n	Presenting problem(s)	Age range	Gender	Ethnicity	Socioeconomic descriptors
Weiss et al (2013)	MST	164	Serious conduct problems (students in self-contained behaviour intervention classrooms)	11 to 18	136 males 28 females	60% African American; 40% Caucasian	61% youths from single-parent families; 71% of the parents had graduated from high school, and the median reported family income was $17,500
Westermark et al (2011)	MTFC	35	Diagnosis of Conduct Disorder (DSM-IV-TR)	12 to 18	18 males 17 females	N=26 Swedish; n=9 immigrants	71% came from single-parent families, mainly single mothers

Note: n/s = not stated

3.4 Intervention Characteristics

Nine types of interventions were identified across all the included studies. These are Multisystemic Therapy (MST; n=10), Functional Family Therapy (FFT; n=5), Multidimensional Treatment Foster Care (MTFC; n=3), Wraparound (n=2), Parent Training (n=1), Family Empowerment Intervention (FEI; n=1), Family Behavioural Therapy (FBT; n=1), Multidimensional Family Therapy (MDFT; n=1), and Behavioural Contracting and Advocacy (n=1). A range of comparison interventions was used across the studies (see Table 2), including treatment as usual (TAU), individual therapies, and group therapies. Twenty-two studies reported the duration of intervention. The duration of intervention was expressed in different time units in different studies and varied from approximately three to 24 months. Most studies (n=21) provided information on therapist characteristics. Only two studies (Coldiron et al., 2019; Hogue et al., 2015b) described and identified common elements.

3.4.1 Treatment Fidelity

Out of the 25 included studies, 18 included a measure for treatment fidelity (see Table 4). For MST studies, treatment fidelity were mostly assessed using versions of the Therapist Adherence Measure (TAM) designed by the MST developers (Henggeler et al., 2006; Henggeler & Borduin, 1992). Nine out of the 10 MST studies included a measure for treatment fidelity. For FFT studies, treatment fidelity measures varied, including the use of official FFT computerised therapist adherence measure on the FFT-LLC website (Gan et al., 2021; Gottfredson et al., 2018), self-developed family therapy adherence measure (Hogue et al., 2015), and “in house” FFT fidelity Likert scales (Humayun et al., 2017; Sexton & Turner, 2010). All five FFT studies included a measure for treatment fidelity. For MTFC studies, treatment fidelity was not measured, but rather ensured through videotaped sessions of family therapy, individual therapy, and foster parents’ supervision sessions. All three MTFC studies did not measure treatment fidelity. For the only Wraparound study that included a measure

for treatment fidelity, the Wraparound Fidelity Index (WFI-EZ) was used to assess adherence to the five key practice elements of the Wraparound model (Coldiron et al., 2019). For the MDFT study, therapist ratings on the Multidimensional Family Therapy Intervention Inventory (MII) were used to assess treatment fidelity. Lastly, for the FBT study, treatment fidelity was assessed by the audio tapings and written documentation of techniques used during the sessions by therapists. Treatment fidelity was reported to be adequate across all studies, except for the Swedish MST study (Sundell et al., 2008) and the Wraparound care coordination study (Coldiron et al., 2019), who reported below average scores in treatment fidelity.

3.5 Study Outcomes

All study outcomes and follow up times are presented on Table 5. All studies focused on measures of *youth behaviour*. In studies that involved juvenile offenders, youth behaviour was primarily assessed through official police/court records of arrests and/or offending. In studies that included youths with severe antisocial behaviours (i.e., not juvenile offenders), youth behaviour was assessed via parent and youth reports (sometimes teacher reports) on standardised measures. These include structured/semi-structured interviews with youths and/or parents, variations of the Self-Reported Delinquency Scale (SRD), and psychometric measures such as the Child Behavioural Checklist (CBCL), the Revised Behaviour Problem Checklist (RBPC), and the Parent Daily Report (PDR).

Most studies included measures on *youth functioning and psychological well-being.* These were determined through self-reports on psychometric measures such as the CBCL Youth Self Report, the Global Severity Index (GSI) of the Brief Symptoms Inventory (BSI), the Sense of Coherence scale (SOC), the Revised Symptom Checklist (SCL-90-R), and in one study, the Child and Adolescent Functional Assessment Scale (CAFAS). Another aspect

Table 4

Intervention Characteristics of the Included Studies

Author (s)	Intervention	Duration of Intervention	Therapist characteristics	Common elements	Measure of treatment fidelity	Author-reported Level of Fidelity (if applicable)
Asscher et al (2013); Asscher et al (2014); Asscher et al (2018); Dekovic et al (2012); Manders et al (2013)	MST	± 5.7 months	n/s	n/s	Family rated on 15-item Treatment Adherence Measure (TAM) to assess the level of therapist adherence to the nine principles of MST	Satisfactory and comparable to the TAM scores in the US
Azrin et al (2001)	FBT	15 sessions over 6 months	Therapists were predominately advanced students in an APA-approved doctoral program in clinical psychology	n/s	- Written documentation by the therapists of techniques used during the sessions - Audiotaping of all sessions - Ongoing clinical supervision	Program therapists adhered closely to their protocol, and that protocol adherence was corroborated by objective raters
Bank et al (1991)	Parent Training	±5 months	n/s	n/s	n/s	n/a
Borduin (1995); Schaeffer & Borduin (2004); Sawyer & Borduin (2011)	MST	23.9 contact hours over 12-24 months	Therapists were graduate students in clinical psychology (Each had approximately 1.5 years of direct clinical experience with children or adolescents)	n/s	- Progress notes - Ongoing clinical supervision - Videotape of sessions reviewed - Therapists completed checklists to indicate the systems directly addressed during treatment (i.e., individual, marital, family, peer, school)	Checklists revealed that therapists successfully intervened on all intended systems
Butler et al (2011)	MST	11 to 30 weeks (m=20.4)	The therapists held master's-level qualifications in counselling psychology or social work, and had a minimum of 2 years' experience working with families	n/s	28-item MST Therapist Adherence Measure (TAM) to measure the team's adherence to the nine MST treatment principles	Not reported, but concluded that TAM scores did not make a significant contribution to the primary outcome variable (all offenses)

Author (s)	Intervention	Duration of Intervention	Therapist characteristics	Common elements	Measure of treatment fidelity	Author-reported Level of Fidelity (if applicable)
Carney & Buttell (2003)	Wraparound	n/s; intervention continued until problems resolved or youth turns 18 years or youth quit	Use of non-professionals with no training, relied on family, neighbours, and the community	n/s	n/s	n/a
Chamberlain & Reid (1998); Eddy et al (2004)	MTFC	n/s	Foster families were recruited by telephone screening interviews, home visits, and 20-hour preservice training	n/s	n/s	n/s
Coldiron et al (2019)	Wraparound Care Coordination	-Median length of enrolment 16.6 months -Total of 134 hr of care coordination	- WA care coordinators were trained, coached, and supervised by staff certified in a model aligned with the WA process and principles outlined by the National Wraparound Initiative - Coordinators required to have a master's degree	Yes	Wraparound Fidelity Index, Short Form (WFI-EZ)- 37-item survey that assesses how well services adhere to five key practice elements of the WA model	- Mean total fidelity score of 69.8% on the WFI-EZ (lower than national sample mean) - Mean fidelity by WA care coordinator varied widely, ranging from 29.4% to 84.4%
Dakof et al (2015)	MDFT	2 sessions per week for 4-6 months	All therapists had master's degrees in counselling, social work, or related fields, and had similar experience and educational backgrounds	n/s	Therapist ratings on the Multidimensional Family Therapy Intervention Inventory (MII)	MDFT delivered with similar fidelity as therapists collapsed across six previous MDFT trials
Dembo et al (2000); Dembo et al (2001)	FEI	3x (1 hour) weekly meetings for 10 weeks	Paraprofessionals (field consultants) not trained therapists	n/s	n/s	n/a
Emshoff & Blakely (1983)	Behavioural Contracting &Advocacy	18 weeks	Trained non-professionals (undergraduate students)	n/s	Process interviews with youths and parents regarding therapist intervention efforts	Not reported

Author (s)	Intervention	Duration of Intervention	Therapist characteristics	Common elements	Measure of treatment fidelity	Author-reported Level of Fidelity (if applicable)
Fonagy et al (2018); Fonagy et al (2020)	MST	3-5 months	n/s	n/s	- Therapist Adherence Measure Revised (TAM-R) based on interviews with carers or parents - Weekly group supervision by an expert in multisystemic therapy (MST) designated by MST Services	Averaged above criterion adherence
Gan et al (2021)	FFT	12 sessions over an average of 4.7 months	All therapists possessed bachelor- or postgraduate-level qualifications; at least 2 years' experience working with youth and families	n/s	FFT Client Services System (CSS)—an online database provided by the FFT LLC which assess therapists' dissemination adherence and fidelity on the Global Therapist Rating Scale (GTRS)	- Sufficient levels of adherence to FFT LLC's protocol - Fidelity ratings consistently surpassed developer-prescribed benchmarks
Gottfredson et al (2018)	FFT-G	0-30 contacts (m= 12.6); 1-14 sessions (m=8.7); 0-6.3 months (m=2.6)	Therapists were experienced FFT therapists, and their agencies had been previously certified to deliver FFT	n/s	FFT-G fidelity and adherence obtained from a computerized tracking system into which therapists entered information about each client contact (provided by FFT-LLC)	The average fidelity rating for all clients who began FFT-G was 4.1 out of 6, therefore implemented with fidelity to the FFT model
Henggeler et al (1992)	MST	Average of 13.4 weeks; 33 hours of direct contact	MST was delivered by three full-time master's level therapists with an average of 1.5 years of post-master's-degree experience	n/s	n/s	n/a
Henggeler et al (1997)	MST	Site 1: 116.6. hours Site 2: 122.6 hours	Masters-level mental health professionals with backgrounds in social work or pastoral counselling	n/s	MST 26 item Adherence Measure completed by parents, adolescents, and therapists to measure family and therapist behaviours specific to the practice of MST	Therapist adherence to the MST principles was an important predictor for key outcomes
Hogue et al (2015)	FFT	8.7 sessions	Licensed Marriage and Family Therapists (MFTs), social workers with family therapy training, or advanced trainees with family therapy experience	Yes	Author developed family therapy adherence measure	Therapists adhered closely to gold-standard fidelity levels for signature FT techniques achieved by a manualized FT model during a controlled trial

Author (s)	Intervention	Duration of Intervention	Therapist characteristics	Common elements	Measure of treatment fidelity	Author-reported Level of Fidelity (if applicable)
Humayun et al (2017)	FFT	12 sessions across 3-6 months	Therapists had experience working with families and all were educated to Masters level or above	n/s	FFT 6-point Likert scale ranging from low (0) to high (5) model adherence	Fidelity to the FFT model was adequate to high in 77% of the cases
Leve et al (2005), Chamberlain et al (2007)	MTFC	Average of 174 days	- Highly trained and supervised foster homes with state-certified foster parents - Experienced program supervisors with small caseloads (10 MTFC families) supervised all clinical staff and provided MTFC parents ongoing consultation, support, and crisis intervention services	n/s	n/s	n/s
Ogden et al (2004)	MST	n/s	MST therapists had a masters or bachelor's degree in social work, psychology, or education and some have additional training in family therapy	n/s	Therapist Adherence Measure (TAM)	Unclear TAM scores significantly differed across the intervention sites
Sexton et al (2010)	FFT	Average of 12 sessions over 3-6 months	Therapists had counselling and family therapy experience, most held master's degree, and some bachelor's level	n/s	Clinical supervisors rated therapist ratings according to FFT protocol on a 6-point Likert scale ranging from low (0) to high (5) model adherence	17 high adherent therapists and 18 low adherent therapists out of a total of 35 therapists
Sundell et al (2008)	MST	145.8 days (sd=51.6)	All therapists with professional education equivalent to a Master of Arts or Bachelor of Arts degree in social work, psychology, or educational sociology	n/s	26-item MST Therapist Adherence Measure (TAM) translated to Swedish	Below average (more than a full standard deviation below the mean reported in USA)

Author (s)	Intervention	Duration of Intervention	Therapist characteristics	Common elements	Measure of treatment fidelity	Author-reported Level of Fidelity (if applicable)
Timmons-Mitchell et al (2006)	MST	Average of 144.48 days (SD= 60.65)	All therapists held master's degrees; One therapist had prior MST experience	n/s	26-item MST Therapist Adherence Measure (TAM)	Good (4.2/5)
Weiss et al (2013)	MST	n/s	All therapists had professional education such as B.A. in psychology, master's degree in social work, psychiatric nursing, family therapy, divinity, and rehabilitation counselling	n/s	- 26-item MST Therapy Adherence Measure (TAM) ratings obtained from parents - Adherence ratings from audiotapes of MST sessions - Quarterly global ratings of each clinician's adherence to MST, provided by the on-site MST supervisor and Family Services research centre-based MST consultant who provided therapist weekly supervision via telephone	Moderate to high range
Westermark et al (2011)	MTFC	n/s	Foster families who fulfil certain criteria set by the MTFC staff and the local social services agency were recruited by an advertisement in the local newspaper	n/s	- n/s	n/s

Note: n/s = not stated
OSLC: Oregon Social Learning Centre

Table 5

Summary of Follow-up Times and Study Outcome(s)

Author (s)	Intervention	Follow up	Study outcomes	
			Primary outcome (s)	Secondary outcome (s)
Asscher et al (2013); Asscher et al (2014); Asscher et al (2018); Dekovic et al (2012); Manders et al (2013)	MST	6; 12; 24 months post randomisation	1. Delinquent behaviour: Self-reported delinquency scale (SRD) 2. Externalising behaviour: CBCL & YSR delinquent and aggressive behaviour syndrome scales; DSM symptom scale for ODD & CD 3. Recidivism: Official data from the Dutch Ministry of Justice	1. Parental symptoms/behaviour: Parenting Stress Index (PSI); Parenting Dimensions Inventory (PDI); Nijmegen Parenting Questionnaire; Network of the Relationship Inventory (NRI); Inventory of Parent & Peer Attachment (IPPA); Parent-Adolescent Communication Scale (PACS); Coder Impressions Inventory (CII); Psychological control scale- youth report 2. Adolescent peer relationships: Family, Friends, and Self Scale 3. Adolescent cognition: Children's Automatic Thought Questionnaire
Azrin et al (2001)	FBT	6 months post intervention	1. Arrest history records: Court house records 2. Youth behaviour: CBCL & YSR delinquency, school, externalizing, internalizing, and total scales; Eyberg Child Behaviour Inventory (ECBI)	1. Youth problem solving skills Social Problem-Solving Inventory-Revised (SPSI-R) 2. Youth psychological symptoms Youth Happiness with Parent Scale (YHPS); Life Satisfaction Scale for Adolescents (LSS-A); Beck Depression Inventory (BDI) 3. Parental symptoms: Parent Happiness with Youth Scale (PHYS)
Bank et al (1991)	Parent Training	1; 2; 3 years post intervention	Delinquency: Juvenile court official offence report	Family functioning: Family Interaction Coding System (FICS)

Author (s)	Intervention	Follow up	Study outcomes	
			Primary outcome (s)	Secondary outcome (s)
Borduin (1995); Schaeffer & Borduin (2004); Sawyer & Borduin (2011)	MST	For criminal activity only: 4 years; 13.9 years; 21.9 years post intervention	1. Criminal activity (rearrest): Juvenile court and state police records 2. Youth behaviour: Revised Behaviour Problem Checklist (RBPC) focused on six constructs: conduct disorder, socialized aggression, attention problems/immaturity, anxiety/withdrawal, psychotic behaviour, and motor excess	1. Parental symptoms: Symptoms Checklist 90-Revised (SCL-90) 2. Family relations/functioning: Family Adaptability and Cohesion Evaluation Scale (FACES II); Unrevealed Differences Questionnaire 3. Peer relations: Missouri Peer Relations Inventory (MPRI)
Butler et al (2011)	MST	For primary outcome only: 6; 12; 18; 24 months post randomisation	1. Offending behaviour: National Young Offender Information Systems (YOIS) on offence information, court appearance, criminal order, police records	1. Parenting behaviours: Positive parenting and disciplinary practices (PP); parent monitoring and supervision measure 2. Youth antisocial behaviour (parent report): CBCL delinquent and aggressive behaviour syndrome scales; Antisocial Process Screening Device (APSD); Involvement with delinquent peers (IDP) 3. Youth antisocial behaviour (youth report): Self-report of youth behaviour (SRYB) includes prevalence and incidence of delinquent behaviours; YSR delinquent and aggressive behaviour syndrome scales; Antisocial Beliefs and Attitudes Scale (ABAS)
Carney & Buttell (2003)	Wraparound Services	6; 12; 18 months	1. Recidivism: Juvenile court arrest data; phone interview with parents/guardians (school attendance, unruly and delinquent informal behaviour, unruly and delinquent formal behaviour, run- away instance)	n/a
Chamberlain & Reid (1998); Eddy et al (2004)	MTFC	EBC: 6, 12 months Official criminal referral data: 6, 12,18, 24 months	1. Delinquent/criminal activity: Official criminal referral data; self-reported delinquency on Elliott Behaviour Checklist (EBC)	1. Youth participation, incarceration rate, family reunification: Individual records of number of days on the run, in care, in detention or the state traig school

Author (s)	Intervention	Follow up	Study outcomes	
			Primary outcome (s)	Secondary outcome (s)
Coldiron et al (2019)	Wraparound Care Coordination	20 months	1. Juvenile justice outcomes: Official offence records 2. Child welfare outcomes: Placement movement records; The Restrictiveness of Living Environment Scale (ROLES)	Educational outcomes: Credits accrued each school year, graduation status, and if the youth was enrolled in a General Educational Development (GED) program
Dakof et al (2015)	MDFT	Arrest data: up to 24 months Other outcomes: 6,12,18, 24 months	1. Rearrests: Data from justice system database 2. Delinquency/externalising symptoms: Self-reported delinquency scale (SRD); National Youth Survey (NYS); YSR externalising subscales	Substance-use: Personal Experience Inventory (PEI); Timeline Follow-Back Method
Dembo et al (2000); Dembo et al (2001)	FEI	Offending: 12 months	Offending: Official records from juvenile justice system	Youth psychological functioning: Symptoms Checklist-90- Revised (SCL-R-90)
Emshoff & Blakely (1983)	Behavioural Contracting and Advocacy	3, 6 months post randomisation	Delinquent activity: Standard police and court archival data; interviews on self-reported delinquent behaviour	School related data: Attendance, grades, credits earned
Fonagy et al (2018); Fonagy et al (2020)	MST	Offending: up to 60 months Other outcomes: 6, 12,18, 24, 36, 48 months post randomisation	Offending: Police National Computer and Young Offender Information Systems (YOIS)	1. Youth antisocial behaviour (parent-report): Strengths and Difficulties Questionnaire (SDQ); Inventory of Callous Unemotional Traits 2. Youth antisocial behaviour (youth-report): Self-reported delinquency scale (SRD); Antisocial Beliefs and Attitudes Scale (ABAS); Youth Materialism Scale 3. Youth psychological functioning: Parent and youth report on the SDQ; parent report Conners Comprehensive Behaviour Rating Scales; Youth report on the Mood and Feelings Questionnaire

Author (s)	Intervention	Follow up	Study outcomes	
			Primary outcome (s)	Secondary outcome (s)
				4. Parenting skills/behaviours: Alabama Parenting Questionnaire (APQ) 5. Family functioning: Loeber Caregiver Questionnaire; Family Adaptability and Cohesion Evaluation Scale; Level of Expressed Emotion Questionnaire; Conflict Tactics Scale
Gan et al (2021)	FFT	n/a	1. Probation completion Official case closure reports	1. Youth psychological functioning: Youth outcome questionnaire 2.0 (self-report) 2. Family functioning: Family Assessment Device- General Functioning Scale (FAD-GF)
Gottfredson et al (2018)	FFT-G (gang)	Recidivism data up to 18 months	1. Recidivism: Official records from juvenile justice system, family court records 2. Youth self-report delinquency & substance use: Interviews focused on normative beliefs about rules/laws; alcohol and drug use frequency & variety	1. Family functioning: Interviews focused on parenting skills and family environment; parental substance use 2. Peer influence (youth self-report): Interviews focused on peer influence & positive perception of peers; constructive time use
Henggeler et al (1992)	MST	Criminal behaviour: 59 weeks	1. Criminal behaviour/incarceration: Archival records 2. Delinquency: Self-reported delinquency scale (SRD)	1. Adolescent behaviour problems: Revised Problem Behaviour Checklist (RPBC) focused on conduct disorder, socialized aggression, attention problems/immaturity, anxiety/withdrawal, psychotic behaviour, and motor excess 2. Adolescent emotional functioning: Global Severity Index (GSI) of the Brief Symptom Inventory (BSI)

Author (s)	Intervention	Follow up	Study outcomes	
			Primary outcome (s)	Secondary outcome (s)
				3. Parental emotional functioning: Global Severity Index (GSI) of the Brief Symptom Inventory (BSI) 4. Peer relations: Missouri Peer Relations Inventory (MPRI); CBCL social competence scale 5. Family relations: Family Adaptability and Cohesion Evaluation Scale III (FACES-III)
Henggeler et al (1997)	MST	Criminal behaviour: 1.7 years	1. Criminal behaviour/incarceration: Department of Juvenile Justice database 2. Delinquency: Self-reported delinquency scale (SRD)	1. Adolescent behaviour problems: Revised Problem Behaviour Checklist (RPBC) focused on six constructs: conduct disorder, socialized aggression, attention problems/immaturity, anxiety/withdrawal, psychotic behaviour, and motor excess 2. Adolescent emotional functioning: Global Severity Index of the Brief Symptom Inventory (BSI) 3. Parental emotional functioning: Global Severity Index of the Brief Symptom Inventory (BSI) 4. Parenting skills/behaviours: Parent Monitoring Index focused on parental supervision, monitoring, control, and trust 5. Peer relations: Missouri Peer Relations Inventory (MPRI) 6. Family relations: Family Adaptability and Cohesion Evaluation Scale III (FACES-III)

Author (s)	Intervention	Follow up	Study outcomes	
			Primary outcome (s)	Secondary outcome (s)
Hogue et al (2015)	FFT	3, 6, 12 months	1. Delinquency: Youth self-reported delinquency scale (SRD) 2. Youth behaviour/symptoms: CBCL & YSR internalising, externalising scores	1. Youth substance- use: Timeline Follow-Back Method (TLFB)
Humayun et al (2017)	FFT	6, 18 months	1. Offending: Official records of offending on UK Police National Computer database 2. Delinquency Youth self-reported delinquency scale (SRD)	1. Youth symptoms/behaviour: Semi-structured diagnostic interview on ODD/CD based on the Adolescent Parent Account of Child Symptoms (APACS) 2. Parent-youth relationship: Alabama Parenting Questionnaire (APQ); Direct observation of parent-youth interaction on 'Hot Topics' measure
Leve et al (2005); Chamberlain et al (2007)	MTFC	12 months post baseline	Criminal activity/delinquency: State police records, circuit court data, days in locked settings based on Characteristics of Living Situation; CBCL delinquency subscale; Elliott Self-Report of Delinquency Scale	n/a
Ogden et al (2004)	MST	Primary outcomes: 12 months	Youth behaviour/symptoms: CBCL, YSR, TRF internalising, externalising, total problems score, self-reported delinquency scale (SRD)	1. Youth peer/social functioning: Social Competence with Peers Questionnaire (SCPQ); Social Skills Ratings System (SSRS); CBCL social competence subscale 2. Youth out of home placement: Parent reported items on youth living arrangements at the time of assessment and most of the previous 6 months 3. Family functioning: Family Adaptability and Cohesion Evaluation Scale III (FACES-III); Family Satisfaction Survey
Sexton et al (2010)	FFT	Recidivism: 12 -18 months post intervention	Recidivism: Official state juvenile justice records	n/a

Author (s)	Intervention	Follow up	Study outcomes	
			Primary outcome (s)	Secondary outcome (s)
Sundell et al (2008)	MST	7 months post randomisation	1. Delinquent behaviour: Self-reported delinquency scale (SRD) 2. Youth symptoms/behaviour: CBCL internalising, externalising, total problem score	1. Youth sense of coherence: Sense of Coherence (SOC) 2. Alcohol and drug consumption (self-report): Alcohol Use Disorder Identification Test (AUDIT); Drug Use Disorder Identification Test (DUDIT) 3. Peer relations/Social competence: Pittsburgh Youth Study (PYS) Bad friends scale; Social Competence with Peers Questionnaire (SCPQ); Social Skills Ratings System (SSRS) 4. Parenting skills: 20 questions focused on parental knowledge, parental knowledge, parental soliciting, youth disclosure, and family decision making 5. Maternal mental health: Symptoms Checklist-90 (SCL-90) 6. Others: School attendance, social services provided for youths and families
Timmons-Mitchell et al (2006)	MST	Recidivism records up to 18 months post intervention CAFAS: 6 months post intervention	Recidivism: Records from family court	1. Youth functioning: Child and Adolescent Functional Assessment Scale (CAFAS) focusing on domains of school/work, home, community, behaviour towards others, mood/emotions, self-harmful behaviours, substance use, and thinking

Author (s)	Intervention	Follow up	Study outcomes	
			Primary outcome (s)	Secondary outcome (s)
Weiss et al (2013)	MST	Court records: 2.5 years Others: 3, 6, 18 months	Adolescent conduct problem: Court records on criminal charges; CBCL externalising problem scale	1. Delinquent behaviour: Self-reported delinquency scale (SRD) 2. Family relationships Family Adaptability and Cohesion Evaluation Scales-III (FACES-III) 3. Parenting behaviour Parental Authority Questionnaire (PAQ) 4. Parental mental health Personality Assessment Inventory (PAI)
Westermark et al (2011)	MTFC	6, 12, 24 months	1. Child problem behaviour: CBCL & YSR internalising, externalising, total problem scores	1. Maternal well-being: Symptoms Checklist-90 (SCL-90)

Notes: n/a: not applicable

of youth functioning- social competence, was assessed in some studies with the Social Skills Rating System (SSRS), the CBCL social subscale, and the Social Competence with Peers Questionnaire (SCPQ). In addition, peer relations were also assessed in some studies using the youth and teacher reports on the Missouri Peer Relations Inventory (MPRI).

Many studies assessed outcomes on *parenting behaviour and symptoms*. Most parental psychological symptoms were determined through the same measures used to assess youth functioning, such as the SCL-90-R and BSI. Parental monitoring and parenting behaviours were assessed through questionnaires such as the Alabama Parenting Questionnaire (APQ), Parenting Stress Index (PSI), Parenting Dimensions Inventory (PDI), Positive Parenting and Disciplinary Practices (PP), Parenting Authority Questionnaire (PAQ), and other similar scales.

Family functioning outcomes were examined in many studies with the Family Adaptability and Cohesion Evaluation Scales (FACES), the Family Assessment Device (FAD-GF), Family Satisfaction Survey, and structured interviews with parents and youths. Direct observations were also conducted and coded in some studies with the Coder Impressions Inventory (CII) or the Family Interaction Coding System (FICS) to determine family functioning and related outcomes. One study (Asscher et al., 2013) specifically assessed the quality of parent-child relationships using measures such as the Network of the Relationship Inventory (NRI), Parent-Adolescent Communication Scale, and the Inventory of Parent and Peer Attachment (IPPA).

All studies included in this review collected outcome data at least during baseline and post-intervention. Most studies included follow up measures (n=24), except one study that only measured outcomes at baseline and post-intervention (Gan et al., 2021). Among the studies with follow-up measures, the timepoints for data collection varied, ranging between six months to 22 years post-randomisation. The most prevalent follow-up times were at 6-,

12-, 18-, and 24-months post intervention. The number of outcomes collected at each timepoint also varied across the studies (i.e., only archival data was attainable at 22 years post intervention).

3.6 Main Findings

The key study findings relating to the research question 1 are summarised in Table 6.

3.6.1 Multisystemic Therapy

Among the 10 studies that examined the treatment effects of MST in reducing severe and persistent conduct problems in youths, eight studies favoured the use of MST over their respective comparison conditions. Between these eight studies, six reported significant improvements in youth recidivism and/or rearrests data and two studies reported significant positive MST results in reducing youth and parental reported delinquency, externalising symptoms, and other familial and/or parental outcomes. Interestingly, the Netherlands MST study found MST to be more effective than TAU in reducing externalising symptoms, however, this positive result was not observed for recidivism data at follow up (Asscher et al., 2013). Two MST studies (Fonagy et al., 2020; Sundell et al., 2008) did not find any significant differences in outcomes between MST and their comparison interventions.

3.6.2 Functional Family Therapy

Among the five studies that examined the treatment effects of FFT, four studies reported findings in favour of FFT for youths with severe and persistent conduct problems. Between the four studies, one reported significant reduction in youth recidivism (Gottfredson et al., 2018), one reported higher probation completion rates in the FFT group (Gan et al., 2021), and one reported a significant reduction in youth-reported externalising and internalising symptoms on the CBCL YSR (Hogue et al., 2015). The Indiana FFT study reported the positive effects of FFT in reducing youth recidivism only when therapists were rated as highly adherent to the treatment model (Sexton & Turner, 2010). The UK FFT study

did not find any significant difference between FFT and their comparison condition in all measures of antisocial behaviour (Humayun et al., 2017)

3.6.3 Multidimensional Treatment Foster Care

All three studies that assessed MTFC yielded positive results. Two studies (Chamberlain et al., 2007; Eddy et al., 2004) reported favourable outcomes on youth criminal referrals, incarceration, and delinquency rates and the Swedish MTFC study reported statistically significant improvements on youth and parent-report symptoms on the CBCL and YSR (Westermark et al., 2011).

3.6.4 Wraparound

Similar results were found in the two studies that examined the wraparound service/model. The WA care coordination study reported no differences between intervention and comparison groups in all outcomes measured (i.e., arrests, residential stability) but noted a trend favouring wraparound services in rearrest and educational outcomes (Coldiron et al., 2019). The JDIC WA study reported no differences between WA and conventional juvenile court services in reducing criminal offenses but found a significant effect on youth delinquent behaviour through parent phone interviews (Carney & Buttell, 2003).

3.6.5 Multidimensional Family Therapy

Only one study examined MDFT (Dakof et al., 2015). No significant treatment differences between MDFT and the comparison group therapy in all outcome measures immediately post-intervention. At 24 months follow-up, no significant treatment differences were found for substance-use, total arrests, or misdemeanours, but a significant reduction in youth self-report of delinquency and externalizing symptoms was reported.

3.6.6 Other Interventions

One study assessed parent training (Bank et al., 1991). The parent training conducted by the Oregon Social Learning Centre (OSLC) was found to produce quicker positive results in reducing the rates and prevalence of juvenile arrests. The FEI study that examined the effects of Family Empowerment Intervention (FEI) in youth recidivism found no significant differences in the total number of arrests and arrest charges between FEI and the comparison group (Dembo et al., 2000). Similarly, the FBT study found no significant differences between Family Behaviour Therapy and Individual Cognitive Problem Solving in improving youth conduct problem outcomes (Azrin et al., 2001). Lastly, the Adolescent Diversion Project study found the superiority of a broad-based intervention over family-focused intervention in reducing youth police contacts and self-reported delinquent behaviour (Emshoff & Blakely, 1983).

Table 6

Overview of Key Study Findings

Author (s)	Intervention	Key Findings
Asscher et al (2013); Asscher et al (2014); Asscher et al (2018); Dekovic et al (2012); Manders et al (2013)	MST	1. MST was more effective than TAU in decreasing externalizing behaviour, ODD, CD and property offences immediately post-intervention 2. No differences between MST and TAU in recidivism from official data at 6 months, 2 years and average 3.06 years follow up 3. MST is effective for extremely violent youth, but this group shows different pattern of change during the treatment than juvenile offenders who do not show extreme violence 4. MST was more effective than TAU in decreasing externalising behaviours but not in reducing psychopathic traits (i.e., callous-unemotional, narcissism) 5. MST was effective for positive dimensions of parenting and associations with prosocial peers, but not for relationships with deviant peers 6. MST enhanced growth in parental sense of competence and positive discipline, led to no deterioration in relationship quality
Azrin et al (2001)	FBT	1. FBT and Individual Cognitive Problem Solving (ICPS) interventions were equally effective in reducing alcohol/drug use and improving conduct problems, according to standardised measures and court records 2. ICPS treatment is simpler and requires less training
Bank et al (1991)	Parent Training	1. Parent-training is a viable strategy when working with chronic adolescent delinquents 2. There were large and significant reductions in rates and prevalence of juvenile arrests in both intervention and comparison conditions, but the OSLC parent-training produced quicker results

Author (s)	Intervention	Key Findings
Borduin (1995); Schaeffer & Borduin (2004); Sawyer & Borduin (2011)	MST	1. MST had highly favourable effects on perceived family relations and observed family interactions (increased supportiveness and decreased conflict-hostility across family dyads). 2. MST resulted in decreased symptomatology in parents and decreased behaviour problems in the youths (self-reports) 3. MST produced longstanding change in youths' criminal behaviours. Youths treated with MST were significantly less likely than comparison counterparts to be rearrested within 4 years post treatment termination, and, when rearrested, had committed significantly less serious offenses 4. MST participants were significantly less likely to be arrested than were than comparison participants within 13.7 years after treatment termination 5. MST participants were significantly less likely to be arrested for felony crimes than were comparison participants within 21.9 years of treatment termination
Butler et al (2011)	MST	1. Both MST and comparison reduced offending; MST reduced significantly further the likelihood of nonviolent offending during an 18-month follow-up period 2. Youth-reported delinquency and parental reports of aggressive and delinquent behaviours show significantly greater reductions from pre-treatment to post-treatment levels in the MST group
Carney & Buttell (2003)	Wraparound Services	1. No empirical support for the hypothesis that relative to those who received conventional juvenile court services, those who received wraparound services would have fewer subsequent criminal offenses 2. Youth who received wraparound services were less likely to engage in subsequent at-risk and delinquent behaviour compared to the control group
Chamberlain & Reid (1998); Eddy et al (2004)	MTFC	1. MTFC boys had fewer criminal referrals, ran away less frequently, completed their programs more often and were locked up in detention or training school less frequently than comparison group 2. At 2 years follow-up, MTFC youths were significantly less likely to commit violent offenses than youth placed in services-as-usual group care
Chamberlain et al (2007); Leve et al (2005)	MTFC	1. MTFC intervention was more effective than the control condition in reducing incarceration and delinquency rates for girls referred for out-of-home care 2. Participation in MTFC resulted in better outcomes than control placement at 12 and 24 month follow-ups
Coldiron et al (2019)	Wraparound Care Coordination	1. Youth in both intervention and comparison groups experienced significantly improved outcomes, including fewer arrests and greater residential stability 2. For the majority of outcomes assessed, no significant differences were found between the WA and TAU groups, likely due to small sample sizes 3. Trends in favour of the WA group were found in the form of medium to large effects for two key follow-up outcomes: time to first rearrest and being on track educationally; no such trends were found for the TAU group
Dakof et al (2015)	MDFT	1. Both MDFT and comparison showed significant reductions in delinquency, externalising symptoms, rearrests, and substance use post intervention, however, no significant treatment differences between conditions 2. MDFT produced significantly better outcomes than comparison AGT on youth self-report of delinquency and externalizing symptoms at follow-up 3. No differences between the treatment and comparison conditions on substance use or misdemeanours arrests 4. MDFT showed greater maintenance of the treatment gains than AGT
Dembo et al (2000); Dembo et al (2001)	FEI	1. FEI and comparison group did not differ significantly in total arrest charges and total number of arrests at 12 months follow up 2. Youths who completed the FEI experienced marginally significantly lower rates of new charges and fewer new arrests than youths who were assigned but did not complete FEI at 12 months

Author (s)	Intervention	Key Findings
Emshoff & Blakely (1983)	Behavioural Contracting & Advocacy	Broad-based intervention effort is preferable to the targeting of the family alone as the focus for intervention
Fonagy et al (2018); Fonagy et al (2020)	MST	1. MST was not superior to management as usual in reducing convictions, out-of-home placements, and bringing about long-term advantages in other outcomes 2. Findings do not support that MST should be used over management as usual for adolescents with moderate-to-severe antisocial behaviour 3. No evidence of longer-term superiority for multisystemic therapy compared with management as usual at 5-year follow-up
Gan et al (2021)	FFT	1. Youths who underwent FFT during probation had higher completion rates than their counterparts who did not 2. The findings generally supported FFT's effectiveness in improving mental well-being 3. Mixed results for improvements on family functioning
Gottfredson et al (2018)	FFT-G (gang)	1. FFT-G was effective for reducing recidivism measured in official records 2. Recidivism measures favoured FFT-G cases at 18 months follow-up
Henggeler et al (1992)	MST	Findings support the effectiveness of family preservation using MST, relative to usual services, in reducing the institutionalization of serious juvenile offenders and in attenuating their criminal activity
Henggeler et al (1997)	MST	1. Findings support the association between high adherence to MST treatment principles and improved functioning in adolescents who are serious criminal offenders 2. The outcomes also support the view that intensive family- and community-based services can serve as viable alternatives to out-of-home placement of youths presenting serious antisocial behaviour; outcomes were substantially better in cases where treatment adherence ratings were high
Hogue et al (2015)	FFT	1. UC-FT produced greater reductions in youth-reported externalizing and internalizing among the whole sample, in delinquency among substance-using youth, and alcohol and drug use among substance-using youth than the comparison condition 2. Non-manualized family therapy can be effective for adolescent behaviour problems within diverse populations in usual care, and it may be superior to non-family alternatives
Humayun et al (2017)	FFT	1. No significant differences found between FFT+MAU and MAU alone at either 6 or 18 month follow-up on any measure of antisocial behaviour 2. The study did not show greater reductions in offending and antisocial behaviour in the group allocated FFT
Ogden et al (2004)	MST	1. MST was associated with decreased internalising and externalising (marginal) symptomatology in youths as well as increased youth social competence. MST also produced decreases in out-of-home placement and marginally greater caregiver satisfaction with treatment relative to comparison condition 2. Findings support the effectiveness of MST relative to the services usually available for adolescents with serious behaviour problems in Norway
Sexton et al (2010)	FFT	1. FFT was no more effective than the comparison condition without considering therapist adherence 2. High adherent therapists delivering FFT had a statistically significant reduction in felony and violent crime 3. High fidelity FFT therapists had more favourable outcomes (less recidivism) than low fidelity therapists

Author (s)	Intervention	Key Findings
Sundell et al (2008)	MST	The findings do not support the short-term effectiveness of MST relative to the services usually available for conduct disordered youths in Sweden
Timmons-Mitchell et al (2006)	MST	1. MST resulted in decreased recidivism compared with the effects of usual court services, however, recidivism rate was still substantial and higher than that reported in previous effectiveness and efficacy trials that included oversight by developers of the model 2. Youth functioning improved over time, with the MST CAFAS scores significantly better on four of six subscales
Weiss et al (2013)	MST	1. MST parents and adolescents reporting on the CBCL significantly greater rates of decrease in externalizing problems than control group parents and adolescents 2. MST had a significant effect on parents' mental health problems, with MST parents reporting a decrease in their internalizing psychopathology while control group parents reported an increase in symptoms 3. No significant MST treatment effect on teacher reports of adolescent externalizing problems and arrest data 4. MST had no significant effects on adolescents' reports of delinquent behaviour or drug use on the Self-Report Delinquency (SRD) scale
Westermark et al (2011)	MTFC	1. Only MTFC showed a consistent statistical significance in symptom reduction. When measuring the clinical significance, the results mostly favoured MTFC 2. The results suggest that MTFC is an effective method in treating young people with behavioural problems in a Swedish context

3.7 Critical Appraisal for Included Studies

Results of the quality assessment for each study are presented in Table 7 using the Joanna Briggs Institute (JBI) Critical Appraisal Checklist for Randomised Controlled Trials. A common methodological limitation among all included studies is the use and/or reporting of blinding (Domains 4, 5, and 6). Only three studies reported information on blinding study participants, four on blinding the therapists, and six on the blinding of outcome assessors. In addition, more than half (n=15) of the studies did not report on the use of allocation concealment (Domain 2).

A common methodological strength among all the included studies is the methods on measuring study outcomes. Study outcomes were measured the same way (i.e., same measurement tool, instructions, procedures) in all studies between the intervention and comparison groups (Domain 10). In addition, most studies included a description on the reliability of the measurement performed in the study (Domain 11).

Table 7

Critical Appraisal for Included Studies

Author (Year)	D1	D2	D3	D4	D5	D6	D7	D8	D9	D10	D11	D12	D13
Asscher et al (2013)	Yes	Yes	No	Unclear	Yes	Unclear	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Azrin et al. (2001)	Yes	Yes	Yes	Unclear	Unclear	Yes	Yes	Yes	Unclear	Yes	Yes	Yes	Yes
Bank et al. (1991)	Yes	Unclear	Yes	Unclear	Unclear	Unclear	Yes	Yes	Unclear	Yes	Yes	Yes	Yes
Borduin et al. (1995)	Unclear	Unclear	No	Unclear	Unclear	Unclear	Yes	Yes	No	Yes	Yes	Yes	Yes
Butler et al. (2011)	Yes	Yes	No	No	No	Unclear	Yes	No	Yes	Yes	Unclear	Yes	Yes
Carney & Buttell (2003)	Yes	Unclear	Yes	Unclear	Unclear	Unclear	Unclear	Yes	Unclear	Yes	Yes	Yes	Yes
Chamberlain & Reid (1998)	Yes	Unclear	Yes	Unclear	Unclear	Unclear	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Coldiron et al. (2019)	Unclear	Unclear	Yes	Unclear	Unclear	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes
Dakof et al. (2015)	Yes	Unclear	Yes	Unclear	Unclear	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Dembo et al. (2000)	Unclear	Unclear	Yes	Unclear	Unclear	Unclear	Yes	Unclear	Yes	Yes	Yes	Yes	Yes
Emshoff & Blakely (1983)	Unclear	Unclear	Yes	Unclear	Unclear	Unclear	Unclear	Unclear	Unclear	Yes	Yes	Unclear	Unclear
Fonagy et al. (2020)	Yes	Yes	Yes	No	Unclear	Yes	Yes	Yes	Yes	Yes	Unclear	Yes	Yes
Gan et al. (2021)	Yes	Yes	Yes	Yes	Unclear	Unclear	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Gottfredson et al. (2018)	Yes	Yes	Yes	Unclear	Yes	Yes	Unclear	Yes	Yes	Yes	Yes	Unclear	Yes
Henggeler et al. (1992)	No	Unclear	Unclear	Unclear	Unclear	Unclear	Yes	Unclear	No	Yes	Yes	Unclear	Yes
Henggeler et al. (1997)	No	No	Unclear	Unclear	Unclear	Unclear	Yes	Yes	No	Yes	Yes	Unclear	Yes
Hogue et al. (2015)	Yes	Yes	No	Unclear	Unclear	Unclear	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Humayun et al. (2017)	Yes	Yes	Yes	Unclear	Unclear	Unclear	Yes	Unclear	Unclear	Yes	Yes	Unclear	Yes
Leve et al. (2005)	Unclear	Unclear	Yes	Unclear	Unclear	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Ogden et al (2004)	Yes	Unclear	Unclear	Unclear	Unclear	Unclear	Yes	Unclear	No	Yes	Yes	Unclear	Yes
Sexton et al. (2010)	Yes	Yes	No	Unclear	Unclear	Unclear	Yes	Unclear	Yes	Yes	Yes	Unclear	Yes
Sundell et al. (2008)	Yes	Yes	Yes	Unclear	Unclear	Unclear	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Timmons-Mitchell et al. (2006)	Yes	Unclear	No	Unclear	Unclear	Unclear	Yes	Yes	No	Yes	Yes	Yes	Yes
Weiss et al. (2013)	Unclear	Unclear	No	Unclear	No	Unclear	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Westermark et al. (2011)	Unclear	Unclear	Yes	Unclear	Unclear	Unclear	Yes	Unclear	Yes	Yes	Yes	Yes	Yes

D1 Was true randomization used for assignment of participants to treatment groups?
D2 Was allocation to treatment groups concealed?
D3 Were treatment groups similar at the baseline?
D4 Were participants blind to treatment assignment?
D5 Were those delivering treatment blind to treatment assignment?
D6 Were outcomes assessors blind to treatment assignment?

D7 Were treatment groups treated identically other than the intervention of interest?
D8 Was follow up complete and if not, were differences between groups in terms of their follow up adequately described and analysed?
D9 Were participants analysed in the groups to which they were randomized?
D10 Were outcomes measured in the same way for treatment groups?
D11 Were outcomes measured in a reliable way?
D12 Was appropriate statistical analysis used?
D13 Was the trial design appropriate, and any deviations from the standard RCT design (individual randomization, parallel groups) accounted for in the conduct and analysis of the trial

Chapter 4: Discussion

The present scoping review was set out to scope and describe parenting and family-based interventions that have been rigorously evaluated for their effectiveness in reducing severe and persistent conduct problems in children and adolescents between the age of 10 to 17 years. The second objective was to identify the individual common elements embedded in these interventions and determine the feasibility of a network meta-analysis. The current thesis will primarily discuss implementation fidelity and the common elements approach of implementing interventions.

The results of the present review revealed 25 independent RCTs that evaluated the effectiveness of parenting and family-based interventions, two of which mentioned common elements. Of the 25 studies, six were included in the 2001 systematic review (Woolfenden et al., 2001), and 19 were new studies conducted in the past 20 years, thus confirming the need for an updated review. The majority of studies were conducted in the USA (above 70%), and Multisystemic Therapy (MST) was the most frequently used intervention for children and adolescents with severe and persistent conduct problems. Despite some mixed results, the present scoping review found that most studies support the use of parenting and family interventions in reducing severe and persistent conduct problem outcomes for 10 to 17-year-olds.

Before discussing the research questions, it is worth mentioning that the current review identified a total of nine different parenting and family-based interventions, four of which were not described in Chapter One. These are Multidimensional Family Therapy (MDFT), Family Behaviour Therapy (FBT), Family Empowerment Intervention (FEI), and Behavioural Advocacy and Contracting.

In short, MDFT is a variation of family therapy that aims to reduce youth substance use and antisocial behaviours by restoring healthy intrafamilial relationships. It is

comprehensive, manualised, and focused on the multidimensionality of adolescent motivation and behaviour (Liddle, 2016). On the other hand, FBT is a behaviour-focused intervention that aims to decrease adolescent conduct problems by engaging families in appropriate contingency and behaviour management strategies (Donohue & Azrin, 2001). FEI is a family-systems intervention aimed at reducing youth recidivism by empowering parents and improving family functioning (Cervenka et al., 1996). Lastly, Behavioural Contracting and Advocacy is a broad-based intervention introduced in the Adolescent Diversion Project to divert youths from further juvenile justice involvement (Emshoff & Blakely, 1983). The programme provides individualised plans that target multiple youths' life domains (i.e., school, peers, employment).

4.1 Research Questions

4.1.1 Implementation Fidelity and Intervention Effectiveness

Although many factors are associated with the effectiveness of an intervention, this thesis will mainly discuss intervention effectiveness in relation to implementation fidelity (i.e., treatment fidelity). Implementation fidelity refers to the extent to which an evidence-based intervention or treatment protocol is implemented or delivered as intended (Carroll et al., 2007). Treatment fidelity is a crucial component of intervention studies, as it not only guides how an intervention is delivered, but its assessment also provides insight into whether an intervention has been delivered well enough to allow a fair test of its effectiveness. In other words, without an appropriate evaluation of implementation fidelity in intervention studies, conclusions drawn about intervention effectiveness may lack validity because they can potentially cause effective interventions to appear ineffective, or vice versa (Breitenstein et al., 2010).

The first research question of the present review examined which family-based and parenting interventions have been rigorously evaluated for their effectiveness in reducing

severe and persistent conduct problems and related outcomes among 10 to 17-year-olds. The current review found studies that suggest the positive treatment effects of MST, FFT, MTFC, Parent Training, and Behavioural Contracting and Advocacy in reducing severe conduct problems in children and adolescents aged 10 to 17. However, some of these study findings should be interpreted with caution, as results from the quality assessment revealed the risk of bias in some studies, particularly those relating to blinding and allocation concealment.

MST. The present review found that most studies identified MST as a useful intervention for youths with severe and persistent conduct problems. In specific, eight out of the 10 MST studies reported reductions in youth conduct problems on standardised psychometrics (i.e., CBCL), self-report delinquency questionnaires, and official data on offending behaviour (i.e., recidivism). This result somewhat aligns with the findings of a recent systematic review that demonstrated the efficacy of MST in treating youths with severe antisocial behaviour and emotional disorders (Tan & Fajardo, 2017). In particular, the authors of the review found MST to be efficacious in reducing conduct problem outcomes such as delinquency and incarceration in youths. Moreover, they found treatment fidelity to be an important predictor of these outcomes.

In the present review, all MST studies included a measure for treatment fidelity, except for the first MST study conducted by the MST's developers (Henggeler et al., 1992). Most studies assessed treatment fidelity through variations of the Therapist Adherence Measure (i.e., TAM and TAM-R), which evaluated the therapists' adherence to the MST principles, as reported by the caregivers. All studies reported sufficient levels of treatment fidelity on the TAM and TAM-R, except for the Swedish MST study, which reported TAM scores that were more than a standard deviation below the reported mean in the USA (Sundell et al., 2008), and the Norwegian MST study who used the tool to measure fidelity but did not provide data on the TAM (Ogden & Halliday-Boykins, 2004). For those studies that reported

"sufficient levels" of treatment fidelity on the TAM, none provided specific data, except for the Ohio MST study (Timmons-Mitchell et al., 2006).

In the Swedish MST study, the low treatment fidelity scores on the TAM may have contributed to the insignificant difference in treatment effects between MST and the Swedish TAU (Sundell et al., 2008). This inference is likely to be true, given that past studies have consistently demonstrated the relationship between TAM scores and youth treatment outcomes. For instance, caregiver-reported therapist adherence on the TAM-R was found to be predictive of lower rates of criminal activity in MST-treated delinquent youths (Schoenwald et al., 2009), and higher levels of MST adherence on the Swedish-adapted TAM-R were found to be significantly associated with greater odds of youths engaging with schoolwork, living at home, and disengaging from criminal activities in Sweden (Löfholm et al., 2014).

Although previous studies have identified the significant relationship between MST treatment fidelity (i.e., measured by the TAM) and youth conduct problem outcomes, the present review revealed some inconsistencies. For instance, while therapist adherence scores on the TAM were found to be an important predictor of youth outcomes such as offending and incarceration in the Charleston MST study (Henggeler et al., 1997), no such relationship was found in the London MST study (Butler et al., 2011). This discrepancy may be related to the validity of the TAM in measuring MST fidelity. For instance, a recent MST review highlighted that the TAM included measures of constructs that are not unique to MST (Sample TAM item: "the sessions were lively and energetic"), stating that there was no evidence to suggest that the items on the TAM exclusively represented the nine principles of MST (Littell et al., 2021). Indeed, research to date have yet demonstrated the validity of the original version of the TAM/TAM-R (i.e., the USA version) in measuring MST fidelity. This is a concern, given that almost all MST studies included in the present review had measured

MST treatment fidelity on the original version of the TAM. More recently, there has been some evidence to support the Dutch TAM-R as a valid measure of MST treatment fidelity in the Netherlands (Lange et al., 2020). However, more work needs to be done in determining the psychometric properties of the original USA version of the TAM/TAM-R in measuring fidelity to the MST model.

In the UK START study, MST was not a better treatment option for youths with moderate to severe antisocial behaviours in the UK despite reporting "above criterion levels" of treatment fidelity on the TAM-R (Fonagy et al., 2018). Apart from concerns around the validity of the TAM-R, it is likely that the high-quality TAU services provided in the UK may have affected this insignificant result. The present review found that the TAU services (i.e., comparison conditions) compared against MST differed according to countries. For instance, the TAU services provided in the Netherlands included family-based interventions, the TAU services in Norway and Sweden involved child welfare agencies who delivered interventions within the youth family/home setting, the UK TAU services included intensive and multi-component interventions recommended by the National Institute for Health and Clinical Excellence (NICE), and the TAU services in the USA primarily focused on probationary or individual-based interventions.

In addition to the different characteristics of the TAU services offered among countries, the current review found that the TAU services employed outside of the USA (i.e., the Netherlands, Norway, Sweden, and the UK) were more family-based compared to the TAU services offered in the USA. For example, approximately 53 per cent of the youths in the TAU condition in the Netherlands MST study received family-based interventions, and a significant number of youths/families in the TAU condition of the Swedish MST study received family therapy. It is thus important to consider these factors (i.e., the quality of comparative conditions) when assessing intervention effectiveness because the treatment

effects may reflect the gap between intervention and the TAU services offered among countries and the extent to which TAU services were family-based (i.e., resembling parenting and family-based interventions), rather than the effectiveness of the intervention per se.

FFT. The present review found that most studies reported the usefulness of FFT in reducing conduct problem outcomes in youths aged 10 to 17. In specific, four out of the five FFT studies reported significant reductions in youth outcomes such as recidivism, probation completion, and parent-report externalising problems on the CBCL and YSR. This result somewhat aligns with the findings of an FFT review which suggested modest FFT treatment effects in reducing youth recidivism (Weisman & Montgomery, 2019).

Albeit different, all FFT studies identified in the current review included a measure for treatment fidelity. These included Likert scales, a computerised measure of therapist adherence provided by the FFT-LLC, and a self-developed measure of family therapy adherence. All studies claimed sufficient levels of therapist adherence to the FFT model on their respective measures, though no specific data was provided. Also, no information was reported regarding the psychometric properties (i.e., validity/reliability) of any of these treatment fidelity measures.

The Indiana study found that FFT was only beneficial when the therapists adhered to the FFT model (Sexton & Turner, 2010). Specifically, FFT was no more useful than the TAU probationary services without accounting for the effects of therapist adherence. High FFT adherent therapists, rated by supervisors on a 6-point Likert instrument developed by the authors, were found to produce more positive youth outcomes (i.e., less recidivism) than therapists rated as low adherent to the FFT model.

Interestingly, the methods used to assess treatment fidelity for FFT differed from the measures used for MST. For instance, the Indiana FFT study rated therapist adherence using a single therapist adherence score that was averaged over multiple FFT sessions and with

different families, rather than measuring therapist adherence to the FFT model during individual family therapy sessions. Moreover, this method of assessing treatment fidelity (i.e., via therapist ratings) was also used in other FFT studies (Gan et al., 2021; Humayun et al., 2017), where treatment fidelity was defined by a single collated therapist score. A concern of this method is that these therapist ratings may not necessarily correspond to the quality of FFT implementation since it is an aggregated measure of the therapists' past performance and skills, rather than the therapists' independent ratings for fidelity in each FFT session. Therefore, it may be risky to assume that treatment fidelity is achieved based on these therapist ratings.

MTFC. All three MTFC studies identified in the current review found the positive effects of MTFC in reducing youth conduct problem outcomes such as criminal activity/behaviour, self-reported delinquency, and externalising symptoms on the total problem scores of the parent-report CBCL and YSR. This result somewhat aligns with the findings of a recent systematic review that found moderate effects of Treatment Foster Care in reducing youth outcomes such as their risk of reoffending and the number of days spent in locked settings (Åström et al., 2020).

None of the MTFC studies identified in the present review assessed or included a measure for implementation fidelity. This may be due to the lack of assessment tools to measure the implementation fidelity of the MTFC. Given the large number of parties involved in the implementation of MTFC (e.g., foster families, biological families, therapists, supervisors, consultants), it is imperative that a standardised measure of adherence or fidelity is developed and used, not only to monitor and evaluate the quality of implementation within each part of the MTFC but also to ensure that MTFC can be implemented and disseminated to other contexts with fidelity.

It is worth noting that despite the positive findings of MTFC, the present review only identified one MTFC study that was conducted outside of the USA and independent of the original developers of the MTFC programme (Westermark et al., 2011). Thus, more MTFC studies should be evaluated in the future to make more solid conclusions on the effects of MTFC for children and adolescents with severe and persistent conduct problems.

Wraparound. Neither of the reviewed WA studies found significant treatment differences between WA and their respective comparison conditions in youth recidivism. However, the JDIC WA study found a significant effect of the WA in reducing parent-report delinquent behaviours (Carney & Buttell, 2003), and the WA care coordination study found a trend favouring the WA group on two outcomes: time to youth first rearrest and being on track on education (Coldiron et al., 2019). These results somewhat align with the findings of a recent WA systematic review and meta-analysis that found nonsignificant effects of the WA for juvenile justice outcomes, but some significant positive effects for youth school functioning and mental health outcomes (Olson et al., 2021). Further, the systematic review highlighted the importance of treatment adherence (i.e., fidelity) on youth outcomes.

An interesting finding of the present review is the two different wraparound models used in these studies. The JDIC WA study aimed to reduce youth involvement with the juvenile justice system by following 13 “core tasks” (Carney & Buttell, 2003). On the other hand, the WA care coordination study is based on the 10 WA care coordination principles outlined by the National Wraparound Initiative (Bruns et al., 2008; Coldiron et al., 2019). It is unclear whether these WA models are related or independent interventions, but there seems to be some overlap in components between the two WA models (e.g., using community supports).

In the present review, only the WA care coordination study measured treatment fidelity on the Wraparound Fidelity Index (WFI-EZ), which assessed how well services

adhere to the five key practice elements of the Wraparound model. The JDIC WA study did not include a measure for treatment fidelity, which is a possible limitation. In the WA care coordination study, some challenges in implementation were apparent. For instance, the mean fidelity score on the WFI-EZ was below the national sample mean, and there was huge variability in the scores reported by the WA coordinators on the WFI-EZ (i.e., range from 29.4% to 84.4%). This may indicate compromised implementation of the WA, which may have subsequently affected the results of this study. Therefore, at this point, there is no evidence to support the use of the WA model in reducing youth conduct problem outcomes.

MDFT. The only MDFT study identified in the present review found that both youths in the MDFT and Adolescent Group Therapy (AGT) showed reductions in delinquency, substance use, externalising symptoms, and rearrests post-intervention (Dakof et al., 2015). Although no significant treatment differences were observed between the two interventions post-intervention, they highlighted that MDFT youths showed greater maintenance of treatment gains than youths in AGT on self-reported delinquency and externalising symptoms at follow-up.

In terms of implementation fidelity, therapist adherence to the MDFT techniques were rated on the Multidimensional Family Therapy Intervention Inventory (MII) by independent raters who evaluated videotaped MDFT sessions and rated the extensiveness of the 16 core MDFT interventions on an 8-point Likert scale ranging from 1 (not at all) to 7 (extensively). The reported benchmark score for adequate adherence on the MII is 3.0 or higher, which falls at the rating anchor of "somewhat" on the MII (Rowe et al., 2013). The authors mentioned that it was "delivered with similar fidelity as previous MDFT trials" but did not provide specific data on the MII. Thus, it is unclear if MDFT was delivered with sufficient fidelity and whether this factor may have affected the effects of MDFT in this study.

Other Interventions. The present review found a study that identified significant treatment effects of the OSLC Parent Training in reducing youth conduct problem outcomes. The Parent Training study found that both youths in the OSLC Parent Training and the comparison condition (i.e., intensive family therapy) showed large and significant reductions in juvenile arrest rates and prevalence (Bank et al., 1991). However, the OSLC treatment produced quicker reductions than the comparison condition. Other than OSLC Parent Training, the present review also found a study that identified positive treatment effects of Behaviour Contracting and Advocacy (i.e., the Adolescent Diversion Project) in reducing youth conduct problem outcomes (Emshoff & Blakely, 1983). In specific, this broad-based intervention produced significantly more reductions in youth police contact and self-reported delinquency compared to a family-focused intervention. Despite the positive findings of OSLC Parent Training and Behavioural Contracting and Advocacy, it is worth noting that they were both conducted over 30 years ago. As such, implementation fidelity was not measured or monitored in both studies. Further, both interventions only had one study that evaluated their use on youths with severe and persistent conduct problems. Therefore, these study findings should be interpreted in light of these limitations.

On the other hand, the current review did not find any studies where Family Behavioural Therapy (FBT) or Family Empowerment Intervention (FEI) were useful in reducing youth conduct problem outcomes. In the FBT study, no significant differences in conduct problem outcomes (i.e., rearrest and externalising symptoms on the CBCL) between youths who received FBT and those who received the Individual Cognitive Problem Solving were found (Azrin et al., 2001). For the FEI, no significant differences in the total number of arrests and arrest charges between youths in the FEI and the comparison group at 12 months follow up (Dembo et al., 2000). There was a marginally significant effect of the FEI in lowering rates of new charges and arrests in youths who completed the FEI, compared to

those who were assigned but did not complete the FEI. However, this marginal effect is too small to be interpreted meaningfully.

Conclusions. Taken altogether, significant implementation challenges were observed across the studies included in the present review. Firstly, there is a lack of reporting in implementation fidelity data across all the identified studies and interventions. Many studies claimed sufficient levels of implementation fidelity without providing specific data to support their claims, which is a major concern. In addition, there are substantial concerns around the psychometric properties (i.e., validity/reliability) of the tools used to assess treatment fidelity, which may compromise the credibility of the study findings regarding intervention effectiveness.

4.1.2 Common Elements

The second research question explored which studies identified common elements. As mentioned in Chapter One of this thesis, common elements (i.e., core components, kernels, practice elements) are distinct and "distilled" clinical components or techniques that exist within a larger intervention that has demonstrated its effectiveness (Chorpita et al., 2005). Some examples of common elements are modelling, relaxation, and time out.

The common elements approach to implementation has emerged as a promising complementary method of implementing interventions with more flexibility while maintaining its effectiveness (Chorpita et al., 2007). This approach is based on the premise that empirically supported treatments often share similar fundamental techniques that can be distilled into smaller operationalizable core components (Barth et al., 2012). Thus, by identifying the effective core components within interventions, practitioners in real-world practice settings may be able to flexibly tailor and deliver these "active ingredients" to suit the needs of individual clients. The viability of "distilling" elements across multiple effective interventions that can be more readily and flexibly delivered in community settings has been

demonstrated (Chorpita et al., 2005; Garland et al., 2008). The aim is to overcome and address the potential barriers of implementing individual manualised interventions in practice, especially those relating to cost, transportability, and implementation fidelity. It is important to note that the common elements approach is not a substitute for manualised interventions but rather an implementation model that supplements manualised treatments.

In addition to challenges with implementation fidelity, there is an increased recognition that manual-based interventions may not be ideal for real-world practice settings due to difficulties with organisational compatibility, client presentation (i.e., comorbidities), universal application, and so on (Chorpita et al., 2007). To address these issues, alternative ways of implementation has been of interest.

The current review only identified two studies that briefly mentioned common elements. The WA care coordination study mentioned the five key practice elements of the WA model: strength and family-driven, needs-based, outcomes-based, using natural and community supports, and having effective teamwork (Coldiron et al., 2019). In the community-based FFT study, a test was conducted on the effectiveness of a non-manualised family intervention for youths with behavioural problems (Hogue et al., 2015a). The study discussed the significant barriers of implementing manualised interventions in community settings (i.e., more costly, less flexible and less sustainable) and highlighted the importance of testing non-manualised (i.e., common elements) approaches as an alternative to treating adolescents with behavioural problems in the community setting.

Indeed, most of the interventions identified in the current review were implemented based on specific intervention protocols (e.g., FFT, MTFC, MDFT, Parent Training) or principles (e.g., MST). However, it is apparent that challenges with implementation still exist for many researchers, where studies are either reporting below-average levels of

implementation fidelity, vaguely reporting details and findings on implementation fidelity, or not reporting information on implementation fidelity at all.

Despite the limited amount of studies that identified or discussed common elements, the current review indicates the increased recognition of the common elements approach as a promising method of implementing and disseminating effective services in the future rather than relying solely on purchased, manualised treatments (Mildon & Shlonsky, 2011).

4.1.3 Feasibility of a Network Meta-Analysis

The third and final research question of the present review concerns the feasibility of a future network meta-analysis of high-quality intervention trials to identify the effectiveness of individual common elements in decreasing conduct problems and/or related outcomes. The results of the present scoping review indicate the feasibility of a future network meta-analysis of RCTs, given that multiple parenting and family-based interventions (i.e., MST, FFT, MTFC) were found to be beneficial in reducing youth severe and persistent conduct problems. Moreover, most studies retrieved in this scoping review used similar outcome measures for youth conduct problems. For instance, youth conduct problem outcomes were primarily measured through official juvenile offending records, the Self-Reported Delinquency Scale (SRD), and the CBCL and YSR. Therefore, future research involving systematic reviews and network meta-analysis on family-based and parenting interventions seems viable.

4.2 Implications and Future Directions

4.2.1 Implications for Practice

The current study holds implications for practice. Firstly, the evidence of the present scoping review suggests that parenting and family-based interventions, specifically Multisystemic Therapy, Functional Family Therapy, Treatment Foster Care, Parent Training, and Behaviour Contracting and Advocacy may have beneficial effects in reducing severe and

persistent conduct problem outcomes in youths aged 10 to 17 years. However, practitioners must recognise that the evidence from the current review was heavily represented by studies conducted in the USA. Therefore, cross-cultural differences may exist and influence the applicability of these findings in different contexts. In addition, the results of the study also suggest that interventions must be delivered/implemented with fidelity in practice to demonstrate their potential treatment effects. Given the significant relationship between implementation fidelity and youth treatment outcomes discussed in the present review, practitioners are strongly encouraged to monitor the implementation of manual-based interventions using consistent and well-validated treatment fidelity measures.

Although research on the effectiveness of the common elements approaches to implementation is still in its infancy, and only a few studies have demonstrated the positive effects of this approach (Chorpita et al., 2017), practitioners may be interested in exploring this promising complementary approach for implementing interventions.

4.2.2 Implications for Research

The current study also holds some implications for research. Future research on intervention effectiveness should include a measure for treatment fidelity. These treatment fidelity measures should also be consistent (i.e., same measures for specific interventions) and well-validated in the literature to provide validity to their research findings. Future studies on intervention effectiveness should also improve on the reporting of implementation fidelity data. As observed in the current review, many studies claimed sufficient levels of implementation fidelity without reporting specific data. Without clear and appropriate reporting of information on implementation fidelity, the outcomes and conclusions on intervention effectiveness may not be scientifically meaningful.

Although the studies in the present scoping review did not discuss much of the common elements approach or common elements, this field of research is expanding. Several

other studies have found positive results when examining the effectiveness of the modular common elements approach for children with mental health difficulties, including conduct problems (Chorpita et al., 2017; Chorpita et al., 2013; Weisz et al., 2012). Therefore, future research should focus on identifying and defining the common elements embedded within the various effectiveness interventions retrieved from the present scoping review for children and adolescents with severe and persistent conduct problems.

The present scoping review has also provided useful data for a future systematic review and network meta-analysis of parenting and family-based interventions for children and adolescents with severe and persistent conduct problems. Given the increasing number and variety of treatments available for this population of youths, a future systematic review and network meta-analysis that examines the relative effectiveness of various parenting and family-based interventions in reducing conduct problem outcomes will be useful to inform and aid decision-making among practitioners and key stakeholders.

4.3 Strengths and Limitations

There are several strengths and limitations to the present scoping study. A methodological strength is the comprehensive inclusion of studies without restrictions placed on the dates and language of publication. As such, 2042 records were identified and screened during the scoping process, indicating the breadth of the search process.

Although not necessarily a strength, it is worth noting that the reviewers of the present scoping study identified some discrepancies in the way conduct problem outcomes were measured on the CBCL. For instance, studies that only included the CBCL total problem score as a measure of conduct problem (i.e., no specific information on the Externalising Symptom Scale or DSM-oriented Scale) were excluded from the present review because the CBCL total problem includes both emotional and behavioural problems and is not an exclusive measure of externalising conduct problems in children and adolescents.

An important limitation of the present review is the failure to include grey literature. More specifically, the review authors were unable to access and screen the full texts for some dissertations that were retrieved from the search (see Appendix C) due to university library restrictions (i.e., insufficient time to obtain documents via inter-library services). This may have resulted in the exclusion of studies that may have otherwise met the criteria for the present review. Another limitation of the present review is the limited electronic databases used during the search process. The search was only conducted across three databases PsycINFO, Medline, and ERIC due to accessibility restrictions (i.e., other electronic databases were not available under the author's university). Therefore, some eligible studies in other databases may have been missed due to this limitation. Finally, though not necessarily a limitation (i.e., not a requirement for scoping review), it is worth noting that the author of the current thesis did not contact the author(s) of the included studies for any missing or non-reported data during the data extraction phase.

4.4 Conclusion

Parents and family systems play an important role in the initiation, maintenance, and escalation of conduct problems in youths. Many parenting and family-based interventions have been recommended for the treatment of children and adolescents with severe and persistent conduct problems. The results of the current review support the use of Multisystemic Therapy, Functional Family Therapy, Treatment Foster Care, Parent Training, and Behaviour Contracting and Advocacy in reducing severe and persistent conduct problems in children and adolescents aged 10 to 17. However, these findings must be interpreted in consideration of their limitations. Challenges to the dissemination and implementation of these interventions exist, and a complementary implementation approach through the identification of common elements may address the potential barriers of implementing and disseminating interventions.

To the author's best knowledge, this is the only review that has examined the effectiveness of parenting and family-based intervention in children and adolescents with severe and persistent conduct problems, across a range of distinct manualised and non-manualised treatments, apart from the 2001 review (Woolfenden et al., 2001). Given the different parenting and family-based interventions suggested to be useful in improving severe and persistent conduct problems in children and adolescents, the challenge now is to determine which elements deployed by these interventions work best for this population of children, which may be best answered through a network meta-analysis.

References

AGCP. (2009). *Conduct problems: best practice report 2009*. Ministry of Social Development. https://go.exlibris.link/3fjYsJx1

American Psychiatric Association, D. S. M. T. F. (2013). *Diagnostic and statistical manual of mental disorders: DSM-5* (5th ed.). American Psychiatric Association.

Arango Tobón, O. E., Olivera-La Rosa, A., Restrepo Tamayo, V., & Puerta Lopera, I. C. (2018). Empathic skills and theory of mind in female adolescents with conduct disorder. *Revista brasileira de psiquiatria*, *40*(1), 78-82. https://doi.org/10.1590/1516-4446-2016-2092

Arksey, H., & O'Malley, L. (2005). Scoping studies: towards a methodological framework. *International journal of social research methodology*, *8*(1), 19-32. https://doi.org/10.1080/1364557032000119616

Asscher, J. J., Deković, M., Manders, W., van der Laan, P. H., Prins, P. J. M., & van Arum, S. (2014). Sustainability of the effects of multisystemic therapy for juvenile delinquents in the Netherlands: Effects on delinquency and recidivism. *Journal of Experimental Criminology*, *10*(2), 227-243. https://doi.org/10.1007/s11292-013-9198-8

Asscher, J. J., Deković, M., Manders, W. A., van der Laan, P. H., & Prins, P. J. M. (2013). A randomized controlled trial of the effectiveness of multisystemic therapy in the Netherlands: Post-treatment changes and moderator effects. *Journal of Experimental Criminology*, *9*(2), 169-187. https://doi.org/10.1007/s11292-012-9165-9

Asscher, J. J., Deković, M., Van den Akker, A. L., Prins, P. J. M., & Van der Laan, P. H. (2018). Do extremely violent juveniles respond differently to treatment? *International Journal of Offender Therapy and Comparative Criminology*, *62*(4), 958-977. https://doi.org/10.1177/0306624X16670951

Åström, T., Bergström, M., Håkansson, K., Jonsson, A. K., Munthe, C., Wirtberg, I., Wiss, J., & Sundell, K. (2020, 05//). Treatment Foster Care Oregon for Delinquent Adolescents: A Systematic Review and Meta-Analysis [Article]. *Research on Social Work Practice*, *30*(4), 355-367. https://doi.org/10.1177/1049731519890394

Azrin, N. H., Donohue, B., Teichner, G. A., Crum, T., Howell, J., & DeCato, L. A. (2001). A controlled evaluation and description of individual-cognitive problem solving and family-behavior therapies in dually-diagnosed conduct-disordered and substance-dependent youth. *Journal of Child & Adolescent Substance Abuse*, *11*(1), 1-43. https://doi.org/10.1300/J029v11n01_01

Bakker, M. J., Greven, C. U., Buitelaar, J. K., & Glennon, J. C. (2017, 01//). Practitioner Review: Psychological treatments for children and adolescents with conduct disorder problems - a systematic review and meta-analysis [Article]. *Journal of Child Psychology & Psychiatry*, *58*(1), 4-18. https://doi.org/10.1111/jcpp.12590

Bank, L., Marlowe, J. H., Reid, J. B., Patterson, G. R., & Weinrott, M. R. (1991). A comparative evaluation of parent-training interventions for families of chronic delinquents. *Journal of abnormal child psychology, 19*(1), 15-33. https://doi.org/10.1007/BF00910562

Barth, R. P., Lee, B. R., Lindsey, M. A., Collins, K. S., Strieder, F., Chorpita, B. F., Becker, K. D., & Sparks, J. A. (2012). Evidence-based practice at a crossroads: The timely emergence of common elements and common factors. *Research on Social Work Practice, 22*(1), 108-119.

Borduin, C. M., Mann, B. J., Cone, L. T., Henggeler, S. W., Fucci, B. R., Blaske, D. M., & Williams, R. A. (1995). Multisystemic treatment of serious juvenile offenders: long-term prevention of criminality and violence. *Journal of Consulting and Clinical Psychology, 63*(4), 569-578.

Bowlby, J. (1980). Attachment and loss: Volume III: Loss, sadness and depression. In *Attachment and Loss: Volume III: Loss, Sadness and Depression* (pp. 1-462). London: The Hogarth press and the institute of psycho-analysis.

Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative research in psychology, 3*(2), 77-101. https://doi.org/10.1191/1478088706qp063oa

Breitenstein, S. M., Gross, D., Garvey, C. A., Hill, C., Fogg, L., & Resnick, B. (2010). Implementation fidelity in community-based interventions. *Research in nursing & health, 33*(2), 164-173. https://doi.org/10.1002/nur.20373

Bronfenbrenner, U., & Morris, P. (2006). The Bioecological Model of Human Development. In (Vol. Vol. 1). https://doi.org/10.1002/9780470147658.chpsy0114

Bruce, J., Fisher, P. A., Graham, A. M., Moore, W. E., Peake, S. J., & Mannering, A. M. (2013). Patterns of brain activation in foster children and nonmaltreated children during an inhibitory control task. *Development and Psychopathology, 25*(4pt1), 931-941. https://doi.org/10.1017/S095457941300028X

Bruns, E. J., Walker, J. S., Adams, J., Miles, P., Osher, T., Rast, J., & VanDenBerg, J. (2008). the National Wraparound Initiative Advisory Group.(2008). Ten principles of the wraparound process. *The resource guide to wraparound. Portland, OR: National Wraparound Initiative, Research and Training Center for Family Support and Children's Mental Health*.

Burnette, M. L., Oshri, A., Lax, R., Richards, D., & Ragbeer, S. N. (2012). Pathways from harsh parenting to adolescent antisocial behavior: A multidomain test of gender moderation. *Development and Psychopathology, 24*(3), 857-870. https://doi.org/10.1017/S0954579412000417

Butler, S. P. D., Baruch, G. P. D., Hickey, N. M. S., & Fonagy, P. P. D. (2011). A Randomized Controlled Trial of Multisystemic Therapy and a Statutory Therapeutic Intervention for Young Offenders. *Journal of the American Academy of Child and Adolescent Psychiatry, 50*(12), 1220-1235.e1222. https://doi.org/10.1016/j.jaac.2011.09.017

Carney, M. M., & Buttell, F. (2003). Reducing juvenile recidivism: Evaluating the wraparound services model. *Research on Social Work Practice, 13*(5), 551-568. https://doi.org/10.1177/1049731503253364

Carr, A. (2016). *The handbook of child and adolescent clinical psychology: a contextual approach* (Third ed.). Routledge, Taylor & Francis Group. https://go.exlibris.link/NBC6SBmy

Carroll, C., Patterson, M., Wood, S., Booth, A., Rick, J., & Balain, S. (2007). A conceptual framework for implementation fidelity. *Implementation science, 2*(1), 1-9.

Cassidy, J. (1994). EMOTION REGULATION: INFLUENCES OF ATTACHMENT RELATIONSHIPS. *Monographs of the Society for Research in Child Development, 59*(2-3), 228-249. https://doi.org/10.1111/j.1540-5834.1994.tb01287.x

Cervenka, K. A., Dembo, R., & Brown, C. H. (1996). A family empowerment intervention for families of juvenile offenders. *Aggression and Violent Behavior, 1*(3), 205-216. https://doi.org/10.1016/1359-1789(95)00007-0

Chamberlain, P., Fisher, P. A., & Moore, K. (2002). Multidimensional treatment foster care: Applications of the OSLC intervention model to high-risk youth and their families. In *Antisocial behavior in children and adolescents: A developmental analysis and model for intervention.* (pp. 203-218). American Psychological Association. https://doi.org/10.1037/10468-010

Chamberlain, P., Leve, L. D., & DeGarmo, D. S. (2007). Multidimensional treatment foster care for girls in the juvenile justice system: 2-year follow-up of a randomized clinical trial. *Journal of Consulting and Clinical Psychology, 75*(1), 187-193. https://doi.org/10.1037/0022-006X.75.1.187

Chamberlain, P., & Reid, J. B. (1998). Comparison of two community alternatives to incarceration for chronic juvenile offenders. *Journal of Consulting and Clinical Psychology, 66*(4), 624-633. https://doi.org/10.1037//0022-006X.66.4.624

Chamberlain, P., & Rosicky, J. G. (1995). The effectiveness of family therapy in the treatment of adolescents with conduct disorders and delinquency. *Journal of Marital and Family Therapy, 21*(4), 441-459. https://doi.org/10.1111/j.1752-0606.1995.tb00174.x (The effectiveness of marital and family therapy)

Chorpita, B. F., Becker, K. D., & Daleiden, E. L. (2007). Understanding the common elements of evidence-based practice: Misconceptions and clinical examples. *Journal of the American Academy of Child & Adolescent Psychiatry, 46*(5), 647-652.

Chorpita, B. F., & Daleiden, E. L. (2009). Mapping evidence-based treatments for children and adolescents: Application of the distillation and matching model to 615 treatments from 322 randomized trials. *Journal of Consulting and Clinical Psychology, 77*(3), 566-579. https://doi.org/10.1037/a0014565

Chorpita, B. F., Daleiden, E. L., Park, A. L., Ward, A. M., Levy, M. C., Cromley, T., Chiu, A. W., Letamendi, A. M., Tsai, K. H., & Krull, J. L. (2017). Child STEPs in California: A Cluster Randomized Effectiveness Trial Comparing Modular Treatment With Community Implemented Treatment for Youth With Anxiety, Depression, Conduct Problems, or Traumatic Stress. *Journal of Consulting and Clinical Psychology, 85*(1), 13-25. https://doi.org/10.1037/ccp0000133

Chorpita, B. F., Daleiden, E. L., & Weisz, J. R. (2005, 2005/03/01). Identifying and Selecting the Common Elements of Evidence Based Interventions: A Distillation and Matching Model. *Mental Health Services Research, 7*(1), 5-20. https://doi.org/10.1007/s11020-005-1962-6

Chorpita, B. F., Weisz, J. R., Daleiden, E. L., Schoenwald, S. K., Palinkas, L. A., Miranda, J., Higa-McMillan, C. K., Nakamura, B. J., Austin, A. A., Borntrager, C. F., Ward, A., Wells, K. C., Gibbons, R. D., & Research Network on Youth Mental, H. (2013). Long-Term Outcomes for the Child STEPs Randomized Effectiveness Trial: A Comparison of Modular and Standard Treatment Designs With Usual Care. *Journal of Consulting and Clinical Psychology, 81*(6), 999-1009. https://doi.org/10.1037/a0034200

Church. (2003). *The definition, diagnosis and treatment of children and youth with severe behaviour difficulties: a review of research*. Ministry of Education. https://go.exlibris.link/mrjy5Rt6

Cicchetti, D., Rogosch, F. A., Maughan, A., Toth, S. L., & Bruce, J. (2003). False belief understanding in maltreated children. *Development and Psychopathology, 15*(4), 1067-1091. https://doi.org/10.1017/S0954579403000440

Coldiron, J. S., Hensley, S. W., Parigoris, R. M., & Bruns, E. J. (2019). Randomized control trial findings of a wraparound program for dually involved youth. *Journal of Emotional and Behavioral Disorders, 27*(4), 195-208. https://doi.org/10.1177/1063426619861074

Colquhoun, H. L., Levac, D., O'Brien, K. K., Straus, S., Tricco, A. C., Perrier, L., Kastner, M., & Moher, D. (2014). Scoping reviews: time for clarity in definition, methods, and reporting. *Journal of clinical epidemiology, 67*(12), 1291-1294. https://doi.org/10.1016/j.jclinepi.2014.03.013

Cyr, C., Euser, E. M., Bakermans-Kranenburg, M. J., & Van Ijzendoorn, M. H. (2010, Feb 2010
2021-11-02). Attachment security and disorganization in maltreating and high-risk families: A series of meta-analyses. *Development and Psychopathology, 22*(1), 87-108. https://doi.org/http://dx.doi.org/10.1017/S0954579409990289

Dakof, G. A., Henderson, C. E., Rowe, C. L., Boustani, M., Greenbaum, P. E., Wang, W., Hawes, S., Linares, C., & Liddle, H. A. (2015). A randomized clinical trial of family therapy in juvenile drug court. *Journal of Family Psychology, 29*(2), 232-241. https://doi.org/10.1037/fam0000053

Dandreaux, D. M., & Frick, P. J. (2009). Developmental pathways to conduct problems: A further test of the childhood and adolescent-onset distinction. *Journal of abnormal child psychology, 37*(3), 375-385. https://link.springer.com/content/pdf/10.1007/s10802-008-9261-5.pdf

De Bellis, M. D. (2001). Developmental traumatology: The psychobiological development of maltreated children and its implications for research, treatment, and policy. *Development and Psychopathology, 13*(3), 539-564. https://doi.org/10.1017/S0954579401003078

DeKlyen, M., & Speltz, M. L. (2001). Attachment and conduct disorder. In *Conduct disorders in childhood and adolescence.* (pp. 320-345). Cambridge University Press.

Deković, M., Asscher, J. J., Manders, W. A., Prins, P. J. M., & van der Laan, P. (2012). Within-intervention change: Mediators of intervention effects during multisystemic therapy. *Journal of Consulting and Clinical Psychology, 80*(4), 574-587. https://doi.org/10.1037/a0028482

Dembo, R., Ramirez-Garnica, G., Rollie, M., Schmeidler, J., Livingston, S., & Hartsfield, A. (2000). Youth recidivism twelve months after a Family Empowerment Intervention: Final report. *Journal of Offender Rehabilitation, 31*(3-4), 29-65. https://doi.org/10.1300/J076v31n03_03

Dembo, R., Ramirez-Garnica, G., Schmeidler, J., Rollie, M., Livingstone, S., & Hartfield, A. (2001). Long-term impact of a Family Empowerment Intervention on juvenile offender recidivism. *Journal of Offender Rehabilitation, 33*(1), 33-57. https://doi.org/10.1300/J076v33n01_02

Dishion, T. J., & McMahon, R. J. (1998). Parental monitoring and the prevention of child and adolescent problem behavior: A conceptual and empirical formulation. *Clinical Child and Family Psychology Review, 1*(1), 61-75.

Dodge, K. A., & Pettit, G. S. (2003). A biopsychosocial model of the development of chronic conduct problems in adolescence. *Developmental psychology, 39*(2), 349-371. https://doi.org/10.1037/0012-1649.39.2.349 (Violent Children)

Donohue, B., & Azrin, N. (2001). Family behavior therapy. *Innovations in adolescent substance abuse interventions*, 205-227.

Dretzke, J., Davenport, C., Frew, E., Barlow, J., Stewart-Brown, S., Bayliss, S., Taylor, R. S., Sandercock, J., & Hyde, C. (2009, 2009/03/04). The clinical effectiveness of different parenting programmes for children with conduct problems: a systematic review of randomised controlled trials. *Child and Adolescent Psychiatry and Mental Health, 3*(1), 7. https://doi.org/10.1186/1753-2000-3-7

Duschinsky, R., & Solomon, J. (2017). Infant disorganized attachment: Clarifying levels of analysis. *Clinical Child Psychology and Psychiatry, 22*(4), 524-538. https://doi.org/10.1177/1359104516685602

Eddy, J. M., Whaley, R. B., & Chamberlain, P. (2004). The Prevention of Violent Behavior by Chronic and Serious Male Juvenile Offenders: A 2-Year Follow-up of a Randomized Clinical Trial. *Journal of Emotional and Behavioral Disorders, 12*(1), 2-8. https://doi.org/10.1177/10634266040120010101

Emshoff, J. G., & Blakely, C. H. (1983). The diversion of delinquent youth: family-frcused intervention. *Children and Youth Services Review, 5*(4), 343-356. https://doi.org/10.1016/0190-7409(83)90002-6

Farrington, D. P. (2010). Family influences on delinquency. *Juvenile justice and delinquency, 10*, 203-222.

Farrington, D. P., Coid, J. W., Harnett, L., Jolliffe, D., Soteriou, N., Turner, R., & West, D. J. (2006). *Criminal careers up to age 50 and life success up to age 48: New findings from the Cambridge Study in Delinquent Development* (Vol. 94). Home Office Research, Development and Statistics Directorate London, UK.

Fearon, R. P., Bakermans-Kranenburg, M. J., van Ijzendoorn, M. H., Lapsley, A.-M., & Roisman, G. I. (2010). The Significance of Insecure Attachment and Disorganization in the Development of Childrens Externalizing Behavior: A Meta-Analytic Study. *Child Development, 81*(2), 435-456. https://doi.org/10.1111/j.1467-8624.2009.01405.x

Fergusson, D., Boden, J., & Hayne, H. (2011). Childhood conduct problems. *Improving the Transition, 59*.

Fergusson, D. M., Horwood, L. J., & Lynskey, M. (1994, Sep). The childhoods of multiple problem adolescents: a 15-year longitudinal study. *J Child Psychol Psychiatry, 35*(6), 1123-1140. https://doi.org/10.1111/j.1469-7610.1994.tb01813.x

Fisher, P. A., & Chamberlain, P. (2000). Multidimensional treatment foster care: A program for intensive parenting, family support, and skill building. *Journal of Emotional and Behavioral Disorders, 8*(3), 155-164.

Fisher, P. A., & Gilliam, K. S. (2012). Research into Theory into Practice: An Overview of Family Based Interventions for Child Antisocial Behavior Developed at the Oregon Social Learning Center. *Clinica y salud, 23*(3), 247-259. https://doi.org/10.5093/cl2012a16

Fonagy, P., Butler, S., Cottrell, D., Scott, S., Pilling, S., Eisler, I., Fuggle, P., Kraam, A., Byford, S., Wason, J., Ellison, R., Simes, E., Ganguli, P., Allison, E., & Goodyer, I. M. (2018). Multisystemic therapy versus management as usual in the treatment of adolescent antisocial behaviour (START): A pragmatic, randomised controlled, superiority trial. *The Lancet Psychiatry, 5*(2), 119-133. https://doi.org/10.1016/S2215-0366(18)30001-4

Fonagy, P., Butler, S., Cottrell, D., Scott, S., Pilling, S., Eisler, I., Fuggle, P., Kraam, A., Byford, S., Wason, J., Smith, J. A., Anokhina, A., Ellison, R., Simes, E., Ganguli, P., Allison, E., & Goodyer, I. M. (2020). Multisystemic therapy versus management as usual in the treatment of adolescent antisocial behaviour (START): 5-year follow-up

of a pragmatic, randomised, controlled, superiority trial. *The Lancet Psychiatry, 7*(5), 420-430. https://doi.org/10.1016/S2215-0366(20)30131-0

Forgatch, M. S., & Kjøbli, J. (2016). Parent Management Training-Oregon Model: Adapting Intervention with Rigorous Research. *Family Process, 55*(3), 500-513. https://doi.org/10.1111/famp.12224

Fosco, G. M., & LoBraico, E. J. (2019). A family systems framework for adolescent antisocial behavior: The state of the science and suggestions for the future. In E. N. Jouriles, M. A. Whisman, B. H. Fiese, K. Deater-Deckard, & M. Celano (Eds.), *APA handbook of contemporary family psychology: Applications and broad impact of family psychology* (Vol. 2, pp. 53-68). American Psychological Association. https://doi.org/10.1037/0000100-004

Frick, P. (2012). Developmental Pathways to Conduct Disorder: Implications for Future Directions in Research, Assessment, and Treatment [Article]. *Journal of Clinical Child & Adolescent Psychology, 41*(3), 378-389. https://doi.org/10.1080/15374416.2012.664815

Frick, P. J. (2006). Developmental Pathways to Conduct Disorder. *Child and Adolescent Psychiatric Clinics of North America, 15*(2), 311-331. https://doi.org/10.1016/j.chc.2005.11.003

Frick, P. J., Cornell, A. H., Bodin, S. D., Dane, H. E., Barry, C. T., & Loney, B. R. (2003). Callous-unemotional traits and developmental pathways to severe conduct problems. *Developmental psychology, 39*(2), 246.

Gan, D. Z. Q., Zhou, Y., Abdul Wahab, N. D. b., Ruby, K., & Hoo, E. (2021). Effectiveness of functional family therapy in a non-western context: Findings from a randomized-controlled evaluation of youth offenders in singapore. *Family Process*. https://doi.org/10.1111/famp.12630

Garland, A. F., Hawley, K. M., Brookman-Frazee, L., & Hurlburt, M. S. (2008, 2008/05/01/). Identifying Common Elements of Evidence-Based Psychosocial Treatments for Children's Disruptive Behavior Problems. *Journal of the American Academy of Child & Adolescent Psychiatry, 47*(5), 505-514. https://doi.org/https://doi.org/10.1097/CHI.0b013e31816765c2

Gottfredson, D. C., Kearley, B., Thornberry, T. P., Slothower, M., Devlin, D., & Fader, J. J. (2018). Scaling-up evidence-based programs using a public funding stream: A randomized trial of Functional Family Therapy for court-involved youth. *Prevention Science, 19*(7), 939-953. https://doi.org/10.1007/s11121-018-0936-z

Guttmann-Steinmetz, S., & Crowell, J. A. (2006). Attachment and Externalizing Disorders: A Developmental Psychopathology Perspective. *Journal of the American Academy of Child and Adolescent Psychiatry, 45*(4), 440-451. https://doi.org/10.1097/01.chi.0000196422.42599.63

Hawes, D. J., & Dadds, M. R. (2005). Chapter 5 - Oppositional and Conduct Problems. In J. L. Hudson & R. M. Rapee (Eds.), *Psychopathology and the Family* (pp. 73-91). Elsevier. https://doi.org/https://doi.org/10.1016/B978-008044449-9/50006-X

Henggeler, S., Borduin, C., Schoenwald, S., Huey, S., & Chapman, J. (2006). Multisystemic therapy adherence scale-revised (TAM-R). *Unpublished instrument. Charleston, SC: Department of Psychiatry & Behavioral Sciences, Medical University of South Carolina*.

Henggeler, S. W., & Borduin, C. M. (1992). Multisystemic therapy adherence scales. *Unpublished instrument, Department of Psychiatry and Behavioral Sciences, Medical University of South Carolina*.

Henggeler, S. W., Melton, G. B., Brondino, M. J., Scherer, D. G., & Hanley, J. H. (1997). Multisystemic therapy with violent and chronic juvenile offenders and their families: The role of treatment fidelity in successful dissemination. *Journal of Consulting and Clinical Psychology, 65*(5), 821-833. https://doi.org/10.1037/0022-006X.65.5.821

Henggeler, S. W., Melton, G. B., & Smith, L. A. (1992). Family Preservation Using Multisystemic Therapy: An Effective Alternative to Incarcerating Serious Juvenile Offenders. *Journal of Consulting and Clinical Psychology, 60*(6), 953-961.

Henggeler, S. W., & Schaeffer, C. M. (2019). Multisystemic Therapy®: Clinical procedures, outcomes, and implementation research. In E. N. Jouriles, M. A. Whisman, B. H. Fiese, K. Deater-Deckard, & M. Celano (Eds.), *APA handbook of contemporary family psychology: Family therapy and training* (Vol. 3, pp. 205-220). American Psychological Association. https://doi.org/10.1037/0000101-013

Higgins, J. P. T., & Cochrane, C. (2019). *Cochrane handbook for systematic reviews of interventions* (Second ed.). Wiley-Blackwell.

Hill, J. (2002). Biological, psychological and social processes in the conduct disorders. *Journal of child psychology and psychiatry, 43*(1), 133-164. https://doi.org/10.1111/1469-7610.00007

Hogue, A., Dauber, S., Henderson, C. E., Bobek, M., Johnson, C., Lichvar, E., & Morgenstern, J. (2015a). Randomized trial of family therapy versus nonfamily treatment for adolescent behavior problems in usual care. *Journal of clinical child and adolescent psychology, 44*(6), 954-969. https://doi.org/10.1080/15374416.2014.963857

Hogue, A., Dauber, S., Henderson, C. E., Bobek, M., Johnson, C., Lichvar, E., & Morgenstern, J. (2015b). Randomized Trial of Family Therapy Versus Nonfamily Treatment for Adolescent Behavior Problems in Usual Care. *Journal of clinical child and adolescent psychology : the official journal for the Society of Clinical Child and Adolescent Psychology, American Psychological Association, Division 53, 44*(6), 954-969. https://doi.org/10.1080/15374416.2014.963857

Humayun, S., Herlitz, L., Chesnokov, M., Doolan, M., Landau, S., & Scott, S. (2017). Randomized controlled trial of Functional Family Therapy for offending and

antisocial behavior in UK youth. *Journal of child psychology and psychiatry, 58*(9), 1023-1032. https://doi.org/10.1111/jcpp.12743

Johnson, A. M., Hawes, D. J., Eisenberg, N., Kohlhoff, J., & Dudeney, J. (2017, 2017/06/01/). Emotion socialization and child conduct problems: A comprehensive review and meta-analysis. *Clinical Psychology Review, 54*, 65-80. https://doi.org/https://doi.org/10.1016/j.cpr.2017.04.001

Kim-Spoon, J., Herd, T., Brieant, A., Peviani, K., Deater-Deckard, K., Lauharatanahirun, N., Lee, J., & King-Casas, B. (2021, 2021/04/01/). Maltreatment and brain development: The effects of abuse and neglect on longitudinal trajectories of neural activation during risk processing and cognitive control. *Developmental Cognitive Neuroscience, 48*, 100939. https://doi.org/https://doi.org/10.1016/j.dcn.2021.100939

Kochanska, G. (2001). Emotional Development in Children with Different Attachment Histories: The First Three Years. *Child Development, 72*(2), 474-490. https://doi.org/10.1111/1467-8624.00291

Lange, A. M. C., Delsing, M. J. M. H., Scholte, R. H. J., & van der Rijken, R. E. A. (2020). Factorial Structure of the Therapist Adherence Measure-Revised (TAM-R) Within Multisystemic Therapy. *European journal of psychological assessment : official organ of the European Association of Psychological Assessment, 36*(2), 427-431. https://doi.org/10.1027/1015-5759/a000505

Levac, D., Colquhoun, H., & O'Brien, K. K. (2010). Scoping studies: advancing the methodology. *Implementation science : IS, 5*(1), 69-69. https://doi.org/10.1186/1748-5908-5-69

Leve, L. D., Chamberlain, P., & Reid, J. B. (2005). Intervention outcomes for girls referred from juvenile justice: Effects on delinquency. *Journal of Consulting and Clinical Psychology, 73*(6), 1181-1184. https://doi.org/10.1037/0022-006X.73.6.1181

Liddle, H. A. (2016). Multidimensional family therapy: Evidence base for transdiagnostic treatment outcomes, change mechanisms, and implementation in community settings. *Family Process, 55*(3), 558-576.

Littell, J. H., Pigott, T. D., Nilsen, K. H., Green, S. J., & Montgomery, O. L. K. (2021). Multisystemic Therapy® for social, emotional, and behavioural problems in youth age 10 to 17: An updated systematic review and meta-analysis. *Campbell systematic review, 17*(4), n/a-n/a. https://doi.org/10.1002/cl2.1158

Locher, S., Barenblatt, L., Fourie, M., Stein, D., & Gobodo-Madikizela, P. (2014, 05/01). Empathy and childhood maltreatment: A mixed-methods investigation. *Annals of clinical psychiatry : official journal of the American Academy of Clinical Psychiatrists, 26*, 97-110.

Loeber, R., Green, S. M., Lahey, B. B., Frick, P. J., & McBurnett, K. (2000, 2000/03/01). Findings on Disruptive Behavior Disorders from the First Decade of the Developmental Trends Study. *Clinical Child and Family Psychology Review, 3*(1), 37-60. https://doi.org/10.1023/A:1009567419190

Loeber, R. E., Farrington, D. P., Stouthamer-Loeber, M. E., & White, H. R. E. (2008). *Violence and serious theft: Development and prediction from childhood to adulthood*. Routledge/Taylor & Francis Group.

Löfholm, C. A., Eichas, K., & Sundell, K. (2014). The Swedish Implementation of Multisystemic Therapy for Adolescents: Does Treatment Experience Predict Treatment Adherence? *Journal of clinical child and adolescent psychology, 43*(4), 643-655. https://doi.org/10.1080/15374416.2014.883926

Manders, W. A., Deković, M., Asscher, J. J., van der Laan, P. H., & Prins, P. J. M. (2013). Psychopathy as predictor and moderator of multisystemic therapy outcomes among adolescents treated for antisocial behavior. *Journal of abnormal child psychology, 41*(7), 1121-1132. https://doi.org/10.1007/s10802-013-9749-5

McCrory, E., De Brito, S. A., & Viding, E. (2012). The link between child abuse and psychopathology: a review of neurobiological and genetic research. *Journal of the Royal Society of Medicine, 105*(4), 151-156.

McElwain, N. L., Booth-Laforce, C., Lansford, J. E., Wu, X., & Justin Dyer, W. (2008, Nov-Dec). A process model of attachment-friend linkages: hostile attribution biases, language ability, and mother-child affective mutuality as intervening mechanisms. *Child Development, 79*(6), 1891-1906. https://doi.org/10.1111/j.1467-8624.2008.01232.x

McIntosh, J. (2006). Assessing Attachment Needs and Potential in High-risk Infants. *Journal of family studies, 12*(1), 57-71. https://go.exlibris.link/3Qfw7lVr

Mildon, R., & Shlonsky, A. (2011). Bridge over troubled water: Using implementation science to facilitate effective services in child welfare. *Child abuse & neglect, 35*(9), 753-756.

Moss, E., Smolla, N., Cyr, C., Dubois-Comtois, K., Mazzarello, T., & Berthiaume, C. (2006). Attachment and behavior problems in middle childhood as reported by adult and child informants. *Development and Psychopathology, 18*(2), 425-444. https://doi.org/10.1017/S0954579406060238

Murray, J., & Farrington, D. P. (2010). Risk Factors for Conduct Disorder and Delinquency: Key Findings from Longitudinal Studies. *55*(Generic), 633-642.

Newman, L., & Mares, S. (2007). Recent advances in the theories of and interventions with attachment disorders. *Current opinion in psychiatry, 20*(4), 343. https://go.exlibris.link/ndz5x8Bw

Newman, L., Sivaratnam, C., & Komiti, A. (2015, 2015/01/01). Attachment and early brain development – neuroprotective interventions in infant–caregiver therapy. *Translational Developmental Psychiatry, 3*(1), 28647. https://doi.org/10.3402/tdp.v3.28647

O'Reilly, J., & Peterson, C. C. (2015). Maltreatment and advanced theory of mind development in school-aged children. *Journal of Family Violence, 30*(1), 93-102.

Ogden, T., & Halliday-Boykins, C. A. (2004). Multisystemic treatment of antisocial adolescents in Norway: Replication of clinical outcomes outside of the US. *Child and Adolescent Mental Health, 9*(2), 77-83. https://doi.org/10.1111/j.1475-3588.2004.00085.x

Olson, J. R., Benjamin, P. H., Azman, A. A., Kellogg, M. A., Pullmann, M. D., Suter, J. C., & Bruns, E. J. (2021, 2021/11/01/). Systematic Review and Meta-analysis: Effectiveness of Wraparound Care Coordination for Children and Adolescents. *Journal of the American Academy of Child & Adolescent Psychiatry, 60*(11), 1353-1366. https://doi.org/https://doi.org/10.1016/j.jaac.2021.02.022

Page, M. J., McKenzie, J. E., Bossuyt, P. M., Boutron, I., Hoffmann, T. C., Mulrow, C. D., Shamseer, L., Tetzlaff, J. M., Akl, E. A., Brennan, S. E., Chou, R., Glanville, J., Grimshaw, J. M., Hróbjartsson, A., Lalu, M. M., Li, T., Loder, E. W., Mayo-Wilson, E., McDonald, S., McGuinness, L. A., Stewart, L. A., Thomas, J., Tricco, A. C., Welch, V. A., Whiting, P., & Moher, D. (2021). The PRISMA 2020 statement: an updated guideline for reporting systematic reviews. *BMJ, 372*, n71. https://doi.org/10.1136/bmj.n71

Patterson, G. R. (2002). The early development of coercive family process. In *Antisocial behavior in children and adolescents: A developmental analysis and model for intervention.* (pp. 25-44). American Psychological Association. https://doi.org/10.1037/10468-002

Patterson, G. R., Reid, J. B., & Eddy, J. M. (2002). A brief history of the Oregon model. In *Antisocial behavior in children and adolescents: A developmental analysis and model for intervention.* (pp. 3-20). American Psychological Association. https://doi.org/10.1037/10468-001

Pears, K. C., & Fisher, P. A. (2005). Emotion understanding and theory of mind among maltreated children in foster care: Evidence of deficits. *Development and Psychopathology, 17*(1), 47-65.

Perry, B. D. (2008). Child maltreatment: A neurodevelopmental perspective on the role of trauma and neglect in psychpathology.

Perry, B. D., Griffin, G., Davis, G., Perry, J. A., & Perry, R. D. (2018). The Impact of Neglect, Trauma, and Maltreatment on Neurodevelopment. In A. R. Beech, A. J. Carter, R. E. Mann, & P. Rotshtein (Eds.), *The Wiley Blackwell Handbook of Forensic Neuroscience* (pp. 813-835). John Wiley & Sons, Ltd. https://doi.org/10.1002/9781118650868.ch31

Pol, T. M., Hoeve, M., Noom, M. J., Stams, G. J. J. M., Doreleijers, T. A. H., Domburgh, L., & Vermeiren, R. R. J. M. (2017, 05//). Research Review: The effectiveness of multidimensional family therapy in treating adolescents with multiple behavior problems - a meta-analysis [Article]. *Journal of Child Psychology & Psychiatry, 58*(5), 532-545. https://doi.org/10.1111/jcpp.12685

Pollak, S. D., Cicchetti, D., Hornung, K., & Reed, A. (2000). Recognizing emotion in faces: developmental effects of child abuse and neglect. *Developmental psychology, 36*(5), 679.

Raine, A. (2002). Biosocial Studies of Antisocial and Violent Behavior in Children and Adults: A Review. *Journal of abnormal child psychology, 30*(4), 311-326. https://doi.org/10.1023/A:1015754122318

Reid, J. B., Patterson, G. R., & Snyder, J. J. (2002). *Antisocial behavior in children and adolescents: a developmental analysis and model for intervention* (1st ed.). American Psychological Association. https://doi.org/10.1037/10468-000

Reiss Jr, A. J., & Farrington, D. P. (1991). Advancing knowledge about co-offending: Results from a prospective longitudinal survey of London males. *J. Crim. L. & Criminology, 82*, 360.

Rowe, C. P. D., Rigter, H. P. D., Henderson, C. P. D., Gantner, A. M. S., Mos, K. M. S., Nielsen, P. M. A. S., & Phan, O. M. D. P. D. (2013). Implementation fidelity of Multidimensional Family Therapy in an international trial. *Journal of substance abuse treatment, 44*(4), 391-399. https://doi.org/10.1016/j.jsat.2012.08.225

Ryan, J. P., Williams, A. B., & Courtney, M. E. (2013). Adolescent Neglect, Juvenile Delinquency and the Risk of Recidivism. *Journal of youth and adolescence, 42*(3), 454-465. https://doi.org/10.1007/s10964-013-9906-8

Sampson, R. J. (2001). Delinquency, Sociology of. In N. J. Smelser & P. B. Baltes (Eds.), *International Encyclopedia of the Social & Behavioral Sciences* (pp. 3380-3384). Pergamon. https://doi.org/https://doi.org/10.1016/B0-08-043076-7/01859-3

Sawyer, A. M., & Borduin, C. M. (2011). Effects of multisystemic therapy through midlife: A 219-year follow-up to a randomized clinical trial with serious and violent juvenile offenders. *Journal of Consulting and Clinical Psychology, 79*(5), 643-652. https://doi.org/10.1037/a0024862

Scaramella, L. V., & Leve, L. D. (2004). Clarifying parent–child reciprocities during early childhood: The early childhood coercion model. *Clinical Child and Family Psychology Review, 7*(2), 89-107.

Schaeffer, C. M., & Borduin, C. M. (2005). Long-Term Follow-Up to a Randomized Clinical Trial of Multisystemic Therapy With Serious and Violent Juvenile Offenders. *Journal of Consulting and Clinical Psychology, 73*(3), 445-453. https://doi.org/10.1037/0022-006X.73.3.445

Schoenwald, S. K., Chapman, J. E., Sheidow, A. J., & Carter, R. E. (2009). Long-term youth criminal outcomes in MST transport: the impact of therapist adherence and organizational climate and structure. *Journal of clinical child and adolescent psychology : the official journal for the Society of Clinical Child and Adolescent Psychology, American Psychological Association, Division 53, 38*(1), 91-105. https://doi.org/10.1080/15374410802575388

Sebastian, C. L., McCrory, E. J., Cecil, C. A., Lockwood, P. L., De Brito, S. A., Fontaine, N. M., & Viding, E. (2012). Neural responses to affective and cognitive theory of mind in children with conduct problems and varying levels of callous-unemotional traits. *Archives of general psychiatry, 69*(8), 814-822.

Sexton, T., & Turner, C. W. (2010). The effectiveness of functional family therapy for youth with behavioral problems in a community practice setting. *Journal of Family Psychology, 24*(3), 339-348. https://doi.org/10.1037/a0019406

Sexton, T. L. (2019). Functional family therapy: An evidence-based, family-focused, and systemic approach for working with adolescents and their families. In E. N. Jouriles, M. A. Whisman, B. H. Fiese, K. Deater-Deckard, & M. Celano (Eds.), *APA handbook of contemporary family psychology: Family therapy and training* (Vol. 3, pp. 171-188). American Psychological Association. https://doi.org/10.1037/0000101-011

Shamseer, L., Moher, D., Clarke, M., Ghersi, D., Liberati, A., Petticrew, M., Shekelle, P., & Stewart, L. A. (2015). Preferred reporting items for systematic review and meta-analysis protocols (PRISMA-P) 2015: elaboration and explanation. *BMJ : British Medical Journal, 349*, g7647. https://doi.org/10.1136/bmj.g7647

Sharp, C. (2008). Theory of mind and conduct problems in children: Deficits in reading the "emotions of the eyes". *Cognition and emotion, 22*(6), 1149-1158.

Smith, C. A., & Stern, S. B. (1997). Delinquency and antisocial behavior: A review of family processes and intervention research. *Social service review, 71*(3), 382-420.

Snyder, J., Cramer, A., Afrank, J., & Patterson, G. R. (2005). The contributions of ineffective discipline and parental hostile attributions of child misbehavior to the development of conduct problems at home and school. *Developmental psychology, 41*(1), 30.

Snyder, J., & Stoolmiller, M. (2002). Reinforcement and coercion mechanisms in the development of antisocial behavior: The family. In *Antisocial behavior in children and adolescents: A developmental analysis and model for intervention.* (pp. 65-100). American Psychological Association. https://doi.org/10.1037/10468-004

Sroufe, L. A. (2005). Attachment and development: A prospective, longitudinal study from birth to adulthood. *Attachment & human development, 7*(4), 349-367. https://doi.org/10.1080/14616730500365928

Sundell, K., Hansson, K., Löfholm, C. A., Olsson, T., Gustle, L.-H., & Kadesjö, C. (2008). The transportability of multisystemic therapy to Sweden: Short-term results from a randomized trial of conduct-disordered youths. *Journal of Family Psychology, 22*(4), 550-560. https://doi.org/10.1037/a0012790

Szpak, M., & Białecka-Pikul, M. (2020). Links between attachment and theory of mind in childhood: Meta-analytic review. *Social development (Oxford, England), 29*(3), 653-673. https://doi.org/10.1111/sode.12432

Tan, J. X., & Fajardo, M. L. R. (2017). Efficacy of multisystemic therapy in youths aged 10–17 with severe antisocial behaviour and emotional disorders: systematic review. *London journal of primary care*, *9*(6), 95-103.

Thompson, R. A. (2008). Early attachment and later development: Familiar questions, new answers.

Timmons-Mitchell, J., Bender, M. B., Kishna, M. A., & Mitchell, C. C. (2006). An Independent Effectiveness Trial of Multisystemic Therapy With Juvenile Justice Youth. *Journal of clinical child and adolescent psychology*, *35*(2), 227-236. https://doi.org/10.1207/s15374424jccp3502_6

Tricco, A. C., Lillie, E., Zarin, W., O'Brien, K. K., Colquhoun, H., Levac, D., Moher, D., Peters, M. D. J., Horsley, T., Weeks, L., Hempel, S., Akl, E. A., Chang, C., McGowan, J., Stewart, L., Hartling, L., Aldcroft, A., Wilson, M. G., Garritty, C., Lewin, S., Godfrey, C. M., Macdonald, M. T., Langlois, E. V., Soares-Weiser, K., Moriarty, J., Clifford, T., Tunçalp, Ö., & Straus, S. E. (2018). PRISMA Extension for Scoping Reviews (PRISMA-ScR): Checklist and Explanation. *Annals of internal medicine*, *169*(7), 467.

Vando, J., Rhule-Louie, D. M., McMahon, R. J., & Spieker, S. J. (2007). Examining the Link Between Infant Attachment and Child Conduct Problems in Grade 1. *Journal of Child and Family Studies*, *17*(5), 615-628. https://doi.org/10.1007/s10826-007-9173-y

Waddell, C., Schwartz, C., Andres, C., Barican, J. L., & Yung, D. (2018). Fifty years of preventing and treating childhood behaviour disorders: a systematic review to inform policy and practice. *Evidence-based mental health*, *21*(2), 45-52. https://doi.org/10.1136/eb-2017-102862

Waller, R., Gardner, F., Hyde, L. W., Shaw, D. S., Dishion, T. J., & Wilson, M. N. (2012). Do harsh and positive parenting predict parent reports of deceitful-callous behavior in early childhood? *Journal of child psychology and psychiatry*, *53*(9), 946-953.

Weinfield, N. S., Sroufe, L. A., Egeland, B., & Carlson, E. (2008). Individual differences in infant-caregiver attachment: Conceptual and empirical aspects of security.

Weisman, C. B., & Montgomery, P. (2019). Functional Family Therapy (FFT) for Behavior Disordered Youth Aged 10–18: An Overview of Reviews. *Research on Social Work Practice*, *29*(3), 333-346. https://doi.org/10.1177/1049731518792309

Weiss, B., Han, S., Harris, V., Catron, T., Ngo, V. K., Caron, A., Gallop, R., & Guth, C. (2013). An independent randomized clinical trial of multisystemic therapy with non-court-referred adolescents with serious conduct problems. *Journal of Consulting and Clinical Psychology*, *81*(6), 1027-1039. https://doi.org/10.1037/a0033928

Weisz, J. R., Chorpita, B. F., Palinkas, L. A., Schoenwald, S. K., Miranda, J., Bearman, S. K., Daleiden, E. L., Ugueto, A. M., Ho, A., Martin, J., Gray, J., Alleyne, A., Langer, D. A., Southam-Gerow, M. A., Gibbons, R. D., & Research Network on Youth Mental, H. (2012). Testing standard and modular designs for psychotherapy treating

depression, anxiety, and conduct problems in youth: a randomized effectiveness trial. *Archives of general psychiatry*, *69*(3), 274. https://go.exlibris.link/H43RDCS4

Wellman, H. M., & Upso. (2014). *Making minds: how theory of mind develops*. Oxford University Press. https://go.exlibris.link/Nn2tfzSr

Westermark, P. K., Hansson, K., & Olsson, M. (2011). Multidimensional treatment foster care (MTFC): Results from an independent replication. *Journal of Family Therapy*, *33*(1), 20-41. https://doi.org/10.1111/j.1467-6427.2010.00515.x

Woolfenden, S., Williams, K. J., Peat, J., & Woolfenden, S. (2001). Family and parenting interventions in children and adolescents with conduct disorder and delinquency aged 10-17. *Cochrane library*, *2010*(1), CD003015-CD003015. https://doi.org/10.1002/14651858.CD003015

Appendix A: Scoping Review Protocol

Protocol for a scoping review of parenting and family-based interventions for severe and persistent conduct problems in children and adolescents aged 10-17

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Registration

The present scoping review protocol is to be registered within the Open Science Framework database

Reporting guidelines

The planning and documentation of this scoping review protocol are guided by the Preferred Reporting Items for Systematic Reviews and Meta-Analyses Protocol (PRISMA-P; Shamseer et al. (2015) and the Preferred Reporting Items for Systematic Reviews and Meta-Analyses Extension for Scoping Reviews PRISMA- ScR (Tricco et al., 2018). The proposed scoping review will be reported following the PRISMA-SCR and the updated PRISMA 2020 statement guidelines (Page et al., 2021).

Scoping review methodology

This scoping review protocol uses the Arksey and O'Malley (2005) methodological framework for scoping studies, with revisions from (Levac et al., 2010). The framework describes six stages of research: (1) identifying the research questions; (2) identifying relevant studies; (3) study selection; (4) charting the data; (5) collating, summarising, and reporting the results; and (6) consultation.

Stage 1: Identifying the research questions

Scoping review goals

The proposed scoping review goals are to (i) scope and identify all available high quality research studies that have evaluated the effectiveness of parenting and family-based interventions in reducing severe and persistent conduct problems among children aged 10-17

years and (ii) to determine the feasibility of a network meta-analysis of common elements embedded in these interventions.

Research questions

Research questions were formulated using the PICO/PICOTS technique (i.e., population, interventions, comparisons, outcomes, timing, setting, study design), as outlined in Table 1. The scoping review will address the following research questions:

1. What parenting and family-based interventions are effective in reducing severe and persistent conduct problems and/or related outcomes (e.g. offending) among 10-17-year olds?
2. Which studies identify common elements or core components?
3. What is the feasibility of carrying out a network meta-analysis of high-quality intervention trials to identify the effectiveness of individual common elements in decreasing conduct problems and/or related outcomes?

Definitions

To establish a clear scope of our review, we developed some key terms and definitions relevant to our scoping review. These are defined as below:

Severe and persistent conduct problems. For this review, we proposed the term 'severe and persistent conduct problems', used interchangeably with 'severe and persistent misconduct', to emphasise the extent of problem behaviour and to accommodate the complexity and diversity in defining children and adolescents' conduct, delinquent or antisocial manifestations of behaviour across disciplines. We identify children and adolescents as having severe and persistent conduct problems if they have (i) a diagnosis of conduct disorder through the ICD/DSM; and/or (ii) a history of recurrent offending and contact with

the juvenile justice system; or (iii) clinically indicated scores on standardised measures of conduct problems, or structured or semi-structured psychiatric interviews, but did not receive a formal diagnosis of conduct disorder.

Parenting and family-based interventions. In the context of misconduct, we define parenting and family-based interventions as interventions or programmes that aim to reduce severe and persistent conduct problems in children and adolescents through addressing parenting and/or family system factors, such as parent-child or family-child relationships, patterns of interactions, behavioural management, and monitoring.

Common elements. Common elements, also known as practice elements, are defined as distinct, operationalizable clinical techniques and procedures that exist within a larger intervention protocol (Chorpita et al., 2005). Components of similar evidence-based interventions are identified; whereby such techniques are 'distilled' into fewer, overlapping elements. For example, intervention practices that target similar areas of child functioning via the same mechanisms are grouped to form one single practice element (i.e., praise, emotion regulation or problem-solving) (Chorpita & Daleiden, 2009).

Stage 2: Identifying relevant studies

The second stage of a scoping review involves a decision plan on the search strategy and the inclusion and exclusion criteria for studies. Our search will be an iterative process, as we strive to achieve a balance between breadth, comprehensiveness, and feasibility without compromising our ability to answer the research questions (Levac et al., 2010).

Search methods

The literature search will be conducted on the following electronic databases: ERIC, CINCH, PsycINFO and MEDLINE. These databases were chosen to ensure a comprehensive sample of

literature from health, science, criminology and education are included. The grey literature search will include searches for reference lists of all relevant studies found through the database searches will be assessed to determine eligibility and possible inclusion in the scoping review. All citations identified throughout the search will be imported into the online systematic review application Covidence (REF) for appropriate screening.
A sample search strategy for the PsycINFO database is detailed in Appendix A.

Inclusion and exclusion criteria

Studies will be included if they meet the PICOTS table criteria defined in Stage 1. There will be no restrictions placed on publication year as we aim to conduct a comprehensive search of the literature. References of the original Cochrane review (Woolfenden et al., 2001) will be cross-checked. There will be no limits on the language and country of publication. The first stage of the current search will only include controlled trials.

Studies that exclusively evaluated interventions or programmes designed for youths with sexual and substance use offences, who without a corresponding diagnosis or indication of other conduct problems will be excluded as they are often specialised treatment approaches. Also excluded were studies evaluating the effectiveness of interventions specifically designed to address Oppositional Defiant Disorder (ODD) as ODD does not meet the threshold of more severe conduct issues.

Outcome Measures

Primary Outcome Measures. To be included in the current review, studies must include a primary outcome measure that was measured before and after treatment or intervention occurred. Primary outcomes were based on individual behavioural characteristics, determined

via a behavioural measurement, through psychometrics, interviews with youth or others (e.g., teachers, parents), direct observations, or were determined through the legal system (i.e., re-offending, re-imprisonment, and other sentencing such as probation, community service, court-ordered diversions to behavioural or substance use treatment).

Secondary Outcome Measures. If studies only included secondary outcome measures, without the presence of the primary outcome, they will be excluded. Secondary outcome measures include factors such as, but not limited to, family functioning (i.e., parent-child relations, sibling delinquency or sibling relations), parenting (i.e., parental mental health, parenting skills) and/or long-term outcomes for the child (i.e., academic performance, school attendance, future employment, or peer relations).

Stage 3: Study selection

Screening round 1: Titles and abstracts

The first part of study selection consists of a title and abstract scan using Covidence software. Two reviewers (VL, SW) will independently screen the titles and abstracts of the studies retrieved from the search by applying the inclusion/exclusion criteria. The aim is to eliminate studies that are irrelevant to our scoping review objectives and research questions. If the eligibility of a study is unclear at this stage, the full text will be retrieved to determine its selection. The two reviewers will meet before and after the screening process to discuss any obstacles and uncertainties related to study selection and refine the search strategy as needed. If there are disagreements on study selection between the two reviewers, a third reviewer (M-TS) will be consulted to determine the inclusion/exclusion of studies. All instances of disagreements and outcomes will be recorded.

Screening round 2: Full-text assessment

Two reviewers (VL, SW) will independently assess the full text of the studies to determine eligibility for final full inclusion. Disagreements will be resolved by a third reviewer (M-TS) as required. Reasons for exclusion at this stage will be documented. Following the PRISMA guidelines, a flowchart will be developed to demonstrate the study selection process and decisions at each stage of the review.

Stage 4: Charting the data

The data charting form was collaboratively developed by our research team following Arksey and O'Malley (2005) framework and the Cochrane data extraction form template (Higgins & Cochrane, 2019). Two reviewers (VL, SW) will independently extract data for the first five to ten included studies and meet to compare and evaluate the consistency of data charting and extraction process. This is to ensure the approach to data extraction is in line with our research questions and objectives. The data extraction form is detailed in appendix B.

Stage 5: Collating, summarising, and reporting the results

As per Arksey and O'Malley's (2005) framework, the analysis of results will include (i) a numerical summary of included studies; and (ii) a qualitative thematic analysis. The numerical analysis will describe basic characteristics of included studies, for example; study design, intervention type, study populations and geographical location. Data will be extracted from the charting form and will be collated to produce descriptive tables outlining these key features. In terms of thematic analysis, (Braun & Clarke, 2006) method for coding data will be followed, allowing for a wide range of data and analytical options. There must be a consistent approach to reporting relevant findings, enabling comparisons across intervention types and gaps in the literature to be identified (Arksey & O'Malley, 2005). Two reviewers (VL, SW) will be

responsible for this stage of the scoping review, however meetings with the entire review team will occur to discuss and agree on thematic analysis.

Strengths of the study and gaps in the existing research will be outlined following thematic analysis. Identifying gaps in the literature will assess the need for a future systematic review or meta-analysis. Finally, the implications of current findings within the broader context will be considered and included.

Stage 6: Consultation

The final stage of our scoping review involves consultation with key stakeholders who have a defined interest, knowledge, and experience in this field of research. The goal is to refine our research focus and to gain additional insights into our review findings. Our scoping review consulted implementation science experts, notably academics who are experienced with evidence-based practices and core elements of treatments that target complex child and/or adolescent behaviour. Their knowledge has provided expertise and valuable perspectives on the common elements within family-based and parenting interventions and the taxonomy of interventions. They will continue to provide further insight into our findings as the review progresses.

Table 1: PICO/PICOTS technique for devising the review research questions

Criteria	**Determinants**
Population	Children and/or adolescents between 10 and 17 who exhibit a "severe and persistent" level of conduct problems, for example: - DSM or ICD diagnosis of conduct disorder - Clinically indicated scores on standardised measures of conduct problems, or structured or semi-structured psychiatric interviews - Youth offending history >60% of study participants must be in the 10-17 age range.
Intervention	Programs, treatments, or interventions that target parenting and/or family system factors, those being: individualised interventions or group-based interventions.
Comparison	Treatment as usual (i.e., treatment the individual would have received in the absence of parenting and/or family-based intervention), another intervention type (i.e., individual CBT, restorative justice), no intervention, or a wait-list control (i.e., those waiting to be included in an intervention).
Outcome	Primary outcomes will be based on either: - A behavioural measurement, through psychometrics, interviews with youth or others (e.g. teachers, parents) or direct observations; - The legal system (i.e. re-offending, re-imprisonment and other sentencing such as probation, community service, court-ordered diversions to behavioural or substance use treatment) Outcomes will be considered if they were obtained from administrative records (such as criminal court and juvenile justice records); validated and non-validated psychometric behavioural measures; interviews; survey questionnaires; and direct observation.
Timing	Outcome measures must be measured pre and post-intervention.
Settings	Programs, treatments, or interventions that are delivered in the community or clinical setting. Countries where parenting and/ or family-based interventions are administered.
Study design	Randomised controlled trials (RCTs), including individual RCTs, cluster RCTs, Step-Wedge designs with random time allocation

Appendix B: Search Strategy

PSYCINFO

	SUBJECT HEADINGS	Results (hits)	Date searched
1.	SU (conduct and (problem or disorder)) OR SU juvenile delinquen* OR SU ((antisocial or crim*) and (behavio*)) OR SU violence OR SU gangs OR SU externali* symptoms OR SU ((youth or juvenile) and justice) OR SU recidivism Narrow by SubjectAge: - school age (6-12 yrs) Narrow by SubjectAge: - adolescence (13-17 yrs)	40,264	23/11/21
2.	SU randomi* and (control* or clinical) trial*	16,062	23/11/21
3.	SU ((family or parent*) and (treatment or therap* or intervention or program* or manage*)) OR SU ((multisystemic therapy) or mst or (multi-systemic therapy) or (multi systemic therapy)) OR SU (functional family therapy or fft) OR SU ((multidimensional treatment foster care) or mtfc or (multi-dimensional treatment foster care)) OR SU (treatment foster care oregon or tfco) OR SU wraparound	88, 484	23/11/21
4.	S1 and S2 and S3	27	23/11/21
5.	SU ((family or parent*) and (train* or psychotherap* or treat* or therap* or interven* or program* or manag*)) OR SU (multisystemic therapy or multi-systemic therapy or mst or multi systemic therapy) OR SU (family therapy or strategic family therapy or network family therapy or structural family therapy)	95,554	25/11/21
6.	1 AND 2 AND 5	27	25/11/2021
7.	1 AND 2	108	25/11/2021

	SUBJECT HEADINGS	Results (hits)	Date searched
8.	SU (conduct and (problem or disorder)) OR SU juvenile delinquen* OR SU ((antisocial or crim*) and (behavio*)) OR SU violence OR SU gangs OR SU externali* symptoms OR SU ((youth or juvenile) and justice) OR SU recidivism Narrow by SubjectAge: - school age (6-12 yrs) Narrow by SubjectAge: - adolescence (13-17 yrs)	40,331	03/12/21
9.	SU ((family or parent*) and (train* or psychotherap* or treat* or therap* or interven* or program* or manag*)) OR SU (multisystemic therapy or multi-systemic therapy or mst or multi systemic therapy) OR SU (family therapy or strategic family therapy or network family therapy or structural family therapy)	95,554	3/12/21
10.	8 OR 9	133,920	3/12/21
11.	SU RCT or randomi* or "control* trial*" or "control* clinical" or "clinical trial*" or "random* assign*" or "random* allocat*" or "wait* list*" or wait*-list* or "control* group*" or "control* condition*" or quasi-ex* or "quasi ex*" or (control* n2 intervention) or (control* n2 treat*) or "control* stud*" or "control* variable" or "comparison group" or "comparative stud*" or "before and after stud*" or "pretest post" or "pre test post"	78,009	3/12/21
12.	9 OR 11	171,764	3/12/21
13.	8 AND 9 AND 11	57	3/12/21

	TITLE	Results (hits)	Date searched
1.	TI (conduct n2(disorder* or problem*)) OR TI juvenile delinquen* OR TI (antisocial or n2(behavio* or problem* or issue* or difficult*)) OR TI violence OR TI criminal behavio* OR TI misconduct OR TI criminal offen* OR TI (externali*ing and (problem* or behavi*)) OR TI (law* n2(break* or breach* or violat* or contraven* or infring* or transgress*)) OR TI ((youth or juvenile) and justice) OR TI ((offen* or reoffen* or re offen* or recidivism) and (juvenile or young or youth or adolescen* or teen*)	50,870	23/11/21
2.	TI (adolescen* or child* or youth* or "pre adolesc*" or teen* or juvenile* or minor*)	530,284	23/11/21
3.	1 OR 2	530,293	23/11/21
4.	TI (RCT or randomi* or "control* trial*" or "control* clinical" or "clinical trial*" or "random* assign*" or "random* allocat*" or "wait* list*" or wait*-list* or "control* group*”)	788	23/11/21
5.	TI ((family or parent*) and (treatment or therap* or intervention or program* or manage*)) OR TI ((multisystemic therapy) or mst or (multi-systemic therapy) or (multi systemic therapy)) OR TI (functional family therapy or fft) OR TI ((multidimensional treatment foster care) or mtfc or (multi-dimensional treatment foster care)) OR TI (treatment foster care oregon or tfco) OR TI wraparound	30, 140	23/11/21
6.	TI (conduct n2(disorder* or problem*)) OR TI juvenile delinquen* OR TI (antisocial or n2(behavio* or problem* or issue* or difficult*)) OR TI violence OR TI criminal behavio* OR TI misconduct OR TI criminal offen* OR TI (externali*ing and (problem* or behavi*)) OR TI (law* n2(break* or breach* or violat* or contraven* or infring* or transgress*)) OR TI ((youth or juvenile) and justice) OR TI ((offen* or reoffen* or re offen* or recidivism) and (juvenile or young or youth or adolescen* or teen*)	55,786	25/11/21

	TITLE	Results (hits)	Date searched
7.	TI ((family or parent*) and (train* or treat* or therap* or interven* or program* or manage* or psychotherapy*)) OR TI(multisystemic therapy or mst or multi-systemic therapy or multi systemic therapy) OR TI (functional family therapy or fft) OR TI(multidimensional treatment foster care or mtfc or multi-dimensional treatment foster care) OR TI (treatment foster care oregon or tfco) OR TI (wraparound or wrap around) OR TI (“strategic family therapy” or “structural family therapy” or “network family therapy” or “systemic family therapy”)	33,601	25/11/2021
8.	TI (RCT or randomi* or "control* trial*" or "control* clinical" or "clinical trial*" or "random* assign*" or "random* allocat*" or "wait* list*" or wait*-list* or "control* group*”)	37,493	25/11/2021
9.	2 AND 6 AND 7 AND 8	41	25/11/2021
10.	TI (RCT or randomi* or "control* trial*" or "control* clinical" or "clinical trial*" or "random* assign*" or "random* allocat*" or "wait* list*" or wait*-list* or "control* group*" or "control* condition*" or quasi-ex* or "quasi ex*" or (control* n2 intervention) or (control* n2 treat*) or "control* stud*" or "control* variable" or "comparison group" or "comparative stud*" or "before and after stud*" or "pretest post" or "pre test post")	54,624	03/12/2021
11.	TI (adolescen* or child* or youth* or "pre adolesc*" or teen* or juvenile* or minor*)	530,744	3/12/21
12.	TI (conduct n2(disorder* or problem*)) OR TI juvenile delinquen* OR TI (antisocial or n2(behavio* or problem* or issue* or difficult*)) OR TI violence OR TI criminal behavio* OR TI misconduct OR TI criminal offen* OR TI (externali*ing and (problem* or behavi*)) OR TI (law* n2(break* or breach* or violat* or contraven* or infring* or transgress*)) OR TI (	55,804	3/12/21

	TITLE	Results (hits)	Date searched
	(youth or juvenile) and justice) OR TI ((offen* or reoffen* or re offen* or recidivism) and (juvenile or young or youth or adolescen* or teen*)		
13.	11 OR 12	567,584	3/12/21
14.	TI ((family or parent*) and (train* or treat* or therap* or interven* or program* or manage* or psychotherapy*)) OR TI(multisystemic therapy or mst or multi-systemic therapy or multi systemic therapy) OR TI (functional family therapy or fft) OR TI(multidimensional treatment foster care or mtfc or multi-dimensional treatment foster care) OR TI (treatment foster care oregon or tfco) OR TI (wraparound or wrap around) OR TI (“strategic family therapy” or “structural family therapy” or “network family therapy” or “systemic family therapy”)	33,601	3/12/21
15.	10 AND 11 AND 12 AND 14	42	3/12/21

	ABSTRACT	**Results (hits)**	**Date searched**
1.	(AB (conduct near2 (disorder* or problem*)) OR AB juvenile delinquen* OR AB (antisocial or near2 (behavio* or problem* or issue* or difficult*)) OR AB violence OR AB criminal behavio* OR AB misconduct OR AB criminal offen* OR AB (externali*ing and (problem* or behavi*)) OR AB (law* adj2 (break* or breach* or violat* or contraven* or infring* or transgress*)) OR AB ((youth or juvenile) and justice) OR AB ((offen* or reoffen* or re offen* or recidivism) and (juvenile or young or youth or adolescen* or teen*)	131,071	23/11/21
2.	AB (adolescen* or child* or youth* or "pre adolesc*" or teen* or juvenile* or minor*)	932,942	23/11/21
3.	1 OR 2	932,946	23/11/21
4.	AB (RCT or randomi* or "control* trial*" or "control* clinical" or "clinical trial*" or "random* assign*" or "random* allocat*" or "wait* list*" or wait*-list* or "control* group*")	4430	23/11/21
5.	AB ((family or parent*) and (treatment or therap* or intervention or program* or manage*)) OR AB ((multisystemic therapy) or mst or (multi-systemic therapy) or (multi systemic therapy)) OR AB (functional family therapy or fft) OR AB ((multidimensional treatment foster care) or mtfc or (multi-dimensional treatment foster care)) OR AB (treatment foster care oregon or tfco) OR AB wraparound	229, 586	23/11/21
6.	AB(conduct n2(disorder* or problem*)) OR AB juvenile delinquen* OR AB(antisocial or n2(behavio* or problem* or issue* or difficult*)) OR AB violence OR AB criminal behavio* OR AB misconduct OR AB criminal offen* OR AB (externali*ing and (problem* or behavi*)) OR AB (law* n2(break* or breach* or violat* or contraven* or infring* or transgress*)) OR AB((youth or juvenile) and justice) OR AB((offen* or reoffen* or re offen* or recidivism) and (juvenile or young or youth or adolescen* or teen*)	132,353	25/11/21

	ABSTRACT	**Results (hits)**	**Date searched**
7.	AB((family or parent*) and (train* or treat* or therap* or interven* or program* or manage* or psychotherapy*)) OR AB(multisystemic therapy or mst or multi-systemic therapy or multi systemic therapy) OR AB(functional family therapy or fft) OR AB(multidimensional treatment foster care or mtfc or multi-dimensional treatment foster care) OR AB(treatment foster care oregon or tfco) OR AB(wraparound or wrap around) OR AB("strategic family therapy" or "structural family therapy" or "network family therapy" or "systemic family therapy")	249,760	25/11/21
8.	AB(adolescen* or child* or youth* or "pre adolesc*" or teen* or juvenile* or minor*)	933,266	25/11/21
9.	AB(RCT or randomi* or "control* trial*" or "control* clinical" or "clinical trial*" or "random* assign*" or "random* allocat*" or "wait* list*" or wait*-list* or "control* group*")	222,757	25/11/21
10.	6 AND 7 AND 8 AND 9	1420	25/11/21
14.	6 OR 8	997, 134	25/11/21
15.	AB(conduct n2(disorder* or problem*)) OR AB juvenile delinquen* OR AB(antisocial or n2(behavio* or problem* or issue* or difficult*)) OR AB violence OR AB criminal behavio* OR AB misconduct OR AB criminal offen* OR AB (externali*ing and (problem* or behavi*)) OR AB (law* n2(break* or breach* or violat* or contraven* or infring* or transgress*)) OR AB((youth or juvenile) and justice) OR AB((offen* or reoffen* or re offen* or recidivism) and (juvenile or young or youth or adolescen* or teen*)	132,353	3/12/21
16.	AB((family or parent*) and (train* or treat* or therap* or interven* or program* or manage* or psychotherapy*)) OR AB(multisystemic therapy or mst or multi-systemic therapy or multi systemic therapy) OR AB(functional family therapy or fft) OR AB(multidimensional treatment foster care or mtfc or multi-dimensional treatment foster care) OR AB(treatment foster care	249,760	3/12/21

	ABSTRACT	Results (hits)	Date searched
	oregon or tfco) OR AB(wraparound or wrap around) OR AB(“strategic family therapy” or “structural family therapy” or “network family therapy” or “systemic family therapy”)		
17.	AB(adolescen* or child* or youth* or "pre adolesc*" or teen* or juvenile* or minor*)	933,266	3/12/21
18.	AB (RCT or randomi* or "control* trial*" or "control* clinical" or "clinical trial*" or "random* assign*" or "random* allocat*" or "wait* list*" or wait*-list* or "control* group*" or "control* condition*" or quasi-ex* or "quasi ex*" or (control* n2 intervention) or (control* n2 treat*) or "control* stud*" or "control* variable" or "comparison group" or "comparative stud*" or "before and after stud*" or "pretest post" or "pre test post")	281,720	3/12/21
19.	17 OR 18	1,158,694	3/12/21
20.	15 AND 16 AND 17 AND 18	1692	3/12/21

Summary for 25/11/2021: **1488** (SU+ TI +AB)

Summary for 03/12/2021: 1692+ 42+57 = **1791** – after refining/adding the clinical trial terms

MEDLINE- OVID

	SUBJECT HEADINGS	Results (hits)	Date searched
1.	((conduct and (problem or disorder)) or juvenile delinquen* or ((antisocial or crim*) and behavio*) or violence or gangs or externali* symptoms or ((youth or juvenile) and justice) or recidivism).sw.	41,373	03/12/2021
2.	(RCT or randomi* or "control* trial*" or "control* clinical" or "clinical trial*" or "random* assign*" or "random* allocat*" or "wait* list*" or wait*-list* or "control* group*" or "control* condition*" or quasi-ex* or "quasi ex*" or (control* adj2 intervention) or (control* adj2 treat*) or "control* stud*" or "control* variable" or "comparison group" or "comparative stud*" or "before and after stud*" or "pretest post" or "pre test post").sw.	2,956,019	03/12/2021
3.	((family or parent*) and (train* or psychotherap* or treat* or therap* or interven* or program* or manag*)) or (multisystemic therapy or multi-systemic therapy or mst or multi systemic therapy) or (family therapy or strategic family therapy or network family therapy or structural family therapy)).sw.	22,021	03/12/2021
4.	(adolescen* or child* or youth* or "pre adolesc*" or teen* or juvenile* or minor*).sw.	3,255,472	03/12/2021
5.	1 AND 2 AND 3 AND 4	108	03/12/2021

	TITLE	Results (hits)	Date searched
1.	("conduct adj2 (disorder* or problem*)" or "juvenile delinquen*" or "antisocial adj2(behavio* or problem* or issue* or difficult*)" or "violence" or "criminal behavio*" or "misconduct" or "criminal offen*OR externali*ing and (problem* or behavi*)" or "(law* adj2 (break* or breach* or violat* or contraven* or infring* or transgress*)OR (youth or juvenile) and justice" or "(offen* or reoffen* or re offen* or recidivism) and (juvenile or young or youth or adolescen* or teen*)").m_titl.	30650	03/12/2021
2.	(adolescen* or child* or youth* or "pre adolesc*" or teen* or juvenile* or minor*).m_titl.	1027637	03/12/2021
3.	(RCT or randomi* or "control* trial*" or "control* clinical" or "clinical trial*" or "random* assign*" or "random* allocat*" or "wait* list*" or wait*-list* or "control* group*" or "control* condition*" or quasi-ex* or "quasi ex*" or (control* adj2 intervention) or (control* adj2 treat*) or "control* stud*" or "control* variable" or "comparison group" or "comparative stud*" or "before and after stud*" or "pretest post" or "pre test post").m_titl.	407271	03/12/2021
4.	(((family or parent*) and (train* or treat* or therap* or interven* or program* or manage* or psychotherapy*)) or (multisystemic therapy or mst or multi-systemic therapy or multi systemic therapy) or (functional family therapy or fft) or (multidimensional treatment foster care or mtfc or multi-dimensional treatment foster care) or (treatment foster care oregon or tfco) or (wraparound or wrap around) or strategic family therapy or structural family therapy or network family therapy).mp. or systemic family therapy.m_titl. [mp=title, abstract, original title, name of substance word, subject heading word, floating sub-heading word, keyword heading word, organism supplementary concept word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier, synonyms]	587816	03/12/2021
5.	1 AND 2 AND 3 AND 4	36	03/12/2021

	ABSTRACT	Results (hits)	Date searched
1.	("conduct adj2 (disorder* or problem*)" or "juvenile delinquen*" or "antisocial adj2(behavio* or problem* or issue* or difficult*)" or "violence" or "criminal behavio*" or "misconduct" or "criminal offen*OR externali*ing and (problem* or behavi*)" or "(law* adj2 (break* or breach* or violat* or contraven* or infring* or transgress*)OR (youth or juvenile) and justice" or "(offen* or reoffen* or re offen* or recidivism) and (juvenile or young or youth or adolescen* or teen*)").ab.	48789	03/12/2021
2.	(adolescen* or child* or youth* or "pre adolesc*" or teen* or juvenile* or minor*).ab	1672668	03/12/2021
3.	(RCT or randomi* or "control* trial*" or "control* clinical" or "clinical trial*" or "random* assign*" or "random* allocat*" or "wait* list*" or wait*-list* or "control* group*" or "control* condition*" or quasi-ex* or "quasi ex*" or (control* adj2 intervention) or (control* adj2 treat*) or "control* stud*" or "control* variable" or "comparison group" or "comparative stud*" or "before and after stud*" or "pretest post" or "pre test post").ab.	1686238	03/12/2021
6.	(((family or parent*) and (train* or treat* or therap* or interven* or program* or manage* or psychotherapy*)) or (multisystemic therapy or mst or multi-systemic therapy or multi systemic therapy) or (functional family therapy or fft) or (multidimensional treatment foster care or mtfc or multi-dimensional treatment foster care) or (treatment foster care oregon or tfco) or (wraparound or wrap around) or (strategic family therapy or structural family therapy or network family therapy or systemic family therapy)).ab.	421366	03/12/2021
7.	1 AND 2 AND 3 AND 4	375	03/12/2021

MEDLINE TOTAL: 108+36+375 = <u>519</u>

ERIC (Online: EBSCO)

	SUBJECT HEADINGS	Results (hits)	Date searched
1.	SU (conduct and (problem or disorder)) OR SU juvenile delinquen* OR SU ((antisocial or crim*) and (behavio*)) OR SU violence OR SU gangs OR SU externali* symptoms OR SU ((youth or juvenile) and justice) OR SU recidivism	23,009	3/12/21
2.	SU ((family or parent*) and (train* or psychotherap* or treat* or therap* or interven* or program* or manag*)) OR SU (multisystemic therapy or multi-systemic therapy or mst or multi systemic therapy) OR SU (family therapy or strategic family therapy or network family therapy or structural family therapy)	47,232	3/12/21
3.	1 OR 2	68,370	3/12/21
4.	RCT or randomi* or "control* trial*" or "control* clinical" or "clinical trial*" or "random* assign*" or "random* allocat*" or "wait* list*" or wait*-list* or "control* group*" or "control* condition*" or quasi-ex* or "quasi ex*" or (control* n2 intervention) or (control* n2 treat*) or "control* stud*" or "control* variable" or "comparison group" or "comparative stud*" or "before and after stud*" or "pretest post" or "pre test post"	14,596	3/12/21
5.	SU(adolescen* or child* or youth* or "pre adolesc*" or teen* or juvenile* or minor*)	316, 176	3/12/21
6.	1 AND 2 AND 4 AND 5	18	3/12/21

	TITLE	Results (hits)	Date searched
1.	TI (adolescen* or child* or youth* or "pre adolesc*" or teen* or juvenile* or minor*)	180,447	3/12/21
2.	TI (conduct n2(disorder* or problem*)) OR TI juvenile delinquen* OR TI (antisocial or n2(behavio* or problem* or issue* or difficult*)) OR TI violence OR TI criminal behavio* OR TI misconduct OR TI criminal offen* OR TI (externali*ing and (problem* or behavi*)) OR TI (law* n2(break* or breach* or violat* or contraven* or infring* or transgress*)) OR TI ((youth or juvenile) and justice) OR TI ((offen* or reoffen* or re offen* or recidivism) and (juvenile or young or youth or adolescen* or teen*)	7,988	3/12/21
3.	1 OR 2	184, 825	
4.	TI ((family or parent*) and (train* or treat* or therap* or interven* or program* or manage* or psychotherapy*)) OR TI(multisystemic therapy or mst or multi-systemic therapy or multi systemic therapy) OR TI (functional family therapy or fft) OR TI(multidimensional treatment foster care or mtfc or multi-dimensional treatment foster care) OR TI (treatment foster care oregon or tfco) OR TI (wraparound or wrap around) OR TI (“strategic family therapy” or “structural family therapy” or “network family therapy” or “systemic family therapy”)	8,636	3/12/21
5.	TI (RCT or randomi* or "control* trial*" or "control* clinical" or "clinical trial*" or "random* assign*" or "random* allocat*" or "wait* list*" or wait*-list* or "control* group*" or "control* condition*" or quasi-ex* or "quasi ex*" or (control* n2 intervention) or (control* n2 treat*) or "control* stud*" or "control* variable" or "comparison group" or "comparative stud*" or "before and after stud*" or "pretest post" or "pre test post")	6,176	3/12/21
6.	1 AND 2 AND 3 AND 4	12	3/12/21

	ABSTRACT	Results (hits)	Date searched
1.	AB(conduct n2(disorder* or problem*)) OR AB juvenile delinquen* OR AB(antisocial or n2(behavio* or problem* or issue* or difficult*)) OR AB violence OR AB criminal behavio* OR AB misconduct OR AB criminal offen* OR AB (externali*ing and (problem* or behavi*)) OR AB (law* n2(break* or breach* or violat* or contraven* or infring* or transgress*)) OR AB((youth or juvenile) and justice) OR AB((offen* or reoffen* or re offen* or recidivism) and (juvenile or young or youth or adolescen* or teen*)	22,427	3/12/21
2.	AB((family or parent*) and (train* or treat* or therap* or interven* or program* or manage* or psychotherapy*)) OR AB(multisystemic therapy or mst or multi-systemic therapy or multi systemic therapy) OR AB(functional family therapy or fft) OR AB(multidimensional treatment foster care or mtfc or multi-dimensional treatment foster care) OR AB(treatment foster care oregon or tfco) OR AB(wraparound or wrap around) OR AB("strategic family therapy" or "structural family therapy" or "network family therapy" or "systemic family therapy")	92,317	3/12/21
3.	1 OR 2	111,091	3/12/21
4.	AB(adolescen* or child* or youth* or "pre adolesc*" or teen* or juvenile* or minor*)	379,105	3/12/21
5.	AB (RCT or randomi* or "control* trial*" or "control* clinical" or "clinical trial*" or "random* assign*" or "random* allocat*" or "wait* list*" or wait*-list* or "control* group*" or "control* condition*" or quasi-ex* or "quasi ex*" or (control* n2 intervention) or (control* n2 treat*) or "control* stud*" or "control* variable" or "comparison group" or "comparative stud*" or "before and after stud*" or "pretest post" or "pre test post")	43,864	3/12/21
6.	1 AND 2 AND 3 AND 4	268	3/12/21

ERIC TOTAL= 18+12+268 =<u>298</u>

Appendix C: Characteristics of Excluded Studies

Study ID	Reason for exclusion	Notes
Adams (2003)	Unable to retrieve full text	Dissertation
*Alexander & Parsons (1973)	Wrong patient population	Soft delinquency
Alexander (1976)	Wrong outcomes	Soft delinquency
Anderson et al. (2021)	Wrong study design	Mixed methods
Astrom (2020)	Wrong study design	Systematic review
Bailey (1999)	Unable to retrieve full text	Dissertation
Bakker (2017)	Wrong study design	Systematic review
Baldwin (2012)	Wrong study design	Systematic review
Bannon (2007)	Wrong intervention	Quasi-experimental
Baruch (2011)	Wrong study design	No randomisation
Bjorknes (2012)	Wrong patient population	3 to 9-year-olds
Bourduin (2009)	Wrong patient population	Sexual offending
Brestan (1998)	Wrong study design	Systematic review
Brody (2012)	Wrong patient population	Preventative study
Brody (2008)	Wrong patient population	Preventative study
Brown (1999)	Wrong outcomes	School outcomes
Burke (2012)	Wrong intervention	Preventative study
Bustamante (2000)	Unable to retrieve full text	Dissertation
Byrnes (1999)	Wrong intervention	Group, Individual & Family Therapy
Caldwell (2014)	Wrong patient population	8 to 12-year-olds
Caldwell (2010)	Wrong patient population	8 to 12-year-olds
Carr (2014)	Wrong study design	Systematic review
Cervenka (1996)	Wrong study design	Description of FEI intervention
Curtis (2013)	Wrong study design	Corrections to benchmark study
Curtis (2009)	Wrong comparator	Benchmark study
Dadds (1987)	Wrong patient population	No age range
Darnell (2015)	Wrong study design	Quasi-experimental
DeVries (2017)	Wrong patient population	Preventative; at risk youth
Demeusy (2021)	Wrong patient population	Preventative intervention
Douds (1977)	Wrong study design	Description of intervention
Eeren (2018)	Wrong study design	Quasi-experimental
Eichelberger (2022)	Unable to retrieve full text	Dissertation
Fonagy (2013)	Wrong study design	Study protocol
Fraser (2004)	Wrong patient population	6 to 12-year-olds
Fujuwara (2015)	Wrong patient population	3-year-olds
Gilman (2019)	Wrong study design	Non-random referral process
Glisson (2012)	Wrong study outcomes	No conduct problem outcomes

Study ID	Reason for exclusion	Notes
Gordon (1988)	Wrong study	Quasi-experimental
Gordon (1995)	Wrong study design	Quasi-experimental
Green (2014)	Wrong patient population	Children in Care
Hansson (2012)	Wrong outcomes	Placement breakdown
He (2018)	Wrong patient population	4 to 12-year-olds
Hewitt-Ramirez (2018)	Language restrictions; Wrong patient population	8 to 12-year-olds, Spanish publication
Horigian (2015)	Wrong patient population	Substance Use
Jalling (2016)	Wrong patient population	Substance Use
Johnides (2017)	Wrong patient population	Caregivers, not youth
Joseph (2012)	Unable to retrieve full-text	Dissertation
Karam (2017)	Wrong study design	Quasi-experimental
Klein (1977)	Wrong patient population	Soft delinquency
Kliem (2014)	Wrong patient population	Not severe conduct problems
Lee (2013)	Wrong patient population	Youths with only Conduct Disorder excluded (must have comorbidities)
Leve (2007)	Wrong outcomes	Youth School Attendance
Liddle (2009)	Wrong patient population	Substance Use
McCarter (2016)	Wrong patient population	First time offenders
Milburn (2012)	Wrong patient population	Sexual & Substance Use
Minor (1990)	Wrong intervention	Not family or parenting intervention
Molleda (2017)	Wrong patient population	Not severe conduct problems
Morris (2014)	Wrong patient population	4 to 15-year-olds
Myers (2000)	Wrong study design	First time offenders > repeated offenders
Ogden (2008)	Wrong patient population	4 to 12-year-olds
Olsen (2020)	Wrong patient population	Unclear participant characteristics
Oruche (2018)	Wrong patient population	Insufficient participant information
Painter (2008)	Wrong study	Quasi-experimental
Pullmann (2006)	Wrong study design	Not RCT
Pol (2018)	Wrong patient population	Cannabis Use Disorder
*Raue & Spence (1985)	Wrong patient population	Not severe conduct problems (ODD)
Robbins (2002)	Wrong study design	Not RCT
Robbins (2019)	Wrong comparator	Testing effectiveness of BOOST intervention
Rovers (2019)	No comparator	No comparison group
Rowland (2008)	Unable to retrieve full text	Dissertation
Ruffolo (2005)	Wrong patient population	Unclear participant characteristics
Santisteban (2003)	Wrong patient population	Substance Use

Study ID	Reason for exclusion	Notes
Scavenius (2020)	Wrong patient population	3.5 to 13-year-olds
Sexton (2011)	Replication	Replication of Sexton et al 2010
Shaykhi (2018)	Wrong patient population	Antisocial behaviour not severe conduct problems
Sheidow (2020)	Wrong patient population	Substance Use
Stephanik (1997)	Unable to retrieve full text	Dissertation
Thorell (2009)	Wrong patient population	3 to 12-year-olds
Tighe (2012)	Wrong study design	Qualitative Study
Valdez (2013)	Wrong patient population	Alcohol/ Drug Use
vanderPol (2020)	Wrong patient population	Cannabis Use Disorder
vanderPol (2018)	Wrong patient population	Cannabis Use Disorder
VanHolen (2018)	Wrong patient population	Foster care children
Vappie-Aydin (2008)	Unable to retrieve full text	Dissertation
Wachlarowicz (2012)	Wrong patient population	Focus on caregiver characteristics
Wagner (2014)	Wrong patient population	Focus on sibling outcomes
Wells (2010)	Wrong study design	Case examples
Wetterborg (2019)	Wrong patient population	Not severe conduct problems (ODD)

*****Studies that were included in Woolfenden et al (2001)

Appendix D: Data Charting Form

A) General Information

1. Date form completed	
2. Name of reviewer extracting data	
3. Reference citation	
4. Title of study	
5. Publication type	
6. Country of study published or conducted	

B) Eligibility

Characteristics		Eligibility met?			Location in text (page/figure/table)
		Yes	No	Unclear	
Design					
Participants	Age range (60%)				
	Conduct problem				
	Offending				
Intervention					
Primary outcome measure					
DECISION	INCLUDE EXCLUDE				
Reason for exclusion					
Notes					

DO NOT PROCEED IF STUDY IS EXCLUDED FROM REVIEW

C) Methods

	Descriptions as stated in paper	Location in text (page/figure/table)
Aim of study		
Study design		
Notes		

D) Participants

	Descriptions as stated in paper	Location in text (page/figure/table)
Number of participants		
Age range		
Gender ratio		
Conduct problem/ Offending		
Other descriptors		
Co-morbidities (if any)		
Other relevant sociodemographic (if any)		
Notes		

E) Intervention

	Descriptions as stated in paper	Location in text (page/figure/table)
Intervention used		
Manual /Protocol exists (Y/N)		
Intervention Setting		
Intervention Provider		

Duration of intervention		
People involved (family or parents)		
Group based or individual		
Co-interventions (if any)		
Integrity of intervention delivery		
Compliance to intervention		
Notes		

F) Comparator (as relevant)

	Descriptions as stated in paper	Location in text (page/figure/table)
Comparator Intervention used		
Manual /Protocol exists (Y/N)		
Intervention Setting		
Intervention Provider		
Duration of intervention		
People involved (family or parents)		
Group based or individual		
Co-interventions (if any)		
Integrity of intervention delivery		
Compliance to intervention		
Notes		

G) Outcomes

Primary outcome 1:	Descriptions as stated in paper	Location in text (page/figure/table)
Assessment/Measurement Tool		
Is Measure Tool validated?		
Duration between pre and post-test		
Follow up measures (Y/N) If yes, please state:		
Notes		

Secondary outcome 1:	Descriptions as stated in paper	Location in text (page/figure/table)
Assessment/Measurement Tool		
Is Measure Tool validated?		
The duration between pre and post-test		
Follow up measure (Y/N) If yes, please state:		
Notes		

*Copy-paste for additional outcomes

H) Common elements (if any)

	Descriptions as stated in the paper	Location in text (page/figure/table)
Common elements		

I) Strengths and Limitation

	Descriptions as stated in the paper	Location in text (page/figure/table)
Strengths		
Limitations		
Strategies to mitigate limitation (if any)		
Notes		

G) Conclusion

	Descriptions as stated in the paper	Location in text (page/figure/table)
Key conclusions by authors		
Notes		

Appendix E: Joanna Briggs Institute Critical Appraisal Checklist

Reviewer_____
Date_____

Author_____Year_____ Record Number_____

	Yes	No	Unclear	NA
1. Was true randomization used for assignment of participants to treatment groups?	☐	☐	☐	☐
2. Was allocation to treatment groups concealed?	☐	☐	☐	☐
3. Were treatment groups similar at the baseline?	☐	☐	☐	☐
4. Were participants blind to treatment assignment?	☐	☐	☐	☐
5. Were those delivering treatment blind to treatment assignment?	☐	☐	☐	☐
6. Were outcomes assessors blind to treatment assignment?	☐	☐	☐	☐
7. Were treatment groups treated identically other than the intervention of interest?	☐	☐	☐	☐
8. Was follow up complete and if not, were differences between groups in terms of their follow up adequately described and analyzed?	☐	☐	☐	☐
9. Were participants analyzed in the groups to which they were randomized?	☐	☐	☐	☐
10. Were outcomes measured in the same way for treatment groups?	☐	☐	☐	☐
11. Were outcomes measured in a reliable way?	☐	☐	☐	☐
12. Was appropriate statistical analysis used?	☐	☐	☐	☐
13. Was the trial design appropriate, and any deviations from the standard RCT design (individual randomization, parallel groups) accounted for in the conduct and analysis of the trial?	☐	☐	☐	☐

Overall appraisal: Include ☐ Exclude ☐ Seek further info ☐

Appendix F: References of Included Studies

	Author (s)	Title and citation
1.	Asscher et al (2013) Asscher et al (2014) Asscher et al (2018) Dekovic et al (2012) Manders et al (2013)	Asscher, J. J., et al. (2013). "A randomized controlled trial of the effectiveness of multisystemic therapy in the Netherlands: Post-treatment changes and moderator effects." Journal of Experimental Criminology **9**(2): 169-187. Asscher, J. J., et al. (2014). "Sustainability of the effects of multisystemic therapy for juvenile delinquents in the Netherlands: Effects on delinquency and recidivism." Journal of Experimental Criminology 10(2): 227-243. Asscher, J. J., et al. (2018). "Do extremely violent juveniles respond differently to treatment?" International Journal of Offender Therapy and Comparative Criminology 62(4): 958-977. Deković, M., et al. (2012). "Within-intervention change: Mediators of intervention effects during multisystemic therapy." Journal of Consulting and Clinical Psychology 80(4): 574-587. Manders, W. A., et al. (2013). "Psychopathy as predictor and moderator of multisystemic therapy outcomes among adolescents treated for antisocial behavior." Journal of abnormal child psychology 41(7): 1121-1132.
2.	Azrin et al (2001)	Azrin, N. H., et al. (2001). "A controlled evaluation and description of individual-cognitive problem solving and family-behavior therapies in dually-diagnosed conduct-disordered and substance-dependent youth." Journal of Child & Adolescent Substance Abuse 11(1): 1-43
3.	Bank et al (1991)	Bank, L., et al. (1991). "A comparative evaluation of parent-training interventions for families of chronic delinquents." Journal of abnormal child psychology 19(1): 15-33
4.	Borduin (1995) Schaeffer & Borduin (2004) Sawyer & Borduin (2011)	Borduin, C. M., et al. (1995). "Multisystemic treatment of serious juvenile offenders: long-term prevention of criminality and violence." Journal of Consulting and Clinical Psychology 63(4): 569-578 Schaeffer, C. M. and C. M. Borduin (2005). "Long-Term Follow-Up to a Randomized Clinical Trial of Multisystemic Therapy With Serious and Violent Juvenile Offenders." Journal of Consulting and Clinical Psychology 73(3): 445-453 Sawyer, A. M. and C. M. Borduin (2011). "Effects of multisystemic therapy through midlife: A 219-year follow-up to a randomized clinical trial with serious and violent juvenile offenders." Journal of Consulting and Clinical Psychology 79(5): 643-652.
5.	Butler et al (2011)	Butler, S. P. D., et al. (2011). "A Randomized Controlled Trial of Multisystemic Therapy and a Statutory Therapeutic Intervention for Young Offenders." Journal of the American Academy of Child and Adolescent Psychiatry 50(12): 1220-1235.e1222.

6.	Carney & Buttell (2003)	Carney, M. M. and F. Buttell (2003). "Reducing juvenile recidivism: Evaluating the wraparound services model." Research on Social Work Practice 13(5): 551-568.
7.	Chamberlain & Reid (1998) Eddy et al (2004)	Chamberlain, P. and J. B. Reid (1998). "Comparison of two community alternatives to incarceration for chronic juvenile offenders." Journal of Consulting and Clinical Psychology 66(4): 624-633 Eddy, J. M., et al. (2004). "The Prevention of Violent Behavior by Chronic and Serious Male Juvenile Offenders: A 2-Year Follow-up of a Randomized Clinical Trial." Journal of Emotional and Behavioral Disorders 12(1): 2-8
8.	Chamberlain et al (2007) Leve et al (2005)	Chamberlain, P., et al. (2007). "Multidimensional treatment foster care for girls in the juvenile justice system: 2-year follow-up of a randomized clinical trial." Journal of Consulting and Clinical Psychology 75(1): 187-193 Leve, L. D., et al. (2005). "Intervention outcomes for girls referred from juvenile justice: Effects on delinquency." Journal of Consulting and Clinical Psychology 73(6): 1181-1184
9.	Coldiron et al (2019)	Coldiron, J. S., et al. (2019). "Randomized control trial findings of a wraparound program for dually involved youth." Journal of Emotional and Behavioral Disorders 27(4): 195-208
10.	Dakof et al (2015)	Dakof, G. A., et al. (2015). "A randomized clinical trial of family therapy in juvenile drug court." Journal of Family Psychology 29(2): 232-241.
11.	Dembo et al (2000) Dembo et al (2001)	Dembo, R., et al. (2000). "Youth recidivism twelve months after a Family Empowerment Intervention: Final report." Journal of Offender Rehabilitation 31(3-4): 29-65 Dembo, R., et al. (2001). "Long-term impact of a Family Empowerment Intervention on juvenile offender recidivism." Journal of Offender Rehabilitation 33(1): 33-57
12.	Emshoff & Blakely (1983)	Emshoff, J. G. and C. H. Blakely (1983). "The diversion of delinquent youth: family-frcused intervention." Children and Youth Services Review 5(4): 343-356
13.	Fonagy et al (2018) Fonagy et al (2020)	Fonagy, P., et al. (2018). "Multisystemic therapy versus management as usual in the treatment of adolescent antisocial behaviour (START): A pragmatic, randomised controlled, superiority trial." The Lancet Psychiatry 5(2): 119-133 Fonagy, P., et al. (2020). "Multisystemic therapy versus management as usual in the treatment of adolescent antisocial behaviour (START): 5-year follow-up of a pragmatic, randomised, controlled, superiority trial." The Lancet Psychiatry 7(5): 420-430
14.	Gan et al (2021)	Gan, D. Z. Q., et al. (2021). "Effectiveness of functional family therapy in a non-western context: Findings from a randomized-controlled evaluation of youth offenders in singapore." Family Process

15.	Gottfredson et al (2018)	Gottfredson, D. C., et al. (2018). "Scaling-up evidence-based programs using a public funding stream: A randomized trial of Functional Family Therapy for court-involved youth." Prevention Science 19(7): 939-953
16.	Henggeler et al (1992)	Henggeler, S. W. and et al. (1992). "Family Preservation Using Multisystemic Therapy: An Effective Alternative to Incarcerating Serious Juvenile Offenders." Journal of Consulting and Clinical Psychology 60(6): 953-961
17.	Henggeler et al (1997)	Henggeler, S. W., et al. (1997). "Multisystemic therapy with violent and chronic juvenile offenders and their families: The role of treatment fidelity in successful dissemination." Journal of Consulting and Clinical Psychology 65(5): 821-833
18.	Hogue et al (2015)	Hogue, A., et al. (2015). "Randomized trial of family therapy versus nonfamily treatment for adolescent behavior problems in usual care." Journal of clinical child and adolescent psychology 44(6): 954-969
19.	Humayun et al (2017)	Humayun, S., et al. (2017). "Randomized controlled trial of Functional Family Therapy for offending and antisocial behavior in UK youth." Journal of child psychology and psychiatry 58(9): 1023-1032
20.	Ogden et al (2004)	Ogden, T. and C. A. Halliday-Boykins (2004). "Multisystemic treatment of antisocial adolescents in Norway: Replication of clinical outcomes outside of the US." Child and Adolescent Mental Health 9(2): 77-83
21.	Sexton et al (2010)	Sexton, T. and C. W. Turner (2010). "The effectiveness of functional family therapy for youth with behavioral problems in a community practice setting." Journal of Family Psychology 24(3): 339-348
22.	Sundell et al (2008)	Sundell, K., et al. (2008). "The transportability of multisystemic therapy to Sweden: Short-term results from a randomized trial of conduct-disordered youths." Journal of Family Psychology 22(4): 550-560
23.	Timmons-Mitchell et al (2006)	Timmons-Mitchell, J., et al. (2006). "An Independent Effectiveness Trial of Multisystemic Therapy With Juvenile Justice Youth." Journal of clinical child and adolescent psychology 35(2): 227-236
24.	Weiss et al (2013)	Weiss, B., et al. (2013). "An independent randomized clinical trial of multisystemic therapy with non-court-referred adolescents with serious conduct problems." Journal of Consulting and Clinical Psychology 81(6): 1027-103
25.	Westermark et al (2011)	Westermark, P. K., et al. (2011). "Multidimensional treatment foster care (MTFC): Results from an independent replication." Journal of Family Therapy 33(1): 20-41