

**Parents of Children with Hyperactivity, Impulsivity, and Inattention: What Do  
Parenting Programs Contribute to Parental Wellbeing?**

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## **Abstract**

Hyperactivity, impulsivity, and inattention are patterns of behaviour that are interrelated, multidetermined, and characteristics of attention deficit hyperactivity disorder (ADHD), yet HII are not limited to people with ADHD. Parenting a child with hyperactivity, impulsivity, and inattention has been described by parents as a “stress-generating experience” as the associated behaviours can be difficult for parents to manage (Johnston & Chronis-Tuscano, 2014, p. 193). Parenting is a modifiable component of the child’s ecological context and central to the management of hyperactivity, impulsivity, and inattention in childhood. Parenting programs aim to promote positive parent-child relationships and developmental outcomes for children and are a recommended intervention for children with ADHD. The aim of this systematic review of randomized control trials was to establish what secondary benefits parenting programs have for the wellbeing of parents of children with elevated levels of hyperactivity, impulsivity, and inattention. A systematic search strategy was implemented in accordance with PRISMA guidelines. A total of 16,027 records were identified from six databases, trial registries and citation searches. After screening, 21 studies were included in the review. A total of nine parenting programs involving 1,323 parent participants were evaluated. While most parenting programs were likely to improve at least one-dimension parental wellbeing, either by reducing stress, depression, or anxiety, or by increase parents’ sense of competence or self-compassion, these effects were highly variable. The largest and most consistent effect found on any measure of parental wellbeing was a reduction in stress after completing Parent Child Interaction Therapy, Mindful Parenting, Triple P, Helping the Non-compliant Child or 1-2-3 Magic. The majority (85%) of between group findings were not significant. Thirteen constructs of parental wellbeing were measured by 16 different psychometric assessments. Implications and limitations are discussed, and recommendations made for future research.

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## **Chapter One: Parenting Children with Hyperactivity, Impulsivity, and Inattention**

This thesis seeks to understand the contribution of parenting programs toward the wellbeing of parents whose children present with elevated levels of hyperactivity, impulsivity, and inattention. In this chapter, hyperactivity, impulsivity, and inattention are defined and discussed from an ecological perspective of child development. Ecological development provides a robust and comprehensive foundation to consider HII and parental wellbeing as it integrates and contextualises multiple influences that shape children's behaviour and families' experiences (Bronfenbrenner, 2005). The influence of HII on child development and family experiences will be considered in conjunction with the role of parenting practices and parental wellbeing.

For children with hyperactive, impulsive, and inattentive behaviours that exceed developmentally expected norms, there is an association with adverse outcomes and impairments in many aspects of daily life (Faraone et al., 2021). Parenting can play a key role in the presentation of hyperactive, impulsive, and inattentive child behaviours (henceforth referred to as HII) which are associated with increased parental stress (Hutchison et al., 2016). A reciprocal relationship between parenting stress and parent-child interactions has been found to moderate and mediate parenting practices that influence child development (Johnston & Chronis-Tuscano, 2014). Parenting programs are a common intervention that aim to improve parenting practices, and parent-child relationships, to support child development. Given parenting programs rely on parents to implement changes to the child's developmental conditions, the wellbeing of the parents needs to be considered.

## Parenting

In this thesis the term parent is used to refer to any person with the associated duties and responsibilities of providing for the child's basic needs, care, and socialisation. Parents' respond to the changing developmental needs of the child and ensure the child obtains the skills necessary to function effectively beyond their family, particularly with regards to social communication, emotional regulation and adherence to norms that enable social inclusion, peer relationships and academic learning (Bornstein, 2019). The role of a parent is not limited to those with a biological relationship to the child, rather it is a socio-emotional function that seeks to ensure children's adaptive and culturally appropriate development. The role of a parent can be fulfilled by non-biologically related adults in the child's life such as stepparents, adoptive parents, and foster parents (Sandler et al., 2011). Parenting is a direct, reciprocal relationship that is dynamic and requires flexibility to remain developmentally sensitive (Neece et al., 2012).

Parenting is a socially valued role that can bring meaning to the lives of the parents' and is not a monolithic experience (Bornstein, 2019; Umberson et al., 2010). There are a significant number of variables and factors that influence experiences of parenthood and add complexity to research on parenting. Some of these variables include the age of the parent, their relationship status, the involvement of co-parents or availability of family support, how many children are in the family, the health of the parent, and gender, culture, and socio-demographic factors such as level of education, employment, housing and economic circumstances (Bornstein, 2019). Parents are experiencing their own developmental processes as adults, and there are intrapersonal differences between parents cognitive and coping styles, attitudes towards being a parent, knowledge of child development and expectations and beliefs about parenting or children (Umberson et al., 2010). Child specific factors that can influence experiences of parenting include the child's temperament, health conditions and

overall fit with their parent and home environment (Bates et al., 2012). Collectively these parent and child variables, and the interactions between them, contribute to a vast and disparate literature attempting to understand parenting.

Research on parents' experiences in relation to challenging behaviour in children has largely focused on the difficulties and demands associated with parenting, with little empirical attention given to the rewards and positive aspects of parenting (Nomaguchi, 2012). Raising any child can be a source of consternation and perturbation as parents navigate their child's developmental and life path, often encountering their own feelings of guilt and stress in relation to their role as parents (Bornstein, 2005). Yet children can bring deep joy and a great sense of meaning and purpose to their parents' lives. Nomaguchi (2012) critiques the continual focus on the challenges and demands of parenting that occurs despite recognition that the rewards of parenting need to be better accounted for.

Parenting stress is an established concept that attempts to quantify the demands and difficulties that a parent is experiencing. Parenting stress is defined as an "aversive psychological reaction to the demands of being a parent" (Deater-Deckard, 1998, p. 315) that occurs when the demands exceed the parents' perceived resources and capacity to cope (Craig et al., 2016). Lazarus (1993) general theory of stress describes a process that consists of; an external causal agent; the cognitive appraisal of the agent as unpleasant; the use of coping mechanisms to reduce the unpleasant effects of the causal agent; and the residual outcome or effects. This definition of parenting stress applies the general theory of stress to the specific role of parenting and involves the parents' processes of cognitive appraisal and perception, their behavioural response, and the subjective evaluation of their parenting experience.

### *Parenting Styles*

Parenting styles are characterised by constellations of parental attitudes, patterns of behavioural responses, and the emotional climate within the parent-child relationship (Darling & Steinberg, 1993; Raya et al., 2013; Spera, 2005). The manner and degree to which parents set limits, explain, justify and enforce boundaries and expectations and offer emotional support and closeness distinguishes different parenting styles (Yaffe, 2020a). Baumrind's (1966, 1971) foundational contribution to understanding parenting established three distinct parenting styles: authoritarian, authoritative and permissive parenting. The distinction between each style was based on the single dimension of control (Kuppens & Ceulemans, 2018). Baumrind suggested that permissive parents relinquish behavioural control and provide the child with a high degree of autonomy; whereas authoritarian parents control their child's behaviour to achieve an absolute standard; and an authoritative parent is a moderate expression of the two extremes (Kuppens & Ceulemans, 2018). Maccoby and Martin (1984, 1994) reconceptualized Baumrind's (1966, 1971) parenting styles based on two dimensions, responsiveness and demandingness, and added a fourth parenting style, neglectful. Based on these dimensions, Maccoby and Martin (1984) describe permissive parenting as being characterised by a low level of demand on the child's behaviour and a high level of responsiveness; authoritarian parenting is high in demandingness and low in responsiveness; authoritative parenting is high in demandingness and high in responsiveness; and neglectful parenting is low in demandingness and low in responsiveness (Lee et al., 2006; Maccoby, 1984). According to Maccoby and Martin (1984) responsiveness and demandingness are similar to parental support and parental behaviour control, the established dimensions of parenting in contemporary research (Kuppens & Ceulemans, 2018). Parental support refers to the emotional, or affective, component of the parent-child relationship and is expressed with parental warmth, responsiveness, and

emotional availability for the child (Kuppens & Ceulemans, 2018; Riany & Ihsana, 2021). Parental behaviour control constitutes the efforts to manage and regulate their child's behaviour by establishing and adhering to standards (Kuppens & Ceulemans, 2018). Broadly, mechanisms for parental behaviour control include discipline strategies, behavioural reinforcement through rewards and punishments, enforcement of rules and the provision of supervision (Riany et al., 2019; Steinberg, 1990; Yaffe, 2020a).

### ***Parenting Practices***

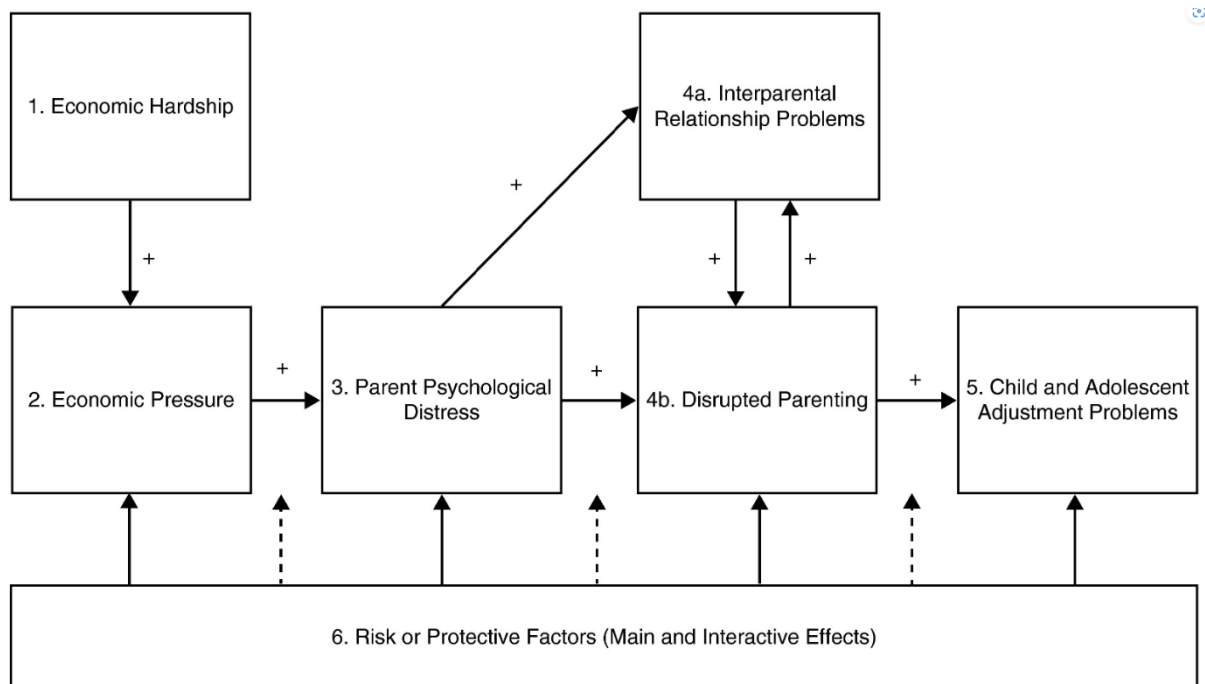
The enactment of parental support and behavioural control constitute parenting practices. Parenting practices are specific parental behaviours that parents use in the context of parenting (Maccoby, 1994; Raya et al., 2013). Darling and Steinberg's (1993) integrative model of parenting distinguishes parenting styles from parenting practices. Yet parenting practices tend to align with different styles or dimensions of parenting, as they are the expression of a parent's attitudes and expectations and occur within the context of the parent-child relationship and emotional climate (Spera, 2005; Yaffe, 2020b). Setting limits, monitoring adherence to behavioural expectations and offering encouragement and specific praise for desired behaviour are parenting practices that align with an authoritative parenting style (Kuppens & Ceulemans, 2018). Parenting practices that provide suitable behavioural control for the context and developmental needs of the child, in conjunction with a high degree of parental support, are associated with positive developmental outcomes for children. There is an extensive literature that strongly establishes this association in multiple domains of child development (Bhide et al., 2017; Faraone et al., 2021; Hutchison et al., 2016; Park et al., 2017; Raya et al., 2013; Spera, 2005).

Parenting practices are a significant factor within children's developmental ecologies and are interrelated with the parents socioeconomic context (Cicchetti, 2016). For example, Bøe and colleagues (2014) cross-sectional epidemiological analysis considered the role of

socioeconomic status on parenting practices and child mental health outcomes. Bøe and colleagues (2014) found that economic circumstances were associated with internalizing and externalizing problems for children, and that this relationship was moderated through parental emotional well-being and parenting practices. More specifically, maternal education was associated with externalizing problems through the use of harsh discipline (Bøe et al., 2014). Masarik and Conger (2017) suggest that economic stress may deplete parents' psychological and relational resources, which can diminish the quality of parenting via a potential increase in inconsistency or harshness, a reduction in supervision and monitoring, or a reduction in emotional support and expressions of warmth. The Family Stress Model (Masarik & Conger, 2017) identifies multiple sociological factors that can contribute to a higher stress environment, disrupt parenting and influence child development. Illustrated in figure 1, the family stress model provides a rudimentary framework to consider stressors that operate beyond the individual and may, directly or indirectly, influence the cognitive, emotional, or behavioural expressions of parents. Financial pressure and economic factors are accounted for, as are parental relationship challenges, and a broad general category of risk and protective factors that exert influence at multiple points of the model. Disrupted parenting is positioned within the model as having a direct influence on developmental outcomes. Masarik and Conger (2017) and Bøe and colleagues (2014) conclude that parenting practices are an effective target for improving the developmental outcomes and wellbeing of children.

**Figure 1**

*Masarik and Cogner's (2017) Model of Family Stress*



### ***Cultural Influences***

The expression of parenting practices is also influenced by cultural values and norms. Socially adopted or recommended parenting practices, perceptions and interpretations of child behaviour are all subject to cultural meaning. Culture is a moderating factor that influences interpretations of child behaviour (Carr, 2016; Zuurmond et al., 2019). What is, or is not, seen as normal development and appropriate responses to, or behaviour from, children arises in the context of cultural norms and beliefs (Bornstein, 2019). The cultural context that parenting occurs in shapes the values and ideals that are embedded in parent-child roles and relationship. For example, what is considered hyperactive, impulsive or inattentive may be influenced by parental perceptions and expectations of their child, attributions that account for variation from expectations and beliefs about appropriate child behaviour. Liu et al. (2021) discuss the cultural factors that influence parents of children with ADHD in China. Liu and colleagues report that traditional Chinese culture encourages “negative and prejudicial attitudes toward children with mental health disorders” (Leung, 2014, p. 1474; Liu

et al., 2021). Collectivist values mean group discipline is important, yet difficulties with self-regulation make it challenging for children with ADHD to adhere to the expected standards (Chen & French, 2008; Hofstede & McCrae, 2004). These difficulties are often attributed to family discipline and viewed as a lack of effort from parents, which contributes to public and personal shame and stress for families, and encourages parenting practises that emphasise personal responsibility and discipline (Norvilitis & Fang, 2005).

Cultural expectations and norms can moderate the child's experiences of being parented (Bøe et al., 2014). Lansford et al. (2005) found that the effect of parenting practices on children's wellbeing was influenced by the degree to which the parenting was normative in the child's cultural milieu, with a greater negative effect for children receiving physical discipline in contexts where it was non-normative. This finding reflects the reciprocal nature of parent-child relationships, and positions children as having agency and being able to interpret and respond to their experiences.

### **Hyperactivity, Impulsivity, and Inattention**

HII are characteristics of attention deficit hyperactivity disorder (ADHD), yet HII are not limited to people with ADHD (Balazs & Keresztesy, 2014). HII are patterns of behaviour that are often interrelated and multidetermined (McLennan, 2016; Willcutt, 2012).

Hyperactivity is commonly defined as a person's physical over-activity, including an excess of fine or gross motor movements, which consequently means being in a near constant state of physical activity (Strine et al., 2006; Vilaro, 2014). Impulsivity relates to a person's behavioural self-regulation, as it reflects a difficulty with the inhibition of behaviour (Hollander & Rosen, 2000). Examples of hyperactive and impulsive behaviours include fidgeting, moving feet or hands, wriggling or having difficulty staying seated and remaining still, climbing on objects when that is not their intended purpose, moving rapidly, shifting



activities often, being noisy, and generally ‘on the go’ (American Psychiatric Association, 2013). Hyperactivity and impulsivity are evident in social behaviours such as when someone talks excessively or rapidly, interrupts, finishes another person’s sentence, and has difficulty waiting or taking turns (American Psychiatric Association, 2013).

Inattention is a term used to capture a pattern of disruption to the process of “concentrating or focusing limited cognitive resources to facilitate perception or mental activity” (Streff, 2000, p. 3). The capacity to regulate attention is significant because it effects daily life in numerous ways. Attention is required for personal organisation and time management skills, and can impact academic achievement and social relationships (Pliszka, 2014; Sayal et al., 2018) For example, a person who regularly changes their physical or mental activity may require more time and/or effort to complete necessary tasks which can disrupt the attainment of goals. Similarly, difficulty following instructions, especially instructions with multiple components to complete sequentially, is associated with inattention (American Psychiatric Association, 2013). Forgetfulness, appearing not to listen when being spoken to, daydreaming and making mistakes from not giving close or sufficient attention to a task are examples of inattentive behaviour that can have social and academic consequences (Barkley, 2014; Lubke et al., 2009; Strine et al., 2006).

HII are the core features of the psychiatric diagnoses of ADHD (American Psychiatric Association, 2013) and hyperkinetic disorder (World Health Organization, 2019). Consistent with a medical conceptualisation, to receive a diagnosis of ADHD the HII behaviour, or symptoms, and associated impairments need to be established as occurring at a frequency that is above a clinical threshold. Additional features required for a diagnosis of ADHD are that the HII behaviour is present in different settings such as home and school, some HII features were evident before the age of 12 years, the HII is related to impairments in living, and not be better explained by an alternative condition (American Psychiatric Association, 2013). In the

Diagnostics and Statistics Manual 5<sup>th</sup> Edition, ADHD is organised into are three subtypes predominantly inattentive type, predominantly hyperactive/impulsive type, and combined type (American Psychiatric Association, 2013). The range of subtypes reflects the variability and multidetermined developmental factors that influence the expression of hyperactivity, impulsivity and inattention for different children.

The dominant paradigms that are influential in the conceptualization of HII are the biomedical model, neurodiversity, and ecological development. From a conventional medical perspective, HII is positioned as being an impairment which is inherent to the individual and can be diagnosed as ADHD if a clinical threshold of behavioural symptoms is met. From a medical perspective, treatment for the disorder is focused on symptom reduction and the amelioration of individual deficits (Barkley, 2014). There are advantages to this approach including targeted reduction of impairment in particular areas, and the development of a range of medication options for people diagnosed with ADHD (Catalá-López et al., 2017). Limitations to this approach include the stigma of a diagnosis, and that targeting treatment based on symptom severity may not reflect the person's goals, improve their wellbeing or support their long-term social outcomes (Coghill et al., 2017; Kazda et al., 2021). The medical conceptualization of ADHD is challenged by the emergence of the neurodiversity paradigm, which Pellicano and den Houting (2022) describe as a socio-cultural and rights-based non-clinical concept that emphasizes acceptance and accommodation of HII as a normal expression of human diversity. Neurodiversity supports inclusion and understanding of difference, rather than pathologizing behaviour as with the medical model (Fletcher-Watson, 2022). The neurodiversity perspective views HII as being a continuum that has variable manifestations relating to people's developmental conditions, the level of environmental demand, available support and resources that interact with biological and cognitive factors specific to that individual (McLennan, 2016; Sibley et al., 2022; Wang et

al., 2022). The neurodiversity perspective promotes a strengths-based acceptance of HII, with a focus on accommodation and the management of related difficulties rather than treatment of symptoms (Astle et al., 2022). Ecological development considers the interactions of the person, process, context and time whereby different systems influence a person's development (Bronfenbrenner, 2005). The developmental systems constitute a series of proximal and distal environments beginning with the ontological, or biological and intra-individual influences relevant to a particular person, and extending to the micro (immediate physical and social context), meso (interaction of multiple micro systems), exo (sociopolitical contexts including governance and policies that influence access to health services, transport and parks for example), macro (cultural values) and chrono systems (location in the time including expression of cultural values) (Bronfenbrenner, 2005; Vélez-Agosto et al., 2017). From this perspective, HII behaviour is understood as being influenced by a range of intra and interindividual factors and features of a person's environment that interact to shape behaviour. The paradigmatic contestation occurring between the medical model and the neurodiversity movement can be included at multiple levels of an ecological model of development. For example, changes in the social acceptability of diagnostic terminology and deficit language can be linked to the exo, marco and chrono systems and may be present in the interpretation of HII behaviour and the framing of conversations that parents may have with professionals regarding HII in the micro and meso systems.

Conceptual paradigms also influence the interventions available to support challenges with HII (Rimestad et al., 2019; Sonuga-Barke, 2020). Current best practice guidelines for the management of ADHD appear to incorporate clinical implications of neurodiversity, retain medical perspectives, and reflect children's developmental ecologies (National Institute for Health and Care Excellence, 2018). The National Institute of Health and Care Excellence (NICE), an international authority on clinical practice, state that support for

managing HII behaviour must recognise the child and their families strengths, address and accommodate specific areas of difficulty, enhance protective factors and prioritise the child and families goals and values rather than base treatment on symptom severity (National Institute for Health and Care Excellence, 2018). The ecological contexts and family relationships that children are embedded in must be included in a wholistic and person-centered approach to the assessment and management of HII (Pellicano & Houting, 2022).

### *Developmental Variables and a Continuum of HII*

The heterogeneity of HII and ADHD is contributed to by a plethora of developmental variables and genetic variants that interact and combine to increase the likelihood of a person developing ADHD (Demontis et al., 2019). Examples of developmental variables that are environmental correlates of HII behaviour and increase the likelihood of an ADHD diagnosis, include, but are not limited to: exposure to stress during pregnancy (Li et al., 2010); cumulative indicators of adversity (Choi et al., 2017), parental substance abuse, significant parental mental illness and residential instability (Björkenstam et al., 2018); exposure to environmental toxins (Dong et al., 2018; Goodlad et al., 2013); preterm birth and low birthweight (Franz et al., 2018); maternal hypertension and preeclampsia (Maher et al., 2018).

The developmental timing and context is an essential consideration in determining if the amount, persistence or duration of HII reflects expected variations in behaviour or are in excess of developmental expectations and norms, and/or may be considered ‘inappropriate’ for the context (Achenbach, 2019; Carr, 2016; Cicchetti, 2016; Mance et al., 2019; Wiebe & Karbach, 2018). For example, the youngest child in a class room is more likely to be diagnosed with ADHD than the oldest child, indicating the biases in developmental expectations and how behaviour is interpreted (Kazda et al., 2021). It is typical for pre-school children to experience periods of hyperactivity, have an abundance of energy and be highly

physically active, as well as have difficulty delaying gratification, following multi-stage instructions, and sustaining attention (Cicchetti, 2016). While these behaviours could be considered characteristic of ADHD in older children, they are within typical limits for earlier stages of development (Achenbach, 2019; Carr, 2016). Comparisons with population level norms provide a mechanism to establish where an individual fits in relation to their same age and gender peers, within their cultural context (Achenbach & Ruffle, 2000). Consideration of an individual's behaviour can be more nuanced and objective when a population level indicator that accounts for the effect of multiple, complex influences on child development, and reflects the normative emergence of neurological and cognitive capacities is used as a point of comparison (Achenbach & Ruffle, 2000; Bronfenbrenner, 2005; Cicchetti & Aber, 1998).

As defined within the medical model, HII are transdiagnostic and multidetermined behavioural characteristics (Rodriguez-Seijas et al., 2020). This means that HII commonly occur in multiple developmental, neurological, or mental health conditions, and are influenced by many aspects of the child's pre-natal and ante-natal environments. For example, difficulties with concentration, forgetfulness and irritability are transdiagnostic symptoms that could be attributed to the presence of a mood condition such as depression or anxiety, can be experienced due to traumatic events or features of a child's environment and are consistent with signs of ADHD (Pliszka, 2014). People with HII, or ADHD, have different profiles of inattentive, hyperactive, or impulsive tendencies that interact with their developmental history and environment to produce unique behavioural profiles and a highly heterogeneous condition (Faraone et al., 2021). This complexity is compounded by developmental transformations, which are changes that occur in the presentation of HII behaviours at different developmental periods within the same person's lifetime (Asherson, 2012). Developmental transformations occurring with a transdiagnostic set of behaviours that

are multidetermined, and interact with the child's environment, mean that care is required when categorising behaviour into discrete medical conditions. HII occurs on a continuum with multiple developmental influences and a changing expression over time (McLennan, 2016). A dimensional or continuum approach to HII aligns with highly variable behaviour profiles and patterns of co-occurring conditions, and better reflects the complexity of interrelated developmental processes and situational variables (Beauchaine, 2003). Evidence from Lubke and colleagues (2009) , and Marcus and Barry's (2011) taxometric analysis of the conceptual structure of ADHD is that challenges with HII are most accurately conceptualised as a continuum, and that ADHD is at the extreme end of the HII spectrum. A dimensional perspective on HII conflicts with the categorical approach implemented by the DSM and ICD diagnostic classification systems. The conceptual and clinical limitation of a categorical approach is that it is difficult to integrate and apply diagnostic criteria to the heterogeneous and dimensional features of a neurodevelopmental condition, as with ADHD (McLennan, 2016). Diagnostic thresholds, used in the medical model, to categorise the presence or absence of a particular condition attempt to account for variability in presentation of ADHD by providing a range of possible symptoms and only requiring a proportion of those symptoms to be present (Epstein & Loren, 2013; Haslam et al., 2020; Rodriguez-Seijas et al., 2020). While the application of diagnostic criteria is subject to a plethora of biases in clinical judgement (Garb, 2021), biomedical explanations for difficulties with HII have been shown to offer a sense of legitimacy and empowerment for some people diagnosed with ADHD (Kazda et al., 2021).

### ***Executive Functioning***

Differences in executive functioning are implicated in HII and ADHD (Barkley, 2014; Brown, 2013). Executive functioning encompasses a range of cognitive processes that develop across the lifespan and contribute to emotional and behavioural self-regulation,

including inhibition, attention, motivation, effort and arousal, task initiation, time management or temporal sequencing, planning and organisation skills and self-monitoring and problem solving (Wiebe & Karbach, 2018). The neurocognitive capacities of executive functioning are necessary for day-to-day life and relate to areas of strength and difficulty for children with HII (Cheung & Theule, 2016; Chung et al., 2014). For example, completing homework and other school tasks on time relates to multiple neurological and cognitive processes including organisation and time management skills, behavioural inhibition and sustained focus to manage distractions, and effort and emotional regulation to support task completion when motivation fluctuates (Brown, 2013; Chung et al., 2014). The normative emergence of executive functioning enables children to progressively acquire the emotional and social skills necessary to support peer relationships and self-responsibility for daily tasks and education (Wiebe & Karbach, 2018). Conversely, the cumulative effect of difficulties with executive functioning can mean that children with ADHD or HII can experience impairments across multiple domains of development such as peer and family relationships, emotional wellbeing, the completion of daily tasks and educational attainment (Barkley, 2014).

Barkley (2001) asserts that evolution is the only credible explanation for the emergence of executive functioning. Contextualizing HII behaviour within an evolutionary neurobiological perspective helps make sense of the variable patterns, and diverse manifestation, of behaviours that are associated with HII and ADHD (Arildskov et al., 2022). It is theorised that HII traits have been selected for as they would have conferred an advantage in an environment, and that those traits increase the likelihood of maladaptive behaviour in a contemporary context (Arcos-Burgos & Acosta, 2007; Durisko et al., 2016). The foundation of empirical support for this theory is still being established, with the first behavioural experiment that sought to mimic hypothetically advantageous conditions and

measure behavioural outcomes being conducted in 2022 (Arildskov et al., 2022). The perspective of an evolutionary advantage for HII recognises that each child with elevated HII has strengths, positive attributes, and tendencies, and it challenges the perspective that HII as a deficit or disorder (Climie & Mastoras, 2015). Further, considering evolutionary neurobiology as an influence in the presentation of HII suggests that the traits and tendencies of HII are likely to occur frequently, whether or not they are associated with challenging behaviour or impairment, and that HII traits are part of a normal expression of neurological diversity.

### ***The Impact of HII***

For children and adolescence with HII behaviour that exceeds developmentally expected norms, there is an association with adverse developmental outcomes. Impairments in quality of life have been established for children with elevated HII compared to their non-HII peers (Lee et al., 2016). The disparity in quality of life between HII and non-HII children tends to increase overtime, with greater impairments reported in emotional functioning and social relationships for children with HII (Lee et al., 2016). Ros and Graziano (2018) meta-analysis found that children with ADHD experienced significant impairment with friendships and social skills. Children with elevated HII were more often rejected or given lower likeability ratings from their peers, and had difficulties with sharing, reciprocity, cooperation, turn-taking, recognising social cues, and identifying and solving social problems (Ros & Graziano, 2018). Modulating emotional and behavioural responses to stress inducing events and novel stimuli was impaired in children with a diagnosis of ADHD (Graziano & Garcia, 2016). The U.S National Health Interview Survey included 8,600 young people and found that young people with a diagnosis of ADHD were eight to ten times more likely to

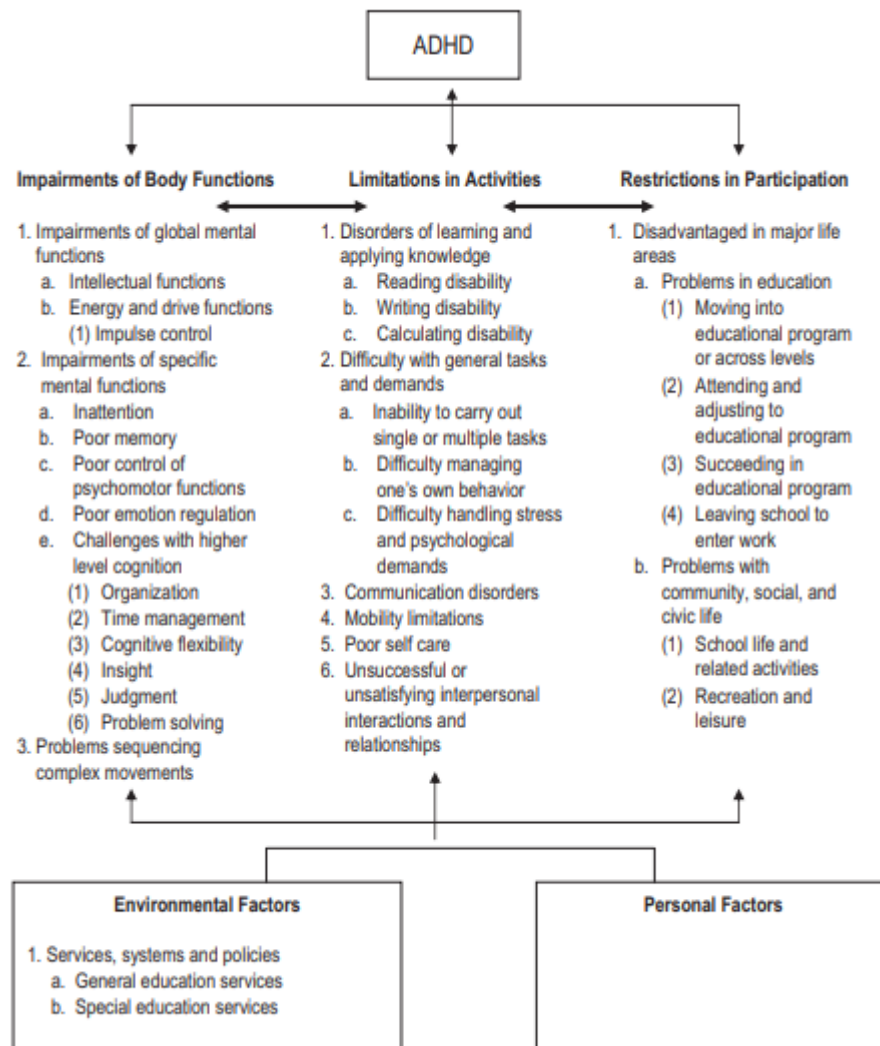


experience difficulties with friendships, classroom learning and leisure activities and were four times as likely to experience emotional and conduct problems (Strine et al., 2006).

In terms of education, young people with a diagnosis of ADHD are twice as likely to not complete schooling (Breslau et al., 2011). Factors that may contribute to this include an increased occurrence of suspension, expulsion, and absenteeism for students with HII compared to students without HII (Barbaresi et al., 2007; Kent et al., 2011; Robb et al., 2011). Academic underperformance is common for children with HII (Kuriyan et al., 2013; Loe & Feldman, 2007). There is also an association with lower performance on measure of expressive, receptive, and pragmatic language which may contribute to difficulties with learning for some students (Korrel et al., 2017). Loe and colleagues (2007) applied the World Health Organisation International Classification of Functioning, Disability and Health to educational contexts for people with elevated HII, as shown in Figure 2. This conceptual framework shows the cumulative effect of HII on the experiences of children during schooling, and how specific neurological and behavioural mechanisms can interact to reduce inclusion and participation over time. This model is congruent with the body of empirical findings on educational outcomes for people with HII.

**Figure 2**

*Loe and Colleagues (2007) Conceptual Framework of Impairments, Limitations and Restrictions for People with ADHD in the Context of Education*



There is an increase in the likelihood of people with elevated HII experiencing multiple psychological conditions (Faraone et al., 2021). Epidemiological studies conducted from national registries in Sweden, Norway, Denmark and Taiwan, and multiple meta-analyses, have consistently established that people with a diagnosis of ADHD are more likely to meet the diagnostic criteria for other psychiatric disorders (Atladottir et al., 2015; Björkenstam et al., 2018; Q. Chen et al., 2018; Mellahn et al., 2022; Nazar et al., 2016; Xu et al., 2018). Commonly co-occurring conditions include depression, anxiety, bipolar, eating disorders, substance use disorders, oppositional defiant disorder and conduct disorder, though

these diagnostic categorisations of behaviour do not account for the developmental context of the child or the factors related to HII that may have influenced the emergence of the behaviour or condition (Bernardi et al., 2012; M.-H. Chen et al., 2018; Groenman et al., 2017; Mellahn et al., 2022; Rodriguez-Seijas et al., 2020; Solberg et al., 2018; Zablotsky et al., 2020). In a study by Mellahn and colleagues (2022) 66% of people diagnosed with ADHD have been found to also meet criteria for at least one other condition. Pilszka (2014) reports that 67-80% of children and adults with an ADHD diagnosis meet criteria for at least one other condition, and 50% have two or more co-occurring conditions. The co-occurring conditions may be interrelated. For example, conduct disorder is thought to mediate the relationship between ADHD and substance use (Pliszka, 2014). Interestingly, externalizing conditions, and the pattern of co-occurring difficulties, account for an increase in challenging behaviour and contribute to the impairment and distress associated with ADHD more than the core features of HII themselves (Anbarasan et al., 2022; Gnanavel et al., 2019; Satterfield et al., 2007). There are gender differences in the prevalence and combinations of specific conditions, with depression, anxiety and bipolar disorder being more likely to be diagnosed in females with ADHD than males and difficulties with conduct and substance more commonly diagnosed in males with ADHD (Solberg et al., 2018).

The interrelated, frequently co-occurring, and highly heterogeneous features of autism and ADHD are increasingly recognised in research and practice. Mellahn (2022) estimates that 20-50% of children with an ADHD diagnosis present with behaviour that is indicative of autism, and that 40-80% of children who have been diagnosed as autistic present with HII behaviour. Brown (2013) suggests that the difference between the conditions may be quantitative rather than qualitative, with the expression of autism and ADHD tendencies varying in frequency, intensity, and impact rather than being discrete and distinct conditions. From a neurodiversity perspective, autism and ADHD are not distinct ‘conditions’, and the

commonality that is better explained by a continuum of diversity that presents differently in different people (Carr-Fanning, 2020; Núñez-Jaramillo et al., 2021).

There is an assortment of impacts associated with HII that relate to the physical health and safety of young people. Young people with elevated HII are estimated to be at a 40-50% greater risk of accidental injuries than people without elevated HII (Ruiz-Goikoetxea et al., 2018), more likely to have a pregnancy during adolescence (Skoglund et al., 2019), and more likely to experience difficulties associated with substance use (Groenman et al., 2017). The likelihood of being a victim of crime or receiving a conviction for criminal offenses are increased for youth with a diagnosis of ADHD; a nationwide population study in Denmark with more than 675,000 young people estimated that, after adjusting for confounding risk factors, young people aged 7-18 diagnosed with ADHD were 3.7 times more likely to be victims of sexual crimes, and 2.7 times more likely to be victims of violent crime than their non-ADHD peers (Christoffersen, 2022). Analysing data from the same study Mohr-Jensen and colleagues (2019) found that, after adjusting for confounding risk factors, young people with a diagnosis of ADHD were 60% more likely to be convicted of a criminal offence than their peers.

The presence of HII can increase the likelihood of experiencing specific medical conditions. Medical conditions that frequently co-occur with elevated HII include somatic and sleep problems, obesity, and sexually transmitted infections for adolescents (M.-H. Chen et al., 2018). Research suggests that those with HII are more likely to be overweight (Cortese et al., 2016) (Fliers et al., 2013) (Nazar et al., 2016). A 2016 meta-analysis found that children with ADHD are 20% more likely to be overweight than children without ADHD, which is assumed to be related to impulsivity with food consumption (M.-H. Chen et al., 2018). Children with HII are also more likely to experience sleep problems (Allard et al., 2014). Delayed sleep onset and chronic insomnia occur at a higher rate for people with

ADHD, with some estimates suggesting these sleep difficulties affect 20-70% of children with ADHD (Goldman et al., 2012; Martin et al., 2019; McLay et al., 2022; Sedky et al., 2014). While sleep efficiency was only moderately lower than for people without ADHD, subjective evaluations revealed that it is common for people with ADHD to experience disrupted sleep due to waking up at night, feel less rested when waking, and report lower sleep quality (Lugo et al., 2020). Several studies have found that adolescents with HII are more likely to contract sexually transmitted infections (M.-H. Chen et al., 2018). For example, in adolescence with HII have been found to be three times more likely to contract a sexually transmitted infection than their peers, after controlling for demographic variables (M.-H. Chen et al., 2018; Flory et al., 2006; Rokeach & Wiener, 2018).

### ***Attention Deficit Hyperactivity Disorder***

ADHD is one of the most commonly diagnosed neurodevelopmental conditions of childhood. Estimates suggest that somewhere between 5-9% of children across all cultures meet diagnostic criteria for ADHD, with the best available estimate, based on meta-analyses, currently being 5.9% (American Psychiatric Association, 2013; Faraone et al., 2021; Polanczyk et al., 2014; Willcutt, 2012). Variation in the range of estimates of ADHD prevalence are mostly accounted for by methodological differences in research such as variability in sample size, population demographics, the psychometric assessment tools used and the diagnostic criteria that was applied (Faraone et al., 2021).

The rate of diagnosis of ADHD has been increasing (Atladdottir et al., 2015; Fairman et al., 2020; Kazda et al., 2021; Song et al., 2019; Vasiliadis et al., 2017). However, the increase in diagnosis may not reflect an increase in the occurrence of a neurological condition as described by the medical model. When standardised diagnostic procedures are adhered to, there is no evidence to suggest there is an increase in the number of children who meet the criteria for an ADHD diagnosis (Faraone et al., 2021). Further, a 2014 meta-analysis on the

prevalence of ADHD included 135 studies and approximately a quarter of a million young people did not find significant differences in the number of children who meet the criteria for ADHD across Africa, Asia, Europe, North America, South America or Oceania (Polanczyk et al., 2014). None-the-less, it has been established by multiple meta-analyses that over several decades the rate of diagnosis of ADHD has consistently increased (Polanczyk et al., 2014; Safer, 2018; Xu et al., 2018; Zablotsky et al., 2019). Faraone and colleagues (2021) suggest that while the constellation of traits, described by the medical model as a condition, are occurring at a stable rate across populations, ADHD is now more likely to be diagnosed than it has been during the previous three decades.

Factors contributing to an increase in ADHD diagnosis may include the contribution of trauma for individuals, cultural shifts towards pathologizing normal behaviour, the influence of ‘big pharma’ as well as changes to clinical practices in the identification, assessment and management of ADHD, revisions of the diagnostic criteria of ADHD and changes in the rate of diagnosis for specific groups (see below) (Epstein & Loren, 2013; Faraone et al., 2021; Kazda et al., 2021; Leo & Lacasse, 2015; Xu et al., 2018). There are some contentions that people with HII have neurobiological differences in their executive functioning which are exacerbated by contemporary societal demands, contributing to an increase in behavioural presentations that are consistent with the medical conceptualization of ADHD (Barkley, 2001; Best & Miller, 2010; Brown, 2013). For instance, financial demands may require people to have multiple jobs to obtain a sufficient income to meet their basic needs, which can increase the level of cognitive demand on time management and organisation skills (Asherson, 2012). Atladottir and colleagues (2015) suggest that there is a reduced social tolerance for different behaviour, which leads to a larger range of behaviour being identified as concerning and potentially diagnosed by clinicians.

Research on HII is predominantly undertaken from a medical perspective and discussed as ADHD (Cortese et al., 2022; Singh, 2002). Yet variability in diagnostic rates amongst different populations overtime suggest that social factors may influence the conceptualisation and diagnosis of HII behaviour as a medical condition. Significant variation in the rate of diagnosis of ADHD has been found amongst people with different genders, socioeconomic statuses, and nationalities. For example, the current ratio of males to females receiving a diagnosis of ADHD is 3:1 (Barreto-Zarza et al., 2022). Kazda and colleagues (2021) systematic review on ADHD included 334 studies that used the medical construct to examine prevalence of symptoms across gender. Kazda and Colleagues (2021) established lower rates of diagnosis occurred for girls compared to boys, including when equivalent symptom severity was established. The difference in the ratio of diagnosis between genders is decreasing over time (Fairman et al., 2020; Xu et al., 2018). A similar pattern where there is a lower rate of diagnosis for ethnic minorities is evident in the United States of America (Garb, 2021). Black/Hispanic youth have a lower rate of diagnosis compared to white youth, with equivalent symptom severity (Morgan et al., 2013; Zablotsky et al., 2019). Migrant and non-English speaking youth were found to be diagnosed with ADHD at a lower rate than their English-speaking peers in the United States (Visser et al., 2010). The difference in this ratio is also decreasing over time (Danielson et al., 2017; Fairman et al., 2020). Kazda and colleagues (2021) found a higher rate of ADHD diagnosis amongst people with a lower socioeconomic status, and Caye and colleagues (2016) found a relative effect of age where the youngest child in a classroom more likely to be diagnosed with ADHD than the oldest child.

There are many possible explanations for the variability in ADHD diagnosis amongst different groups. These findings could be interpreted to support Sayal and colleagues (2018) assertion that ADHD and HII are potentially underrecognized or misdiagnosed in some

populations. Alternatively, different cultural conceptualizations, experiences, and attributions for HII behaviour can be seen as equally as valid as the medical perspective of HII as a neurological disorder, with individuals navigating interpretations that are meaningful to them. For example, hegemonic power structures and social norms shape what behaviour is expected from different people and influence how someone's actions may be interpreted (Grønhøj & Gram, 2020; Hofstede & McCrae, 2004). This means that HII behaviour may not be perceived as 'abnormal' or experienced as an impairment; or that previously acceptable HII behaviour is now seen as problematic; challenges with HII may be present for reasons other than a neurological condition; or if a diagnostic process is culturally or individually valued, accessibility issues may prevent equitable access to medical assessment, treatment and support. These societal expectations and systemic influences may explain some of the variability in diagnosis for women, black/Hispanic youth in America, or people with a lower socioeconomic status.

Another potential influence on the rate of diagnosis of ADHD is that in 2013 modifications were made to the diagnostic criteria of ADHD with the 5<sup>th</sup> edition of the *Diagnostics and Statistics Manual* (American Psychiatric Association, 2013; McKeown et al., 2015). The central features of HII were retained, with adjustments made that reflect the variability in presentation and better account for developmental factors (Epstein & Loren, 2013). For example, for a diagnosis of ADHD the DSM-5 requires evidence of HII behaviour prior to 12 years of age, as opposed to evidence of impairment due to HII prior to 7 years of age as with DSM-IV and DSM-IV-TR (Epstein & Loren, 2013). HII are not inherently impairing, and the change in criteria reflects that impairment may not be experienced for some people with HII until later in life (Balazs & Keresztesy, 2014). For example, people with structured environments, high intelligence, or predominantly inattentive symptoms may not experience detrimental effects of their HII tendencies until the level of demand exceeds



their capacity or compensatory skills (Balazs & Kereszteny, 2014; Barkley, 2014). The threshold at which this occurs for any given individual is highly variable and subject to developmental, intrapersonal, and environmental influences (Barkley, 2014; Epstein & Loren, 2013; Tannock, 2013).

Other changes to the diagnostic criteria of ADHD include the provision of additional examples of HII behaviour that cover a broader developmental range and changes to the symptom threshold. This may have influenced the range of behaviour that clinicians interpreted as being consistent with ADHD. For example, a persistent feeling of restlessness has been added as an indicator of hyperactivity for adolescence and adults (Balazs & Kereszteny, 2014; Tannock, 2013). There has been a reduction in the total number of symptoms required to meet diagnostic criteria from eight out of 14 hyperactivity/impulsivity or inattention symptoms in the DSM-III to six out of nine inattention symptoms or six out of nine hyperactivity/ impulsivity symptoms in the DSM5 (American Psychiatric Association, 2013; Balazs & Kereszteny, 2014). Only five symptoms are required for people over 17 years of age and several symptoms must be present before the age of 12, instead of the age of seven, which accounts for developmental transformations and variations in presentation across the lifespan (Asherson, 2012; Epstein & Loren, 2013)

Autism, conceptualized as disorder, is no longer an exclusionary condition for a diagnosis of ADHD (American Psychiatric Association, 2013; Tannock, 2013). The removal of autism as an exclusionary condition means that a person can have a diagnosis of autism spectrum disorder and ADHD, increasing the population of potentially diagnosable cases of ADHD (McKeown et al., 2015). The changes to diagnostic criteria in effect increase the number of people likely to be eligible for a diagnosis of ADHD (Epstein & Loren, 2013; Tannock, 2013). These deficit-based categories of behaviour are situated within a medical

model, and do not reflect the neurodiversity paradigm of autism and HII being normal expressions of neurological diversity.

The occurrence of HII is higher than reflected in the prevalence estimates of ADHD. Sayal and colleagues (2018) estimate that beyond the ADHD prevalence rate, an additional 5% of children have substantial difficulties with HII and are slightly below the threshold required for diagnosis. From a medical perspective, ADHD and subthreshold ADHD are conceptually equivalent to elevated HII. Balazs & Keresztesy (2014) established a range of estimates of subthreshold ADHD that varied depending on how it was defined and which forms of measurement were used. The upper limit of estimates for the prevalence of subthreshold ADHD was found to be 23% for inattentive type, 15% for hyperactive/impulsive type, and 9% for combined type (Malmberg et al., 2008). However, Malmberg and colleagues (2008) study was conducted 12 years ago and favoured sensitivity when measuring HII, meaning it likely overestimates subthreshold ADHD. Malmberg and colleagues (2008) estimates are substantial, yet have value as an indicator that elevated HII frequently occurs in non-clinical populations to varying degrees. Other studies have adhered to standard diagnostic tools and have consistently found evidence of elevated HII, or subthreshold ADHD, that is between 6-11% for people aged 7-17 years. Kim and colleagues (2009) used a structured diagnostic interview with children aged 7-13 years attending school in Korea, and found a 8.64% prevalence rate for subthreshold ADHD when three to five symptoms were required instead of six. Similarly, using the same definition and diagnostic tools as Kim and colleagues (2009), Cho and colleagues (2011) found a 9-11% prevalence rate with children aged 8-10 years old. A 6.4% prevalence rate of subthreshold ADHD was found by Lewinsohn and colleagues (2004) with youth aged 15-17 years in the United States of America. Polanczyk and colleagues (2014) meta-analysis of prevalence estimates found that prevalence rates for ADHD were an estimated 2.32% higher when the criteria of

impairment was removed instead of adjusting the number of HII behaviours required. The studies included in Polanczyk and colleagues (2014) analysis were predominantly from North America and Europe (66.7%). These studies provide evidence that the occurrence of HII is higher than the prevalence rates of ADHD. Balazs & Kereszteny (2014) conclude that people's functioning can be meaningfully impacted by subthreshold ADHD and that focusing on subthreshold ADHD, or elevated HII, provides an important opportunity to prevent associated difficulties. The aforementioned studies relating to the prevalence of subthreshold ADHD retain a medical perspective while ostensibly acknowledging the central tenant of neurodiversity: that the occurrence of HII is normative.

### ***Parents' Experiences of Raising a Child with HII***

Parenting a child with HII has been described by parents as a “stress-generating experience” (Johnston & Chronis-Tuscano, 2014, p. 193). The behaviours associated with child HII can be difficult for parents to manage (Zwi et al., 2011). Sonuga-Barke et al. (2001b) identified that parents of children with HII need to provide more structure, consistency, and calmness than parents of children without HII. Parents of children with HII are more involved in managing the daily tasks and social interactions of their children (Sikirica et al., 2014). While the level of difficulty each child experiences in completing different daily tasks varies per child, or per day for the same child, HII related behaviours can be prominent during tasks that are undesirable for the child (Barkley, 2014). Qualitative research with parents of children with ADHD identified that parents of children with ADHD exert significant effort into their parenting, often do not feel rewarded by their efforts, and instead perceive themselves to be ineffective (Corcoran et al., 2016). The parents included in Corcoran's (2016) qualitative interviews consistently identified that they found it difficult to maintain and apply behavioural techniques such as reinforcement and reward of positive

behaviours and ignoring unwanted behaviours, and that over time the parents felt that their efforts were futile.

The impact of parenting a child with HII can mean that parents can experience disruptions to their own social and work lives (Cheung & Theule, 2016; Theule et al., 2010) including reduced availability for work, increased absenteeism, and loss of opportunities for advancement in the workplace (O'Brien et al., 2017). Further, parents report that the time and effort required to manage HII behaviour can result in fewer opportunities for pursuing their own hobbies, interests and adult friendships that are sources of joy, meaning and relaxation in their lives (O'Brien et al., 2017; Weyers et al., 2019). The lack of time or energy to pursue interests and friendships may impact on the parents sense of competence and self-esteem in areas beyond their role as a parent (Johnston & Chronis-Tuscano, 2014). Wymbs and colleagues (2008) analysis of longitudinal data found that parents of youths diagnosed with ADHD were more likely to divorce (27% of 282 parents in the sample), and for divorce to occur sooner, than parents of youths without ADHD (12.6% of the 206 parents in the sample). When considering the outcomes associated with parenting a child with ADHD, the co-occurrence of child and parental ADHD symptomology is a potentially confounding variable that needs to be controlled (Cheung & Theule, 2016). For example, Wymbs (2008) study of divorce rates for people with a child diagnosed with ADHD did not measure parental ADHD symptomology. Yet an examination of distal and proximal factors in romantic relationships for adults with ADHD found that adults with ADHD report less satisfaction in relationships and have higher rates of divorce and separation than adults without ADHD (Wymbs et al., 2021).

Parents whose children experience HII report higher rates of stress, anxiety, depression, and reduced self-esteem compared to other parents, and report feeling isolated, exhausted and overwhelmed (Coates et al., 2015; Corcoran et al., 2016; Craig et al., 2016;

Steijn et al., 2014; Theule et al., 2010). The severity of ADHD symptoms is associated with increased parenting stress (Theule et al., 2010). Sikirica et al. (2014) qualitative analysis of the experience of parents' raising children with ADHD found that even when children had no or low co-occurring conditions, parents described feeling more stressed, worried and emotionally and physically drained than parents of children without an ADHD diagnosis. It is estimated that 50% of mothers whose children have a diagnosis of ADHD have experienced at least one episode of major depression (Pliszka, 2014). These findings are aligned with a meta-analysis that included 647 families across 17 studies and found a moderate reduction in the quality of life for parents whose children have a diagnosis of ADHD compared to children without a diagnosis (Dey et al., 2019).

Johnston and Chronis-Tuscano (2014) report that in the context of HII parent-child relationships are characterized by reduced warmth and positivity, increasingly directive and authoritarian parenting. Parent– child relationship problems are more closely linked to child disruptive behaviours than to ADHD symptoms (Azazy et al., 2018; Faraone et al., 2021; Leijten et al., 2019; Mellahn et al., 2022). Similarly, Johnston (1996) reported that overall children with ADHD, at any age and gender, had lower levels of behavioural compliance, increased negativity and the pattern of parent engagement involved reduced interaction, fewer rewards, and more commands compared to children without ADHD.

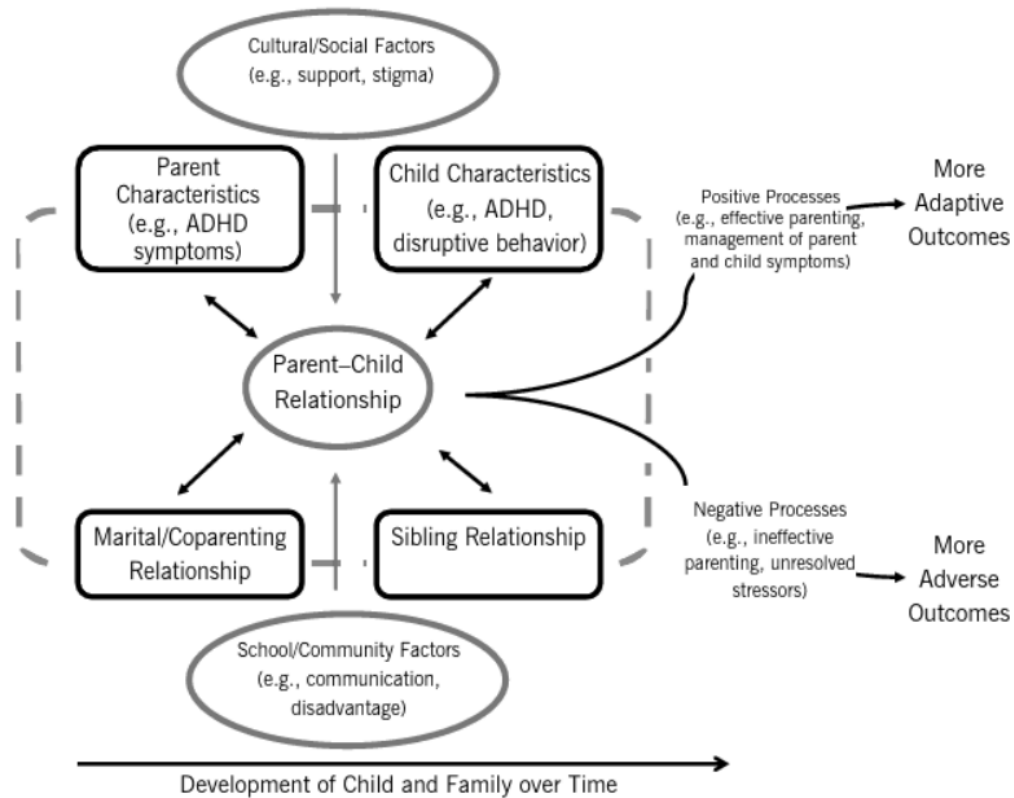
### ***Developmental Transactions***

The relationship between parental stress and child HII is bidirectional and influenced by developmental transactions. Developmental transactions comprise a series of ongoing bidirectional and reciprocal interactions between a child and their environment (Neece et al., 2012). The transactional model captures the dynamic process of development and is useful for understanding the influence of parent-child interactions (Neece et al., 2012). Children with challenging behaviour have historically been positioned as the causal agent of parents'

stress, which is then mediated by parenting behaviour (Neece et al., 2012). Neece and colleagues (2012) used hierarchical linear modelling to conduct multilevel growth model analyses to test this relationship and found that child behaviour and parent stress co-varied over time, suggesting a bi-directional relationship. Johnston and Chronis-Tuscano (2014) transactional model of ADHD, as shown in Figure 3, illustrates the multiple and multidirectional influences of the parent-child relationship on child development. Johnston and Chronis-Tuscano's (2014) model recognizes that parenting practices are embedded within the parent child relationship, and that the effectiveness of parenting is a significant influence on the child's developmental trajectory. As shown by Johnston and Chronis-Tuscano (2014) the child's characteristics are one component of an interconnected and mutually influential series of relationships and processes. HII behaviour may be an observable feature of the parent-child relationship meaning that the parents stress can be disproportionately attributed to the child's HII characteristics in isolation, yet Johnston and Chronis-Tuscano's (2014) model situates HII behaviour and child characteristics within a broader context.

**Figure 3**

*Johnston and Chronis-Tuscano (2014) Developmental-Transactional Model of ADHD within a Family Context*



Mechanisms that contribute to the relationship between stress, HII and the parent-child relationship are being elucidated by empirical findings. For example, Grizenko et al. (2015) found that maternal stress during pregnancy increased child ADHD symptomology. Chen et al. (2017) found that parental distress increases the discrepancy in reports of child internalizing and externalizing behaviour, indicating that stress influences the parents' perception of their child's difficulties, rather than their child's behaviour being objectively difficult. Parents negative attributions for their child's behaviour can predict an increase in challenging behaviour over time (Hoza et al., 2006). Biederman et al. (2001) report that parenting difficulties such as low responsiveness, low positivity, over-reactivity and inconsistency are predictive of increases in challenging behaviour when HII is present.

Collett and Gimpel (2004) found that mothers of children with ADHD were likely to view negative behaviours as being pervasive and stable over time and were attributed to internal and uncontrollable factors. These findings relate to the parents' cognitive appraisal and perception of their child's behaviour, parenting practices and the parent-child relationship.

The logic of a transactional framework suggests the interpretations and attributions children make for their parent's behaviour could influence their response to the parent (Colalillo et al., 2014; Wong et al., 2017). Children's interpretation of their parents' behaviour has received limited empirical attention (Collett & Gimpel, 2004). For example, Johnston and colleagues (Johnston et al., 2009) conceptualize child HII behaviour as contributing to the relational conditions where parents develop unhelpful cognitions or negative beliefs about the child. The negative perceptions of the child then impact parenting practices and, in turn, exacerbate challenging child behaviour. The child's subjective experience of being parented was not considered (Johnston et al., 2009). The possibility that a child's perception of their parent's behaviour may influence parent-child relationships is consistent with the theory of developmental transactions and ecological frameworks. Colalillo and colleagues (2014) analysed attributional ratings of children with and without ADHD, in positive and negative parenting scenarios. It was expected that children with ADHD would have more negative attributions for their parents' parenting behaviour. However Colalillo and colleagues (2014) found that boys with ADHD consistently attributed a higher degree of responsibility to themselves for causing their parents' behaviour in positive and negative scenarios. Irrespective of the processes that influence the attributional style, a tendency for younger children with HII to potentially perceive themselves as a cause of negative parental behaviour has been identified (Colalillo et al., 2014; Collett & Gimpel, 2004; Wong et al., 2017).



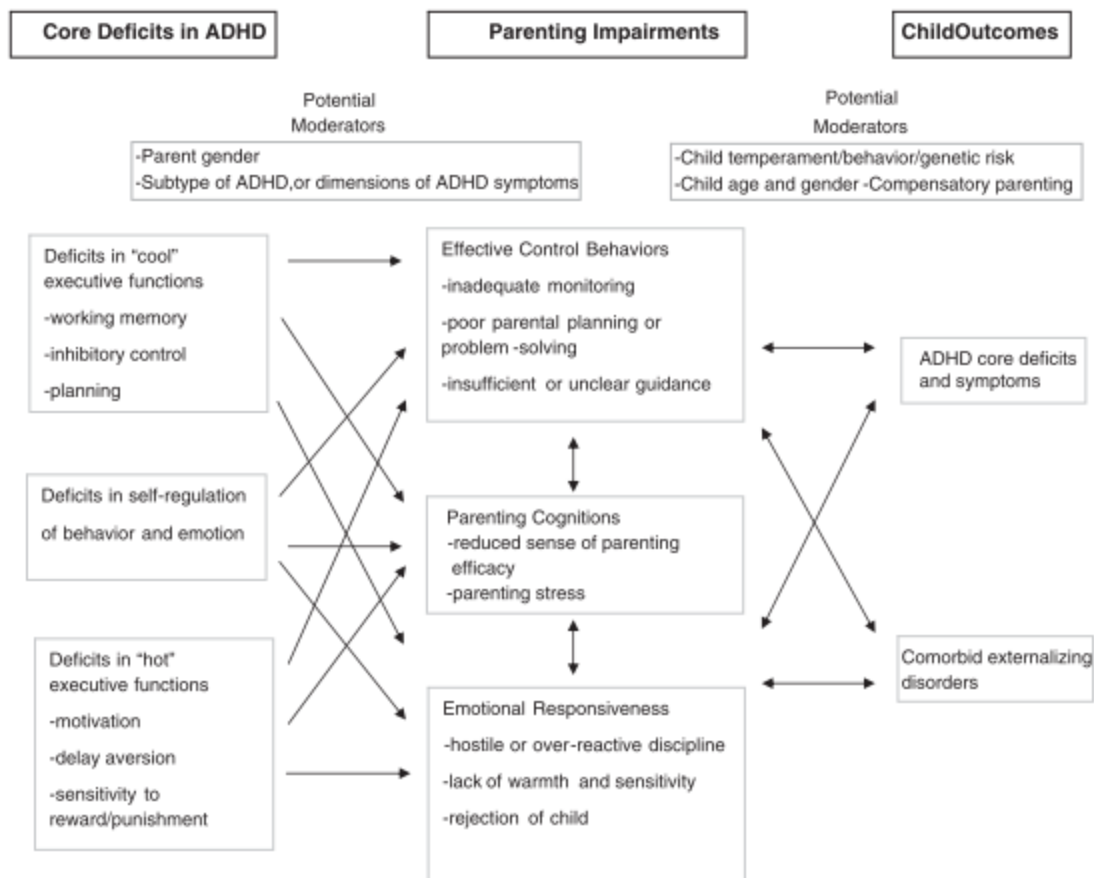
### ***Parents with ADHD***

It is estimated that up to two thirds of children with a diagnosis of ADHD have a parent who meets the diagnostic threshold for ADHD symptomology (Barkley, 2014; Theule et al., 2010). The continuity of ADHD into adulthood has been comprehensively established, as have the range of functional impairments and co-occurring difficulties for adults with ADHD (Asherson, 2012; Fleming et al., 2017; Ginsberg et al., 2010; Harpin et al., 2016; Margari et al., 2013). There is relatively little research considering the effect of parents own diagnosis of ADHD on their parenting practices, despite ADHD being highly heritable and executive functioning skills being a significant component of parenting (Porrino, 2018).

According to Weiss et al. (2000) parental ADHD symptoms are associated with particular challenges and strengths when parenting. Johnston and colleagues (2012) conceptual review of parenting in adults with ADHD noted that research on parents with ADHD tends to be deficit oriented and focus on the limitations rather than the potential strengths. There is an absence of empirical research considering the strengths of parents who have a diagnosis of ADHD, yet speculative possibilities of the strengths for these parents include their potential to be spontaneous, energetic, enthusiastic, playful and fun (Weiss et al., 2000). It is also possible that parents with ADHD could be a source of support for children with HII in circumstances where they can identify adaptive strategies and are accepting of their child's HII tendencies (Climie & Mastoras, 2015). Park (2017) found a statistically significant association between parenting with ADHD and warmth. While this finding was negligible based on Cohen's (1977) recommended interpretation of effect sizes, it is one of few findings that indicate potential strengths for parents with ADHD (Park et al., 2017). Challenges specific to parents with ADHD have been illustrated by Johnston et al. (2012) in figure 4, which applies the core features of ADHD to impairment in the role-specific skills of parents.

**Figure 4**

*Johnston and Colleagues (2012) Schematic Representation of Potential Parental ADHD Effects on Parenting*



Porrino (2018) identified that the most prominent and recurrent challenges for parents with ADHD relate to inconsistency with discipline and difficulty with sustained involvement with their child's daily activities. Inconsistent discipline constitutes an oscillation between lax and harsh discipline and includes stating consequences that are not reliably followed-up. This can culminate in parental responses that are experienced as random or arbitrary by the child (Frick et al., 1992; Theule et al., 2018). Inconsistency makes it difficult for children to have clarity on behavioural limits, rules, and expectations. Challenges with consistency are congruent with the neurobiological processes of ADHD, and mothers with ADHD are reported to engage in significantly higher levels of inconsistent discipline than mothers without ADHD (Mokrova et al., 2010; Porrino, 2018). Parental involvement consists of behaviours such as engagement in age-appropriate play, providing opportunities for the child

to contribute to household activities, support with homework, and presence and attendance at events or activities the child is interested in. Mokrova and colleagues (2010) analysis of longitudinal data indicate that parents with ADHD demonstrate lower levels of involvement than parents without ADHD. Parents with ADHD report similar difficulties as those identified by Porrino (2018), such as difficulties sustaining attention when supervising and monitoring children, procrastination with routine-based tasks such as dinner, bath and bed time, difficulty planning and implementing tasks that require organisation such as timely preparation for the child's activities (Johnston et al., 2012). These findings are congruent with an understanding of ADHD as a neurodevelopmental disorder that produces a pattern of inconsistent attention and difficulties with behavioural and emotional regulation that are relevant to the application of parenting skills (Johnston et al., 2012; Starck et al., 2016; Weiss et al., 2000).

In summary, parents of children with HII have consistently been found to experience higher levels of parenting stress and greater difficulties with parenting than parents of children who do not have HII (Shimabukuro et al., 2020; Theule et al., 2010; Weyers et al., 2019). When the prevalence of HII is considered in conjunction with the associated challenges for parents and the significance of parenting practices, it is clear that the wellbeing of these parents warrants attention.

## **Parental Wellbeing**

Despite ubiquitous use, the term wellbeing has not been well defined in the literature (Ilias et al., 2017). There is an ambiguity of language and diversity of measurement that contributes to wellbeing having a nebulous quality (Nelson et al., 2014). The evolution and application of wellbeing theory likely influences these inconsistencies. In the absence of a single agreed definition, wellbeing emerges from multiple definitions as a holistic concept

that is dynamic and contextualized (Ilias et al., 2017; McNulty & Fincham, 2012; Pozo et al., 2014). Wellbeing commonly includes physical, social, emotional, and spiritual dimensions, and is recognized as being a process that is influenced by circumstances (Andrews et al., 2014; Bettney, 2017). While these characteristics offer some elucidation, this conceptualization of wellbeing is not specific to the role of parenting.

Parental wellbeing is a specific construct, or subset of general wellbeing, that is role specific (Podolski & Nigg, 2001). Piehler et al. (2014) offer a definition of parental wellbeing as the product of “a parent's coping strategies, satisfaction with role as a caregiver, perceived support by others, and general emotional stability in contrast to feeling stressed, depressed, and/or lonely” (p.322). Piehler et al. (2014) considers wellbeing to exist in contrast to stress and distress, implying that wellbeing is more than the lack of negative psychological states (Seligman & Csikszentmihalyi, 2000). Negraia and Augustine (2020) found that parents experienced more happiness and meaning as well as more stress and fatigue than non-parents. This finding suggests that for parents, there may be a greater range and intensity of emotion and that positive and negative affective states can co-occur. Taken together, it is evident that the inclusion of positive and negative affect is important when defining parental wellbeing.

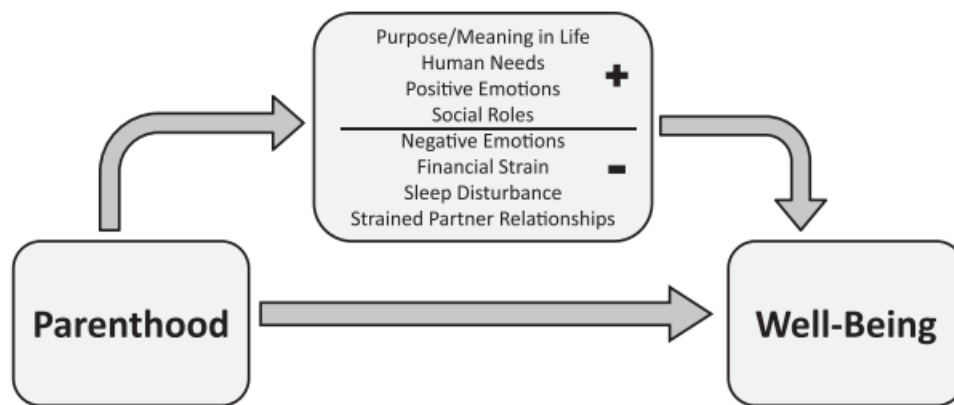
Nelson and colleagues (2014) model of parental wellbeing, as shown in Figure 5, reflects multiple positive and negative influences on parental wellbeing. This model is theoretically aligned with the assertions of Diener et al. (1999); Seligman and Csikszentmihalyi (2000); Van Schuur and Kruijtbosch (1995) and others that a reduction of stress, or the absence of a negative influence, is not equivalent to the presence of positive states. The Nelson (2014) model captures the central idea that wellbeing can consist of positive and negative components, and that they are predictors of wellbeing. Financial strain, partner relationships and negative emotion are featured in Nelson and colleagues’ model of parental wellbeing, and are conceptually equivalent to economic hardship, distress and

relationship problems in the family stress model (Bøe et al., 2014; Masarik & Conger, 2017).

Nelson and colleagues (2014) model suggest that wellbeing can be mediated through proximal processes such as quality of sleep or distal processes such as the fulfillment of social roles that are influenced by cultural norms and economic circumstances. Similarly, Masarik and Cogner (2017) and Bøe and colleagues (2014) converge on the understanding that parental wellbeing and parenting practices moderate the relationship between family stressors and child development.

**Figure 5**

*Nelson and Colleagues (2014) Model of Parental Wellbeing*



The conceptual difference between parental wellbeing and parenting stress are well established, yet these differences are not reflected in parenting literature (Craig et al., 2016). The results of stress-based measurements are often described as wellbeing (Barlow et al., 2014; Ilias et al., 2017; Irwin et al., 2019; Nomaguchi, 2012; White & Kern, 2017). In systematic reviews by Barlow et al. (2014); Coates et al. (2015); Irwin et al. (2019) stress, depression, anxiety, and anger are the most commonly measured constructs. The same reviews from Barlow et al. (2014); Coates et al. (2015); Irwin et al. (2019) found positive dimensions of wellbeing were measured less often than negative dimensions, and there was substantial variation in the psychometric tools used to quantify wellbeing. Barlow et al.

(2014); Coates et al. (2015); Irwin et al. (2019) found that conceptualisations of wellbeing were infrequently explained, justifications for measurement choices were infrequently provided and reporting of the wellbeing measures varied considerably. Defining parental wellbeing to include, and extend beyond, parental stress, anxiety and depression is necessary to capture the data affected by trends in measurement. Prior studies have rarely examined both positive and negative emotions within the same investigation, and less frequently within same parenting context (Negraia & Augustine, 2020). The discrepancy between measurement and framing occurs despite a lack of theoretical support for a reduction in parenting stress being synonymous with an increase in parental wellbeing (Diener et al., 1999; McNulty & Fincham, 2012).

Restricting the quantification of parents experiences to readily measurable concepts such as stress, depression and anxiety does not consider the meaning, joy, and positive aspects of raising a child, including children with HII (Langley et al., 2020). Nor does it account for high levels of positive affect co-occurring amidst experiences of higher stress (Negraia & Augustine, 2020), or reflect the importance of understanding parental wellbeing for its own sake. Measuring stress, depression, anxiety and the demands of parenting, without including positive dimensions of the parents experience, may inadvertently reinforce the narrative that children with difficulties or differences, such as HII, are challenging and burdensome to parent, and decrease their parents' wellbeing (Cheshire et al., 2010; Hastings, 2016; Hastings, 2002).

In conclusion, this chapter has defined HII and discussed the ramifications of ADHD from a medical perspective. The relationship between children with HII and the stress experienced by their parents has been considered, and the need to develop knowledge and interventions to support the wellbeing of parents raising children with HII has been recognized.

## **Chapter Two: Parenting Programs and the Management of Hyperactivity, Impulsivity, and Inattention**

Parenting is central to the management of HII and is a modifiable component of the child's ecological context (Allmann et al., 2022; Bronfenbrenner, 2005; Dahl et al., 2019; Wymbs et al., 2016). The National Institute for Health and Care Excellence (2018) practice guideline recommends a sequential, progressive response for HII and ADHD management that varies based on the age of the child and range of difficulties related to HII. The foundation for managing and responding to children and adolescents with HII begins with environmental modifications and parenting strategies (Dahl et al., 2019; National Institute for Health and Care Excellence, 2018; Zwi et al., 2011). Support for implementing parenting strategies may be provided in the form of individual advice with a clinician, group-based parenting programs, or individual parenting programs (Agahi, 2017; Coates et al., 2015; Steenhuis et al., 2020). For example, for children under 5 years old, a group-based parenting program is recommended prior to further specialist assessment (National Institute for Health and Care Excellence, 2018). For children over 5 years old, after environmental modifications and parent-behaviour management strategies have been implemented, medication options can be considered when HII difficulties persist (Dreyer et al., 2010; Zwi et al., 2011). For adolescents, cognitive-behavioural therapies are recommended as additional support for social, emotional and problem solving skills when difficulties remain after environmental modifications, parenting strategies and medication have been initiated (National Institute for Health and Care Excellence, 2018). The provision of group-based ADHD specific information is recommended for parents, and either group-based parenting programs, or individual parenting programs if there are logistic or socio-economic barriers to attendance (National Institute for Health and Care Excellence, 2018). Parental involvement is required for implementing environmental modifications and behaviour management strategies,

administering and adhering to medication regimes and can influence the accessibility of cognitive-behavioural therapy for adolescence (Sayal et al., 2018).

### **Parenting Programs**

Parenting programs aim to promote positive parent-child relationships and developmental outcomes for children (Rimestad et al., 2019). Typically, parenting programs aim to develop parents' knowledge and behaviour management skills by teaching specific parenting practices. Such programmes are often delivered in a group setting and facilitated by a trained practitioner (Bornstein, 2019; Sandler et al., 2015). For example, the Triple P (Positive Parenting Program) aims to support the social, emotional and behaviour development of children by improving the knowledge and skills of their parents (Sanders et al., 2014). Common elements of parenting programs include the presentation of information, discussions, role plays, video vignettes and homework to support the caregiver's understanding and application of the parenting skills (Barlow & Coren, 2018). Parenting programs can be delivered individually or in small groups, and in a range of settings including in homes, schools, clinics, community facilities, faith-based institutions and social service agencies or online (Barlow et al., 2014; Dopfner et al., 2020; Tarver et al., 2014). There are variations in the structure, delivery, frequency, and duration of sessions across different parenting programs depending on the purpose and context of the program (Agahi, 2017; Bennett et al., 2013; Ilias et al., 2017). There is often a focus on the strengths of the child and the parent, as well as different ways parents can respond to challenging behaviour when it occurs (Barlow & Coren, 2018; Leijten et al., 2019). Programs also vary in the extent to which they provide additional services such as counselling or supplementary material such as self-care and emotional regulation skills for the parents and adjunctive social skills training for children (Lo et al., 2020; Shimabukuro et al., 2020; Siebelink et al., 2022; Steeger et al., 2016).



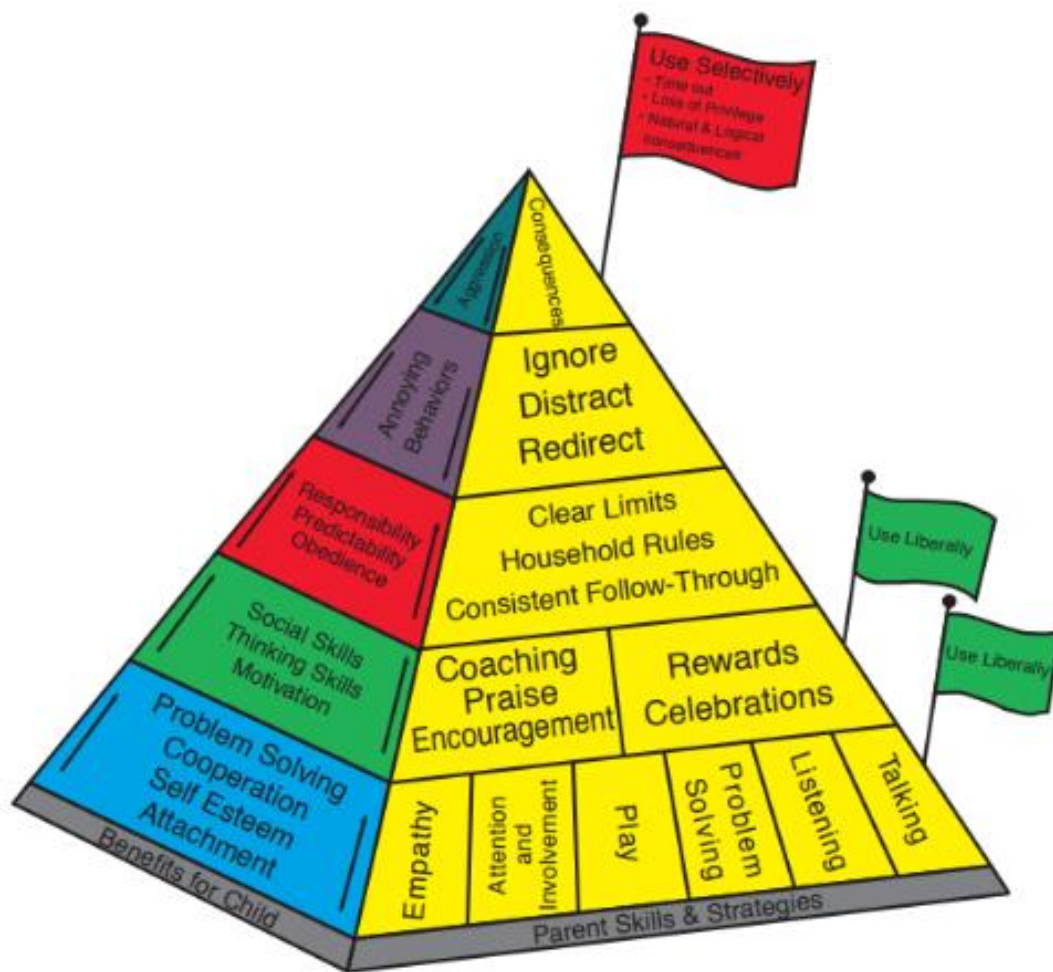
The presentation of program content is often adapted for different cultural contexts. Cultural meaning impacts the interpretation of parenting program content and influences how the parenting skills are implemented (Matsumoto et al., 2007). Cultural adaption is defined as “the systematic modification of an evidence-based treatment (EBT) to consider language, culture, and context in such a way that it is compatible with the client’s cultural patterns, meanings and values” (Bernal et al., 2009, p. 362) The content and delivery of parenting interventions need to reflect cultural contexts to ensure the intervention, or program, is accessible and acceptable for the participants (Baumann et al., 2015). For example, Shimabukuro et al. (2017) details the process of adapting the New Forest Parenting Program for Japanese mothers. Participants revealed a preference for mother-only groups to support open conversation and a need to explain the purpose and importance of behaviour management strategies that were not perceived as being consistent with Japanese cultural norms, for example, offering praise. Similarly, Te Whānau Pou Toru, is a culturally adapted version of the Positive Parenting Program for Māori (Keown et al., 2018). Modifications were made to the presentation of resources while retaining fidelity to the content. For example, Te Whānau Pou Toru welcomed participants with *karakia* (prayer), *mihi whakatau* (welcome), and *whakawhānaungatanga* (process of establishing connections and building relationships) and included elders in presenting the program (Keown et al., 2018). Te Whānau Pou Toru participants rated the program as highly satisfactory, and it was found to be efficacious on outcome measures with medium to large within group effect sizes reported at T2 and T3 for an improvement in child behaviour (ECBI Problem subscale ( $d = 0.88$ ) ECBI intensity subscale ( $d = 0.62$ )) and parenting practices (reductions in overreactive ( $d = 0.70$ ) and lax ( $d = 0.64$ ) parenting) and there was an increase in parenting confidence as measured by the Parenting Task Checklist self-efficacy scale ( $d = 0.73$ ).

## **Theoretical Foundations of Parenting Programs**

Despite variation in the delivery and structure of parenting programs, there are theoretical similarities in empirically supported parenting programs (Rimestad et al., 2019). Skinner's (1965) operant conditioning, Bandura's (1963) social learning theory and attachment theory often provide the theoretical foundation that most evidence-based parenting programs use to inform parenting practices. For example, the Incredible Years Program (IY) (Webster-Stratton, 1998) Parent–Child Interaction Therapy (Eyberg, 1988), The Triple P-Positive Parenting Program (Sanders et al., 2014) and the New Forest Parenting Program (Shimabukuro et al., 2017) are based on the application of operant conditioning and social learning theory. The Incredible Years Program have combined the core parenting techniques informed by these theoretical perspectives into a visual resource for parents as shown in Figure 6.

**Figure 6**

*The Incredible Years Parenting Pyramid illustrates recommended parenting practices that are based on social learning theory and operant conditioning principles (Leijten et al., 2019)*



## Parenting Pyramid®

The Incredible Years

### ***Operant Conditioning***

Behavioural contingencies and differential patterns of reinforcement are essential components of operant conditioning that are often applied to parenting practices (Bornstein, 2019; Sanders & Mazzucchelli, 2022). Behavioural contingencies are multi-phase process

where children's behaviour occurs in response to aspects of their environment and can be expressed as (McSweeney & Murphy, 2014):

$$EO/S^D \rightarrow R \rightarrow S^R$$

The basic principles of operant conditioning are that an antecedent (circumstance, event or catalyst the precedes a behaviour, noted in this equation as a discriminative stimulus 'SD' and establishing operation 'EO') elicit a behavioural response, expressed as 'R' (McSweeney & Murphy, 2014). Where 'R' is the child's behaviour, 'SR' is the parents' response to the child's behaviour, which can strengthen or diminish the likelihood of 'R' re-occurring. Reinforcement is the operant conditioning principle underlying 'SR', colloquially known as a consequence (McSweeney & Murphy, 2014). A reinforcement is a response that increases the frequency of the behaviour and can be in the form of positive reinforcement (e.g the addition of a tangible or social reward) or negative reinforcement (e.g the cessation of a preferred activity) (De Meyer et al., 2019; Kaehler et al., 2016; Leijten et al., 2019). Punishment is the operant term for a behavioural consequence, or parental response ('SR'), that decreases the frequency of a behaviour (Lundahl et al., 2006). Parents offering praise or rewards to children for desired behaviour is a form of positive reinforcement as it supports an increase in the re-occurrence of the desired behaviour (Chu et al., 2012; Leijten et al., 2019). There are two types of negative reinforcement, escape, and avoidance (McSweeney & Murphy, 2014; Vandbakk et al., 2019). An escape-based reinforcement occurs when a behavioural response stops an unpleasant stimulus, and avoidance occurs when the experience of an unpleasant stimulus is prevented (Miltenberger & Crosland, 2014; Romano et al., 2021). Another variant of reinforcement is an automatic reinforcer, which occurs when the behaviour provides its

own reinforcement. Children with HII, for example, may experience automatic negative (escape) reinforcement when engaging in small physical movements while required to sit in a classroom, as the movements may alleviate or remove unpleasant internal sensations associated with behavioural inhibition (Piazza et al., 2000). In general, the effectiveness of a reinforcer is influenced by the rate, amount, and quality of the reinforcement (McSweeney & Murphy, 2014). The relative value of different forms of reinforcement are specific to each child, their developmental ecosystem and history of reinforcement (Binnendyk et al., 2009; Vandbakk et al., 2019).

Children are immersed within multiple, complex behavioural contingencies that contribute to the development and maintenance of the child's behaviour over time (De Meyer et al., 2019; Hulsbosch et al., 2021). Behavioural theorists have identified a range of schedules of reinforcement that exert different effects on the frequency and persistence of behaviour (Binnendyk et al., 2009; McSweeney & Murphy, 2014; Piazza et al., 2000). Broadly, reinforcement can be continuous (provided for every instance of behaviour) or intermittent, and can be based on a ratio (number of occurrences of a behaviour) or interval (passage of time since last reinforcement) schedule (Furukawa et al., 2019; Vandbakk et al., 2019). A continuous ratio schedule of reinforcement can be effective in establishing new behaviour whereas intermittent reinforcement supports the maintenance of behaviour once established (Furukawa et al., 2019). Beyond the simplistic allure of operant principles, children are increasingly recognized as having agency and are no longer perceived as passive recipients of reinforcement (Binnendyk et al., 2009; Fisher & Skowron, 2017; Gonçalves, 2018; Steenhuis et al., 2020). For example, children's responses to their parent function as schedules of reinforcement, or behavioural contingencies, for the parents (Hulsbosch et al., 2021; Neece et al., 2012; Sandler et al., 2011).

Parenting programs that are informed by operant conditioning develop the parents' skill in the identification and modification of behavioural contingencies to shape child behaviour (Hornstra et al., 2021; Leijten et al., 2019). Content relating to environmental modifications seek to address the behavioural antecedents ('SD' and 'EO') as a mechanism to prevent or reduce the occurrence of undesirable behaviour (McSweeney & Murphy, 2014). Behavioural parenting techniques such as sticker charts (fixed ratio schedule of reinforcement) and ignoring undesirable behaviour (negative reinforcement) are modifications to the child's schedule of reinforcement ('SR') that encourage the child to increase the frequency of desirable behaviour (Chorpita et al., 2011; Kaehler et al., 2016; Leijten et al., 2019).

### *Social Learning Theory*

Social learning theory emphasizes that children learn behaviour from direct and indirect processes of observation, imitation and modeling from within their social environment (Bandura & Walters, 1963; Fisher & Skowron, 2017). The child's acquired behavioural strategies can become generalized across time and place and may progressively increase in complexity during development (Leijten et al., 2019; O'Connor et al., 2013). Proposed learning mechanisms are diverse, and include repeated experiences, exposure to social norms and values via cultural mediums such as stories, the reproduction of social roles and situations in play, direct explanations and conversations regarding acceptable behaviour with people in proximal roles within the child's ecosystem (O'Connor et al., 2013; Sanders & Mazzucchelli, 2022). Varying levels of behavioural support and social reinforcement are provided to child to encourage their adherence to an expected standard of behaviour (O'Connor et al., 2013; Sanders & Mazzucchelli, 2022).

Parenting programs use social learning theory to assist parents in shaping their child's behaviour (O'Connor et al., 2013; Reitman & McMahon, 2013). Examples of parenting practices that are informed by social learning theory include giving direct, descriptive

instructions that specify what action should be taken by the child, the establishment of consistent routines, setting rules and limits that demonstrate appropriate and inappropriate behaviour, monitoring the child and their activities, and teaching the child emotional regulation, problem solving and social skills via both parent modeling and direct teaching (Fisher & Skowron, 2017; Rimestad et al., 2019; Sanders et al., 2014).

### ***Attachment Theory***

Attachment theory is a prominent and influential explanation of socioemotional development (Duschinsky, 2020). Attachment theory suggests the pattern of availability and responsiveness of caregivers, particularly during the first year of a child's life, contributes to an internal working model of relationships and an enduring pattern of engagement with others (Bowlby, 1988). Attachment styles have been classified into secure and insecure categories, with anxious, avoidant, and disorganized attachment being styles of insecure attachment (Ainsworth, 1979). While contemporary attachment research may be shifting towards a continuum of security that is fluid, rather than fixed classification of discrete attachment styles, the importance of relationships and the role of early experiences with caregivers is undisputed (Schore & Schore, 2008). Parenting programs that are informed by attachment theory emphasize positive, warm and emotionally attuned relationships that can be a reliable source of comfort for the child during times of distress (Kohlhoff et al., 2022). Parent-child relationships are prioritized as the central mechanism to support the child's self-regulation and social development (Webster-Stratton & Reid, 2014; Wright & Edginton, 2016). Parenting practices in programs that are influenced by attachment theory can include empathy, active listening and perspective taking, spending time together, noticing and appreciating the child's strengths, engaging in child led play and sharing the child's interests (Wright & Edginton, 2016).

The distinct theoretical foundations of behaviourism, social learning and attachment theory are increasingly viewed as complementary perspectives that can be integrated into parenting program content (Fisher & Skowron, 2017; Garland et al., 2008; Greco et al., 2001; Shapiro et al., 2015). Empirical findings from randomized control trials support the theoretical integration, for example O'Connor and colleagues (2013) found that social learning approaches increased parental sensitivity and strengthened the parent-child relationships on measures of attachment. Parental sensitivity is described by Duschinsky and colleagues (2020) as the detection, interpretation and relevant response to the child's behaviour in a manner that establishes a mutual understanding of the child's experience. The translation of operant and social learning-based parenting practices into improvements in relationship quality illustrate that distinct theoretical perspectives are conceptually congruent, and converge on practices that support child development (Fisher & Kim, 2007; Kaehler et al., 2016; O'Connor et al., 2013; Van Zeijl et al., 2006).

### ***Mindful Parenting***

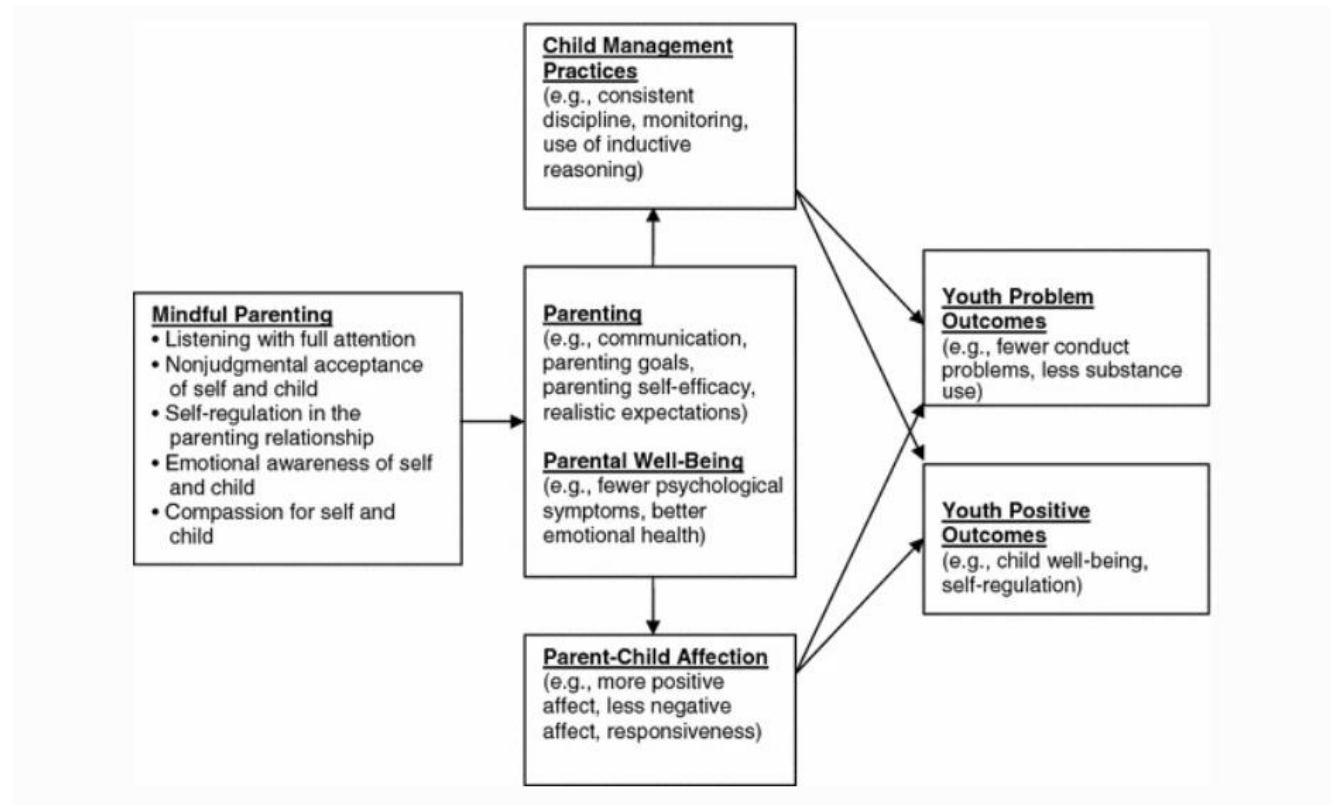
Mindful parenting is an emerging intervention that is a-theoretical and distinct from operant conditioning, social learn theory, attachment and general mindfulness (Liu et al., 2021). Mindfulness can be defined as non-judgemental awareness of the present moment, and mindful parenting involves the application of compassion and non-judgemental awareness to parent-child interactions (Liu et al., 2021). Duncan et al. (2009) developed a model of mindful parenting with five components: listening with full attention, non-judgemental acceptance of self and child, emotional awareness for self and child, compassion for self and child and emotional regulation in the parenting relationship, including practising low-reactivity to challenging child behaviour (see Figure 7). The model relates the principles of mindful parenting to relational mechanisms that are proposed as influences on child development. For instance, parent-child communication is proposed as a mediating



mechanism that is improved by mindful practices of listening with full attention, practicing self-regulation and compassion, and subsequently related to an improvement in parental wellbeing which can improve the consistency and positive affect of the parents' interactions with the child. The components in the model are consistent with findings from mindful parenting literature. For example, a number of studies have found that mindful parenting can assist parents to reduce emotional reactivity, retain positive emotions during parent-child conflict and experience less parenting stress (Lippold et al., 2015; Moreira & Canavarro, 2018). The quality of the parent-child relationship and communication have been found to improve through mindful parenting practices (Anand et al., 2021; Bögels et al., 2021).

**Figure 7**

*Duncan et al (2009) Mindful Parenting, Parent–Child Relationships, and Youth Outcomes*



### ***The Efficacy of Parenting Programs***

Parenting programs have been shown to be effective in improving parenting practices and child development outcomes (Barlow & Coren, 2018; Leijten et al., 2019; Yaffe, 2020c). Barlow's (2014) meta-review of the effectiveness of parenting programs considered all Campbell Collaboration systematic reviews of parenting programs irrespective of the outcome measures, theoretical foundation, target concern or specific parent-population that the parenting program review included. Six reviews were included in Barlow and colleagues (2014) meta-review, which found that parenting programs consistently reduced negative or harsh parenting practices and increased parental responsiveness to the child and positive parent-child interactions. Findings that support improvements in parenting skill, or competence, and increases in positive parent-child interactions have consistently been replicated in a range of populations including with children aged 0-16 with challenging

externalizing behaviour (Barlow & Parsons, 2005; Sanders et al., 2014), teen parents (Furey, 2004), incarcerated parents (Wilson et al., 2010), and parents in low and middle income countries (Knerr et al., 2013).

Parenting programs for children with HII have been found to increase parenting skill, yet do not consistently improve HII behaviour for children diagnosed with ADHD (Rimestad et al., 2019). Rimestad and colleagues (2019) systematic review on the effects of parenting programs for children under 5 years old with and without ADHD found a reduction in negative parenting practices across 10 studies and 771 participants. A 2015 meta-analysis of 8 randomized control trials with 400 participants completing parenting programs for children with ADHD found significant improvement in parenting skill compared to waitlist controls, with an effect size of 0.61, 95%  $CI = [0.41, 0.81]$  (Mulqueen et al., 2015). Despite improvements in parenting skill, there is inconsistent evidence relating to a reduction in ADHD symptoms as measured by HII (Daley et al., 2014). For example, Jones and colleagues (2008) long term follow-up of a randomized control trial of the Incredible Years Parenting Program for children with ADHD found sustained improvements in child HII behaviours, yet this finding has not been replicated in systematic reviews. Fifteen studies included in Rimestad and colleagues (2019) systematic review produced a combined effect of a moderate reduction in child ADHD symptoms and conduct problems after completing a parenting program, as reported by parents. Yet independent assessors in 6 studies with 311 participants did not find evidence of significant symptom reduction (Rimestad et al., 2019). Previous meta-analysis investigating behavioural parenting programs for children aged 3-18 years with ADHD diagnoses also found a discrepancy between parent reported changes and independent outcome assessors (Catalá-López et al., 2017; Daley et al., 2014; Sonuga-Barke et al., 2013). Parents' assessments are ecologically valid as the parent is aware of changes in the frequency and intensity of their child's behaviour across multiple contexts, over a longer

period compared to the time and context limited behavioural ratings of an independent observer (Chen et al., 2017; Rimestad et al., 2019). Regardless of the validity and objectivity of changes in child HII behaviour after the completion of a parenting program, it is interesting that parents perceive an improvement in the child's behaviour (Daley et al., 2014; Rimestad et al., 2019). It is possible, though not empirically established, that parent reported improvements in child HII may be partially attributed to changes to the parents perception of their child, related to improvements in parenting confidence or reflect overall satisfaction with the parenting program (Chen et al., 2017; Daley et al., 2014; Rimestad et al., 2019; Zwi et al., 2011). The multidetermined aspect of HII, heterogeneity of associated behaviour and difficulties, and variation in the severity of HII behaviours amongst participants may influence the degree of change that can be expected on HII outcomes (Faraone et al., 2021; Sonuga-Barke et al., 2022). Possible differences in outcomes between ADHD specific parenting programs, and more generic programs delivered to parents whose children have ADHD require further examination (Rimestad et al., 2019; Steenhuis et al., 2020; van den Hoofdakker et al., 2010).

The value of parenting programs extends beyond possible changes in child HII behaviour (Catalá-López et al., 2017; Daley et al., 2014; Faraone et al., 2021). Children with an ADHD diagnosis often experience co-occurring or associated difficulties with mental health, social relationships, educational achievement and risk taking behaviours (Lee et al., 2016; Rodriguez-Seijas et al., 2020; Safer, 2018; Zablotsky et al., 2019). Parenting programs are efficacious for reducing challenging child behaviour, and may contribute to reducing the impact of features associated with HII (Catalá-López et al., 2017; Daley et al., 2014; Shorey & Ng, 2021; Warren, 2018). Parenting practices are not a causal agent of ADHD, however ineffective parenting practices are likely to contribute to, exacerbate, or maintain difficulties with HII (Allmann et al., 2022; Barkley, 2014; Faraone et al., 2021; Johnston & Chronis-

Tuscano, 2014). Addressing parenting practices is known to improve the developmental outcomes for children with HII, irrespective of discrepancies or inconsistent findings regarding the degree of impact on core ADHD symptoms (Daley et al., 2014; Rimestad et al., 2019; Zwi et al., 2011).

Parents are the mechanism of change in parenting programs and there is a diminished response when parents are experiencing higher levels of stress, or lower levels of wellbeing (Kaehler et al., 2016; Piehler et al., 2014). Parenting programs are a parent administered intervention and their effectiveness relies upon the parents capacity to recognise, understand and implement changes (Bornstein, 2019). Piehler's (2014) analysis using structural equation modelling found that parental wellbeing had a moderating effect on parenting program outcomes and attendance and predicted parental efficacy two years after the parenting program. Similarly, Masarik and Cogner (2017) and Bøe and colleagues (2014) longitudinal and cross-sectional studies converge on the understanding that parental wellbeing and parenting practices moderate the relationship between family stressors and child development. Hinshaw (2007), Coates and colleagues (2015), Woodman and colleagues (2015), Iwrin and colleagues (2019) and Warren (2018)'s studies of families with a child with ADHD or a developmental disability collectively argue that parenting interventions need to optimise parental wellbeing in order to improve parenting program outcomes.

Parental ADHD needs to be considered when delivering programs to parents whose children have a diagnosis of ADHD (Brown, 2013; Cheung & Theule, 2016). The effectiveness of a parenting program may be reduced if parental ADHD is unaccounted for or when parents with ADHD also experience difficulties with reduced self-esteem, an impaired self-concept or co-occurring mental health conditions that reduce their wellbeing (Q. Chen et al., 2018; Hage et al., 2018). Harpin and colleagues (2016) systematic review of the long-term outcomes of self-esteem and social functioning for people with ADHD found

differences between adults categorized as having treated vs untreated ADHD, with the untreated ADHD group experiencing worse self-esteem outcomes. Disentangling these parental characteristics from the effect of parenting programs in the context of child HII is challenging, particularly as parental HII or ADHD is often not measured (Chacko et al., 2017; Harpin et al., 2016; Neece et al., 2012; Weiss et al., 2000). People with ADHD can experience executive functioning related impairments that disrupt the acquisition and application of parenting skills and knowledge, may impact attendance or mean that the parenting techniques being taught need to be adjusted for parents with ADHD (Barkley, 2014; Hage et al., 2018). Accommodating and accounting for different needs amongst the parents could improve the delivery and outcomes of such programs (Chacko et al., 2017; Harpin et al., 2016). For example, Jans et al. (2015) advises clinicians to regard suboptimal compliance with interventions as the norm for parents with an ADHD diagnosis, and notes that minor non-compliance does not necessarily obstruct progress.

### **Parenting Programs and HII/ADHD**

The relationship between parenting programs and parental wellbeing in the context of HII is complex and interrelated and requires disentangling. The reciprocal relationship between parenting practices, child behaviour and parental wellbeing has been well established (Neece et al., 2012; Steijn et al., 2014), and parents of children with HII are known to have elevated indicators of stress (Theule et al., 2018; Theule et al., 2010). Parenting programs and adjustment to parenting strategies are the recommended response when children experience challenges with HII behaviour, the implementation of which relies on the parents (Coates et al., 2015; Kaehler et al., 2016). It is evident that parenting programs are beneficial for children's development (Barlow & Coren, 2018; Bornstein, 2019; Rimestad et al., 2019; Sandler et al., 2011). Yet it is not evident what contribution, if any, parenting programs make to the parents' lives and, more specifically, to their wellbeing (Barlow et al.,

2014; Bennett et al., 2013; Ferrin et al., 2014; Nelson et al., 2014; Zwi et al., 2011). Piehler and colleagues (2014) analysis of the factors moderating parental wellbeing in the context of child conduct problems found that parental wellbeing influenced the strength of the relationship with parenting program outcomes and attendance. Coates and colleagues (2015) considered the possibility that smaller than expected effect sizes for the wellbeing of parents whose children have ADHD when completing a parenting program may reflect an interaction where parenting programs exacerbate parental depression. Coates and colleagues (2015) suggested that this may occur as the parent is required to deal directly with their parenting difficulties and recommend that consideration of parental mood be included in intervention planning for children with ADHD. Conversely, Furlong & McGilloway's (2015) systematic review of long-term follow-up outcomes of parenting programs for early onset conduct problems in children aged 3 – 12 years included 13 studies and found a small, statistically significant improvement in maternal mental health with a small to moderate effect size. Barlow and Coren (2014, p. 101) conclude that there is an abundance of reliable evidence to support short-term improvements in the psychosocial functioning of parents after the completion of a parenting program. However, there is less evidence to support this relationship for parents whose children have a diagnosis of ADHD (Zwi et al., 2012).

There is a broad consensus on the need to examine empirical evidence specific to fathers (Fletcher et al., 2011; Panter-Brick et al., 2014). For example, a 2017 meta-analysis that evaluated parental ADHD and parenting behaviour included 32 studies, and only 3 were specific to fathers (Park et al., 2017). It is possible that fathers experience parenting and parenting programs differently to mothers, and that there are differences in the wellbeing related outcomes for fathers (Barlow et al. (2014). In a review of the literature by Zwi and colleagues (2011) it was found that fathers benefitted from group parenting programs and mothers benefitted more from individual parenting programs. Joseph (2019) conducted an

analysis using longitudinal data and compared the parenting practices of fathers with and without a childhood ADHD diagnosis. Joseph (2019) found a positive bias in the self-perception of fathers with childhood ADHD where the fathers rated their parenting as more efficacious than fathers without ADHD, but provided fewer supportive responses to their child's negative emotions. Similarly, Chang (2013) compared fathering and father-child relationships between those whose children had a diagnosis of ADHD and those who did not. Chang and colleagues (2013) found that children with ADHD experienced fewer daily interactions with their fathers, received less affection, and more authoritarian parenting practices than children without ADHD. The children rated their fathers parenting more negatively than children without ADHD (Chang et al., 2013). Joseph (2019) and Chang (2013) conclude that parent training may be of particular benefit to father with childhood ADHD or elevated HII. However, it is possible that fathers with positive views of their parenting skills may be less likely to engage with parenting programs (Joseph et al., 2019). The number of boys that are diagnosed with ADHD in childhood is higher than girls, and ADHD is a highly heritable condition (Zablotsky et al., 2019). Given this, Joseph's (2019) and Chang's (2013) finding on the differences in parenting practices and self-perception of fathers with ADHD may relate to a relatively large group of parents and requires further empirical attention.

### **Findings and Limitations of Previous Systematic Reviews**

This section will consider the findings and limitations of previous systematic reviews that relate to HII and parental wellbeing. As yet, the relationship between parenting programs and parental wellbeing has not been comprehensively examined in the context of child HII. The logic of a developmental-transactional framework suggests that parenting practices and parental wellbeing are important and potentially modifiable components of the ecological context for children with HII (Bronfenbrenner, 2005; Davies & Cicchetti, 2004; Johnston &



Chronis-Tuscano, 2014). Individual studies of parenting programs report improvements in parental wellbeing as with Franke et al. (2020); Shimabukuro et al. (2020) and Behbahani et al. (2018); a finding not consistently endorsed by systematic reviews.

While many previous systematic reviews have been conducted on the effectiveness of parenting programs, there are none that specifically address parental wellbeing where children experience elevated levels of HII. Some reviews include an analysis on stress, anxiety or self-esteem and report contradictory findings as will be discussed with regards to systematic reviews completed by Barlow and Coren (2018); Coates et al. (2015); Irwin et al. (2019); Leijten et al. (2019); Zwi et al. (2011). Where wellbeing is reported, the individual constructs and measures that are being considered equivalent to wellbeing are either not reported or are highly varied across studies, resulting in an inconsistent and incomplete analysis of the existing literature.

### ***Parenting Programs and Psychosocial Health***

There are inconsistent findings regarding the effect of parenting programs on parental self-esteem, confidence, anxiety, and depression (Barlow et al., 2014; Coates et al., 2015). In contrast to the findings from Coates et al. (2015) where parental self-esteem was found to increase after completion of a parenting program, Barlow and colleagues (2014) systematic review of the effect of group-based parenting programs on parental psychosocial health included 48 studies and was not restricted to parents or children with specific characteristics, such as HII. Despite broad criteria to assess the effect of group-based parenting programs on parental psychosocial health, Barlow and colleagues (2014) found no evidence of an effect on self-esteem (*SMD* -0.01, 95% *CI* -0.45 to 0.42). Barlow et al. (2014) did find statistically significant short-term improvements in depression (standardised mean difference (*SMD*) -0.17, 95% confidence interval (*CI*) -0.28 to -0.07), anxiety (*SMD* -0.22, 95% *CI* -0.43 to -0.01), stress (*SMD* -0.29, 95% *CI* -0.42 to -0.15), anger (*SMD* -0.60, 95% *CI* -1.00 to -0.20),

guilt (*SMD* -0.79, 95% *CI* -1.18 to -0.41), confidence (*SMD* -0.34, 95% *CI* -0.51 to -0.17) and satisfaction with the partner relationship (*SMD* -0.28, 95% *CI* -0.47 to -0.09) at 3 months.

Improvements in stress and confidence continued at 6 months, however, no measures of psychosocial health remained statistically significant at 1 year. Positive dimensions of wellbeing identified by Coates and colleagues (2015) and Barlow and colleagues (2014) include confidence and self-esteem, however it is the measurement and terminology relating to wellbeing is not consistently applied across studies or systematic reviews; and when the same dimension is measured the results can be inconsistent, as with self-esteem. It is noteworthy that Barlow and colleagues (2014) review was restricted to group parenting programs and did not focus on parents of children with ADHD symptomology. The extent to which the findings from Barlow and colleagues (2014) review apply to parents of children with HII is not known.

The short-term improvements in depression found by Barlow and colleagues (2014) were not replicated in a systematic review by Leijten and colleagues (2019). Leijten et al. (2019) conducted a systematic review that only considered parents with a diagnosis of Depression and examined co-occurring change in child conduct and parental mental health following the completion of the Incredible Years parenting program. Maternal depressive symptoms did not improve, even when child conduct problems did, except in severe cases of depression. The results from Leijten et al. (2019) indicate that even when there is change in child behaviour outcomes, wellbeing, or some dimensions of wellbeing, are not impacted for some parents. When these findings are considered in combination with those of Zwi et al. (2011), and the increased rates of stress and depression reported by parents of children with HII (Al-Balushi et al., 2019; Allmann et al., 2022; Gallagher & Hannigan, 2014), it is evident that more research is needed to understand the impact of parenting programs on parental wellbeing.

### ***Co-Occurring Conditions, Disability, Parenting Programs and Parental Wellbeing***

There is a well-established literature base considering the quality of life of parents whose children have disabilities and mental health conditions. Quality of life (QOL) is defined as a person's "perception of their position in life in the context of the culture and value systems in which they live and in relation to their goals, expectations, standards and concerns" (Dey et al., 2019, p. 563). A Family Quality of Life measure has been developed that includes five subscales of Family interaction, Parenting, Emotional wellbeing, Physical/Material wellbeing, and Disability-related support (Mori et al., 2017). Mori and colleagues (2017) investigation into the impact of a genetic condition, CDKL5, on parental wellbeing and family quality of life found that the emotional wellbeing subscale on the family quality of life measure was the lowest. The mean emotional wellbeing score was 3.50 (*SD* 0.97), yet overall family quality of life was considered satisfactory with an average score of 4.06 (*SD* 0.66). Reduced parental emotional wellbeing was associated with severe co-occurring sleep disturbances for the child, and financial hardship that reduced the parents' capacity to meet their child's healthcare needs. Similarly, Gilson (2018) and Gallagher and Hannigan (2014) describe consistent patterns where parents whose children have disabilities report higher rates of chronic stress, depression, anxiety, sleep disturbances, and reduced physical health, compared to parents of children without a disability. Cheshire and colleagues (2010) acknowledge that caring for a child with a disability compromises parental wellbeing, and that these parents are reluctant to access services for their own needs, and instead chose to prioritise their child's needs. In contrast to this Scorgie's (2000) qualitative research on the transformational potential of raising a child with a disability found significant, positive changes for parents. Scorgie (2000) reported that personal growth, engagement with philosophical and spiritual values, and interpersonal relationships improved for parents whose children had a disability. Cheshire and colleagues (2010) recommend that

interventions to improve parental wellbeing are developed for parents whose children have a disability. A small number of studies have investigated the wellbeing of parents whose children have a disability after the completion of a parenting program. A meta-analysis of the Stepping Stones Triple P parenting program found improvements in child behaviour, parenting style, parenting satisfaction and efficacy and parental adjustment following the completion of the Stepping Stones Triple P program (Tellegen & Sanders, 2013). Hohlfield (2018) conducted a systematic review on the relationship between parental efficacy and parenting programs for parents whose children have a disability. Parenting programs were found to produce a statistically significant increase in parental self-efficacy (standardised mean difference, 0.60 [95% *CI*: 0.38–0.83]; *I*<sup>2</sup>, 74%) relative to baseline, with the largest improvement in self-efficacy occurring in parents whose children were under 5 years of age (Hohlfield et al., 2018). Research considering parents of children with disabilities may parallel experiences of parents whose children experience severe HII because of the impairing effects and highly co-occurring nature of the behaviours, but few studies have investigated this (Johnston & Chronis-Tuscano, 2014).

The measurement of constructs related to wellbeing are expanding to include positive dimensions of wellbeing (Irwin et al., 2019). Irwin et al. (2019) detailed the measures used to conceptualize wellbeing for parents of children with disabilities and included any subjective or objective total measures of self-actualisation and contentment/happiness as well as improvements in depression, aggressive behaviour and stress or anxiety. Including positive dimensions of parenting is important as it ensures that research captures positive parental experiences and affect. The Irwin et al. (2019) review targeted interventions that directly addressed the wellbeing of parents whose children have Cerebral Palsy and was not restricted to parenting interventions. Irwin and colleagues' review included 13 reports of studies, five of which examined Stepping Stone Triple P group parenting program as the intervention

condition. No other parenting programs were included in the review. As the analysis was not restricted by intervention, the quantitative synthesis of effect sizes includes interventions that directly addressed parental wellbeing. The effect of the Stepping Stones Triple P on parental wellbeing cannot be separated. These factors mean that the extent to which patterns in measurement of wellbeing, or the findings of measures, will translate to parents of children with hyperactivity, impulsivity, and inattention is unclear.

Mindful parenting interventions for parents whose children have a developmental disability have been shown to improve parental ratings of stress and depression (Osborn et al., 2021). Osborn and colleagues (2021) completed a systematic review of mindful interventions for parents whose children have a developmental disability, including ADHD, and a variety of physical, learning and neurological conditions. Three studies examined parenting interventions, and all three studies reported significant improvements in ratings of stress and depression. However, there was variation in the results with one of the included studies (Behbahani et al., 2018) finding a small, non-significant stress reduction. Only one of the studies, Behbahani and colleagues (2018), found a continuity of effects at follow up. In another study included in the review, Liu et al. (2021) investigated the effects of mindful parenting programs on ADHD with a randomized control trial. Those who completed the 8-week mindful parenting program experienced significant reduction in parental stress ( $F = 8.79, p = .004$ , effect size  $d = 0.44$ ). Within this study, Liu and colleagues identified the need for a systematic review that included mindful based parenting programs and that addressed ADHD specifically.

Significant differences in the effectiveness of parenting programs have been found, based on the format of delivery (group vs individual) (Barlow & Coren, 2018; Rimestad et al., 2019; Wymbs et al., 2016). Irwin et al. (2019) systematic review of the effectiveness of interventions for wellbeing of parents whose children have cerebral palsy found that one

parenting program (Steppingstones Triple P Positive Parenting Program) did not affect parent wellbeing unless delivered in a group setting or delivered in conjunction with Acceptance and Commitment Therapy [ACT]. This suggests that mechanisms that improve parental wellbeing may be more related to peer support or normalization of parental experiences via social environments than parenting program content or changes to child behaviour. However, a contradictory finding is reported in a systematic review of a self-directed parenting program for children with externalizing behaviour difficulties, where Tarver et al. (2014) found a moderate effect of self-directed versions of parenting programs (Triple P and NFPP) on parental mood. A self-directed parenting program does not involve peer support or additional therapeutic components.

### ***Parenting Programs and ADHD***

The effect of parenting programs on parental stress, wellbeing and self-esteem has received minimal empirical attention in the context of interventions for HII. Coates (2015) systematic review of the effectiveness of parent administered behavioural interventions for children with symptoms of ADHD included an analysis of the effect of parenting programs on parental stress, parental wellbeing, and parenting self-esteem. Individual effect sizes were calculated using the standard mean difference [*SMD*] and based on five studies with significant heterogeneity ( $\chi^2 = 10.11$ ,  $I^2 = 60\%$ ,  $p < .05$ ). The only statistically significant result being parental self-esteem with a large effect size ( $SMD = 0.93$ , 95%  $CI = [0.48, 1.39]$ ). A moderate and non-significant effect was found with three studies measuring parenting stress ( $SMD = 0.50$ , 95%  $CI = [-0.12, 1.12]$ ). Heterogeneity was not significant ( $\chi^2 = 5.29$ ,  $I^2 = 62\%$ ,  $p = .07$ ). Four studies were included in parental wellbeing, with the *SMD* being not significant ( $SMD = 0.23$ , 95%  $CI = [-0.026, 0.73]$ ) however heterogeneity was significant ( $\chi^2 = 8.88$ ,  $I^2 = 66\%$ ,  $p < .001$ ). The heterogeneity indicates that there were methodological or measurement differences between the studies, which reduces confidence in

the findings. The methodological and measurement differences were possibly introduced to Coates' and colleagues' findings through the inclusion of randomized and non-randomized control designs, with any study design feature such as multi-arm trials included, and no exclusion criteria on the outcomes measured or focus of the study provided child ADHD symptomology accounted for. The parenting interventions were found to have a moderate effect in reducing HII and conduct problems, yet there was no corresponding effect for the wellbeing of the parents. One explanation for the non-significant effect found in measures of parental stress is due to the small number of included studies. While parental wellbeing was included in these studies, the construct and definition was not explained so it is unclear what specific components were measured and how it was conceptualized. With an ambiguous or undefined concept of wellbeing, it is difficult to understand what the relationship between effective interventions for child behaviour and non-significant effect sizes on parental wellbeing are influenced by.

Recommendations for the use of parenting programs, as a means of support for the management of ADHD, are not based on research with children who have ADHD (Zwi et al., 2011). An ADHD specific systematic review was conducted by Zwi et al. (2011) who recognised that the National Institute for Health and Clinical Excellence [NICE] recommendation of parent training as an intervention in ADHD was based on studies of children under 12 years with conduct disorder, not ADHD. Consequently, Zwi et al. (2011) conducted a systematic review that sought to examine the effectiveness of parent training interventions for ADHD in children aged 5-18 years, based on evidence from randomised and quasi-randomised control trial designs where the participants had elevated HII. Zwi and colleagues (2011) concluded that poor methodological quality meant there was insufficient evidence on which to base practice recommendations. Zwi and colleagues conducted a meta-analysis on parenting stress that was based on two studies that used the Parent Stress Index

(PSI) (Abidin, 2012). The PSI includes a child and parent domain, with the child domain relating to the parents perception of the child and the parent domain measuring stress (Abidin, 2012). While it was only based on two studies, Zwi and Colleagues (2011) found a statistically significant difference for the child domain of the PSI (*MD* -10.52; 95% *CI* -20.55 to -0.48, *I*<sup>2</sup> = 0%), but not for the parent domain. This suggests that changes in the perception of the child may have a direct influence on parents' stress when the child experiences elevated levels of HII. Zwi and colleagues review (2011) noted that parents who completed an individual therapy program alongside a parenting program reported a greater duration of improvements in stress. Gender analysis was limited by available data, though preliminary analysis suggested that fathers benefitted more from group interventions and mothers from the individual therapy program delivered in conjunction with parent training. The conclusions of Zwi and colleagues are limited by a small number of included studies, a high risk of bias and insufficient information to draw meaningful conclusions. The findings do highlight the mixed results on parental wellbeing. In the 11 years since this review the evidence base has expanded significantly, and while the proposed review is not a replication of Zwi and colleagues work, it will provide an update on findings relating to parental stress for this population of parents.

Wymbs and colleagues (2016) conducted a discrete-choice experiment with 445 parents whose children had elevated HII to examine the parent preferences for the format of parenting programs. Wymbs and colleagues (2016) established that 58.7% of parents preferred individually delivered, ADHD specific parenting programs that would help them understand their child's difficulties. 19.4% of parents preferred group-based parenting programs with a preference for developing skills that would provide solutions to their child's challenges and increase the parents sense of confidence (Wymbs et al., 2016). The remaining parents preferred a minimal intervention option that was neither individual nor group-based



parent training (e.g the provision of information only), and reported the highest levels of depression yet no interest in improving their parenting confidence (Wymbs et al., 2016). These preferences are not reflected in the format of programs commonly offered or researched (Wymbs et al., 2016). Of the 15 studies included in Rimestad and colleagues (2019) systematic review of the short and long term effects of parenting programs, nine studies were delivered in a group format (Rimestad et al., 2019). There was no statistically significant difference found between group or individual parenting programs for outcomes related to child HII, however there was a larger effect size for individually delivered programs than for group-based interventions ( $d = 0.72$  vs.  $0.38$ ). All the studies in Zwi and colleagues (2011) review of parenting programs for ADHD were delivered in a group format, despite the format not being an exclusion criterion. Coates and colleagues (2015) review of parenting interventions for ADHD did not specifically report on the delivery format of the programs, which limits the application of the findings. Studies included in Coates and colleagues (2015) review are commonly delivered in a group format, for example Triple P, Incredible Years, New Forest Parenting Program.

### **The Current Study**

The aim of this systematic review is to establish and evaluate the evidence base concerning the impact of parenting programs on parental wellbeing, for parents and caregivers of children with elevated levels of HII. As such, the primary aim of the proposed systematic review is to address the question:

***What benefit do parenting programs have on parental wellbeing for parents of children with elevated levels of hyperactivity, impulsivity, and inattention?***

The secondary aims are to:

- Identify patterns in the measurement of parental wellbeing; and describe the program components, and characteristics of studies, that report an improvement in parental wellbeing.
- Identify potential differences in outcomes for parents with elevated HII. Outcomes for parents with elevated HII, or a diagnosis of ADHD, will be compared to parents without elevated HII, if sufficient data is available.

The primary and secondary aims will allow quality evidence to inform our understanding of the contribution parenting programs make to parental wellbeing and identify possible improvements for programs.

While there have been many previous systematic reviews within parenting program literature, the primary concern is typically the effectiveness of programs for child development, longevity of effects, or evaluations of population specific programs (Barlow & Coren, 2018; Bornstein, 2019). Systematic reviews have been conducted on many aspects of ADHD (Coates et al., 2015; Deault, 2010; Theule et al., 2018; Zwi et al., 2011), and various manifestations of parental wellbeing (Barlow et al., 2014; Bennett et al., 2013; Rutherford et al., 2019; Shorey & Ng, 2021; Webb et al., 2018), yet none on the wellbeing of parents raising children with elevated HII after the completion of a parenting program.

For the purpose of this study, parental wellbeing is conceptualized to be inclusive of positive and negative dimensions of parental affect and cognition. Thus, studies will be of interest where parental wellbeing is considered in the form of effects on stress, distress or negative affect, or effects on positive affect or quality of life. The amorphous use of the term ‘wellbeing’ and inconsistencies in measurement mean it is necessary to include studies that have measured either positive or negative dimensions of wellbeing as well as studies which have measured multiple dimensions. This approach allows all relevant studies to be included

and means that potential variation in findings based on measurement differences can be identified. Excluding studies that have measured only one component would limit our understanding of parental wellbeing. Due to the additional complexity of parental psychopathology and its impact on measures of wellbeing, studies limited to parents with a diagnosed mental health condition will be excluded from this review. To isolate the secondary effect of parenting programs on parental wellbeing, studies where programs were modified to directly target parental wellbeing will be excluded.

### ***The Value of this Review***

The value of this systematic review has been considered from the perspective of clinicians, children, and their families, and prioritises delivering value to the parents of children with HII (Shea et al., 2017). Parenting programs have the potential to be an accessible intervention that improves parental wellbeing. Some conflicting findings of parenting programme outcomes require clarification, particularly in regard to the parents of children with HII. This review would be helpful to guide clinicians, community support and education practitioners regarding the optimal order of interventions (i.e., the value of addressing parental wellbeing before the completion of a parenting program) and adaptations (i.e., content or format adjustments) needed to meet the unique needs of this population of parents. It is possible that in elucidating the effectiveness of parenting programs for parental wellbeing, it may also clarify whether it is beneficial to address parental wellbeing prior to completing a parenting program to increase its effectiveness and the longevity of the effect.

Parenting programs may be a more accessible or acceptable intervention for some parents as it is primarily to benefit their child, rather than themselves. Qualitative research with parents whose children have disabilities revealed that parents can be reluctant to access services for themselves and have difficulty prioritizing their own health and wellbeing (Gilson et al., 2018). This emphasises the value in understanding the secondary effects of

parenting programs and potentially identifying areas for improvement that can support and enhance parental wellbeing.

Parental ADHD is a potential barrier to participation and engagement in parenting programs and is of particular relevance for children with HII (Brown, 2013). A systematic review of secondary outcomes, where the parents are more likely to experience HII or ADHD themselves, provides an opportunity to better serve the needs of these parents by understanding the effectiveness of, and scope for adjustment within, existing interventions.

### **Chapter Three: Methodology**

Science is a process, a standard of evidence and a form of storytelling (Barkley, 2001). Systematic reviews are an evaluation of existing evidence that requires meticulous adherence to process, in order to reliably tell more of the story and make sense of discrepancies (Clarke, 2011). With the prevalence and heterogeneity of HII, the prominence of parenting programs as a preferred intervention, and the ubiquity of parental wellbeing as a concept despite variable forms of measurement, a systematic review offers an opportunity to synthesise, integrate and evaluate these disparate yet interrelated spheres of knowledge. A systematic review is a robust and reliable way to determine the quality of evidence and add coherence to knowledge that is relevant to the lived experiences of many parents (Thomas et al., 2004).

#### **Inclusion Criteria**

The PICOTS framework was used to develop the inclusion criteria for this systematic review, summarised in Table 1 (Samson & Schoelles, 2012). Studies were included if they were: a) randomized controlled trials of b) manualised parenting programs facilitated by trained professionals, for groups of parents or individual parents, delivered in person in any setting c) to parents of children with elevated levels of hyperactivity, impulsivity or inattention - verified by standardized measurement or a diagnostic interview for ADHD d) and report parental wellbeing with a standardized psychometric assessment pre and post parent program only study condition e) peer reviewed publications in English, or with English translations available.

Studies were excluded if they:

- a) did not have an exclusively parent training condition.
- b) the intervention targeted parental wellbeing.

- c) selected parents based on mental health status or included only parents with a diagnosed mental health condition.
- d) were not manualized parenting programs.
- e) the program was delivered by peers or self-administered.
- f) only measured child outcomes.
- g) Were Quasi-randomized studies.

Multiple reports published from a single study were included if they each met criteria for inclusion. To prevent duplication of data and for clarity when multiple reports of the same study were included, each report was entered into results tables separately, but the data of subsequent reports was only included if it provided novel or divergent information from the original study. Studies using constructive designs were included, but the data from the condition with an additional intervention or component was excluded if it did not meet criteria. Constructive designs, or additive designs, examine the effect of a single additional component to an intervention (Barker et al., 2016). Studies were restricted by date of publication with studies published after 2000 excluded during screening.

The inclusion criteria were intentionally broad with regards to parental wellbeing outcomes, intervention, setting and comparison. The purpose was to ensure the inclusion of all relevant studies, and all potential components of wellbeing. This is particularly important due to diversity in the measurement of wellbeing, and to reflect the varied real-world contexts of parenting program delivery. The inclusion of individual and group programs is significant as the systematic review by Irwin et al. (2019) of the effectiveness of interventions for wellbeing of parents found that one parenting program did not affect wellbeing unless delivered in a group setting.

Including studies that assess HII with a standardised psychometric measure is intended to capture elevated HII, and not restrict assessment to diagnostic processes.

Psychometric measures that assess HII include the Eyberg Child Behaviour Inventory (ECBI) and the Strengths and Difficulties Questionnaire (SDQ) (Eyberg & Ross, 1978; Goodman, 1997). These are commonly used measures that can be completed with children aged 2-16 to assess a wider range of behaviours, and they include hyperactivity subscales (Eyberg & Ross, 1978; Goodman, 1997). These scales are developmentally sensitive, and increase objectivity in the assessment of HII so that the review is able to capture HII data that extends beyond ADHD diagnosed populations (Achenbach & Ruffle, 2000). The psychometric properties of scales assessing HII, and parental wellbeing will be considered during the risk of bias assessment process and interpretation of the effect of interventions. As per Higgins et al. (2020) recommendation and for the purposes of an effective screening and selection process, exclusion criteria were prioritized and expressed in a flow chart to support the consistent application of criteria when screening articles. The flow chart, or prioritized decision tree, and record of inclusion decisions with rationale, is included in Appendix C.

**Table 1**

*PICOTS*

Population	Parents completing a parenting program whose children have a diagnosis of ADHD or elevated levels of hyperactivity, impulsivity, and/or inattention, established by a standardised psychometric measures Children with co-occurring conditions will not be excluded. Programs that are completed exclusively by parents with diagnosed mental health conditions will be excluded.
Intervention	Manualized parenting programs that are based on psychological theory and delivered in person to individuals or groups by trained facilitators from professional backgrounds.  Programs will be excluded if they are facilitated by peers, or wraparound support is provided such as home-visits or phone calls that are beyond the specific application of parenting skills. Online programs will not be included. Programs that are delivered in person with additional content online will be included.
Comparison	Active, non-active and care as usual. No intervention, waitlist, care as usual, or alternative interventions are suitable comparators.
Outcome	Parent outcomes will be measured pre and post intervention using a standardised psychometric assessment.

	Parent outcomes: One or multiple outcomes related to wellbeing, including subjective and objective measures of; <ul style="list-style-type: none"> <li>• Parenting Stress</li> <li>• Depression</li> <li>• Anxiety</li> <li>• Anger</li> <li>• Guilt</li> <li>• Life satisfaction / parenting satisfaction</li> <li>• Positive affect including gratitude, joy, contentment.</li> <li>• Quality of life</li> <li>• Parenting confidence</li> <li>• Parenting self-esteem</li> <li>• Happiness</li> <li>• Any validated wellbeing measure such as PERMA-profiler</li> </ul>
Timing	Pre and post intervention measurement is required, additional follow up data will be identified and included where available
Setting	Included studies will not be limited by setting. Program delivery can occur in clinic or non-clinic settings including schools, homes, community and social service facilities and faith-based institutions.
Study Design	Randomized control trials only, with active and non-active controls.

## Search Strategy

A systematic search strategy was implemented in accordance with the Preferred Reporting Items for Systematic Reviews and Meta-analysis [PRISMA] guidelines (Shamseer et al., 2015), on the 27<sup>th</sup> and 28<sup>th</sup> of June 2022. The full strategy is reported in Appendix A and was developed in consultation with a University of Canterbury specialist subject librarian for psychology and discussed with the supervisory team. Multiple researchers in a review team reduce bias, and while it would be optimal to conduct this review with a team, that is not feasible as the author is undertaking the review in partial fulfillment of a Master of Science at the University of Canterbury. In lieu of a team of researchers, a supervisory team provided consultation and guidance, and reliability and validity checks were conducted with independent researchers using random samples of data at screening, extraction, and risk of



bias assessment phases. Interrater reliability was calculated. The proportion of data checked ranged from 10-20%,

The following six databases were searched: CINAHL, Embase, PsycINFO, Medline, SCOPUS and Education Source. The search strategy outlined in Table 2 was adapted to the syntax and subject headings for each the database. A pilot search was conducted on July 1<sup>st</sup>, detailed below. To ensure literature saturation the reference lists of included studies, and relevant systematic reviews that were identified through the initial search, were searched by backward citation searching, and additional studies screened for eligibility on November 6<sup>th</sup>, 2022. No further studies were included. Forward citation searching of included articles was conducted between December 6<sup>th</sup> and December 8<sup>th</sup>, 2022; 2,647 articles were screened during the forward search, 109 sought for retrieval, and 44 assessed for eligibility. One additional article met the criteria and was included. An international registrar of clinical trials, ClinicalTrials.Govt, was searched on 28<sup>th</sup> July 2022, with no additional studies identified for inclusion. One study protocol, Shimabukuro (2022), was monitored for available data throughout the review process and was not included as it was not available prior to the completion of this review.

The Population Intervention Comparison and Outcome (PICO) framework, recommended by the Cochrane Collaboration for systematic reviews, is considered to be the most reliable foundation for developing a search strategy (Cooke et al., 2012; Higgins et al., 2020). The study identification search strategy and Boolean operators are outlined in Table 2.

**Table 2***Search Strategy*

Key term	Alternatives
Parent	Paren* OR care* OR mother* OR father*
Wellbeing	wellbeing OR well-being OR self-esteem OR efficacy OR confidence OR joy OR meaning OR coping OR happiness OR positive OR gain OR quality of life OR life satisfaction OR stress OR depression OR anxiety OR anger OR distress
Parent program*	Education OR management OR behaviour management OR behaviour management OR training OR mindful
Hyperactivity*, impulsivity*, inattention*	OR ADHD OR attention deficit disorder OR attention deficit hyperactivity disorder OR hyperkinetic OR executive functioning OR externalizing OR Neurodivers*
Randomized	Randomized control trial OR RCT OR randomization

To assist in the identification of articles relating to the wellbeing of the parent or caregiver, a proximity search strategy was planned for the term ‘wellbeing’ to capture alternatives located within three words of the term ‘parent’ or alternatives. The rationale was that a significant proportion of parenting program research is focused on child development outcomes, potentially meaning that the term ‘wellbeing’ could be used in relation to the child’s wellbeing rather than the parent (Barlow & Coren, 2018; Barlow et al., 2010; Furlong et al., 2012; Mejia et al., 2012; Townshend et al., 2016). However, this approach was trialed in pilot searches, and not implemented in the final strategy as it was too sensitive and potentially excluded eligible studies. The data extraction form was piloted and updated based on the variation of study design, measurement schedules and reporting of results as combinations of subscales and total scores.

## Screening and Study Selection

As summarised in Figure 8 (p.89), the initial searches generated 9,480 citations which were exported to EndNote X20, a standard reference management software package.

Following the removal of duplicates ( $n = 3540$ ) 6,218 citations were screened. The articles were screened against the study inclusion criteria by examining titles and abstracts and using a prioritized decision tree. The 6,073 articles that did not meet the criteria, as defined above, and were separated into a folder. The full text articles were retrieved for the remaining 145 citations and assessed these for eligibility. Of the 145 full text articles requested, a total of 4 studies were unretrievable either locally or via the inter-loan system. Those deemed not eligible were removed from the list, with the rationale documented in Table 3. One exclusion criterion is provided per excluded report because the exclusion criteria were applied hierarchically. The hierarchy of criteria were expressed as a prioritized decision-making tree (Appendix B) and were used during screening to ensure consistency of decision making.

Ten percent of all studies were randomly selected and screened by an independent reviewer. To achieve randomization and impartiality, a new EndNote library was created, and the search results imported. The 9,480 references within the EndNote library were imported to excel where a pseudo-random number generator was used to select 10% of the references (948 articles). The randomization process is included as Appendix C. The independent reviewer was provided a copy of the PICO table and prioritized decision tree. Articles were sorted based on exclusion rationale, designated for consultation, or included. Interrater reliability was 100%, with one included article identified and no other articles meeting inclusion criteria. As per the PRISMA recommendation, the details of reports which were close to inclusion are provided in appendix D.

The methodological components of eight dissertations were assessed for eligibility, and a follow up search was conducted in attempt to obtain published, peer reviewed articles

from the potentially eligible dissertations. No articles were found, so the dissertations were excluded. In cases with ambiguity, the studies were advanced for further screening and discussed with the supervisory team. Three articles did not clearly state who facilitated the intervention but met all other inclusion criteria. These articles (Aghebati et al., 2014; Behbahani et al., 2018; Yusuf et al., 2019) were provisionally included, and the corresponding author was contacted to obtain the missing information. In total, 23 articles of 21 studies, from 19 publications, were included in the review.

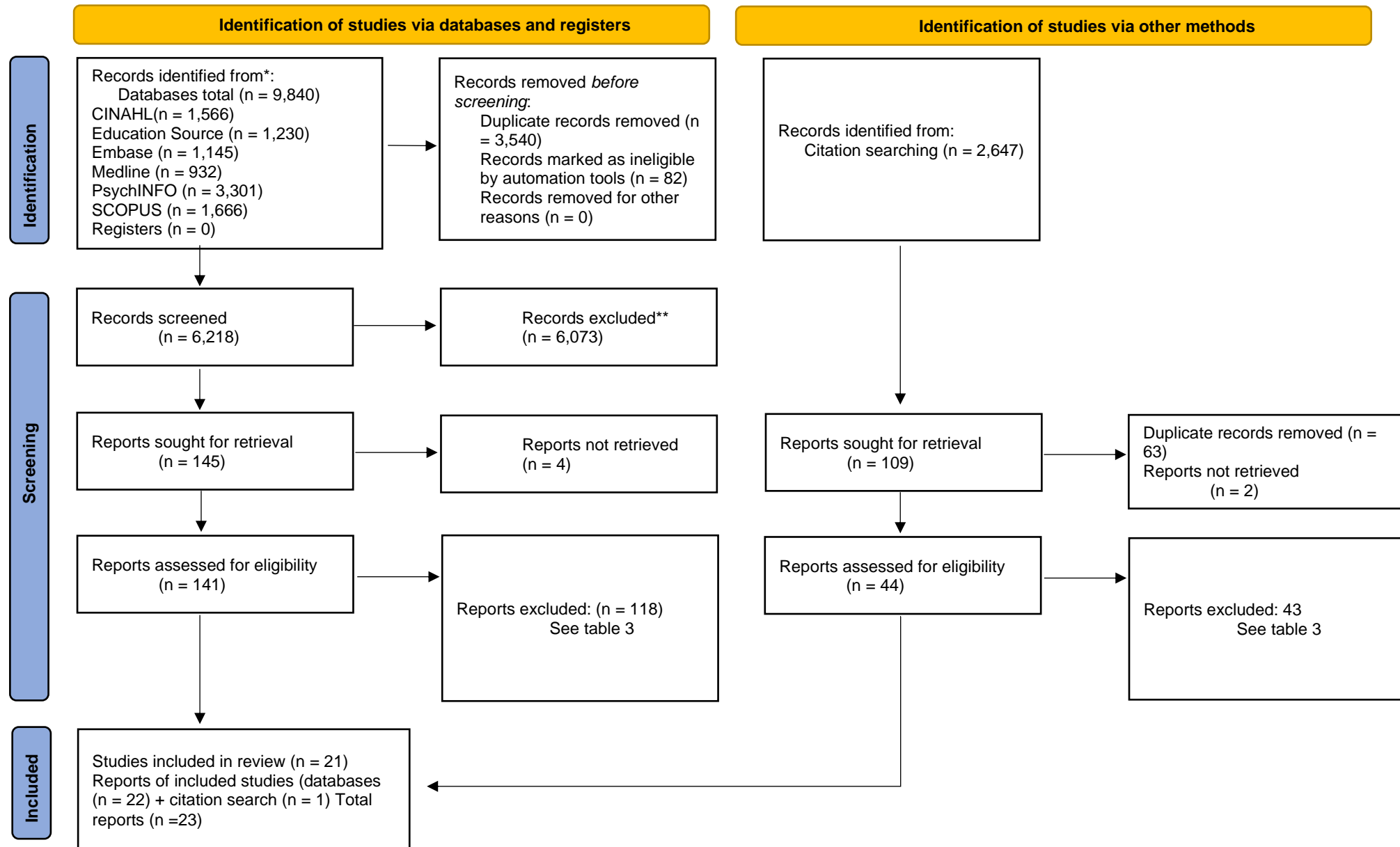
**Table 3**

*Studies Deemed Ineligible for Inclusion.*

<b>Reason for exclusion</b>	<b>Frequency – main search</b>	<b>Frequency – forward search</b>
<u>Randomization:</u> Did not use random allocation	15	11
<u>Hyperactivity, Impulsivity, Inattention:</u> Did not establish HII with standardized measure for entire study population	38	0
<u>Intervention:</u> Intervention was not a manualized parenting program, combined multiple interventions, or provided concurrent intervention to the children with HII without having a parent program only condition	22	13
<u>Parental Wellbeing:</u> Did not measure parental wellbeing outcomes	18	7
<u>Facilitation:</u> peer facilitator or pre-recorded online and self-help versions of programs	3	5
<u>Other:</u> report not available in English, abstract only, dissertations, protocol only, unretrievable, date of study	21	7
Total excluded, all reasons	117	43

Figure 8

## Process of Article Selection



## Data Collection and Assessment Process

A data extraction form was developed based following the recommendations of the Cochrane Collaboration (Henderson et al., 2010; Higgins et al., 2020). Data extracted from each study included publication details, study design details (for example, the number and type of conditions, measurement schedule), recruitment and screening procedures, participant characteristics (for example, age, gender, socio-economic and education information), intervention details (for example, ADHD specific, enhanced, or general program, format of delivery, teaching methods used), and the effect of the intervention on the dependent variable outcome measures. The preferred method of aggregation that was extracted was the mean, standard deviation, p value and effect size at all time periods that measurement occurred. For studies where these metrics were not available,  $t$ ,  $F$ ,  $Z$  or  $\chi^2$  statistics were collected. This approach is based on recommendations from the Cochrane Collaboration (Higgins et al., 2020).

Further, to support the identification of potential cultural biases and applicability of results, the country in which the study was performed was extracted.

In line with the aims of the study described in Chapter 2, the primary outcome of interest was the effect of parenting programs on measures of parental wellbeing. This required extracting:

- Data from all repeated measures of parental wellbeing, in all conditions that met the inclusion criteria, at each period that the outcome was measured.
- Psychometric properties of parental wellbeing measures, where reported.

Where properties of the measure were not reported, this information was obtained from the authors of the measurement tool. Summaries of parental wellbeing measures are provided in Appendix F with psychometric properties are presented

alongside results. Outcome data were extracted for all conditions that met inclusion criteria.

Two studies (Abikoff et al., 2015; Mah et al., 2021) had active comparison conditions where both conditions met criteria. Primary outcome data and the results of statistical analysis that compared the effectiveness of both programs were extracted. Three studies (Bor et al., 2002; Leckey et al., 2019; Sayal et al., 2016) used a three-group constructive design where one condition was an ineligible active comparison. The data from the ineligible conditions were separated from the included results. Where information was absent or ambiguous, the corresponding author of the study was contacted via email. Three authors were contacted, and as of February 1<sup>st</sup>, 2023, no additional data was received.

### **Risk of Bias Assessment**

To assess the risk of bias in included studies, each study was evaluated using the Cochrane Risk of Bias Tool, second edition (RoB2) (Higgins et al., 2020). Using RoB2, studies were evaluated against five domains:

- The process of randomization,
- Deviations from the intended intervention,
- Reporting of outcome data,
- Outcome measurement and,
- Selection of the reported result.

Each domain is mandatory and includes multiple signalling questions with a response range of ‘yes’ ‘probably yes’ ‘probably no’ ‘no’ or ‘no information’, with a logical progression of questions based on previous answers (Sterne et al., 2019). For example, signalling question 2.3 only apply if question 2.1 or 2.2 were responded to with ‘yes,’ ‘partial yes’ or ‘no information’. Collectively the domain components produce a risk rating of

either ‘low risk of bias’, ‘some concerns’, or ‘high risk of bias’. An algorithm, based on the level of risk in each of the five domains, is used to guide the overall risk of bias rating for each study. RoB2 assesses the direct mechanisms that bias trial results (e.g., processes of randomization, deviation from intended intervention), and does not consider indirect sources of bias such as funding or multicentre designs (Sterne et al., 2019). The RoB2 does not use terms found in other risk of bias tools such as ‘selection bias’, on the grounds that these can be misunderstood by users and produce inconsistent evaluations (Armijo-Olivo et al., 2012; Sterne et al., 2019).

To assess interrater reliability (IRR) of the RoB2, 20% of included reports ( $n = 5$  reports) were randomly selected and assessed by an independent rater. The independent rater was a doctoral graduate from the University of Canterbury. An interrater reliability percentage was calculated for the domain and overall judgement. The total interrater reliability for the domain scores was 76% with 19 of 25 domains having the same outcome. The discrepancies on the domain scores did not affect the overall outcome which had 100% agreement. Belur and colleagues (2021) suggest that the reporting of IRR requires substantially more than an agreement percentage. For that reason, the results and process of assessing interrater reliability will be described in detail.

Training was provided by way of two completed reports being shared with the second-rater, along with the crib-sheet and full elaboration of RoB2 from (Sterne et al., 2019). Discussion of the decision process including supplementary sources of information to access, and interpretation occurred at this time. Of the five studies randomly selected, two studies obtained 100% agreement, one study 80%, one study 60% and one study 40% agreement. The discrepancies were reviewed and discussed. Of the six total differences in domain scores, two differences occurred in domain four (measurement of the outcome) and one difference occurred in domains one, two, three and five. The difference in domain one



occurred due to an error in the application of the algorithm. The differences in domains two and three occurred in the same study were resolved by a discussion regarding intention to treat analysis and attrition. The remaining discrepancies were resolved by discussion relating to self-report measurements and their psychometric properties, and all included studies were then checked for consistency in the application of rationale. None of the domain adjustments changed the overall judgement of any study.

### **Interpretation of Findings**

Statistical significance, magnitude and direction of effect, and relevance of findings are critical considerations for interpreting results and determining the value of an intervention (McGough & Faraone, 2009). Underlying the significance of an outcome are the psychometric properties of the outcome measures. As discussed in Chapter 2, previous findings for effects on parental wellbeing after the completion of a parenting program have been small and inconsistent. To aid in identifying significant effects, in this thesis a robust standard of test-retest reliability was applied (Matheson, 2019). When interpreting the psychometric properties of the measures used in the studies, Matheson (2019) recommends that for measures used in a clinical context, values between 0.5 and 0.75 are poor to moderate, 0.75 to 0.9 are good, and above 0.9 are acceptable. Conflicting findings from previous studies indicate this robust standard is warranted for this review, especially as wellbeing literature retains a degree of conceptual ambiguity, and there are a litany of measures claiming to represent a single construct.

The value of reporting statistical significance at the .05 level is contested (Greenland et al., 2016; Nuzzo, 2014; Sullivan & Feinn, 2012; Wasserstein & Lazar, 2016). Nonetheless, null-hypothesis significance testing (NHST) at the .05 level is common in psychology (Masicampo & Lalande, 2012) despite potentially distorting the scientific process (Wasserstein & Lazar, 2016) and being mistaken for clinical significance (Matthey, 1998).

To account for this, and the variable sample size within included studies, significance was considered in two phases, first at .05 and then at 0.001. The .05 standard was used to capture all claims of significance made within the literature, and the .001 level was used to identify findings where a ‘true’ difference between groups exists. The criteria for establishing the presence of an effect were a statistically significant difference, at the .001 level, between the experimental and control condition at post intervention (T2). If the control condition had been discontinued at follow up (T3), a within group comparison was used and significance of effect was established based on the .001 level of significance (Bakker et al., 2019; Sullivan & Feinn, 2012). Similarly, within group significance will be reported when the control condition is TAU or RCC and the clinical response is not detailed. The proportion of statistically significant findings at the .05 and .001 level will be reported for each outcome domain as an indicator of the overall direction and pattern of results.

For consistency in the expression and interpretation of results, comparison of intervention effects amongst a wide range of reported statistics, and to balance the risk of Type I and Type II errors, post-hoc power and effect size calculations were undertaken. To determine the magnitude of effect for each outcome, effect sizes were recalculated using the reported means, standard deviation, and sample size between conditions. Cohen’s *d* and a Common Language Effect Size (CLES) were used. The value of the effect size is reported with an interpretation of the effect size as large (*d* > 0.08), moderate (*d* > 0.05) small (*d* > 0.02), no effect (*d* < 0.02) or having an adverse effect (*d* < 0.0) (Morris, 2008). The following formula (Morris, 2008) was used via Lenhard and Lenhard (2016) online calculator for the comparison of groups with different sample sizes:

$$d_{pp2} = c_P \left[ \frac{(M_{post,T} - M_{pre,T}) - (M_{post,C} - M_{pre,C})}{SD_{pre}} \right] \quad (\text{Equation 1})$$

Where the pooled standard deviation,  $SD_{pre}$ , is defined as

$$SD_{pre} = \sqrt{\frac{(n_T-1)SD_{pre,T}^2 + (n_c-1)SD_{pre,C}^2}{SD_{pre}}} \quad (\text{Equation 2})$$

and

$$c_P = 1 - \frac{3}{4(n_T+n_c-2)-1} \quad (\text{Equation 3})$$

Lenhard and Lenhard (2016) online calculator provided a Common Language Effect Size (CLES) which is a non-parametric calculation, based on the following formula:

$$CLES = \Phi d / \sqrt{2} \quad (\text{Equation 4})$$

The inclusion of a non-parametric effect size is due to variability in outcomes between parametric and non-parametric tests when studies have small sample sizes (Ivarsson et al., 2013). While parametric tests are sufficiently robust to withstand violations of their assumptions and still produce a meaningful result (Norman, 2010), the CLES provides an accessible and consistent way to interpret results that can assist in translating research findings into practice (Mastrich & Hernandez, 2021).

A post-hoc power calculation was conducted to determine if studies had sufficient statistical power to reliably detect effects (Higgins et al., 2020; Levine & Ensom, 2001). Post hoc power analysis was conducted for studies that reported suitable data. The following formula was used to assess whether the study met an acceptable standard of power via an online calculator (Levine & Ensom, 2001). The probability of type I error was set at .05 and the probability of the type II error set at 0.2.

$$Power = \Phi\{-Z_{1-\alpha/2} + \frac{\Delta}{\sqrt{\sigma_1^2/n_1 + \sigma_2^2/n_2}}\} \quad (\text{Equation 5})$$

*With*

$n_i$  - sample size for the  $i^{th}$  group

$\Delta$  - difference between means of groups

$\sigma_i$  - variance

$\alpha$  – probability of type I error

$\beta$  – probability of type 2 error

$z$  – critical Z-value for a given  $\alpha$

## **Presentation of Results**

The organisation of the study characteristics table, program characteristics table and results table will vary based on the purpose of the table. The summary of study characteristics table is ordered alphabetically by author. The summary of parenting programs table is ordered alphabetically by program, with reports relating to that program then ordered chronologically. In this way, revisions to parenting programs, or variations specific to the study, that resulted in changes to the format or content of the program will be identified. The results of each construct of parental wellbeing are presented separately and ordered based on the psychometric assessment.

## Chapter Four: Results

### Overview

This review included 21 studies, detailed in 23 reports which were identified using the screening process described in Chapter 3. The presentation of results first considers the study participants and research processes as these features influence the generalizability of the findings such as the degree to which any intervention effects might apply to particular groups of parents. The parenting programs and the measurement of wellbeing are then considered, prior to reporting the results of effect sizes of specific programs on different measures of wellbeing.

The characteristics of all included studies are reported in table 4. Across the twenty-one studies included, nine parenting programs were evaluated. For clarity, the parenting programs are referred to either with their specific name or as the ‘intervention(s)’; the term ‘study’ refers to an entire data set generated by a sample that can include multiple reports; individual publications relating to a study will be referred to as ‘reports’, and where there are multiple reports relating to a single study, the specific reports being referred to will be identified or the term ‘subsequent articles’ will be used.

The Incredible Years program (IY) was evaluated by 2 studies and detailed in 4 reports; three of the reports were published by Azevedo and colleagues and are based on one study (Azevedo et al., 2013; Azevedo et al., 2014; Azevedo et al., 2015). The three reports were included as each subsequent report provided additional information. Azevedo (2014) added 12-month post intervention follow up data from participants in the original study. Azevedo (2015) analysed the long-term outcome data based on child HII scores on the Werry-Weiss-Peters Activity Rating Scale (WWAPS; Werry, 1968) and the Parental Account of Childhood Symptoms (PACS; Taylor et al. 1986) with children categorised as

experiencing ‘low’ or ‘high’ HII. The study characteristics table contains a ‘Study ID’ column to identify distinct study samples and data. The three reports by Azevedo and colleagues have been allocated the same study ID as they use the same source of data for each subsequent article.

## Participants

Eleven of the 21 studies are from China, Hong-Kong, Iran, Portugal, Puerto Rico, or Turkey. The remaining studies are from Western, educated, industrialised, rich, and democratic (WEIRD) countries. The studies occurred in 12 different countries, including Australia ( $n = 3$ ), China ( $n = 2$ ), Denmark ( $n = 1$ ), Guernsey Island ( $n = 1$ ), Hong Kong ( $n = 2$ ), Ireland ( $n = 1$ ), Iran ( $n = 3$ ), Portugal ( $n = 1$ ), Puerto Rico ( $n = 1$ ), Turkey ( $n = 2$ ), UK ( $n = 3$ ) and USA ( $n = 1$ ). The sample size varied considerably between studies, with a range of 17-164 participants ( $M = 63$ ). While there were a slightly larger number of studies conducted outside of WEIRD countries, the sample size of those studies was smaller, and they only account for 46% of participants.

Across all studies, there were 1,323 parent participants. Reporting of parent’s gender and demographic information was variable, with the children often considered the primary participant and parent information presented per child, rather than per parent completing the parenting program. Participants were predominantly mothers in their thirties whose child was diagnosed with ADHD. Across all parent participants, 91% were parents of children with a diagnosis of ADHD ( $n = 1,207$ ) were diagnosed with ADHD, most of whom ( $n = 761$ , 63%) were not taking medication. Parents’ mean ages ranged from 33 to 43 years. Eighty percent of parents were raising a child with elevated HII who was under seven years of age. Ninety one percent ( $n = 811$ ) of participants whose gender was reported were identified as mothers, and 9% ( $n = 80$ ) were identified as fathers. Amongst all participants, sixty nine percent of the

parents were identified as mothers, and 14.4% as fathers. The remaining 16.6% of participants were recruited as families or couples without their gender identified, or the gender of the child was reported instead of the parents. Ambiguous reporting made it difficult to determine whether multiple parents of the same child were included in the intervention. A minority of studies ( $n = 5$ ) referred to families or couples as the participant entering the study, being randomized or completing the intervention, though it was unclear if more than one member of the family was actively participating in the parenting program. In contrast, the participants of four studies were exclusively mothers. The remaining studies included one parent per child ( $n = 8$ ) or did not report this information ( $n = 4$ ). Overall, it was unclear how many co-parents participated in the intervention together. Family composition, in terms of the number of children in the family, parental relationship status and living arrangements, and family income and education were inconsistently reported. Half of the studies ( $n = 10$ ) did not report the relationship status of participating parents. When relationship status was reported, 74% of participants ( $n = 591$ ) were married or in de facto relationships. Twenty six percent of participants were single, separated or divorced. One study (Turan et al., 2021) excluded parents who were single or divorced and required both parents to participate in the intervention and with the completion of all psychometric assessments. Compared to the population of the country the study was conducted in, most studies reported participants having average or above average levels of income and having spent more time in education than the general population.

## **Recruitment**

Most participants were self-selected parents who were recruited through advertisements at child mental health services. The proportion of parents who were recruited through child mental health services ranges from 51% when considering studies that recruited exclusively from child mental health services, up to 83% when including participants of

studies with multiple methods of recruitment that was not limited to parents whose children were accessing child mental health services. Differences between parents who chose to participate and those who chose not to participate are often not known or were not reported. Recruitment predominantly occurred in child mental health services for parents of children with an ADHD diagnosis ( $n = 9$  studies) or included child mental health services in combination with broader community advertisement ( $n = 6$  studies). These parents were likely engaging in assessment processes or seeking the provision of clinical services for children whose difficulties with HII exceed clinical thresholds on diagnostic measures. Parents recruited through child mental health services may not be representative of parents who do not seek, or are not eligible for, support from child mental health services for their child with elevated HII. Three studies implemented recruitment strategies that sought parents of children with elevated HII through schools or epidemiological recruitment processes, detailed below.

Three studies recruited participants over extended periods, ranging from 18 months to four years and six months (Abikoff et al., 2015; Lange et al., 2018; Thompson et al., 2009). None of the reports provide details relating to the specific process of randomization for assignment to intervention after recruitment, or the timing of when the intervention commenced for different groups of parents during the study making it difficult to assess potential allocation and selection biases.

Two studies used an epidemiological recruitment method (Sonuga-Barke et al., 2001b; Sonuga-Barke et al., 2004; Thompson et al., 2009). In these studies, national health data from a birth cohort enabled the identification of preschool children with elevated HII behaviour, though the families were not necessarily seeking support to manage their child's behaviour. This is relevant as parental decisions relating to seeking support for HII behaviour may relate to parenting attitudes, education, income, parental stress, access to information



and resources, the degree of difficulty posed by the child's HII behaviour or other features of potential population biases that differentiate parents who chose to participate in research from those who do not. The WWPAS was used for routine 3-year-old developmental checks. Children who scored above 20 on the WWPAS were included in the initial sample. Once identified, the parents were approached by researchers and offered the opportunity to participate if all inclusion criteria were met. For example, Sonuga-Barke and colleagues (2001b) screened 3,051 children born between January 1993 and September 1993 in the Southampton and New Forest area of the UK and identified 286 children who scored above 20 on the WAAPS. The parents of 78 children agreed to participate. The authors stated that the WWPAS score of eligible children whose parents declined to participate was lower than the WWAPS score of children whose parents agreed to participate, though differences in measurement were not reported. This multi-phase epidemiological recruitment strategy was replicated by Sonuga-Barke and colleagues (2004) who completed initial screening based on national health data from 3,409 children born in the same area of the UK between 1993 and 1997. The parents of 69 children participated in the study. Neither study reported the reasons that eligible parents chose not to participate. Each of these five studies, with epidemiological or extended recruitment periods were evaluating the New Forest Parenting Program (NFPP). One study, evaluating 1-2-3 Magic, cluster randomized 12 schools, and assessed 848 students for eligibility. Ninety-two parents across 12 schools participated in the study. Sixteen parents did not consent for unknown reasons.

The remaining studies ( $n = 1$  study remaining;  $n = 7$  studies using community recruitment strategies that have not yet been discussed) used a combination of community outreach strategies to recruit participants. Strategies included advertisements on TV and radio, in newspapers, and at preschools (Matos et al., 2009); or a more targeted approach of accepting referrals from community agencies in addition to providing leaflets to schools,

NGOs and Government agencies that provide services for children, and advertising on the same organisations websites, for parents to self-refer to the study (Leung et al., 2017). Three studies reported attempts to reduce participation barriers for parents by either offering financial reimbursement for transport or childcare costs, providing childcare, and providing refreshments for the parents (Abikoff et al., 2015; Azevedo et al., 2013; Leckey et al., 2019). One study provided parents with financial compensation upon the completion of psychometric assessments (Sayal et al., 2016).

It is difficult to ascertain whether the overall risk of selection biases from self-selected recruitment strategies has been reduced by the large-scale epidemiological recruitment strategies that targeted participants based on child characteristics. This is because reasons for parent non-participation were not recorded or reported in 22 of the 23 included studies. It is possible that some parents participated in the epidemiologically recruited studies that may not have otherwise engaged in research due to the proactive approach whereby researchers contacted parents. While this might have the potential to reduce the influence of potential selection bias in the overall sample of this review, it cannot be ascertained due to missing information.

## **Study Design**

### ***Included Studies***

The included studies contained a diverse range and combination of experimental, control, and comparison conditions, and measurement schedules. All included studies are randomized control trials. Fifty seven percent of studies ( $n = 12$ ) measured outcomes at three time points, for at least one condition. The majority of studies ( $n = 16$ , 76%) used a two-group parallel design. Across all studies, three types of control condition were used. Waitlist control conditions were the most common control condition ( $n = 13$ ). The remaining studies used

Treatment As Usual (TAU) or Routine Clinical Care (RCC) ( $n = 4$ ), two studies did not describe the control condition (Aghebati et al., 2014; Behbahani et al., 2018), one used a no intervention control (Sayal et al., 2016), one used an active comparison only (Mah et al., 2021).

None of the Treatment As Usual (TAU) or Routine Clinical Care (RCC) conditions ( $n = 4$ ) contained sufficient detail to determine exactly what was provided to participants. The TAU/RCC conditions included studies conducted in China, Denmark, Iran and the UK and two were multicentre trials with regional variation in clinical practice that was acknowledged by the authors, but the details were not provided (Lange et al., 2018; Thompson et al., 2009).

Two studies (Abikoff et al., 2015; Sonuga-Barke et al., 2001b) used an active comparison in addition to a waitlist control. Of those, only Abikoff and colleagues' (2015) study contained two eligible parenting programs; Helping the Non-Compliant Child (HNC) and NFPP. Mah and colleagues (2021) used a constructive design comparing a standard parenting program to a mindfulness enhanced parenting program, and both parenting programs met inclusion criteria. One study (Leckey et al., 2019) included a qualitative component. In total, two studies, (Abikoff et al., 2015; Mah et al., 2021) each evaluated two different parenting programs and both programs met inclusion criteria.

### ***Excluded Conditions***

The ineligible study conditions are detailed in Appendix D. There were several common reasons for exclusion. Five studies each contained three conditions, where the third condition did not meet inclusion criteria. The ineligible condition either targeted parental wellbeing, provided additional support to the parents that was unrelated to parenting, or provided a concurrent intervention for the child.

Four studies (Bor et al., 2002; Leckey et al., 2019; Mah et al., 2021; Sayal et al., 2016) used constructive designs. Three of the constructive conditions were ineligible for inclusion in this review as they directly targeted parental wellbeing or provided concurrent interventions to the children.

The active comparison used by Sonuga-Barke and colleagues (2001) did not meet inclusion criteria as it consisted of unstructured, undocumented psychoeducation and non-directive non-parenting support.

Characteristics of all included studies are described in Table 4, below.

**Table 4***Characteristics of Included Studies*

Study	Author	Country	Design	Conditions			Timing of Measurement (weeks)		Sample		Participant Characteristics		Child Characteristics			Risk of Bias
				Experimental	Comparison	Control	T1-T2	T2-T3	Size	Attrition	Age	Gender	Age	ADHD	Medicated	
									<i>n</i>	%	years	<i>M</i> ± <i>SD</i>	M:F	years	%	
1	(Abikoff et al., 2015)	U.S.A	3 phase 3 group parallel design stratified randomization	NFPP (I)	HNC (I)	WL	8	30 ± 8	164	7-20	-	-	3-4	100	Nil	Some Concerns
2	(Aghebati et al., 2014)	Iran	2 phase 2 group parallel design	Triple P (G)	-	Not described	8	-	27	10	33 ± 5-9	0:30	6-10	100	-	High Risk of Bias
3	(Au et al., 2014)	Hong Kong	3 phase 2 group parallel design	Triple P (G)	-	WL	9	12	17	6-12	39-43 ±6	4:13	5-10	100	Nil	Some Concerns
4	(Azevedo et al., 2013)	Portugal	2 phase 2 group parallel design	IY (G)	-	WL	26	-	100	13	34-36 ±5	0:100	3-6	100	Nil	High Risk of Bias
4	(Azevedo et al., 2014)	Portugal	Additional follow up data	/	-	WL	-	52	/	25	/	/	/	/	/	High Risk of Bias
4	(Azevedo et al., 2015)	Portugal	Subgroup analysis of existing 2 group parallel design	/	High vs Low HII	N/A	52	-	52	/	/	/	/	/	/	High Risk of Bias
5	(Behbahani et al., 2018)	Iran	3 phase 2 group parallel design permuted blocked randomization	Mindful Parenting (G)	-	Not described	8	8	60	20	-	0:60	7 - 12	100	100	High Risk of Bias

Study	Author	Country	Design	Conditions			Timing of Measurement (weeks)		Sample		Participant Characteristics		Child Characteristics			Risk of Bias
				Experimental	Comparison	Control	T1-T2	T2-T3	Size	Attrition	Age	Gender	Age	ADHD	Medicated	
									<i>n</i>	%	years <i>M</i> ± <i>SD</i>	M:F	years	%		
6	(Bor et al., 2002)	Australia	3 phase 3 group constructive parallel design	Triple P (I)	Triple P with partner support and coping skills content	WL	15	52	87	28	-	-	3-4	100	Nil	Some Concerns
7	(Chesterfield et al., 2021)	Australia	3 phase 2 group parallel design stratified randomization	1-2-3 Magic (G)	-	WL	8	16	60	3-5	42-43 ± 4-6	10:47	6-12	100	68	Some Concerns
8	(Hoath & Sanders, 2002)	Australia	3 phase 2 group parallel design	Triple P (G)	-	WL	12		21	5-12	-	-	5-9	100	71	High Risk of Bias
9	(Khademi et al., 2019)	Iran	2 phase 2 group parallel design	Triple P (G)	-	RCC/TAU	8	-	110	15	-	0:94	3-6	100	-	High Risk of Bias
10	(Lange et al., 2018) 10a	Denmark	3 phase multicentre 2 group parallel design with stratified block randomization	NFPP (I)	-	TAU	12	36	164	26-30	35-38 ± 5	-	3-7	100	Nil	High Risk of Bias
11	(Leckey et al., 2019)	Ireland	2 phase constructive 3 group parallel design block randomization (geographic location)	IY (G)	Concurrent Small Group Dinosaur Programme	WL	26	-	45	7	24-26 ± 4-6	3:42	3-7	-	Nil	Some Concerns
12	(Leung et al., 2017)	Hong Kong	3 phase 2 group parallel design	PCIT (I)	-	WL	17 ± 5 *	3 m	64	3-22	37 ± 4-5	7:57	2-7	100	6.0	High Risk of Bias

Study	Author	Country	Design	Conditions			Timing of Measurement (weeks)		Sample		Participant Characteristics		Child Characteristics			Risk of Bias
				Experimental	Comparison	Control	T1-T2	T2-T3	Size	Attrition	Age	Gender	Age	ADHD	Medicated	
									<i>n</i>	%	years <i>M±SD</i>	M:F	years	%		
13	(Liu et al., 2021)	China	2 phase 2 group parallel design	Mindful Parenting (G)	-	TAU	8		113	24	38-40 ± 4	11:102	7-12	100	67-27	Some Concerns
14	(Mah et al., 2021)	China	2 phase 2 group constructive parallel design block randomization (child gender and medication)	Unnamed ‘standard’ BPT	Mindfulness enhanced ‘standard’ BPT	N/A	12	-	88	28	40-41 ± 7	5:58	6-11	100	34-44	High Risk of Bias
15	(Matos et al., 2009)	Puerto Rico	3 phase 2 group parallel design	PCIT (I)	-	WL	17 **	14	32	3	30	-	4-6	100	Nil	High Risk of Bias
16	(Sayal et al., 2016)	U.K	2 phase 3 group cluster randomized constructive parallel design	1-2-3 Magic (G)	Combined teacher intervention and parent training	no intervention			92	17	-	-	4-6	-	-	High Risk of Bias
17	(Sonuga-Barke et al., 2001b)	U.K	3 phase 3 group parallel design	NFPP (I)	non- directive parent counselling and support (excluded)	WL	8	15	78	9	-	0:78	3	-	-	Some Concerns
18	(Sonuga-Barke et al., 2004)	U.K	3 phase 2 group parallel design	NFPP (I)	-	WL	8	15	89	12	-	0:89	3	-	-	Some concerns
19	(Thompson et al., 2009)	Guernsey Island	3 phase 2 group parallel design	NFPP (I)	-	TAU	9	8	41	15-20	39	0:41	2.5 – 6.3	-	Nil	High Risk of Bias

Study	Author	Country	Design	Conditions			Timing of Measurement (weeks)		Sample		Participant Characteristics		Child Characteristics			Risk of Bias
				Experimental	Comparison	Control	T1-T2	T2-T3	Size	Attrition	Age	Gender	Age	ADHD	Medicated	
20	(Turan et al., 2021)	Turkey	2 phase 2 group parallel design	PPCP (G)	-	Attention and non-structured psycho-education	9	-	50	8	-	-	6-11	100	100	Some Concerns
21	(Yusuf et al., 2019)	Turkey	2 phase 2 group parallel design	Triple P (G)	-	WL	8	-	60	20	-	-	8-12	100	100	High Risk of Bias

*Note: - indicates information was not relevant or not reported; / indicates that the information was reported in an earlier publication and removed from this table to prevent duplication. WL refers to a waitlist; TAU refers to treatment as usual; RCC refers to routine clinical care; (I) denotes the program was delivered to individuals; (G) means the program was delivered to a group. \* Duration of intervention reported as a mean and standard deviation, with variability due to attainment of a skill required for progression onto later stages of the program. \*\* duration of intervention reported as a mean.*



## Study Quality

Risk of bias was assessed using the Revised Cochrane Risk of Bias tool (RoB2) and is summarised in Table 5 (Sterne et al., 2019). In total, the overall algorithm deemed 60% ( $n = 14$ ) of included reports to be at high risk of bias, and 35% ( $n = 8$ ) to have some concerns. To attain an overall high risk of bias rating using RoB2, a study can either score a 'high risk of bias' in any of 5 analysed domains or contain multiple domains that receive a score of 'some concerns' which substantially lower confidence in the study. Studies with 'some concerns' in at least one domain, and no 'high risk of bias' ratings in any domain are considered to have 'some concerns'. Practically it is difficult for studies of this nature to achieve a low risk of bias. Sequentially, results for the five domains are discussed below.

### *Randomisation*

The domain with the lowest risk of bias amongst the included studies are the processes of randomization and missing data. Processes of randomization and concealment were often not specified, yet baseline differences between groups did not indicate that there were problems with the randomization process. An exception to this was that HII was not distributed evenly between groups in four studies (Liu et al., 2021; Sayal et al., 2016; Thompson et al., 2009; Yusuf et al., 2019). Several studies ( $n = 6$ ) used stratified, or block randomization and one study used cluster randomization. Stratification was predominantly based on age and gender of the child, and not psychometric assessment outcomes of HII.

### *Missing Data*

An Intention to treat analysis was conducted in 61% of studies ( $n = 13$ ) and documentation of participants throughout the trial was reported in accordance with CONSORT in 78% of reports ( $n = 16$ ) (Schulz et al., 2010). Attrition ranged from 3-30%.

Half of the studies reported a rate of attrition that was at or above 20%. Three studies reported a rate of attrition lower than 5% in any condition. These thresholds are discussed by Schulz and Grimes (2002) as potential indicators of bias. Dumville and colleagues (2006) notes that missing data occurs more frequently in a secondary analysis and Lewin and colleagues (2018) determined that multiple imputation is not a substitute for complete data sets when considering selection biases. Program attendance was reported in 71% of studies ( $n = 15$ ). Of those studies, ten reported average attendance below 85%.

#### *Deviation from Intended Treatment*

Risk of bias due to deviations from intervention, or treatment integrity, was distributed evenly across all studies (30.5% low risk, 39% some concerns, 30.5% high risk of bias). Inconsistent reporting increased the risk of bias as it was difficult to assess sources of deviation for all groups as it was not frequently reported, nor were mechanisms used to control or monitor potential deviations, and their potential impact on the results. When reported, mechanisms to ensure fidelity to included dual facilitation, supervision, recording and reviewing sessions, facilitator checklists, the provision of pre-recorded content and parent workbooks. Of the studies that reported medication status ( $n = 10$ ) 50% did not impose restrictions on changes to children's medication. Medication was an exclusion criterion in six studies. Alternative interventions or additional non-study approved support that parents or children may have received were not reported by any studies, except for when the medication status of children changed.

#### *Measurement of Data*

Outcome measurements were classified as being at high risk of bias across 35% of studies ( $n = 8$ ). Inconsistent reporting increased the risk of bias across the domain. Across all studies, all the outcome measures were self-report (parent) questionnaires, meaning that

awareness of intervention status was unavoidable for the respondents, who are considered to be the outcome assessors by the RoB2. Self-reported data did not have undue influence on the overall RoB domain rating as measures were assessed primarily on the basis of their psychometric properties rather than method of administration.

Thirteen studies (62%) used psychometric measures with adequate properties. The remaining 38% ( $n = 8$ ) used at least one measure that scored below the ‘acceptable’ range as determined by Matheson (2019) or the psychometric properties were unable to be ascertained ( $n = 4$  studies). The RoB2 evaluates the measure based on the internal properties and does not consider the ecological or construct validity of how the measure is used and what it is used for, which was of concern for the four studies where the psychometric properties were unable to be ascertained (Abikoff et al., 2015; Sayal et al., 2016; Sonuga-Barke et al., 2001b; Sonuga-Barke et al., 2004). Sayal and colleagues (2016) used the Strengths and Difficulties Questionnaire (SDQ) to measure parental burden, Sonuga-Barke et al., (2001b; 2004) used a composite of two established measures, the Parenting Sense of Competence Scale (PSOC) and the General Health Questionnaire (GHQ) to represent a ‘maternal wellbeing index’ and Abikoff and colleagues (2015) combined with Parenting Stress Index (PSI) with four items of another measure (Parents Perception of Parenting Efficacy) without explanation. While these measures individually have acceptable psychometric properties, the validity of their application in these studies has not been established. The psychometric properties of 75% ( $n = 12$ ) of measures were found to be above the ‘good’ or ‘acceptable’ range measured by alpha scores of over .75 for reliability or internal consistency (Matheson, 2019), indicating that data collection was mostly valid and reliable. The majority of studies reported the psychometric properties of the measures, and previous evaluations of the measure for use in specific cultural contexts were reported or a culturally adapted version of the measure was

used, for example the Spanish version of Becks Depression Inventory (BDI-S) was used in Puerto Rico (Azevedo et al., 2013).

### *Selection of Reported Results*

Unclear reporting of outcome measures increased the overall risk of bias in the selection of reported results. There are three components of the selection of reported result domain which examine whether the data was analysed in accordance with a pre-specified plan, whether the result could have been derived from multiple outcome measures or analysed in multiple ways. In total there were 32 ‘No information’ responses (46%), 23 ‘probably’ responses (33%), and 14 definitive responses (21%) across the 3 components for all 23 reports. There were many instances of discrepancies between the data collected on psychometric measures, and the data reported, without explanation. Explanations were not consistently provided when multiple analyses of the data occurred, either. When statistical analysis plans were unclear, or rationale not provided, the report was rated as not providing the information. Any response of ‘no information’ produced a result of ‘some concerns’ for the domain overall.

In summary, randomization processes, documentation deviations from the intended intervention and accounting for missing data are areas of relative strength within this body of literature. The design of RoB2 means that it is difficult for studies of parenting programs to acquire a rating as having a low risk of bias despite strengths in design that are responsive to this specific intervention context. Outcome data and the selection of results are areas of weakness and could be improved via adherence to standardized reporting practices.

**Table 5***Risk of Bias Assessment*

Study	Randomization process	Deviation from intended intervention	Missing Data	Outcome Data	Selection of result	Overall Judgement
						Algorithm
(Abikoff et al., 2015)	Low	Low	Low	Concerns	Low	Concerns
(Aghebati et al., 2014)	Concerns	Concerns	Low	Concerns	Concerns	High
(Au et al., 2014)	Low	Concerns	Low	Concerns	Concerns	Concerns
(Azevedo et al., 2013)	Low	Concerns	Concerns	Concerns	High	High
(Azevedo et al., 2014)	Low	High	Low	High	High	High
(Azevedo et al., 2015)	Low	High	Low	High	High	High
(Behbahani et al., 2018)	Concerns	Concerns	Low	High	Concerns	High
(Bor et al., 2002)	Low	Concerns	Low	Concerns	Low	Concerns
(Chesterfield et al., 2021)	Low	Concerns	Low	Concerns	Concerns	Concerns
(Hoath & Sanders, 2002)	Concerns	High	Low	High	Concerns	High
(Khademi et al., 2019)	Concerns	High	High	Concerns	Concerns	High
(Lange et al., 2018)	Low	Concerns	High	Concerns	Low	High
(Leckey et al., 2019)	Low	Low	Low	Concerns	Concerns	Concerns
(Leung et al., 2017)	Low	Low	High	High	Concerns	High
(Liu et al., 2021)	Concerns	Low	Low	Concerns	Concerns	Concerns
(Mah et al., 2021)	Low	High	Concerns	Concerns	Concerns	High
(Matos et al., 2009)	Low	Low	Low	High	Concerns	High
(Sayal et al., 2016)	Concerns	High	High	High	Concerns	High
(Sonuga-Barke et al., 2001b)	Concerns	Low	Low	Concerns	Concerns	Concerns
(Sonuga-Barke et al., 2004)	Low	Low	Concerns	Concerns	Concerns	Concerns
(Thompson et al., 2009)	Concerns	High	High	High	Concerns	High
(Turan et al., 2021)	Low	Concerns	Low	Concerns	Concerns	Concerns
(Yusuf et al., 2019)	Concerns	Concerns	High	Concerns	Concerns	High
<b>Total:</b>	<b>61% low risk</b>	<b>30% low risk</b>	<b>61% low risk</b>	<b>0% low risk</b>	<b>17% low risk</b>	<b>0% low risk</b>

**The Parenting Programs**

The parenting programs evaluated by the studies in this review were: 1-2-3 Magic ( $n = 2$  studies), Helping the Non-Compliant Child (HNC) ( $n = 1$  study), Incredible Years (IY) ( $n = 2$  studies, 4 reports), Mindful Parenting ( $n = 3$  studies), New Forest Parenting Program (NFPP) ( $n = 5$  studies), Parents Plus Children Program (PPCP) ( $n = 1$  study), Parent Child Interaction Therapy (PCIT) ( $n = 2$  studies), Triple P Positive Parenting Program (Triple P) ( $n = 6$  studies), and an unnamed program that combined the manuals of the Community Parent Education Program (Cunningham, 2005) and Incredible Years with ADHD specific content from Taking Charge of ADHD (Barkley, 2013) ( $n = 1$  study) (Mah et al., 2021). The

characteristics of the parenting programs are detailed in Table 6, and a further description of each program is provided in Appendix G.

Most of the programs ( $n = 5$ ) were delivered to small groups of parents on a weekly basis. Three of the group programs (1-2-3 Magic, Triple P and IY ( $n = 9$  studies)) included short phone conversations with parents between sessions to discuss the parent's application of the program content. 1-2-3 Magic also provided email summaries of content to the parents to facilitate sharing with other family members. Two programs (IY and Mindful Parenting ( $n = 2$  studies)) provided extra time for parents who missed a session (Azevedo et al., 2013; Behbahani et al., 2018). There was no additional contact outside of sessions in the other programs. Children were present for at least part of one session in four programs (HNC, NFPP, PCIT and individually delivered Triple P ( $n = 9$  studies)). Program length ranged from 3 sessions (1-2-3 Magic) to 17 sessions (PCIT), with most programs consisting of 8 sessions. Program length is individualised in PCIT, with participant progression based on the competent use of the parenting skills. This is a distinct approach to most parenting programs in this review ( $n = 17$  studies) where the intervention length is determined by the predetermined number of sessions provided rather than the participants progress. HNC typically uses a skill acquisition-based progression process, yet for the study conducted by Abikoff and colleagues (2015) this was not implemented. Programs were predominantly facilitated by clinical or research psychologists ( $n = 14$ ). All programs were delivered in person.

### *Adaptions for Cultural Context*

Six programs (HNC, IY, Mindful Parenting, NFPP, PCIT, Triple P) were modified for the cultural context of the study (Abikoff et al., 2015; Au et al., 2014; Azevedo et al., 2013; Lange et al., 2016; Liu et al., 2021; Matos et al., 2009). Descriptions of adjustments and justifications were provided in all instances, increasing confidence in the fidelity to

manualized interventions. Some modifications were minor, for instance Liu and colleagues (2021) evaluation of the mindful parenting program adjusted the time that examples of parent-child interactions occurred to reflect life in China. Au and colleagues (2014) used Triple P content that had previously been adjusted for Chinese parents, and Azevedo and colleagues (2013) used Portuguese subtitled for the Incredible Years video content. Lange and colleagues (2016) adjusted the location of two sessions of NFPP from being delivered in the child's home to being delivered in a clinic. Abikoff and colleagues (2015) limited the number of sessions of Helping the Non-Compliant Child, where they are usually unlimited with the parents' progression based on the acquisition of parenting skills as with PCIT. The most substantial adaptations were implemented by Matos and colleagues (2009) and based on a process of adaption of PCIT for Puerto Rican families. Matos and colleagues (2009) adjusted the language to reflect Puerto Rican families' idiomatic expressions and made changes to the presentation of visual resources. A discussion topic was added that aligned with Puerto Rican values of "familism" where parents and facilitators discussed how the parents can integrate the PCIT content with extended family members, obtain their support and prevent other adults from responding to the child in ways that are not aligned with the new skills the parent has developed.

### ***Theoretical Orientations of Parenting Programs***

There was significant convergence amongst the theoretical orientations of parenting programs. Theories of child development embedded in parenting programs were predominantly based on behavioural and social learning theories. Across all programs, the full range of theoretical influences included neuropsychological principles, attachment theory, cognitive behavioural theory and mindfulness. While Triple P was the only programme that explicitly adopted an ecological perspective and prioritised environmental modifications and the prevention of difficult behaviour, the majority of programs recognised,

to different extents, the role of environmental influences on child development. Similarly, all programs sought to improve the quality of parent-child relationships. Parent-child interactions were most often described in the context of social learning, cognitive and behavioural theories, and influenced by communication, praise, play and adjustments to the parent's perception of the child. Parent-Child Interaction Therapy (PCIT) explicitly identified the influence of attachment theory on the program. The primary emphasis in PCIT is on providing a warm and responsive relationship for the child within which additional techniques to manage child behaviour can be implemented.

The mindful parenting programs were the most theoretically distinct as the parents' internal experiences, cognitions and emotional regulation skills were the primary mechanism used to influence the parent-child relationship. Principles of classic mindfulness were applied to parents, as opposed to theories of child development being applied to parenting practices. The focus of mindful parenting programs was on improving the parents' emotional responsiveness to the child; observing the parent's own behaviour, and the child's behaviour, without judgement; taking the child's perspective; and cultivating gratitude, self-compassion, and kindness. The proposed mechanisms of mindful parenting practices on child development are that parents become more consistent and responsive to their child and that the parent and child experience an increasingly warm and positive relationship with less conflict and negative affect (Liu et al., 2021; Shorey & Ng, 2021).

### ***Commonly Included Parenting Practices***

The parenting practices that were taught in the programs were consistent with social learning and behavioural principles and sought to enhance parent-child interactions and modify the child's environment. Commonly recommended parenting practices included quality time, praise, child-directed play, affection, and attention, establishing routines, using incentives, selective attention as a differential reinforcer of positive behaviour, collaborative



problem-solving, modelling behaviour, and the use of logical consequences, limit setting, quiet time to manage challenging behaviour. The Mindful Parenting Programs, Triple P and IY emphasised parental self-regulation skills as a means to create a calm environment, support modelling of emotional regulation for children and improve parent-child relationships. Most programs sought to improve parent-child relationship with positive behaviour strategies such as praise, play, active listening, incentives, attending to positive behaviour and the prevention of challenging behaviour prior to teaching positive discipline skills such as consequences, loss of privileges and timeout.

The nuanced application of social learning, behavioural and ecological theories to contemporary understandings of ADHD was either limited or unclear based on the level of detail describing intervention content. NFPP was the only program specifically designed for parents of children with ADHD, and it targeted the development of the child's neuropsychological capacities through the parent and provided a framework for the parents ongoing learning. For example, engaging children in games that facilitate skill development in the regulation of attention and impulsivity, in addition to the parents implementing behavioural strategies. The Incredible Years, Mindful Parenting and Triple P Positive Parenting Programs identified in this review, were adapted to additional content specific to ADHD. For example, a version of Triple P that was modified to include ADHD specific content sought to develop children's organisational capacities, and emphasised structure and routine for children with ADHD (Au et al., 2014). The organisation skills targeted time management, planning and emotional regulation and were taught through games, discussion and responding to real situations. The Incredible Years was modified by Leckey and Colleagues (2019) to emphasise routine, consistency, and clarity with limit setting, and increase the frequency of reinforcement for desirable behaviour. Matos and colleagues (2009) provided parents with information about medication options for their children yet did not

report the rate at which this was taken up or how it was monitored. Overall, it was unclear to what degree neuropsychological influences on behaviour, or principles of acceptance and accommodation for neurodiversity, were incorporated into parenting programs and practices.

Table 6

*Parenting Program Characteristics*

Program name	Evaluation study	ADHD specific content?	Format and Delivery					Teaching Methods	Parenting Practices and Theoretical Influences
			Group size	Number of sessions	Frequency	Duration (hours)	Child present (number of sessions (n))		
1-2-3 Magic	(Sayal et al., 2016)	No	1-7	3	weekly	2	0	DVD and workbook provided.	<b>Theory:</b> social learning: behaviourism: Cognitive Behavioural Therapy:  <b>Practices:</b> positive reinforcement, charting and natural consequences. Praise, Stop/Start instructions, counting technique, time out, loss of privileges, Consequences, modeling behaviour. Reframing misattributions. Strengthening relationships: active listening, not over parenting. Calm, positive parents proposed mechanisms for change in child behaviour.
	(Chesterfield et al., 2021)	No	-	3	weekly	2	0	Videos, Q&A discussions Homework: journalling, practice skills. Participants were emailed content summaries to enable non-participating parents to access learning.	
Helping the Non-compliant Child (HNC)	(Abikoff et al., 2015)	No	Ind	8	weekly	1	8/8	Modelling, role play, didactic instruction, discussion. Home practice of skills	<b>Theory:</b> social learning: behaviourism.  <b>Practices:</b> Differential attention for positive behaviour, rewards with positive physical attention, praise. Ignoring. Giving

Program name	Evaluation study	ADHD specific content?	Format and Delivery					Teaching Methods	Parenting Practices and Theoretical Influences
			Group size	Number of sessions	Frequency	Duration (hours)	Child present (number of sessions (n))		
									instructions, consequences.
<b>Incredible Years (IY)</b>	(Azevedo et al., 2013)	No	9-12	14 +2 + P/C	weekly	2	0	Video vignettes, group discussions, practicing skills, brainstorming, Homework: skill practice, buddy calls, reading	<b>Theory:</b> social learning: behaviourism. <b>Practices:</b> Child directed play, reinforcement. Routines, limit setting, boundaries. Descriptive commenting (social, emotional, persistence and Academic coaching), praise and rewards, Household rules, problem solving, time out., ignoring.
	(Azevedo et al., 2014)								
	(Azevedo et al., 2015)								
	(Leckey et al., 2019)	Yes	-	20 + P/C	weekly	2-2.5	0	Group discussions, role plays, DVD material Homework: practice skills	
<b>Mindful parenting</b>	(Behbahani et al., 2018)	No	-	8	weekly	1.5	0	Meditation practice related to family situations, discussion, sharing with group/pairs, self-reflection. Homework: practice skills and use meditation CD	Mindfulness. <b>Practices:</b> Mindful practices with parent; shared mindfulness activities with child. Perspective taking, conflict resolution, setting limits, self-awareness.
	(Liu et al., 2021)	No	8-10	8	weekly	3	0	Mindfulness activities, group discussions Homework: 45 min daily practice. Phone app to share experiences with other participants	<b>Practices:</b> Parents exploration of bodily sensations, thoughts, actions in relational to child

Program name	Evaluation study	ADHD specific content?	Format and Delivery					Teaching Methods	Parenting Practices and Theoretical Influences
			Group size	Number of sessions	Frequency	Duration (hours)	Child present (number of sessions (n))		
New Forest Parenting Program (NFPP)	(Mah et al., 2021)	Yes	10-12	12	weekly	2	0		<b>Theory:</b> social learning, behavioural theories  <b>Practices:</b> Child centered play, differential attention, problem solving, limit setting, incentives, body scan meditations, compassion, 3-minute meditation
	(Sonuga-Barke et al., 2001a)	Yes	Ind	8	weekly	1	8/8	Discussion and reflection, introduction of behavioural strategies to use, observation and feedback.	
	(Sonuga-Barke et al., 2004)	Yes	Ind	8	weekly	1	8/8	Behaviour diary, practise skills Discussion and reflection, introduction of behavioural strategies to use, observation and feedback. Practise skills, keep behaviour diary.	<b>Theory:</b> behavioural, social learning Neuropsychological.  <b>Practices:</b> Authoritative parenting, play based strategies, increasing quality and quantity of positive parent-child interactions, reducing parent negative reactivity. Listening. Praise. Short sentences. Giving choices. Scaffolding. Preventative strategies. behavioural contingency.
	(Thompson et al., 2009)*	Yes	Ind	8	weekly	-	2/8	Video and discussion, observation and feedback, games, introducing and developing strategies and skills	
	(Abikoff et al., 2015)	Yes	Ind	8	weekly	1-1.5	4/8	Using 'teachable moments' in naturalized settings, modelling, practice Homework: skills practice	Cultural adaption for Denmark based on Danish Ministry of Health 2016
	(Lange et al., 2018)	Yes	Ind	8	Weekly/fortnightly		3/8	Play and games, guiding parents to use behavioural strategies. weekly homework assignments tailored to the needs of the child and the parent, including videotaped practice of specific tasks	
Parents Plus	(Turan et al., 2021)	No	-	11:9	weekly	2	0	Video, role-play, discussion, planning Homework – play and problem solving	<b>Theory:</b> behavioural, social learning

Program name	Evaluation study	ADHD specific content?	Format and Delivery					Teaching Methods	Parenting Practices and Theoretical Influences
			Group size	Number of sessions	Frequency	Duration (hours)	Child present (number of sessions ( <i>n</i> ))		
Children Program (PPCP)				+2 (I)					<b>Practices:</b> Positive attention, child center play, routine, praise, instructions, consequences, encouragement, collaborative problem solving, active listening, family listening.
Parent Child Interaction Therapy (PCIT)	(Matos et al., 2009)	No	Ind	8-11	weekly	1.5	Yes, all sessions	Live parent coaching in two phases, dyadic play situation, instruction, modeling, and role-playing, therapist and parent observing other parent with child at play, handouts of parenting skills	<b>Theory:</b> social learning; attachment theory  <b>Practices:</b> Specific praise, reflecting child's speech and play, describe positive behaviour ('do' instructions), reduction of criticism and commands. ignore inappropriate behaviour. Time out.
	(Leung et al., 2017)	No	Ind	( <i>M</i> ) 17*	weekly	1	Yes	Live parent coaching. Observation, discussion Homework: practice skills	As above.
Triple P Positive Parenting Program	(Bor et al., 2002)	No	Ind	10	weekly	1-1.5	Yes 6/10	Workbook, modeling, role plays, feedback Homework – Yes	<b>Theory:</b> social learning, behavioural.
	(Hoath & Sanders, 2002)	Yes	-	5 +4 P/C	weekly	1-1.5 P/C 20m	No	Workbook and tip sheets, modelling, role plays, feedback, videos, group problem solving. Homework – skills practice	<b>Practices:</b> Praise, encouragement, child centered play, rewards, quiet time, time out, stop/start instructions, behavioural contingencies/ consequences
	(Aghebati et al., 2014)	No	-	8: 5 + 3P/C		2 P/C	No	-	

Program name	Evaluation study	ADHD specific content?	Format and Delivery					Teaching Methods	Parenting Practices and Theoretical Influences
			Group size	Number of sessions	Frequency	Duration (hours)	Child present (number of sessions (n))		
	(Au et al., 2014)	No	-	5 +1 +3 P/C		15-30m 2.5 P/C 15-30m	No	mini-lectures, workbook, discussions, role-play, observation, feedback, DVD demonstration Homework – yes	Parent self-regulation.
	(Khademi et al., 2019)	No	12-15	4 +4P/C	weekly	2	No	-	
	(Yusuf et al., 2019)	No	-	8 +3P/C	weekly	2 P/C 15-30m	No	Phone calls have a self-regulator format to facilitate independent problem solving, group sessions educate and actively train skills.	
<b>Unnamed ‘standard’ parenting program</b>	(Mah et al., 2021)	No	10-12	12	weekly	2			<b>Theory:</b> social learning, behavioural theories  <b>Practices:</b> Child centered play, differential attention, problem solving, limit setting, incentives,

Note: \*\* Mah and colleagues (2021) unnamed ‘standard’ parenting program is adapted from established programs and includes ADHD specific content. For additional details refer to Appendix G. \*\*\* completion of PCIT is based on skill acquisition. Session completion is presented as average for Leung et al. (2017), mean of 17 total sessions. Matos et al. (2009) reports a maximum duration of 8 sessions, yet two families were given two-three extra sessions, so the range is presented.

## Measures of Parental Wellbeing

Parental wellbeing was conceptualised and measured in multiple ways across the literature. Most reports ( $n = 18$ , 78%) measured multiple constructs of wellbeing ( $M = 2$ , range 1-5 constructs per study). The constructs that were measured were predominantly affective states (confidence, satisfaction, self-compassion, anxiety, depression, stress, mental health), or parents' perceptions of themselves or their child (self-esteem, parental burden, parenting efficacy, parenting attitude, parenting competence, maternal adjustment). Studies reported total scores, subscales, or combinations thereof from 16 different psychometric measures. Self-reported psychometric measurements were the only form of assessment used across all studies. None of the included studies measured parental HII as an outcome. Three studies (Lange et al., 2018; Mah et al., 2021; Thompson et al., 2009) reported screening measures for parental ADHD. Of the studies that screened for parental ADHD, two were evaluating NFPP and one study included two programs, the Mindful and Unnamed 'standard' parenting program. All three programs that screened for parental ADHD included ADHD specific content in the program.

Data for a total of 64 parental wellbeing effects were extracted. Outcomes were measured at baseline and post-intervention. Twelve studies included a follow-up condition. As waitlist control participants were often provided with the intervention prior to follow up, between group comparisons were not possible for most of the studies using waitlist control conditions. These results are presented in tables 7-18 and are organised according to the measurement of wellbeing constructs as used by the study authors. The tables are ordered alphabetically by construct, psychometric measure and then study.

Overall, 86% of results for parental wellbeing outcomes either do not reach significance or the quality of the evidence is reduced by a high risk of bias. Across all studies,



40% of findings ( $n = 26$ ) were reported as having a significant effect, of those 65% ( $n = 17$ ) are from studies with a high risk of bias. Five studies (24%) reported a significant finding on multiple measures of wellbeing, though only three studies (14%) reported a significant finding on both positive and negative dimensions of wellbeing. Liu and colleagues (2021) found that Mindful Parenting was associated with a decrease in depression and an increase in self-compassion. Bor and colleagues (2002) found that Triple P was associated with a decrease in depression, stress, and anxiety, measured by the DASS total score, and an increase in parents' sense of competence (PSOC). Aghebati and colleagues (2014) found a similar pattern associated with Triple P and reported an increase in PSOC and a reduction in the depression subscale of the DASS, but not the anxiety or stress subscales.

To evaluate the indirect effect that parenting programs have on wellbeing for parents whose children have HII, the results are first discussed in relation to the parenting programs. Patterns of in the measurement of wellbeing are then considered.

### **The Significance and Magnitude of Effect Per Program**

The proportion of significant effects per program ranged from 0-100%. Seven parenting programs were associated with a significant effect on at least one measure of parental wellbeing. The unnamed 'standard' parenting program and the mindful parenting program implemented by Mah and colleagues (2021) did not report any significant findings ( $n = 4$  effects).

All of the findings from Helping the Non-Compliant Child (HNC) (evaluated by one study) were significant ( $n = 2$  significant findings, 100%). HNC is a general population group program that was compared to an active comparison (NFPP) and a waitlist control. HNC was associated with a moderate ( $d = -0.58$ ) reduction in stress on the PSI compared to the waitlist control condition, with 78% post-hoc power (Abikoff et al., 2015). NFPP was not

associated with a significant reduction in stress compared to the waitlist control condition. Post intervention HNC was associated with a larger reduction in stress than NFPP, a specialised individual program, with a moderate ( $d = 0.30$ ) effect size, but only 3.1% post-hoc power. The difference was not retained at follow up.

All of the parental wellbeing effects associated with the Parents Plus Childrens Program evaluated by Turan and colleagues (2021) were significant ( $n = 1$  effect).

All of the findings from Parent-Child Interaction Therapy (PCIT) were significant (100%,  $n = 3$  significant findings). PCIT was associated with a moderate ( $d = .76$ ) to large ( $d = 1.4$ ) reductions in stress across three measures (DASS, FEI, PSI), and moderate reductions in depression and anxiety ( $d = .79$ ) (Leung et al., 2017; Matos et al., 2009).

Two thirds of the findings from the 1-2-3 Magic program ( $n = 2$  significant findings, 66%), evaluated by two studies, were significant. 1-2-3 Magic was associated with a statistically significant improvement in parenting stress and mental health. This includes a moderate (re-calculated  $d = 0.58$ ) reduction in stress ( $p < .001$ ) on the PSI (Chesterfield et al., 2021) and a significant improvement in mental health ( $p < .05$ ) on the Malaise inventory (Sayal et al, 2016). The effect size for changes in mental health was not reported by Sayal and colleagues (2016) and could not be re-calculated for this review. The SDQ was also administered as a measure of parental burden by Sayal and colleagues (2016) and did not record a significant finding. The SDQ is not a validated measure of parental burden, and the study (Sayal et al, 2016) was at high risk of bias, reducing confidence in the findings related to 1-2-3 Magic's effect on mental health, but not stress.

Over half of the findings associated with the Incredible Years parenting program were significant. There were four significant effects (57%) from two studies ( $n = 7$  total effects). The effects include a small reduction in depression established with the BDI-s ( $d = .43$ ) and a

variable effect found with the PSOC total score ( $d = .74$ ) and subscales ( $d = .48$ ;  $d = .83$ ).

Confidence in these findings is reduced because the highest quality evaluation of IY (Leckey et al., 2019) did not report any significant findings.

Half of the findings from the Mindful Parenting programs, evaluated by three studies, were significant ( $n = 4$  significant findings, 50%). Overall, Mindful Parenting was associated with a moderate ( $d = 0.44$   $p < .01$ ) (Liu et al., 2021) to large ( $d = 0.98$ ,  $p < .001$ ) (Behbahani et al., 2018) reduction in stress as measured on the PSI, and a moderate ( $d = -0.58$ ,  $p < .001$ ) increase in self-compassion as measured on the self-compassion scale (Liu et al., 2021). There was no association with an improvement in anxiety between groups, but a significant improvement was reported within both intervention and TAU control groups in one study (Liu et al., 2021). The evaluation of Mindful Parenting that reported a large effect on stress at  $p < .001$  was at high risk of bias in multiple domains (Behbahani et al., 2018). Mindful Parenting is one of only two programs that is associated with an effect on two constructs of wellbeing.

The proportion of findings for the New Forest Parenting Program that reached significance is 25% ( $n = 3$ ) across a total of five studies. Of those findings, 66% ( $n = 2$ ) were associated with a study that received a high risk of bias rating. NFPP was associated with an increase in a maternal adjustment index (the term ‘maternal wellbeing’ was used interchangeably with ‘maternal adjustment’ by the same authors), as reported by the authors of one study (Sonuga-Barke et al., 2001b). The maternal wellbeing index is a composite measure, constructed by combining the Parenting Sense of Competence Scale and the General Health Questionnaire to establish ‘maternal adjustment’ or ‘maternal wellbeing’ (Sonuga-Barke et al., 2001b; Sonuga-Barke et al., 2004). Of note, a second study from the same authors, also evaluating NFPP, found a significant deterioration in the maternal wellbeing index after the completion of the program (Sonuga-Barke et al., 2004). This is the

only instance of an adverse effect that has been found across all programs. No other significant findings were established for NFPP, including on measures of stress and parenting satisfaction in studies with a lower risk of bias (some concerns) conducted by Abikoff and colleagues (2015). These factors diminish confidence in the association between NFPP and the reported increase in maternal wellbeing.

Six studies evaluated Triple P, with 25% ( $n = 7$ ) of the findings reaching significance. Of the significant findings, 71% ( $n = 5$ ) were reported by studies with high risk of bias ratings. Triple P was associated with a large increase in parents' sense of competence ( $d = .81$ ), and small ( $d = .18$ ) to large ( $d = 1.81$ ) reductions in depression, anxiety and stress.

### **Constructs and Measurements of Parental Wellbeing**

There was considerable overlap between the constructs of wellbeing, though there was also variation in the psychometric measures that were used to assess them. Measures with multiple subscales enabled the assessment of multiple constructs and contributed to the overlap amongst included studies. Overall, sixteen psychometric measures were used to measure wellbeing, and are detailed in appendix F. Collectively, 13 wellbeing constructs were described.

The majority ( $n = 9$ , 56%) of constructs were specific to parents. Parenting specific constructs centred on the parents' perception of their parenting skill. For example, the constructs of parenting confidence, competence and efficacy are centred on the parents' perception of their ability to manage their child's behaviour and were used in 16 studies (76% of all studies included in this review). The PSI includes items relating to parenting competence, as does PARI, an assessment of parenting attitudes and are included in this total. The PSOC and GHQ (General health questionnaire) were combined to form a maternal wellbeing, or maternal adjustment, index in two studies (Sonuga-Barke et al., 2001b; Sonuga-

Barke et al., 2004) and the PSI was administered in conjunction with four items of the Parent Perceptions of Parent Efficacy (PPPE) scale to generate a composite parenting stress score in one study (Abikoff et al., 2015). The inclusion of four PPPE items was not explained by the study authors and, given that the PSI contains items relating to parenting competence, the reasons for using the measures in this way are not clear. In total, two different composite indices were created by combining separate measures and the validity of the indices was not established.

Constructs that were not specific to parenting include depression, anxiety, stress, mental health, and self-compassion. The affective states of parents as individuals were frequently measured. Eight measures (50%) either directly assessed anxiety, depression, stress, mental health or “mood-related conditions”, or contained items relating to negative affect such as anxiety, anger, stress and distress. Four out of five measures of stress (FEI, FSI, PSI, SNQ) situated stress within a family, child ADHD or developmental disability specific context, and contained items relating to financial stress, family social life, and sibling and partner relationships. This situated and contextualised the parents in relation to their role within the family, rather than emphasising features of their mood as individuals. Conversely, while the PSI contains a satisfaction subscale, the Family Experiences Index (FEI), Family Strain Index (FSI) and Service Needs Questionnaire (SNQ) did not include items relating to a broader affective range.

The Parenting Stress Index (PSI) and Parenting Sense of Competence Scale (PSOC) were the parenting specific measures used most frequently ( $n = 8$  for each measure) and were associated with large effect sizes. The proportion of significant findings established with the PSI was 58% ( $n = 7$ ) with three large effect sizes, classified based on Cohen’s  $d > .8$  (Cohen, 1977), ranging from 1.49 to .977. Similarly, 42.8% ( $n = 6$ ) of the findings established with the PSOC reached significance, with two large effects ranging from .84 to .81. The

Depression, Anxiety and Stress Scale (DASS) was the non-parenting specific measure that was used most frequently ( $n = 5$  studies). The proportion of significant findings established with either the subscales or total score of the DASS was 54% ( $n = 6$ ). The DASS was associated with large (Cohen's  $d > .8$ ) effect sizes ( $n = 3$ ) ranging from 2.95 to 1.81.

The wellbeing constructs with the greatest proportion of significant effects, at any level of significance, and captured by any measure, are self-compassion (100%  $n = 1$ ), parenting sense of competence (75%  $n = 3$ ), stress (57%  $n = 12$ ) and depression (55.5%  $n = 5$ ). Half of the findings for anxiety ( $n = 3$ ), wellbeing ( $n = 1$ ) and mental health ( $n = 1$ ) were significant. The parenting efficacy and satisfaction subscales of the PSOC reported fewer significant findings than the PSOC total score, with 33% ( $n = 2$ ) of the efficacy findings and 25% ( $n = 1$ ) of the satisfaction findings obtaining significance. The constructs of parental confidence, burden and attitude were not associated with any significant effects.

Overall, with significance at .001, the largest and most consistent effect sizes were found for a reduction in stress. This effect was reported on three different measures (PSI, DASS and FEI) across four studies (Aghebati et al., 2014; Behbahani et al., 2018; Leung et al., 2017; Matos et al., 2009). A large effect size was established with the PSI by Leung and colleagues (2017) evaluation of PCIT ( $d = 1.49$ ) and by Behbahani and colleagues (2018) evaluation of Mindful Parenting ( $d = .97$ ). A large reduction in stress was found using the DASS by Aghebati and colleagues (2014) evaluation of Triple P ( $d = 2.45$ ) and Leung and colleagues (2017) study of PCIT ( $d = .78$ ). The Family Experiences Inventory (FEI) used by Matos and colleagues (2009) evaluation of PCIT reported a large reduction in stress ( $d = .76$ ).

**Table 7***The Effect of Parenting Programs on Measures of Anxiety*

Construct & Psychometric Measurement	Author	Re-calculated effect size and post hoc power					Post intervention between group*signif icance	Additional information including statistics reported by the author in the absence of <i>M(SD)</i>
		<i>d</i>	(95%CI) lower	upper	CLES	Post hoc power %	Significance .05 .001 or – (NS)	
Anxiety								
DASS	(Aghebati et al., 2014)	1.817	0.92	2.714	0.901	99.8	.05	Anxiety subscale only
	(Bor et al., 2002)	0.184	-0.141	0.508	0.552	20	.001	DASS total score
	(Hoath & Sanders, 2002)	0.484	-0.41	1.377	0.634	21.5	-	Anxiety subscale only
	(Khademi et al., 2019)	/	/	/	/	/	-	Anxiety subscale only Group (subject*control) Type III sum of squares: 55.86 Degree of freedom: 1 Mean Square: 55.86 F: 1.74 Significance level: 0.19
	(Leung et al., 2017)	0.789	0.072	1.505	0.711	56	.001	DASS total score
HAMA	(Liu et al., 2021)	0.339	-0.032	0.711	0.595	43.3	-	Within group significance EXP * $z = -2.96$ , $p = .003$ TAU: * $z = -2.98$ , $p = .003$

Note: / information unavailable, - not significant \*experimental vs control group comparison, unless otherwise stated. Follow up conditions are entered on a separate line if applicable. *DASS: Depression, Anxiety, Stress Scale (Lovibond & Lovibond, 1996)*: The DASS has high reliability for the Depression subscale ( $\alpha = .91$ ), Anxiety subscale ( $\alpha = .81$ ) and Stress subscale ( $\alpha = .89$ ), and good discriminant and concurrent validity (Lovibond & Lovibond, 1996); *HAMA: Hamilton Anxiety Scale (Hamilton, 1959)*: The Hamilton Anxiety Scale is a five-point Likert scale used to assess anxiety. In this study, the internal consistency was 0.86 (Liu et al., 2021).

**Table 8***The Effect of Parenting Programs on Measures of Depression*

Construct & Psychometric Measurement	Author	Re-calculated effect size and post hoc power					Post intervention between group* significance	Additional information including statistics reported by the author in the absence of <i>M(SD)</i>
		<i>d</i>	(95%CI) lower	upper	CLES	Post hoc power %	Significance .05 .001 or – (NS)	
Depression								
DASS	(Aghebati et al., 2014)	2.949	1.859	4.039	0.981	100	.001	Depression subscale
	(Bor et al., 2002)	0.184	-0.141	0.508	0.552	20	.001	DASS total score
	(Hoath & Sanders, 2002)	0.234	-0.65	1.118	0.566	7.5	-	Depression subscale only
	(Khademi et al., 2019)	/	/	/	/	/	.05	Depression subscale only. Group (subject x control) Type III sum of squares: 272.29 Degree of freedom: 1 Mean Square:272.29 F: 4.94 Significance level: 0.02
	(Leung et al., 2017)	0.789	0.072	1.505	0.711	56	.001	DASS total score
BDI-S	(Azevedo et al., 2015)	0.433	-0.188	1.054	0.62	22.8	.05	
HAMD	(Liu et al., 2021)	0.567	0.2	0.952	0.658	86.4	-	
GHQ	(Thompson et al., 2009)	-0.028	-0.75	0.695	0.508	3	-	
	(Thompson et al., 2009)	-0.183	-0.907	0.54	0.552	7.7	-	Follow up result



Note for table 8: / information unavailable, - not significant \*experimental vs control group comparison, unless otherwise stated. Follow up conditions are entered on a separate line if applicable. *DASS: Depression, Anxiety, Stress Scale (Lovibond & Lovibond, 1996)*: The DASS has high reliability for the Depression subscale ( $\alpha = .91$ ), Anxiety subscale ( $\alpha = .81$ ) and Stress subscale ( $\alpha = .89$ ), and good discriminant and concurrent validity (Lovibond & Lovibond, 1996) *BDI-S: Becks Depression Inventory-Spanish edition (Bonilla et al., 2004)*: The BDI (Beck Depression Inventory) reports good internal consistency ( $\alpha = .81$ ). The BDI-s (Beck Depression Inventory) has moderate to high test-retest reliability ranging from  $r = .60$  to  $r = .90$  for non-clinical populations. *HAMD: Hamilton Depression Scale (Hamilton, 1960)*: The Chinese version of the HAMD has good reliability and validity (Zheng et al., 1988) internal consistency was 0.70 for this sample. *GHQ: General Health Questionnaire (Goldberg, 1992)* The GHQ internal consistency is satisfactory ( $\alpha = 0.91$ ) in this study the test-retest reliability was 0.43.

**Table 9***The Effect of Parenting Programs on Measures of Maternal Adjustment and Maternal Wellbeing*

Construct & Psychometric Measurement	Author	Re-calculated effect size and post hoc power					between group* significance	Additional information including statistics reported by the author in the absence of <i>M(SD)</i>
		<i>d</i>	(95%CI) lower	upper	CLES	Post hoc power %		
Maternal adjustment or Maternal wellbeing Composite Index	(Sonuga-Barke et al., 2001b)	/	/	/	/	/	.001	F= 17.80 p=.0001 Interaction group x time: F = 1.84 p= .1650
	(Sonuga-Barke et al., 2004)	/	/	/	/	/	-	Difference in chance between groups (95%CI) 0.22 (-0.23 – 0.67) Degree of change (95%CI) -0.41 (-0.68 to -0.14) -0.63 (-1.04 to -0.26)

Note: / information unavailable, - not significant \*experimental vs control group comparison, unless otherwise stated. Follow up conditions are entered on a separate line if applicable. This index is comprised on the *GHQ: General Health Questionnaire* (Goldberg, 1992) and *PCOS: Parenting Sense of Competence Scale* (Johnston & Mash, 1989). There are no psychometric properties for the combined index.

**Table 10***The Effect of Parenting Programs on Measures of Mental Health*

Construct & Psychometric Measurement	Author	Re-calculated effect size and post hoc power					between group* significance	Additional information including statistics reported by the author in the absence of <i>M(SD)</i>
		<i>d</i>	(95% CI) lower	upper	CLES	Post hoc power %	Level of significance .05 .001 or – (NS)	
Mental Health								
Malaise Inventory								
	(Sayal et al., 2016)	/	/	/	/	/	.05	Mean change difference:(95% <i>CI</i> ) -1.9: -3.2,-0.5 <i>p</i> = 0.009

Note: / information unavailable, - not significant \*experimental vs control group comparison, unless otherwise stated. Follow up conditions are entered on a separate line if applicable. *Malaise Inventory* (Rodgers et al., 1999) The Malaise Inventory is a 24 items questionnaire that assesses mental health. It has a clinical cut-off score of 6 or above. The Malaise Inventory reports good sensitivity and specificity for depression, and high internal reliability at 0.78 (McGee et al., 1986; Rodgers et al., 1999).

**Table 11***The Effect of Parenting Programs on Measures of Parental Attitude*

Construct & Psychometric Measurement	Author	Re-calculated effect size and post hoc power			Post intervention between group* significance		
		<i>d</i>	(95% CI) lower	upper	CLES	Post hoc power %	Significance .05 .001 or – (NS)
Parental Attitude							
<i>FAD subscales</i>							
FAD-PS	(Yusuf et al., 2019)	0.37	-0.201	0.941	0.603	24.5	-
FAD-C	(Yusuf et al., 2019)	0.232	-0.336	0.801	0.565	12.6	-
FAD-R	(Yusuf et al., 2019)	0.075	-0.492	0.641	0.521	4.5	-
FAD-AE	(Yusuf et al., 2019)	0.464	-0.109	1.038	0.629	37.1	-
FAD-AA	(Yusuf et al., 2019)	0.169	-0.398	0.736	0.548	8.5	-
FAD-BC	(Yusuf et al., 2019)	-0.034	-0.601	0.532	0.51	3.3	-
FAD-GF	(Yusuf et al., 2019)	0.531	-0.045	1.107	0.646	46.2	-
<i>PARI subscales</i>							
OPA	(Yusuf et al., 2019)	0.427	-0.145	1	0.619	31.3	-
DA	(Yusuf et al., 2019)	-0.916	-1.511	-0.321	0.741	89.7	-
RHRA	(Yusuf et al., 2019)	0.634	0.054	1.215	0.673	60.9	-
MC	(Yusuf et al., 2019)	0.362	-0.209	0.933	0.601	24.5	-
SD	(Yusuf et al., 2019)	0.607	0.027	1.186	0.666	56.7	-

**Table 12***The Effect of Parenting Programs on Parental Burden*

Construct & Psychometric Measurement	Author	Re-calculated effect size and post hoc power					between group* significance	Additional information including statistics reported by the author in the absence of <i>M(SD)</i>
		<i>d</i>	(95%CI) lower	upper	CLES	Post hoc power %	Significance .05 .001 or – (NS)	
<hr/>								
Parental Burden								
SDQ								
	(Sayal et al., 2016)	/	/	/	/	/	-	Mean change difference (95% <i>CI</i> ) <i>d</i> = 0.2 (-0.2, 0.6) <i>p</i> = 0.31

Note: / information unavailable, - not significant \*experimental vs control group comparison, unless otherwise stated. Follow up conditions are entered on a separate line if applicable. *SDQ: Strengths and Difficulties Questionnaire (Goodman, 1997)* The Strengths and Difficulties questionnaire is a behavioural screening tool for children aged 4-16 years, with subscales for hyperactivity, relationships and emotions. Four subscales provide a total score from 0-40. The parent report form of the SDQ contains one question regarding family burden due to the child's behaviour with 4 possible responses ranging from 'not at all' to 'a great deal' and a total score of 0-3. Items of the SDQ related to child behaviour have good internal consistency at 0.6.

**Table 13***The Effect of Parenting Programs on Measures of Parenting Confidence*

Construct & Psychometric Measurement	Author	Re-calculated effect size and post hoc power					between group*	Additional information including statistics reported by the author in the absence of <i>M(SD)</i>
		<i>d</i>	(95%CI) lower	upper	CLES	Post hoc power %	Significance .05 .001 or – (NS)	
Parenting Confidence PCSB								
	(Hoath & Sanders, 2002)	-1.117	-2.063	-0.17	0.785	71.1	-	

Note: / information unavailable, - not significant \*experimental vs control group comparison, unless otherwise stated. Follow up conditions are entered on a separate line if applicable. *PSBI: Parent Setting and Behaviour Index (Sanders et al., 2002)* The Problem Setting and Behaviour Checklist is a 28-item rating scale that describes how confident parents feeling about managing their child's behaviour. The scale responses range from 0 (certain I cannot do it) to 100 (certain I can do it). 14 items relate to specific child behaviours and 14 items related to parenting settings. The total scale has high internal consistency with an alpha coefficient of .97.

**Table 14***The Effect of Parenting Programs on Measures of Parenting Efficacy*

Construct & Psychometric Measurement	Author	Group & Time	Re-calculated effect size and post hoc power					between group significance	Additional information including statistics reported by the author in the absence of <i>M(SD)</i>
			<i>d</i>	(95%CI) lower	upper	CLES	Post hoc power %	Level of significance .05 .001 or – (NS)	
Parenting self- efficacy PSOC <i>efficacy</i> <i>subscale</i>									
	(Azevedo et al., 2013)		-0.484	-0.841	-0.126	0.634	76.4	.05	
	(Azevedo et al., 2014)		/	/	/	/	/	/	ITT: T1-T2 8.42 (0.001) 0.15 T2-T23 0.88 (0.351) 0.02
	(Au et al., 2014)		-1.379	-2.476	-0.282	0.835	74	-	
	(Lange et al., 2018)		-0.461	-0.793	-0.129	0.628	78	.05	
	(Lange et al., 2018)	<i>Follow up</i>	-0.323	-0.653	0.007	0.59	47	-	Follow up result
	(Mah et al., 2021)		-1.059	-1.588	-0.531	0.773	13.2	-	Interaction effects: $F(1, 61) = 1.614$ , $p = .209$ , $\eta^2 = .026$ Within group: $F(1, 61) = 11.136$ , $p = .001$ , $\eta^2 = .044$

Note: / information unavailable, - not significant \*experimental vs control group comparison, unless otherwise stated. Follow up conditions are entered on a separate line if applicable *PCOS: Parenting Sense of Competence Scale (Johnston & Mash, 1989)* The Efficacy subscale contains 7 items, with a score range of 7-35. Higher scores indicate greater parenting competence. Evaluations of the psychometric properties demonstrate that these dimensions are robust and test-retest reliability is high. The total score shows a satisfactory level of internal consistency ( $\alpha = .79$ ) (Johnston & Mash, 1989). Internal consistency for subscales ranged from 0.70 to 0.83 for a Portuguese population (Azevedo et al., 2013).

**Table 15***The Effect of Parenting Programs on Measures of Parenting Self-Esteem and Competence*

Construct & Psychometric Measurement	Author	Re-calculated effect size and post hoc power					between group significance	Additional information including statistics reported by the author in the absence of <i>M(SD)</i>
		<i>d</i>	(95%CI) lower	upper	CLES	Post hoc power %	Significance .05 .001 or – (NS)	
Parenting self- esteem								
PSOC total score	(Azevedo et al., 2013)	-0.773	-1.138	-0.408	0.708	98.7	.05	ITT analysis: Group X Time (F, p) ES np 2 4.87 (0.030) 0.05
Parenting sense of competence								
PSOC total score	(Bor et al., 2002)	-0.811	-1.403	-0.218	0.717	78.5	.001	
	(Azevedo et al., 2014)	/	/	/	/	/	/	IY condition only: significant within 55.79 (± 7.61) 59.24 (± 7.06) 59.32 (± 6.98) Group X Time (F, p) ES np 2 T1-T2 12.14 (\0.001) 0.20 T2-T3 0.02 (0.900) \0.01
	(Khademi et al., 2019)	/	/	/	/	/	.001	Group (subject*control) Type III sum of squares: 1201.88 Degree of freedom: 1 Mean Square: 1201.88 F: 19.99 p = 0.001

Note: / information unavailable, - not significant \*experimental vs control group comparison, unless otherwise stated. Follow up conditions are entered on a separate line if applicable *PCOS: Parenting Sense of Competence Scale (Johnston & Mash, 1989)* The parenting sense of competence scale is a 16-item self-report measure of parent's competence, based on their ratings of satisfaction and efficacy. The PSOC uses a 6-point Likert scale ranging from 1; strongly agree to 6; strongly disagree. Evaluations of the psychometric properties demonstrate that these dimensions are robust and test-retest reliability is high. The total score shows a satisfactory level of internal consistency ( $\alpha = .79$ ) (Johnston & Mash, 1989)



**Table 16***The Effect of Parenting Programs on Measures of Parenting Satisfaction*

Construct & Psychometric Measurement	Author	Re-calculated effect size and post hoc power					Post intervention between group* significance	Additional information including statistics reported by the author in the absence of <i>M(SD)</i>
		<i>d</i>	(95%CI) lower	upper	CLES	Post hoc power %	Significance .05 .001 or – (NS)	
Parenting Satisfaction								
PSOC Satisfaction Subscale								
	(Azevedo et al., 2013)	-0.835	-1.202	-0.467	0.723	99.5	.05	
	(Au et al., 2014)	0.024	-0.963	1.012	0.507	2.8	-	
	Lange et al., 2018)	-0.428	-0.76	0.097	0.619	71.2	-	
	Lange et al., 2018)	<i>Follow up</i>	-0.194	-0.522	0.135	0.555	94.6	-
								Follow up results

Note: / information unavailable, - not significant \*experimental vs control group comparison, unless otherwise stated. Follow up conditions are entered on a separate line if applicable *PCOS: Parenting Sense of Competence Scale (Johnston & Mash, 1989)*. The parenting sense of competence scale is a 16-item self-report measure of parent's competence, based on their ratings of satisfaction and efficacy. The PSOC uses a 6-point Likert scale ranging from 1; strongly agree to 6; strongly disagree. The satisfaction subscale consists of 9 items with a score range from 9 and 45

**Table 17***The Effect of Parenting Programs on Measures of Self-Compassion*

Construct & Psychometric Measurement	Author	Re-calculated effect size and post hoc power					Post intervention between group* significance	Additional information including statistics reported by the author in the absence of <i>M(SD)</i>
		<i>d</i>	(95%CI) lower	upper	CLES	Post hoc power %		
Self-compassion SCS								
	(Liu et al., 2021)	-0.62	-0.998	-0.242	0.669	91	.001	

Note: / information unavailable, - not significant \*experimental vs control group comparison, unless otherwise stated. Follow up conditions are entered on a separate line if applicable. *SCS: Self-Compassion Scale (Neff, 2003)* The Self Compassion Scale is a 26 item self-report measure using a five-point Likert scale. The SCS contains six subscales, with higher scores indicate a higher level of self-compassion. Chinese version of the SCS has been shown to have acceptable reliability and validity (J. Chen et al., 2011). In this sample, the internal consistencies were 0.87 (self-judgment subscale) 0.91 (self-kindness subscale) 0.85 (isolation subscale) 0.85 (common humanity subscale) 0.81 (over-identification subscale) and 0.86 (mindfulness subscale).

**Table 18***The Effect of Parenting Programs on Measures of Stress*

Construct & Psychometric Measurement	Author	Follow up/group	Re-calculated effect size and post hoc power					Post intervention between group* significance .05 .001 or – (NS)	Additional information including statistics reported by the author in the absence of <i>M(SD)</i>
			<i>d</i>	(95%CI) lower	upper	CLES	Post hoc power %		
Stress									
DASS									
	(Aghebati et al., 2014)		2.446	1.448	3.444	0.958	100	.001	Stress subscale only
	(Bor et al., 2002)		0.184	-0.141	0.508	0.552	20	.001	DASS total score
	(Hoath & Sanders, 2002)		0.945	0.017	1.874	0.748	59.1	-	Stress subscale only
	(Khademi et al., 2019)		/	/	/	/	/	-	Stress subscale only Group (subject*control) Type III sum of squares: 295.51 Degree of freedom: 1 Mean Square: 295.51 F: 3.74 Significance level: 0.04
	(Leung et al., 2017)		0.789	0.072	1.505	0.711	56	.001	DASS total score
FEI	(Matos et al., 2009)		0.76	0.02	1.5	0.705	55.1	.001	
FSI	(Lange et al., 2018)		0.261	-0.068	0.591	0.573	34.1	-	
	(Lange et al., 2018)	Follow up	0.316	-0.013	0.646	0.589	46.1	.05	Within group significance only
PSI	(Abikoff et al., 2015)	NFPP vs WL	0.54	0.121	0.96	0.649	70.3	-	

Construct & Psychometric Measurement	Author	Follow up/group	Re-calculated effect size and post hoc power					Post intervention between group* significance .05 .001 or – (NS)	Additional information including statistics reported by the author in the absence of <i>M(SD)</i>
			<i>d</i>	(95% CI) lower	upper	CLES	Post hoc power %		
	(Abikoff et al., 2015)	HCN vs WL	0.661	0.234	1.088	0.68	77.7	.001	
	(Abikoff et al., 2015)	NFPP vs HNC	0.017	-0.327	0.361	0.505	3.1	.05 (HNC)*	
	(Abikoff et al., 2015)	NFPP vs HNC	-0.08	-0.264	0.424	0.532	6.6	-	Follow up T3
	(Behbahani et al., 2018)		0.977	0.421	1.532	0.755	95.3	.001	
	Behbahani et al., 2018)	Follow up	1.13	0.519	1.741	0.788	97.5	.001	
	(Chesterfield et al., 2021)		0.581	0.051	1.111	0.659	59.4	.001	
	(Leung et al., 2017)		1.49	0.712	2.269	0.854	99	.001	
	(Leckey et al., 2019)		0.438	-0.261	1.136	0.622	21.6	-	
	(Liu et al., 2021)		0.439	0.066	0.813	0.622	64.5	.05	
	(Mah et al., 2021)		-1.046	-1.574	-0.518	0.77	15.8	-	

Construct & Psychometric Measurement	Author	Follow up/group	Re-calculated effect size and post hoc power					Post intervention between group* significance .05 .001 or – (NS)	Additional information including statistics reported by the author in the absence of <i>M(SD)</i>
			<i>d</i>	(95% CI) lower	upper	CLES	Post hoc power %		
	(Turan et al., 2021)		/	/	/	/	/	.05	All PSI subscales and total score reported as significant at ( $p < .05$ )
SNQ	(Au et al., 2014)		0.859	-0.172	1.891	0.728	41.6	-	

Note: / information unavailable, - not significant \*experimental vs control group comparison, unless otherwise stated. Follow up conditions are entered on a separate line if applicable. *DASS: Depression, Anxiety, Stress Scale* (Lovibond & Lovibond, 1996): The DASS has high reliability for the Depression subscale ( $\alpha = .91$ ), Anxiety subscale ( $\alpha = .81$ ) and Stress subscale ( $\alpha = .89$ ), and good discriminant and concurrent validity (Lovibond & Lovibond, 1996). *FEI: Family Experiences Inventory* (Bauermeister et al., 1999) The FEI was developed to assess stressful experiences associated with mother-child relationship, family social life, mother-child's teacher relationship. Family finances, and child-siblings' relationships. The internal consistency is .95 and test-retest reliability is .79 for Puerto Rican preschool children *FSI: Family Strain Index* (Riley et al., 2006) The Family Strain Index is a 6-item parent-report questionnaire with a range of 5 responses that assesses stress in families with a child with ADHD. A higher score indicates higher stress and family difficulties. The FSI has high internal consistency of 0.87. The FSI is the only ADHD specific tool that assesses family stress in the included studies. *PSI: Parenting Stress Index* (Abidin, 1995) The Parenting Stress Index is a 36 or 16 item self-report questionnaire measuring parents' stress. Respondents use a 5-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). The PSI contains 3 subscales evaluating distress, parent-child interactions, and the parents' perception of their competence. The PSI has good to high internal consistency (Total score,  $\alpha = .95$ ; subscales ( $\alpha = .88$  to  $.90$ ; Abidin, 2012) and good test-retest reliability for the total Stress score,  $r = .90$ . Validity is 0.90 for the total score. *SNQ: Service Needs Questionnaire* (Leung et al., 2010). The Service Needs Questionnaire is an assessment for families whose child has a developmental disability. The SNQ is a 2-part, 29-item measure using a 5-point scale (ranging from 1 = do not endorse at all to 5 = endorse a lot) with part 1 being a 9-item measure of individual and family stress. Cronbach's  $\alpha$  coefficients for the SNQ were .89 and .94 at pre- and post-intervention, respectively. \* Abikoff and colleagues (2015) used the PSI in conjunction with 4 items of the Parent Perceptions of Parent Efficacy (Hoover-Dempsey et al., 1992) scale for a composite total score reported as stress

## Chapter Five: Discussion

This review of the indirect effects of parenting programs on parental wellbeing established that, for parents whose children have elevated HII, most parenting programs have an effect on at least one dimension of parental wellbeing. The magnitude of specific effects on different dimensions of wellbeing were not found consistently across all programs, as will be discussed in this chapter.

### The Effects of Parenting Programs on Parental Wellbeing

Across the twenty-one studies included in this review, nine parenting programs involving 1,323 parent participants were evaluated. The parenting programs were predominantly for a general audience ( $n = 13$ , 62%), rather than containing specialist content for children with ADHD, and were clustered around two age groups (children under five years and children over seven years, with some overlap). None of the programs included in this review related to adolescents with HII. Program length ranged from 3 sessions (1-2-3 Magic) to 17 sessions (PCIT), with most programs ( $n = 5$ ) consisting of 8 sessions delivered on a weekly basis to small groups of parents. There were four programs that were delivered individually, and each of these programs used in vivo parent-child interactions for at least part of one session (HNC, NFPP, PCIT and Triple P). The parenting practices taught across all programs aligned with social learning and behavioural principles. The programs emphasised the parent-child relationship, taught parents how to improve the quality of their interactions with their child, reinforcement techniques to encourage positive child behaviour and prevent misbehaviour in addition to authoritative approaches to discipline.

The conceptualisations of parental wellbeing were variable across studies and a multitude of measures were used. Sixteen psychometric measures were used to measure 13 different constructs of wellbeing. Across all studies, 64 wellbeing outcome measurements

were extracted and assessed in this review. Overall, 85% of the outcomes were not associated with a significant improvement in parental wellbeing.

The effects of parenting programs on parental wellbeing found in this review were inconsistent. While most parenting programs are likely to improve at least one-dimension parental wellbeing to some extent, either by reducing stress, depression, or anxiety, or by increase parents' sense of competence or self-compassion, these effects are highly variable. The largest and most consistent effect found on any measure of parental wellbeing was a reduction in stress after completing PCIT, Mindful Parenting, Triple P, HNC or 1-2-3 Magic. Three measures established this effect which does increase confidence in the reliability of a reduction in stress after the completion of a parenting program. An increase in parental sense of competence was found after completion of the Incredible Years, Triple P and NFPP. The effect size varied, with a range from non-significant to large increase in parental competence. Unfortunately, with the exception of Triple P, the programs that are associated with the most reliable reduction in stress (Mindful Parenting, PCIT, HNC and 1-2-3 Magic) did not measure the parent's sense of competence as an outcome. This limits what is known about the capacity of these programs to deliver beneficial outcomes on multiple dimensions of wellbeing.

Four programs, mindful parenting, IY, PCIT and Triple P, emphasised the importance of parental self-regulation, with a suggested mechanisms of change in child behaviour and parent-child relationships overtime being parents who are calm, encouraging, and non-reactive. These programs reported a broad range of effects with reductions in depression, anxiety and stress as well as increases in self-compassion and sense of competence.

## **The Application to Practice**

Clinicians need precise and reliable information to base recommendations for interventions on. The capacity for these results to provide specificity and reliability for clinicians to recommend parenting programs for parents whose child has HII is limited, though not entirely absent. While the results of this review found inconsistencies, there is a greater likelihood that parenting programs will reduce stress for parents of children with HII. Parents will likely experience additional improvements to another dimension of their wellbeing, such as a reduction in depression and anxiety or an increase in their sense of competence and efficacy, yet no other singular effect was consistent across programs included in this review and therefore cannot be relied upon.

Clinicians do not need to refer the parents of children diagnosed with ADHD to a specialist ADHD parenting program to obtain the potential secondary benefits of reducing the parents' stress or improving a dimension of the parent's wellbeing. PCIT and group-based parenting programs consisting of three or more sessions, that are based on social learning and behavioural principles, and that address parental self-regulation and the parent-child relationship are most effective for improving parental wellbeing. Wymbs and colleagues (2016) ascertained that 58% of parents whose child has a diagnosis of ADHD prefer individually delivered parenting programs. Based on the current review, unless the program is Parent-Child Interaction Therapy, it may be more likely that parents would experience an improvement in wellbeing from attending a group-based parenting program, though tailoring interventions to individual preferences is more important than rigid adherence to what is essentially a negligible difference in the likelihood of a specific effect.

It is important to note that while statistical significance and magnitude of effect are important considerations, when applying findings to the lives of humans they are not the only



considerations (Matthey, 1998). Clinical changes that may not reach statistical significance and are difficult to ascertain in a systematic review, remain important for the parents who experience the difference (Bussing et al., 2006; Coates et al., 2015; Matthey, 1998; Resch et al., 2012; Steenhuis et al., 2020). Similar patterns have been established by other systematic reviews where parenting programs consistently improve child development outcomes and parenting skills, metrics that were not examined in this review, but less consistently improve specific components of parental wellbeing (Theule et al., 2018; van den Hoofdakker et al., 2010; Warren, 2018). Moderate reductions in stress have been the most consistently reported change for parents whose children have HII, within and beyond this systematic review. Such that Theule and colleagues (2018) suggest that for parents with mild to moderate stress, a parenting program may be a sufficient standalone intervention. Thuele and colleagues' (2018) recommendation is based on research specific to stress, and no other dimensions of parental wellbeing. PCIT, Mindful Parenting, Triple P, HNC or 1-2-3 Magic are the programs included in this review that are most likely to have this effect.

### **Unexpected Results**

Surprisingly, the New Forest Parenting Program is the least likely to improve the wellbeing of parents. NFPP is an individually delivered, home based parenting program specifically designed for children with ADHD (Sonuga-Barke et al., 2001b; Thompson et al., 2009). In addition to behavioural management strategies, NFPP requires parents to take on a more complex role with their child's development that may contribute to the lack of improvement for parents' wellbeing. NFPP teaches parents how to increase the neuropsychological capacities of their child through games and real-world situations (Abikoff et al., 2015; Sonuga-Barke et al., 2001b; Thompson et al., 2009). The parents learn four elements of constructive parenting to identify and implement as part of the development of their child's self-regulation, attention, and memory skills (Abikoff et al., 2015; Lange et al.,

2018). Parents learn to ‘scope’ the child’s current capacity so the parent has a realistic expectation of their child, performance targets are then identified (‘extending’) and integrated (‘scaffolding’) into games and practiced in real-world scenarios, prior to the ‘consolidation’ phase of generalizing the child’s new skills across settings (Abikoff et al., 2015). This structure, while effective for child development outcomes and improvements in HII, is beyond the typical expectations of parents in other programs and requires extensive executive functioning skills that may be challenging for parents of children with ADHD (Daley & O’Brien, 2013; Sonuga-Barke et al., 2001b; Starck et al., 2016).

Typically, NFPP is delivered by clinical psychologists, however when it was delivered by non-psychologist healthcare providers, a detrimental effect on the wellbeing of parents was reported (Sonuga-Barke et al., 2004); the mothers in NFPP were significantly more distressed and perceived themselves as significantly less effective and less satisfied than prior to the trial. Sonuga-Barke and colleagues (2004) suggest this may have occurred as part of the normal trajectory of parental experiences when raising a three-year-old child with elevated HII, and implied that the early childhood period is particularly challenging in the development of ADHD. This explanation is partially supported by the waitlist control group reporting a small deterioration in wellbeing during the trial, though it does not account for the significant reduction reported by the participants of the New Forest Parenting Program. The detrimental effect of a parenting program is not consistent with the findings of previous research from the same author, or other parenting programs designed for the parents of pre-school children (Barlow & Parsons, 2005; Sonuga-Barke et al., 2001b). Further, the recruitment process and inclusion criteria did not indicate any differences in the child or parent characteristics between the 2001 and 2004 studies of the same program, by the same author. Nor was there a discernible difference in the outcome measures and statistical analysis that could explain the anomalous result from the 2004 study. An alternative

explanation may be that the parents of children with ADHD are themselves more likely to experience HII, which may make it difficult for the parent to monitor, evaluate and develop their child's neuropsychological capacities if the parent themselves experiences similar challenges (Cheung & Theule, 2016; Starck et al., 2016). While this potential difficulty applies equally to all studies of NFPP, it is possible that the change in program facilitator that occurred with the 2004 study compounded this difficulty. Sonuga-Barke and colleagues (2004) suggest that despite training and supervision, the health professionals may have been "less involved in the program" (p.454).

The New Forest Parenting Program may be influenced by researcher allegiance to the intervention (Dragioti et al., 2015). The foundation of evidence for NFPP is not yet independent from the people who developed the program. Of the five reports examining NFPP included in the current review, at least three of the authors have been involved in every study. The studies have been published by four different lead authors and were conducted in four different countries, potentially having the *prima facie* effect of establishing a wider and more diffuse base of evidence than may exist. This potential source of bias is indirect and therefore not identified in the RoB2 assessment. Of note, the only finding of an adverse outcome in this review was reported by (Sonuga-Barke et al., 2004) evaluation of NFPP; and improvements to maternal wellbeing that were established using an unvalidated wellbeing index have not been replicated, yet the favourable result continues to be reported by the same group of authors without always mentioning the contradictory results (Daley & O'Brien, 2013). Collectively these findings are strongly suggestive of researcher allegiance to the intervention that reduces the credibility and confidence in the New Forest Parenting Program's findings of improvements to parental wellbeing. While these studies have a strength in epidemiological recruitment processes, it is possible that improvement to processes of blinding, the separation of researchers and intervention facilitators, and the

establishment of a more independent evidence base would assist in the parental wellbeing findings from the NFPP being more reliable.

### **Inconsistency in the Measurement and of Wellbeing**

This review identified inconsistent effects of parenting programs on parent wellbeing across the included literature. This inconsistency may be expected given the diversity of parenting experiences and the heterogeneity of HII for this population of parents in general, and the range of programs and variation in the measurement of parental wellbeing found in this review. There are multiple influences contributing to the diversity of measurements used to capture effects on parental wellbeing. As discussed in Chapter One, parental wellbeing is a multifaceted construct with a range of conceptualisations. The concept of wellbeing, and the form of measurement used to assess it, is likely to vary with the research purpose, cultural context and point in time that each study occurred (Kahneman & Krueger, 2006; Webb et al., 2018). As the studies in this review did not directly target parental wellbeing, it is less likely that a consistent conceptualisation and standard of measurement will be applied. Rather, this review reflects studies that happened to capture a component of wellbeing. Similarly, the target population of the research can influence the primacy of different wellbeing components such as sleep quality, social support, important cultural concepts or financial considerations (Draugalis & Plaza, 2009; van Agteren et al., 2021). The suitability of psychometric assessment measures, such as the form of administration and their properties of reliability and validity for particular populations, will be influenced by the research purpose and context, further increasing the range of measures likely to be included in the quantification of wellbeing. These factors combine to produce variability in measurement, and variability in the sensitivity of different measurement tools for different populations, contributing to the overall inconsistency in measurement of outcomes and potentially the outcomes themselves (Draugalis & Plaza, 2009; van Agteren et al., 2021).

### ***Individual Factors that Increase Variability***

Individual participant differences contribute to the inconsistent wellbeing outcomes. Each parent is within their own lifetime process of development, shaped by their ecosystem, and interacting with social and economic structures that confer varying degrees of difficulty for their role as parents (Asherson, 2012; Bornstein, 2005; Bronfenbrenner, 2005; Masarik & Conger, 2017; Nelson et al., 2014). Income and education are important demographic factors that interact with parenting practices and the effectiveness of parenting programs. Umberson et al. (2010) identified that sole parent households and low-income parents report higher child-care related stress. Low-income families obtain benefits from parenting programs however the effect diminishes overtime more so than for higher income families (Leijten et al., 2019; Lundahl et al., 2006). Barriers to participation disproportionately effect attendance for low-income parents, and socioeconomic stressors can disrupt the application of recommended parenting practices (Leijten et al., 2019; Lundahl et al., 2006). Zuurmond et al. (2019) longitudinal study of a parent support program in Ghana reported that “poverty shaped the wellbeing of the majority of our caregivers and their ability to implement change” (pp.50) yet concludes that the parents experienced an improvement in wellbeing attributed to attitudinal changes, increase knowledge, a sense of hope and expansion of supportive social networks from completing a parenting program. It is not clear to what extent parents’ decisions not to participate in parenting program research was due to socioeconomic factors, nor to what extend variable outcomes on measures of mood or cognition reflect underlying difference in parents’ level of distress or cognitive style prior to the program. Five programs attempted to reduce barriers to participation by providing practical and financial incentives including childcare and transport assistance.

The intrapersonal factors such as parents’ cognitive styles and attributions for their child’s behaviour contribute to varying levels of stress and depression amongst parents and

varying levels of effectiveness of parenting programs in improving parental wellbeing (Collett & Gimpel, 2004; Johnston & Chronis-Tuscano, 2014). None of the studies included in this review were exclusively delivered to parents with diagnosed mental health difficulties. Coates (2015) suggests that parent-administered behavioural interventions may exacerbate parental depression as the parent is required to address their difficulties with parenting. Alternatively, Coates (2015) suggested the perceived additional demand of personal time and resources to complete the program may diminish wellbeing for some parents.

Factors motivating parental engagement with parenting programs were not discussed by the studies included in this review, while the context precipitating a recommendation or referral to complete a parenting course may influence the variability in parental wellbeing outcomes, this cannot be established with the available data. The level of child HII is not necessarily an indicator of parental engagement in parenting programs. Sonuga-Barke and colleagues (2001) found that the parents who declined to participate in the New Forest Parenting Program were more likely to have children with higher levels of HII. Conversely, parents of children with higher levels of HII were more likely to attend with a second caregiver and there were no differences in the rate of attendance or program completion based on the level of HII in Azevedo and colleagues' (2015) subgroup analysis. This echoes earlier findings by Dreyer et al., (2010), where higher parenting stress resulted in higher attendance of parenting programs rather than being a barrier to attendance. The relationship between HII features and parenting stress is not uniform, with hyperactivity and impulsivity contribute more to stress than inattention, and disruptive behaviour contributing more to parent stress, and poor parenting practices, than HII itself (Craig et al., 2016; Theule et al., 2010). Parental stress based on variables of child HII may be unrelated to program attendance.

van den Hoofdakker et al. (2010) established that parenting program attendance is stronger when parents have a higher sense of efficacy which may be an individual parent factor that interacts with the likelihood of parents experiencing improvements in their parental wellbeing either directly (i.e differences in cognitive styles) or indirectly (i.e reciprocal influence of changes in parenting practices and parent-child interactions). Parents who do not attend parenting program are more likely to have lower self-efficacy and maladaptive attributions towards their child compared to parents who engage with parenting programs, even when the program was not completed (Chacko et al., 2017). Attendance is often low for parenting programs. Chacko and colleagues (2016) systematic review of 120 studies of parenting programs reported that on average participants attended 72 % of the program ( $SD = 18\%$ ; range 29–100 %). Similarly, attrition is often high for parenting programs, with an average attrition rate estimated to be 25-40% (Chacko et al., 2016; Corralejo & Domenech Rodríguez, 2018). Of the studies included in this systematic review, program attendance was reported in 71% of studies ( $n = 15$ ). Of those studies the style of reporting was variable making it difficult to compare across the literature. Collectively, ten reported average attendance below 85%. It is inconclusive as to what attendance rates contribute to the variability in wellbeing outcomes and whether the higher-than-average attendance rates reported by studies included in this review is related to child HII, parental efficacy or other factors. In terms of generalizability of the results in this review, most analyses of outcomes from the included studies were based on intention-to-treat principles which account for missing data, and increase the generalizability of findings.

### ***Child Characteristics that Influence Variability***

HII is a heterogeneous, multidetermined, dimensional construct that contains different challenges for children and parents at different stages of development (Lubke et al., 2009; McLennan, 2016; Pliszka, 2014). These factors, and differences in experiences with

diagnosis of ADHD, likely contribute to differences in outcomes on the diverse collection of wellbeing measures included in this review. The majority of the parents in this review were parenting children with a diagnosis of ADHD, which is considered to be an extreme expression of a continuum of HII behaviour (Balazs & Keresztesy, 2014; Demontis et al., 2019; Faraone et al., 2021). Given all children in the review experienced elevated HII, it is possible that there are differences between the parents of children who have engaged in a diagnostic assessment process that are relevant to parental wellbeing outcomes. Ringer and colleagues (2020) qualitative exploration of the meaning making process with parents whose child has been diagnosed with ADHD suggests the diagnostic process is influential in parents' perception of their child. Diagnosis can mark a shift from feelings of frustration, confusion, exhaustion, and sorrow and guilt when the parent is not behaving in accordance with their values, towards a process of acceptance and adaption (Ringer et al., 2020). For some parents this was as pronounced as "feelings of shame being transformed into feelings of pride and self-worth" with a diagnosis providing validation, and the parent gained a new appreciation for how they had managed their child's behaviour (Ringer et al., 2020, p. 386). Diagnosis provided parents with different ways of perceiving and interacting with their child and a better understanding of their needs (Ringer et al., 2020). Post diagnosis, all of the parents in Ringer's study reported seeking out ADHD specific information either informally or by attending parenting programs. Given many of the parents in the current study were recruited through child and adolescent mental health services, it is possible that parents of children with elevated HII and no diagnosis of ADHD have different emotional needs, different perceptions of their child or different experiences of stigma relating to diagnostic processes compared to parents of children with a diagnosis and that that is reflected in the inconsistent results (DosReis et al., 2010). It is also possible that changes in parental wellbeing coincide with parents' processes of adaption post-diagnosis. All the children in the



study experienced an assessment process to establish the presence of elevated HII. It is unclear to what extent the assessment of eligibility for inclusion in a study itself would have affected parents' perception of their child or prompted a process similar to what the parents described to Ringer and colleagues (2020). What is clear is that the range of emotion described by the parents of children with HII in qualitative studies consistently illustrates the complexity of wellbeing for these parents, and that it is not yet captured in the range or type of measures used to assess or conceptualize wellbeing. These factors likely contribute to the inconsistencies found in parental wellbeing outcomes in this review.

### **Conceptual Disparities with the Measurement of Wellbeing**

Considered in conjunction with Nelson and colleagues (Nelson et al., 2014) model of parental wellbeing (Figure 5), it is apparent that several dimensions of parental wellbeing are not represented by the constructs and measures contained within the current review. While there were a plethora of measures assessing valid constructs related to wellbeing, the range of constructs being measured do not capture all dimensions of parental wellbeing (Bøe et al., 2014; Nelson et al., 2014). The majority of measures related either to negative affect (predominantly stress, depression, and anxiety, either parenting specific or as a general mood state), or to changes in parents' perception of their parenting skill (as with the parenting sense of competence scale and subscales of the PSI that evaluated confidence). Given that the definition of parenting stress includes parents perceptions of their ability to cope, it could be argued that measures of parenting efficacy are conceptually associated with parenting stress (Abidin, 2012; Albanese et al., 2019; Harpaz et al., 2021). Parenting efficacy has been found to have a moderating or mediating role in parenting stress and may be better understood as a mechanism to support wellbeing rather than being a representation of it (Harpaz et al., 2021; McConkey, 2020; Nomaguchi, 2012; Resch et al., 2012). Negative affect and parents' perception of their competence are relevant components of wellbeing and have substantial

empirical support. Yet the consensus position that wellbeing is more than the absence of a negative state is not reflected in outcome measures of RCT's of parenting programs for parents whose children have HII behaviour (Nomaguchi, 2012; Piehler et al., 2014; Scorgie & Sobsey, 2000; Seligman & Csikszentmihalyi, 2000). Negraia and Augustine (2020) established that parents experience a broad range and intensity of emotion, and that positive states and negative states co-occur. While it is simplistic to label emotional states as positive or negative, it is congruent with Nelson and colleagues' (2014) model of wellbeing and illustrates that measures of positive affect are a significant component that is missing from the current forms of measurement.

Financial strain, partner relationships and social roles are all features of Nelson's (2014) model of parental wellbeing that are not well accounted for due to variation in reporting across the included studies. Overall, in comparison to the country the study was conducted in, the participants reported average and above levels of education and income. The metrics used to report the level of education and income was variable, and comparisons across studies were difficult. Higher levels of education amongst parents has been associated with increased knowledge about child development, developmentally informed expectations and authoritative parenting practices (Morawska et al. 2009; Waylen and Stewart-Brown 2010) (Bøe et al., 2014). Interestingly, parent education has not been established as a correlate of parenting stress for parents of children with ADHD (Theule et al., 2011). Lange et al. (2016) compared the demographic information of parents in their study to all Danish children with ADHD and found that the parents of children in the study reported higher levels of education and higher incomes than the parents of other children with ADHD. The children in Lange et al. (2016) study were also more likely to be living with both of their parents compared to other children with ADHD. It is difficult to establish if this pattern is true for this review as a whole because half of the studies ( $n = 10$ ) did not report the relationship

status of participating parents, living arrangements or the number of siblings in the family.

The relationship status of parents is particularly important as single parents report significant higher levels of stress than partnered parents raising children with ADHD (Theule et al., 2011).

Consistency in the measurement of multiple dimensions of wellbeing, and reporting of relevant demographic factors, could enhance our understanding of the effect of parenting programs on wellbeing. Umberson et al. (2010) notes that wellbeing is a complex process where a singular effect cannot be expected. This is consistent with the variable findings from this review where different programs exhibited different effects on wellbeing. Consistency in the effect of a single component, parenting programs, on a dynamic, multidimensional process of wellbeing, amongst a diverse group of parents, is unlikely. With varied measurement of diverse wellbeing constructs, as with the parenting program literature for parents of children with HII, it is less likely. Further, parenting is embedded in highly variable proximate contexts that are hierarchically situated within social structures that influence wellbeing (McLeod et al., 2007; Negraia & Augustine, 2020). The reliance on the measurement of individual-level constructs of wellbeing, such as parenting sense of competence or individual affect, does not account for familial, economic or social changes that can occur concurrently with the parenting program and that are likely to influence the parents wellbeing (Ilias et al., 2017; Seligman et al., 2004). Detailed examination of participant demographic variables is a potentially important reflection of differences in the dynamic sociocultural influences on parental wellbeing (Nomaguchi, 2012). Different populations of parents are possibly affected by different forms of stress, and therefore the capacity for an individual, parenting specific, intervention to impact upon wellbeing may be constrained. Increased range of demographic variables and consistency in the reporting of the relationship, family constellation, income and education level for parents of children with

HII, as well as experiences of marginalization, could have provided nuanced understandings of the factors potentially influencing different groups of parents whose children experience elevated HII. This review does not overcome the limitation of examining a single component within the complex and intersectional contexts of parenting and the dynamic processes that influence parental wellbeing.

### **Methodological and Design Features that Influence Inconsistencies**

The design features that influence findings need to be considered. Variability in the findings of psychological research and challenges with replication are widespread and are reflected amongst the findings of this review. Inconsistencies complicate the process of decision making for clinicians which limits the value that evidence based parenting programs can deliver to families (Kaehler et al., 2016). In the case of interventions to support the wellbeing of parents whose children experience HII, these inconsistencies prevent clinicians and policy makers from being able provide reliable recommendations that are specific to this group of parents.

All of the measures of parental wellbeing were based on self-report data, obtained through psychometric questionnaires. Of the studies included in this review, 65% ( $n = 13$ ) used psychometric measures with adequate properties, and 75% of the individual psychometric measures obtained acceptable levels of validity and reliability across multiple cultural contexts using a robust standard (Matheson, 2019). Self-reported questionnaires are accessible and acceptable to participants, with low administration costs for researchers, and it is relatively easy to communicate the findings especially when the questionnaires have been normed with large populations and provide score ranges to assist with for interpretation (Brenner & DeLamater, 2016). Given this review was an analysis of the indirect effects of parenting programs on parental wellbeing, rather than interventions targeting wellbeing, it is

expected that self-reported questionnaires are a frequent form of measurement. None the less, being overly reliant on self-reported data is undesirable (Yarkoni, 2022). The limitations of relying on self-report measures include response biases where participants respond in a manner that they either perceive to be expected or is associated with social desirability and reduces the accuracy of their information; limits of memory, and depending on what the questionnaire is asking accuracy may be reduced due to the passing of time or mood-congruent processes that influences the participants perception of what they are reporting on; misinterpretation of the question is another way that self-report questionnaires can be erroneous, or increase ambiguity of responses which can compromise the validity of the data collected (Paulhus, 2017; Wittkowski et al., 2017; Yarkoni, 2022). Self-report measures have a weak correlation with behavioural measures, indicating challenges to accuracy of self-report data that have implications for the validity of studies that relying exclusively on this form of measurement (Dang et al., 2020). Holly (2019) recommends the inclusion of observation, physiological and performance-based outcome measures rather than relying exclusively on self-report data. The lack of information on parents who chose not to participate in the various studies, combined with an overreliance on self-reported data, reduces the generalizability of these findings.

### ***Replication of the Replication Crisis?***

Yarkoni (2022) observes that seemingly robust statistical analysis in individual studies is incongruent with a literature base that contains results that aren't replicated across studies. Li et al. (2022) suggests that low rates of replication and generalization are expected in psychological research due to measurement error and sample sizes with low statistical power that render null hypothesis testing uninformative and experimental designs prone to a high rate of false positive results (Greenland et al., 2016; Masicampo & Lalande, 2012). Within the current review, replication of significant findings occurred frequently in studies

with low methodological rigor and at levels of statistical significance that favor type 1 error; incorrectly detecting a difference between groups when no difference exists (McGough & Faraone, 2009). Sample sizes were small ( $M = 63$ ), and 13 studies used waitlist control conditions. Under these conditions Pashler & Harris (2012) suggest that significant p-values are likely to be related to random chance, p-hacking or mathematical error. Matthey (1998); McGough and Faraone (2009) caution that statistical significance is not equivalent to clinical significance, and that being overly reliant on p-values increases the likelihood that interventions with marginal effectiveness will be accepted as efficacious. To help clarify discrepant findings in previous randomized control trials and systematic reviews, this review focused on between group findings. The majority (85%) of between group findings across all measures of parental wellbeing were not significant at  $p < .05$  or  $p < .001$ . The only result that was replicated, and was not at high risk of bias, was a moderate reduction ( $d = .58$  and  $.66$ ) in stress at  $p < .001$ , as measured by the PSI on two studies (Abikoff et al., 2015; Chesterfield et al., 2021). This illustrates the challenges of replication given that stress was measured by 65% of the studies included in the review.

### ***The Influence of Bias***

Methodological factors that relate to generalizability and replication are relevant to the Cochrane risk of Bias assessment that was used to evaluate the quality of the studies included in this review (Greenland et al., 2016; Li et al., 2022; McGough & Faraone, 2009; Yarkoni, 2022). Sources of bias that are assessed by Rob2 include measurement error and the suitability of inferential statistical analysis, as discussed above. Processes of randomization, concealment, blinding and reporting of outcome data were consistently found to be mechanisms that confer risk of bias and reduce the quality of evidence for parenting programs in this review. The pattern of weaknesses across the studies included in this review was found in five other systematic reviews of parenting programs or psychosocial

interventions for ADHD that included parenting programs. Shorey and Ng (2021) Catalá-López et al. (2017) Barlow et al. (2015) Rimestad et al. (2019) and Sonuga-Barke et al. (2013) all found similarities in the design features and reporting practices of randomized control trials of parenting programs that reduced the overall quality of evidence and increased the likelihood that marginally effective programs could be considered efficacious. Ten studies included in this review were evaluated using either earlier versions of the Cochrane Risk of Bias tool or the Jadad criteria (Jadad et al., 1996), and as with this review, none were found to have a low risk of bias. The Jadad criteria assesses three mechanisms of risk; randomization, blinding, and missing data. Risk scores for each domain range from 0 to 4, with an overall score of three indicating acceptable methodological quality for the study. According to (Rimestad et al., 2019) and (Sonuga-Barke et al., 2013) and colleagues' assessment, the overall Jadad criteria for acceptable methodological quality, expressed as the mean score of studies, was not met by the seven studies evaluated (Azevedo et al., 2013; Bor et al., 2002; Hoath & Sanders, 2002; Matos et al., 2009; Sonuga-Barke et al., 2001b; Sonuga-Barke et al., 2004; Thompson et al., 2009). Similarly, Abikoff et al. (2013); Behbahani et al. (2018); Bor et al. (2002); Mah et al. (2021); Sonuga-Barke et al. (2001b); Thompson et al. (2009) were assessed as having an unclear or high risk of bias in 5-6/7 domains using the RoB (Higgins et al., 2011), and all received an overall rating of unclear risk of bias. The domains consistently rated as unclear or high risk of bias on the Cochrane Risk of Bias tool were in relation to randomization, concealment, attrition, the selection of outcome and reporting of the outcome.

One possible explanation for the low standard of evidence in randomized control trials of parenting programs is that the Cochrane RoB and RoB2 assessments are overly sensitive to aspects of risk that are unavoidable in the context of parenting programs and psychological research (Armijo-Olivo et al., 2012). As this possibility is considered, it becomes clear that it is the research context influencing the quality of included studies, and not the sensitivity of

the appraisal tool, that influences the ratings of the risk of bias in this review. Blinding participants of parenting programs to their intervention status is not feasible, for example. High rates of attrition and low attendance are common problems within parenting programs more broadly and were a persistent issue for the majority of studies included in this review (Agahi, 2017; Chacko et al., 2017; Jones et al., 2021). This is a design problem for parenting program research in general, and not specific to sensitivities of the RoB2. Most of studies ( $n = 13$ ) included in this review attempted to account for missing outcome data, attrition, and attendance, by conducting Intention-To-Treat analysis, yet few reported calculating the Number Needed To Treat to determine sample size (McCoy, 2017; Yarkoni, 2022).

Deviation from intended intervention is another risk mechanism that is inherent to parenting program research and manualized psychological interventions. Fidelity, integrity or deviations from intended interventions create difficulties with replication of results and increases the likelihood that significant findings are due to random chance or the fixed-effect fallacy (Harlow et al., 2013; Judd et al., 2012; Li et al., 2022). Overall, manualized approaches are intended to resolve issues associated with deviations from intervention as program manuals increase the consistency of interventions (Gearing et al., 2011). Facilitators of interventions that are delivered in person need to balance flexibility and responsiveness to the needs of individuals or groups who may raise unexpected topics, or direct the session away from the structured content, with fidelity to an intervention whilst being relevant and engaging. In these circumstances, a degree of variation in the delivery of the intervention is likely to occur across conditions, studies or individual participants (Castro et al., 2004; Gearing et al., 2011; McHugh et al., 2009). The RoB2 does not offer a range within which deviations from interventions is acceptable nor has this been established more broadly. These features of the parenting program research context interact with the RoB2, yet it is the



research context and methodological constraints that reduce the overall quality of evidence and not the RoB2 itself.

### **Recommendations for Future Research**

Despite the contextual factors identified in parenting program research, attributing the relatively low quality of evidence amongst parenting programs to the choice of assessment tool is not a compelling argument when multiple quality appraisal tools report similar findings. Instead, improvements to methodologies and reporting standards are needed for future research (Barlow & Coren, 2018; Höfler, 2005; Rimestad et al., 2019). While some contextual features shape research design for parenting programs, there are not unique and unavoidable risks for randomized control trials of parenting programs that cannot be overcome. Areas for targeted improvement in future research include; transparency with processes of randomisation, programs being delivered by intervention facilitators that are independent of researchers, monitoring deviations from intervention for control and comparison groups, using mixed methods approaches to increase ecological validity, and complying with standardised reporting of participant demographics and psychometric scores would improve the quality of knowledge and confidence in interpretation for clinicians . Transparent reporting is essential as any uncertainty regarding adherence to process increases the likelihood that a form of bias, or mechanism that reduces the generalizability and validity of the finding has influenced the research (Liberati et al., 2009). The RoB2 identifies many aspects of poor reporting, an important feature of the assessment tool that encourages researchers and publications to maintain adequate and consistent reporting standards (Sterne et al., 2019). Adherence to standardized reporting practices such as those recommended by PRISMA and CONSORT increase the accuracy of risk assessments and improve the quality of evidence overall as well as support the consistent interpretation of findings and

communication to the public and should be adhered to in future studies (Page et al., 2021; Perestelo-Pérez, 2013; Rethlefsen et al., 2021; Schulz et al., 2010).

To address the conceptual and administrative weaknesses in the measurement of wellbeing, and specific mechanisms that commonly confer a risk of bias, it would be helpful for future research to include qualitative components in randomized control trials and adopt mixed methods approaches to outcome assessment (Barker et al., 2016; Holly et al., 2019; Li et al., 2022; Yarkoni, 2022). Li (2022) suggests that psychology relies on a perception of objectivity and rigour that is gained with inferential statistical procedures on complex datasets, often based on self-reported psychometrics, and argues for the inclusion of qualitative data to add depth and validate interpretation of empirical findings. For example, parental wellbeing is considered as conceptually distinct from general wellbeing. General concepts of wellbeing commonly include physical, social, emotional, and spiritual dimensions, and it is recognized that wellbeing is a subjective process that is influenced by circumstances (Andrews et al., 2014; Bettney, 2017). While this is not specific to the role of parenting, it may be relevant from the perspective of parents. Similarly, the role of a parent is commonly conceptualized as including a responsibility for the socio-emotional adaptiveness and culturally appropriate development of children (Bornstein, 2019). As such, it seems remiss that these dimensions are not reflected in the measurement of parents' wellbeing. Including qualitative components in randomized control trials would allow for these dimensions to emerge and be incorporated into understandings of wellbeing.

A mixed methods approach for future RCT's could add depth and context to the understanding and interpretation of improvements to parental wellbeing after the completion of a parenting program for parents of children with HII. The inclusion of semi-structured interviews with parents, such as the interviews included by Leckey and colleagues (2019) alongside an RCT, would provide additional and distinct information to support the

interpretation of effect sizes and identify features of programs that influence parents' experiences. The qualitative component in Leckey and colleagues' (2019) study was only completed with parents in the intervention condition, which did not meet inclusion criteria for this review, however, the reflections of parents remain relevant. Parents discussed the opportunity the parenting program provided for self-reflection, with one parent stating "it helped me realise I might have been making it worse, so it helped me realise that I had to change myself as well as him. [Mother of 5-year-old boy]" (Leckey et al., 2019). The emotional and relational value of personal growth from self-reflection, and the potential intra and interpersonal differences the parent may have experienced subsequently, are not captured in any of the self-report questionnaires. This indicates that while some dimensions of wellbeing can be reliably measured, a comprehensive understanding has yet to be developed. The parent interviews conducted by Leckey and colleagues (2019) also indicate that there are potential mechanisms influencing wellbeing (self-reflection prompted by attendance at a parenting program) that are yet to be incorporated into current knowledge. Adjustments to programs that are seeking to enhance parental wellbeing outcomes could be targeting specific content when a supportive environment for self-reflection is more helpful for parents whose children have an ADHD diagnosis or elevated HII (Leckey et al., 2019; Resch et al., 2010; Sikirica et al., 2014). Including qualitative components in RCT's could be an effective way to establish what is valuable and important for parents, and how participating in parenting programs impacts their wellbeing (Ilias et al., 2017). This is especially important given the variability in findings and narrow scope of measurement of parental wellbeing (Negraia & Augustine, 2020).

Implementation of mixed methods approaches for future research appears to be logistically simple for parenting program RCT's when children have HII. Given a large majority of studies used interview processes to screen for child HII, and several programs (*n*

= 3 programs;  $n = 9$  studies) included regular telephone contact, the processes for including qualitative components for RCTs of parenting programs already exists within standard recruitment and intervention processes and can be applied to future studies. The studies included in this review contained small sample sizes ( $M = 63$ ) and the participants demonstrated a willingness to be interviewed, reflecting the potential willingness of future participants to engage in qualitative components of RCT's. As such, it is possible that including semi-structured interviews may not be overly onerous or costly for researchers and can deliver considerable value. Parents can offer validity checks to the interpretation of findings, elucidate contextual factors that may explain the variability of findings, add specificity for particular groups of parents, identify additional variables or aspects of their experience that can generate new insights on parental wellbeing for parents of children with HII and be used to improve the effectiveness of programs and interventions to support parental wellbeing (Barker et al., 2016; Koerting et al., 2013). Research and interpretation of findings can be responsive to emergent understandings from the parents, and gives parents a voice (Resch et al., 2010). Wellbeing is a dynamic process, and research methodologies needs to be responsive to the contexts needs that can best serve parents and children.

Improving the monitoring of deviations from intended interventions and collecting additional information on parents who decline to participate, where possible and ethical, would assist in improving the quality and specificity of knowledge regarding the effects of parenting programs on parental wellbeing. Design choices such as the type of control condition that is used can influence the magnitude of effects from an RCT, as do deviations from the intended intervention. This is a relevant consideration for parenting programs where the study population is self-selected and primarily from a child and adolescent mental health service as it is likely parents in the waitlist will be motivated to seek additional information and have previously been found to engage in a process of self-directed learning related to

their child's diagnosis (Ringer et al., 2020). Four studies used a Treatment As Usual (TAU) control group, which illustrates that while parenting programs can have an additional effect beyond TAU, the magnitude of effect is diminished (Barker et al., 2016; Khademi et al., 2019; Lange et al., 2018; Liu et al., 2021; Thompson et al., 2009; Warren, 2018). Efforts to monitor deviations from parenting program interventions may include the provision of specific information, monitoring of sources of information the parent accessed, post-intervention assessment for all conditions to ascertain if any potential differences are equal across groups.

### ***The Need for Inclusive Demographic Reporting Practices***

Inconsistent reporting practices and missing information means that it is difficult to ascertain and compare the structural variables that may be influencing the wellbeing of parents in this review with other parents whose children have HII. While the gender and age of parents was regularly reported, the level of income and education was variable, and co-parenting relationships and family composition rarely reported. The clinical relevance of patterns in participants gender, income, education and family composition will be considered and recommendations made so that the contemporary context of parents is reflected in findings and parents can experience benefit of interventions most likely to help them.

Fathers continue to be underrepresented in research on parenting programs. In this study, and consistent across parenting program literature, the parents are predominantly mothers. Of the 1,323 participants in this review, 80 were identified as fathers. The wellbeing outcome data related to fathers was subsumed into analyses pertaining to 'parents', where the gender was not specified. Consequently, no additional information relating to fathers' experiences of parenting, or the effect of parenting programs on their wellbeing, has been established by this review. Failure to differentiate parents' gender is at odds with evidence that the parenting practices, parent-child relationships and the effects of parenting programs

vary between mothers and fathers (Adamsons & Buehler, 2007; Joseph et al., 2019; Turchi, 2019). Inaccurate reporting of gender is systematic error of measurement that increases bias, may contribute to variability in outcomes, and decreases the relevance and application of findings (Höfler, 2005). The Sex and Gender Equity in Research (SEGAR) guideline recommends the disaggregation of sex and gender when reporting results of trials and attrition (Heidari et al., 2019). Similar recommendations for the inclusion of fathers and the identification of father specific data in parenting program research have repeatedly been made (Chang et al., 2013; Fabiano et al., 2012; Gryczkowski et al., 2010; Harmon & Perry, 2011; Joseph et al., 2019). This review establishes that these recommendations remain relevant and have not been implemented.

Implementing inclusive demographic reporting practices that would allow father specific associations and effects to be understood and accounted for in practice, without perpetuating harm to gender diverse parents or homogenising the gender and sexuality of all parents into the amorphous category of ‘parent’. The SEGAR guidelines encourage consideration of whether sex and gender are relevant variables for the specific research (Heidari et al., 2019). Given the gendered history of parenting and current research being centred on mothers experiences, retaining measurement of gender in demographic reporting is important, yet these measures should not replicate the gender binary (Cameron & Stinson, 2019). Conversely, 16.6% of participants were identified as families or couples, yet the study did not report the gender of the families or couples in a transparent manner. Reporting outcomes for families or parents ignores dimensions of gender that can influence parents’ experiences (Adamsons & Buehler, 2007; Brennan et al., 2002). Failing to disaggregate parents gender risks collapsing differences into a singular construct that loses relevance and makes it difficult for clinicians to determine to what extent the findings for all ‘parents’ will relate to a specific parent. Similarly, (Holly et al., 2019) Holly’s evidence-based practice update

recommended that the heterogeneity of parent's experiences needs to be reflected in the validation of psychometric measures across different groups of parents. The parenting stress index, frequently used by studies included in this review, is validated predominantly on mothers and may not be sensitive or valid for use with father, queer and gender diverse parents, single parents, grandparents, or other dimensions of nuance (Holly et al., 2019).

### *Asking Different Questions*

From an ecological perspective, it is important to consider the macro, exo and chrono systems influencing parental wellbeing. Zuurmond et al. (2019) notes that addressing structural components of parents' experiences such as discrimination, poverty and stigma could strengthen outcomes for parents. It is possible that a focus on individual level interventions such as parenting programs limit wider responses that could improve parental wellbeing on a larger scale such as inclusion, stigma, financial support from government to reduce pressure on parents and support capacity for family time, access to assessment for children with ADHD, access to inclusive education (Andrews et al., 2014; DosReis et al., 2010; Grønhøj & Gram, 2020; Lebowitz, 2016; Resch et al., 2010). Understanding these factors and the interaction effects would be a valuable contribution for future research specific for parents of children with HII and could add contextual detail to the expected effect of parenting programs.

Sonuga-Barke and colleagues (2022) raised a pertinent consideration: to what extent would parental wellbeing be improved by focusing on environmental accommodations for neurodiversity rather than attempting to ameliorate individual's symptoms? In this review, it was unclear to what extent the programs taught parents to accommodate and adapt to the neurological differences associated with HII for their children, and to what extent the programs adjusted their teaching and engagement approaches for neurodivergent parents completing the program. Russel Barkley (2013) was frequently referenced in relation to

ADHD specific content that was included in general parenting programs, which may indicate that executive functioning difficulties and the neuropsychological capacities associated with ADHD are being integrated into recommended parenting practices. In alignment with the neurodiversity movement and social model of disability, if environmental accommodations could support a reduction in impairment associated with children's HII, it's possible that parents might experience benefits too (Carr-Fanning, 2020; Pellicano & Houting, 2022).

While there have been changes in the positioning of children's behaviours over time, from defiant and disruptive, to challenging or difficult, the narratives surrounding HII can remain focused on deficits rather than cultivating a perspective of acceptance and appreciation as per the neurodiversity movement (Kaehler et al., 2016). It is unclear what effect these discourses have on the wellbeing of parents whose children have HII, and it would be a valuable factor for future research to elucidate.

### ***The Influence of Neurodiversity and Parental HII***

The influence of parental HII or ADHD on experiences of parenting, engagement with programs and the application of recommended parenting practices is a pertinent consideration in context of children with HII. In this sample of studies there was insufficient data to examine or establish any potential association between parental ADHD, wellbeing outcomes or adjustments and accommodations of parenting program content to optimise learning and engagement for these parents. Three included studies screened for parental ADHD, no other studies reported adult diagnosis as a variable in their participant demographics. The lack of data relating to parental ADHD prevents meaningful conclusions from being drawn, including whether there is a discrepancy in the population of parents that conclusions about parental wellbeing is based on in the context of HII. Maternal and paternal ADHD have been associated with increased parenting stress and depressive symptoms, which underlines the relevance of quantifying and distilling the experience of parenting programs



for parents with ADHD (Steijn et al., 2014). Not accounting for parental HII is a significant oversight in the collective literature given the highly heritable nature of HII (Larsson et al., 2014); and the relationship to many aspects of parenting practices for these parents, as discussed in Chapter One.

A systematic review of parenting program wellbeing outcomes, where the parents are more likely to experience HII or ADHD themselves, would provide an opportunity to better serve the needs of these parents by understanding the effectiveness of, and scope for adjustment within, existing interventions. It could be beneficial to be routinely screen parents for elevated HII when engaging in interventions to support children with ADHD to support the identification of potential needs of these parents that could enhance the effectiveness of the intervention (Starck et al., 2016). Further, if parents valued access to medication or benefitted from personal insights related to a medical diagnosis of their tendencies and traits, it's possible this could lead to improved outcomes for their wellbeing and their capacity to understand and manage their children's challenges associated with HII (Chronis-Tuscano et al., 2011; Hage et al., 2018). Not accounting for parental ADHD or HII surmounts a lost opportunity to consider the strengths of parents with ADHD and gain insights on potential enhancements to parenting practices that would be most useful for parents with HII.

### **Limitations of this Review**

It is important to recognise the limitations of this systematic review in order to interpret the findings accurately. Despite the comprehensive search strategy implemented, the systematic review was undertaken by a sole researcher with interrater reliability reported for subsets of data at multiple stages of the process. As such, it is possible that relevant studies may have been inadvertently missed or excluded during the screening process. Further, one study was excluded after screening, and upon reflection this decision was made without

adequate justification. The decision to exclude studies published prior to 2000 resulted in the exclusion of one report that detailed two studies, published by Pisterman and colleagues in 1992. This is an omission that represents a potential bias in the results and is an area for methodological improvement of this review. The report by Pisterman and colleagues (1992) used a combined ‘standard’ group parenting program, incorporating psychoeducation of ADHD, and was delivered to parents of preschool children with ADHD. Ideally this study would have been included in the dataset when the error was identified, yet the practical constraints associated with a sole researcher completing a time-sensitive systematic review precluded that option. Consequently, the comprehensiveness and generalizability of the results of this systematic review are limited by the exclusion of the report. Enhanced decision-making regarding exclusion criteria would improve future reviews by preventing the loss of relevant data and should be applied to future systematic reviews of parenting programs for parents of children with HII. While relevant publications were identified through six databases, forward citation searching and clinical trial registries, the inherent limitations of database searches and potential publication bias cannot be eliminated. As publication bias was not assessed within this review, and the proportion of significant findings cannot be considered indicative of publication bias, the precise manner and degree to which publication bias may influence the results is unknown (Song et al., 2013; Thornton & Lee, 2000). The inclusion of additional studies may have altered the overall findings of this systematic review either by increasing the number of programs and wellbeing effects considered (comprehensiveness of the review), altered the proportion of significant and non-significant findings associated with each program and influenced the range of measures and effects for parents of children with HII (specific effects and generalizability). Future research can overcome this limitation by assessing publication bias, including grey literature, contacting prominent researchers in the field, and including additional mechanisms to ensure

the screening process captures all relevant studies. Additional screening mechanisms could include additional researchers or larger subsets of data evaluated by an independent researcher.

In terms of the inclusivity of outcome measures that are considered to be components of parental wellbeing, an omission was made relating to measures of parental relationships. Parental relationships are identified by Nelson and colleagues (2014) as a factor that influences parental wellbeing, yet it remains unaccounted for in this review. For the purposes of this review, parental wellbeing was conceptualized to be inclusive of positive and negative dimensions of parental affect and cognition. Consequently, the search terms did not specify components of wellbeing beyond affect and cognition. While some of the included studies did measure parental relationships, this data was not extracted as it would not have been applied systematically across the literature given the absence of terms relating to relationships in the original search terms. Expanding the search terms to include more components of parental wellbeing is an area for improvement in future reviews. The expansion of search terms applies to the potential effect of parental ADHD on wellbeing outcomes after the completion of a parenting program for children with HII, too. Understanding more about the influence of parental ADHD on attendance, engagement and outcomes of parenting programs would offer opportunities to tailor interventions to this population of parents as well as conducting research into the strengths associated with parents who have elevated HII traits or associated behaviours themselves.

A limitation regarding confidence in the mathematical calculations conducted for this review requires acknowledgement. While efforts were made to ensure accuracy of the re-calculated effect sizes, there is a degree of uncertainty in the confidence of the reviewer due to limited previous experience with quantitative research and the associated reduction in the capacity to identify errors. A selection of effect size calculations were repeated, and

compared to the interpretation in the original study. Repeated calculations delivered the same result, yet this doesn't exclude the possibility that the same mistake was repeated. This limitation has implications for the precision and reliability of the results, which should be interpreted with caution.

The inclusion criteria of this review were narrowly defined in terms of the intervention condition, limiting the scope of eligible studies. The pragmatic decision to exclude online and technology-based parenting programs means that the comparative effectiveness of alternative modes of delivery of parenting programs cannot be considered for parents of children with HII, and it limits the generalizability of the findings. There are potential differences in the parent populations that would engage with technologically delivered parenting programs rather than attending in person sessions (Franke et al., 2020). Parenting programs delivered through digital platforms offer potential improvements to accessibility and immediacy of support (Dopfner et al., 2020; Tarver et al., 2014). From an ecological perspective, accessibility and immediacy may interact with socioeconomic factors that reduce engagement in parenting programs and could disrupt the sequel of adverse effects associated with ineffective parent-child interactions by intervening earlier in the transactional process (Allmann et al., 2022; Neece et al., 2012). It would be valuable to explore how the use of digital platforms, including parenting program apps and online support networks for parents who engage or complete the program, may impact parental wellbeing. Equally, future reviews could expand upon the included study conditions to allow for greater comparison across intervention combinations. These potential participant and intervention differences have not been accounted for in this review and may represent an opportunity for future research.

## Conclusion

The aim of this systematic review was to establish what benefit parenting programs have for the wellbeing of parents of children with elevated levels of hyperactivity, impulsivity, and inattention. A total of nine parenting programs involving 1,323 parent participants were evaluated by 21 studies in this review. While most parenting programs were likely to improve at least one-dimension parental wellbeing to some extent, either by reducing stress, depression, or anxiety, or by increase parents' sense of competence or self-compassion, these effects were highly variable. The largest and most consistent effect found on any measure of parental wellbeing was a reduction in stress after completing PCIT, Mindful Parenting, Triple P, HNC or 1-2-3 Magic. The majority (85%) of between group findings, across 13 constructs of parental measured wellbeing by 16 different psychometric assessments, were not significant. The only result that was replicated, and was not at high risk of bias, was a moderate reduction ( $d = .58$  and  $.66$ ) in stress at  $p < .001$ , as measured by the PSI (Abikoff et al., 2015; Chesterfield et al., 2021).

The parental wellbeing constructs that were measured were predominantly affective states (confidence, satisfaction, self-compassion, anxiety, depression, stress, mental health), or parents' perceptions of themselves or their child (self-esteem, parental burden, parenting efficacy, parenting attitude, parenting competence, maternal adjustment). There are multiple influences contributing to the diversity of measurements used to capture effects on parental wellbeing. Individual, cultural and economic factors of families and parents, child characteristics, as well as the complexities in measuring a dynamic process and the disparity between the quantification of components of wellbeing and the theoretical foundations of wellbeing. Expanding the measurement of parental wellbeing to align with existing models and definitions, such as Nelson and colleagues (2014) model, would assist in developing more nuanced understandings of the effect of parenting programs on parental wellbeing when

they are raising a child with HII. Further, including qualitative components in research design, improving reporting standards, monitoring deviations from intended interventions and providing comparisons to national datasets for parents who have children with HII would provide valuable improvements to quality of literature and generalizability of highly variable findings.

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## Appendix A: Search Strategy

### MEDLINE:

searched on 27.6.22:

- 1 ((parent\* or mother\* or father\* or caregiver\*) adj3 (program\* or intervention\* or education\* or behavior\* management or train\* or mindful\*)).ti,ab,kf. 39134
  - 2 exp Parents/ 133333
  - 3 caregivers/ or grandparents/ 46645
  - 4 Program Evaluation/ 66685
  - 5 Parenting/ 19910
  - 6 2 or 3 or 5 186114
  - 7 4 and 63155
  - 8 1 or 7 41146
  - 9 (wellbeing or well-being or well being or self esteem or efficacy or confidence or joy or meaning or coping or happiness or positive or gain or quality of life or life satisfaction or stress or depression or anxiety or anger or distress).ti,ab,kf. 4859410
  - 10 "Quality of Life"/ 244578
  - 11 exp adaptation, psychological/ or exp emotions/ or psychosocial functioning/ 493995
  - 12 self concept/ or self-compassion/ 60072
  - 13 stress, psychological/ or caregiver burden/ 131619
  - 14 Depression/ 141904
  - 15 Anxiety/ 99080
  - 16 personal satisfaction/ 22772
  - 17 self efficacy/ 23304
  - 18 Psychology, Positive/ 127
  - 19 9 or 10 or 11 or 12 or 13 or 14 or 15 or 16 or 17 or 18 5155691
  - 20 (child\* disab\* or Hyperactiv\* or impulsiv\* or inattenti\* or adhd or "attention deficit disorder" or "attention deficit hyperactivity disorder" or ADHD or hyperkinetic or executive functioning or externalizing or Neurodivers\*).ti,ab,kf. 114095
  - 21 "attention deficit and disruptive behavior disorders"/ or attention deficit disorder with hyperactivity/ or sluggish cognitive tempo/ 35044
  - 22 Impulsive Behavior/ 9376
  - 23 Attention/ 83963
  - 24 behavior/ or "attention deficit and disruptive behavior disorders"/ or child behavior disorders/ 53624
  - 25 20 or 21 or 22 or 23 or 24 244570
  - 26 (random\* or RCT or control\* or clinical trial\*).ti,ab,kf. 5243483
  - 27 clinical trial/ 535403
  - 28 randomized controlled trial/ 571560
  - 29 26 or 27 or 28 5558323
  - 30 8 and 19 and 25 and 29 932
- Medline: 932 results

### CINAHL

searched on 27.6:

#	Query	Results
S5	S1 AND S2 AND S3 AND S4	1,566

S4	random* OR RCT OR control* OR clinical trial*	1,726,136
S3	child* disab* OR Hyperactiv* OR impulsiv* OR inattenti* OR adhd OR "attention deficit disorder" OR "attention deficit hyperactivity disorder" OR ADHD OR hyperkinetic OR executive functioning OR externalizing OR Neurodivers*	66,940
S2	wellbeing or well-being or well being or self esteem or efficacy OR confidence OR joy OR meaning OR coping OR happiness OR positive OR gain OR quality of life OR life satisfaction OR stress OR depression OR anxiety OR anger OR distress	1,639,729
S1	(parent* or mother* or father* or caregiver*) N3 (program* OR intervention* OR education* OR behavio* management OR train* OR mindful*)	139,956

CINAHL: total results, 1566; English only total 1540

#### EMBASE:

searched on 27.6.22

Embase <1974 to 2022 June 24>

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1      ((parent* or mother* or father* or caregiver*) adj3 (program* or intervention* or
education* or behavio* management or train* or mindful*)).ti,ab.      50877
2      caregiver/      99864
3      parent/ or exp father/ or exp mother/ or single parent/ 264342
4      program evaluation/ or evaluation study/      70420
5      (2 or 3) and 4      1487
6      1 or 5      51988
7      (wellbeing or well-being or well being or self esteem or efficacy or confidence or
joy or meaning or coping or happiness or positive or gain or quality of life or life satisfaction
or stress or depression or anxiety or anger or distress).ti,ab. 6608674
8      wellbeing/ or emotional well-being/ or psychological well-being/ or social well-
being/ 101909
9      self esteem/      24615
10     self concept/      99686
11     exp emotion/      689915
12     coping behavior/ or family coping/ or stress management/      74973
13     "quality of life"/ 559017
14     life satisfaction/ or satisfaction/ 83046
15     mental stress/      92780
16     depression/      427002
17     anxiety/      247972
18     or/7-17 7206844

```

19 (child\* disab\* or Hyperactiv\* or impulsiv\* or inattenti\* or adhd or "attention deficit disorder" or "attention deficit hyperactivity disorder" or ADHD or hyperkinetic or executive functioning or externalizing or Neurodivers\*).ti,ab. 154454  
 20 behavior disorder/ or attention deficit disorder/ or impulse control disorder/ 124394  
 21 neurodiversity/ 59  
 22 19 or 20 or 21 226136  
 23 random\* .tw. 1802373  
 24 clinical trial\* .mp. 1906892  
 25 exp health care quality/ 3773151  
 26 23 or 24 or 25 6118357  
 27 6 and 18 and 22 and 26  
 EMBASE total results: 1145

### Education Source:

searched on 27.6.22:

#	Query	Results
S5	(random* OR RCT OR control* OR clinical trial*) AND (S1 AND S2 AND S3 AND S4)	1,230
S4	random* OR RCT OR control* OR clinical trial*	324,957
S3	child* disab* OR Hyperactiv* OR impulsiv* OR inattenti* OR adhd OR "attention deficit disorder" OR "attention deficit hyperactivity disorder" OR ADHD OR hyperkinetic OR executive functioning OR externalizing OR Neurodivers*	78,144
S2	wellbeing or well-being or well being or self esteem or efficacy OR confidence OR joy OR meaning OR coping OR happiness OR positive OR gain OR quality of life OR life satisfaction OR stress OR depression OR anxiety OR anger OR distress	558,686
S1	(parent* or mother* or father* or caregiver*) N3 (program* OR intervention* OR education* OR behavio* management OR train* OR mindful*)	171,326

Education Source total results: 1230

### psychINFO

searched on 27.6.22:

#	Query	Results
S5	S1 AND S2 AND S3 AND S4	3,301

S4	random* OR RCT OR control* OR clinical trial*	971,228
S3	child* disab* OR Hyperactiv* OR impulsiv* OR inattenti* OR adhd OR "attention deficit disorder" OR "attention deficit hyperactivity disorder" OR ADHD OR hyperkinetic OR executive functioning OR externalizing OR Neurodivers*	180,616
S2	wellbeing or well-being or well being or self esteem or efficacy OR confidence OR joy OR meaning OR coping OR happiness OR positive OR gain OR quality of life OR life satisfaction OR stress OR depression OR anxiety OR anger OR distress	1,673,946
S1	(parent* or mother* or father* or caregiver*) N3 (program* OR intervention* OR education* OR behavio* management OR train* OR mindful*)	212,272

PsychINFO total results: 3,301

## SCOPUS:

Searched on 28.6.22

( SUBJAREA ( psyc ) ) AND ( ( TITLE-ABS-

KEY ( "parent\*" OR "mother\*" OR "father\*" OR "caregiver\*" W/3 "program\*" OR "i  
ntervention\*" OR "education\*" OR "behavio\*" OR "management" OR "train\*" OR "m  
indful\*" ) ) AND ( TITLE-ABS-KEY ( "wellbeing" OR "well-being" OR "well  
being" OR "self

esteem" OR "efficacy" OR "confidence" OR "joy" OR "meaning" OR "coping" OR "h  
appiness" OR "positive" OR "gain" OR "quality of life" OR "life  
satisfaction" OR "stress" OR "depression" OR "anxiety" OR "anger" OR "distress" ) )

AND ( TITLE-ABS-

KEY ( "child\*" "disab\*" OR "Hyperactiv\*" OR "impulsiv\*" OR "inattenti\*" OR "adhd  
" OR "attention deficit disorder" OR "attention deficit hyperactivity

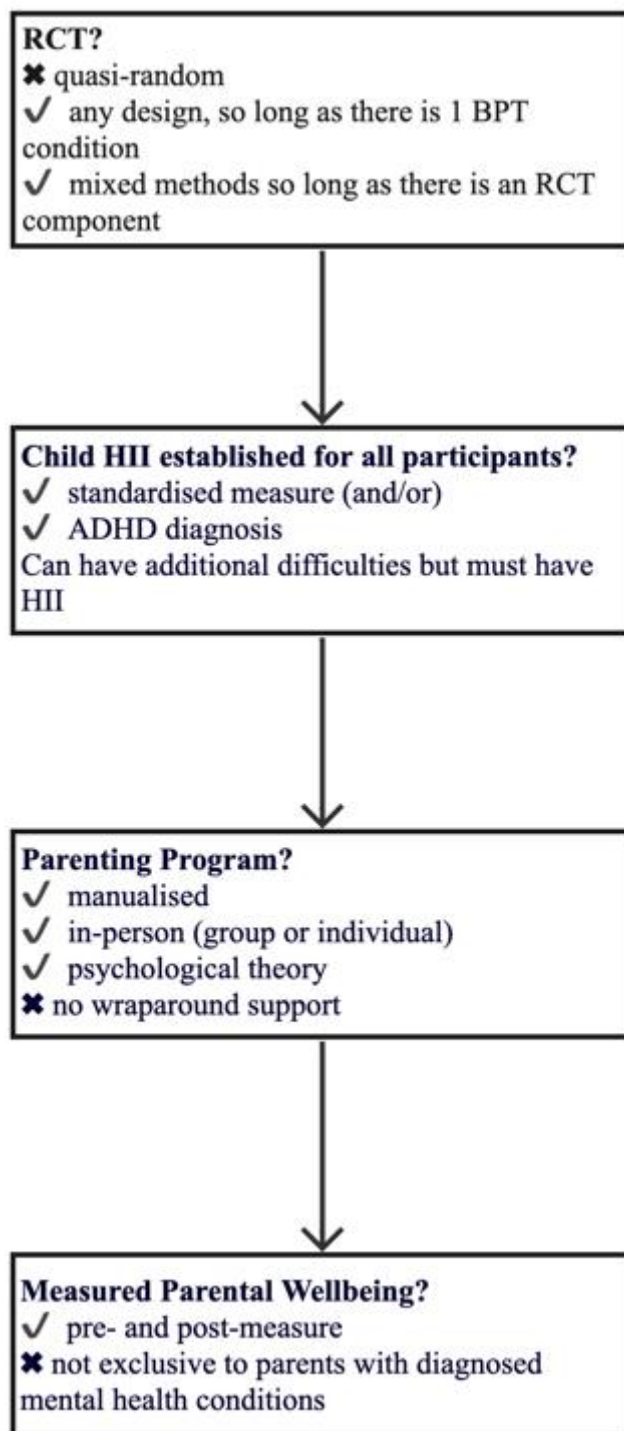


disorder" OR "ADHD" OR "hyperkinetic" OR "executive  
functioning" OR "externalizing" OR "Neurodivers\*" ) ) AND ( TITLE-ABS-  
KEY ( "random\*" OR "RCT" OR "control\*" OR "clinical trial\*" ) ) )

1,666 document results exclude English only = 1610

## Appendix B: Prioritized Decision Tree

Prioritized decision-making tree to assist in assessment of study eligibility.



## Appendix C: Randomization to Assess Inter-Rater Reliability of Screening

Excel formula for randomization:

1. Sheet One Column A: imported txt. file
2. Sheet One Column B: =\_\_Anonymous\_Sheet\_DB\_\_0[Column1]
3. Sheet One Column A: article information, as per sheet one column a
4. Sheet Two Column B: =RAND()
5. Sheet Two Column C:  
=INDEX(\$A\$1:\$A\$11466,RANK.EQ(B1,\$B\$1:\$B\$11466),1)
6. Sheet Three consists of randomized results separated from formula to prevent unintended updates to dynamic randomization occurring =  
\_\_Anonymous\_Sheet\_DB\_\_2[@Column1]

Below is an example of the results of randomization that were then manually identified in EndNote and transferred into a folder for screening by a second rater:

34 Auerbach, S. K., et al. (1985). "Impact of Ethnicity." *Society* 23(1): 38-40.

35 August, G. J., et al. (2004). "Maintenance effects of an evidence-based prevention innovation for aggressive children liv

36 Aust-Claus, E. and P. M. Hammer (2005). "ADHD training program for coaches who train parents. Better treatment suc

37 Averill, S. (1976). "A brighter future." *MH* 60(1): 14-16.

38 Awada, S. R. and E. C. Shelleby (2021). "Bidirectional Associations between Child Conduct Problems and Parenting P

39 Axelsson, A. K., et al. (2013). "Engagement in family activities: a quantitative, comparative study of children with profou

40 Azevedo, A., et al. (2013). "The Incredible Years Basic Parent Training for Portuguese Preschoolers with AD/HD Behav

41 Babinski, D. E., et al. (2017). "Parent-reported improvements in family functioning in a randomized controlled trial of lisc

42 Babinski, D. E., et al. (2018). "The Effects of Behavioral Parent Training With Adjunctive Social Skills Training for a Pre

43 Babocsai, L., et al. (2018). "Auch du hast sommerferien: Evaluation des kognitiv-behavioralen sommertherapiecampus i

44 Baggerly, J. N. (1999). Adjustment of kindergarten children through play sessions facilitated by fifth grade students trair

45 Bagner, D. M. and P. A. Graziano (2013). "Barriers to success in parent training for young children with developmental

46 Bagner, D. M., et al. (2012). "An initial investigation of baseline respiratory sinus arrhythmia as a moderator of treatmen

47 Bai, S. and R. L. Repetti (2018). "Negative and Positive Emotion Responses to Daily School Problems: Links to Interna

48 Bai, S., et al. (2020). "Daily mood reactivity to stress during childhood predicts internalizing problems three years later."

49 Baiden, P., et al. (2017). "The role of adverse childhood experiences as determinants of non-suicidal self-injury among

50 Baker, B. L. and R. P. Brightman (1984). "Training parents of retarded children: Program-specific outcomes." *Journal c*

51 Baker, B. L. and R. P. Brightman (1984). "Training parents of retarded children: Program-specific outcomes." *Journal c*

52 Baker, J. K., et al. (2020). "Respiratory sinus arrhythmia, parenting, and externalizing behavior in children with autism s

53 Bakhshayesh, A. R., et al. (2011). "Neurofeedback in ADHD: A single-blind randomized controlled trial." *European Child*

54 Bakhtiari, R., et al. (2021). "How do children and youth with autism spectrum disorder self-report on behavior? A study."

55 Band, J. (2017). "Autism Supporting Difficulties: Handbook of Ideas to Reduce Anxiety in Everyday Situations." *Learning I*

56 Band, S., et al. (2002). "Are Health and Education talking to each other? Perceptions of parents of children with speech

57 Banks, B. A. (1995). Family stress and burns in children: A case control study, ProQuest Information & Learning. 56: 2

58 Bao, J., et al. (2019). "The impact of family rituals and maternal depressive symptoms on child externalizing behaviors:

59 Barak-Levy, Y. and N. a. Atzaba-Poria (2020). "A mediation model of parental stress, parenting, and risk factors in fami

60 Barbosa-Resende, W., et al. (2015). "Psychometric properties of the Autoquestionnaire Qualité De Vie Enfant Imagé (/

61 Barclay, M. E., et al. (2022). "Childhood Irritability: Predictive Validity and Mediators of Adolescent Psychopathology." *Re*

62 Barkley, R. A. (2013). "Distinguishing sluggish cognitive tempo from ADHD in children and adolescents: executive func

63 Barlow, A., et al. (2013). "Effect of a paraprofessional home-visiting intervention on American Indian teen mothers' and

64 Barlow, A., et al. (2015). "Paraprofessional-delivered home-visiting intervention for American Indian teen mothers and c

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### Appendix D: Excluded Studies or Conditions of Studies

Included study	Excluded condition and rationale	
(Bor et al., 2002)	Active comparison: Enhanced Triple P- adjunctive content relating to partner support and coping skills.  Exclusion reason: the provision of additional content that constitutes a direct parental wellbeing intervention	
(Leckey et al., 2019)	Active Comparison: Combined IY parenting training with concurrent child focussed IY Small Group Dinosaur Programme  Exclusion reason: provision of additional content via concurrent child intervention	
(Sayal et al., 2016)	Active comparison: combined parent and teacher training  Exclusion reason: additional content beyond parenting program was included in teacher training, and an existing alternative condition was available within the study	
(Sonuga-Barke et al., 2001b)	Active comparison: Parent counselling and support group  Exclusion reason: Counselling and support constitutes a direct parental wellbeing intervention	
Close to inclusion studies and rationale for exclusion		
Author	Title	Rationale
(Babinski et al., 2014)	Treating Parents with Attention-Deficit/Hyperactivity Disorder: The Effects of Behavioural Parent Training and Acute Stimulant Medication Treatment on Parent-Child Interactions	Parents receiving medication for ADHD; constitutes a parental wellbeing intervention
(Chacko et al., 2009)	Enhancing Traditional Behavioural Parent Training for Single Mothers of Children with ADHD	All conditions included the provision of content that constitutes a direct parental wellbeing intervention, no condition with exclusively parenting training intervention
(Chacko & Scavenius, 2018)	Bending the Curve: A Community-Based Behavioural Parent Training Model to Address ADHD-Related Concerns in the Voluntary Sector in Denmark	Program facilitated by community volunteers, and a “pragmatic and non-excluding” recruitment strategy did not ascertain elevated HII across the entire sample
(Chronis-Tuscano et al., 2011)	The Relation Between Maternal ADHD Symptoms & Improvement in Child Behavior Following Brief Behavioral Parent Training is	Not a randomized control trial

	Mediated by Change in Negative Parenting	
(Daley & O'Brien, 2013)	A small-scale randomized controlled trial of the self-help version of the New Forest Parent Training Programme for children with ADHD symptoms	Self-help version did not meet program facilitation criteria
(Fabiano et al., 2021)	A school-based parenting program for children with attention-deficit/hyperactivity disorder: Impact on paternal caregivers	No measurements of parental wellbeing
(Larsen et al., 2021)	Effect of Parent Training on Health-Related Quality of Life in Preschool Children With Attention-Deficit/Hyperactivity Disorder: A Secondary Analysis of Data From a Randomized Controlled Trial	Secondary analysis of an included study that did not contain additional information or provide relevant results as it was related to factors that moderated the relationship
(Pisterman et al., 1992)	The effects of parent training on parenting stress and sense of competence	Publication prior to 2000
(Rajwan et al., 2014)	Evaluating Clinically Significant Change in Mother and Child Functioning: Comparison of Traditional and Enhanced Behavioural Parent Training	All conditions included the provision of content that constitutes a direct parental wellbeing intervention
(Sonuga-Barke et al., 2018)	A comparison of the clinical effectiveness and cost of specialised individually delivered parent training for preschool attention-deficit/hyperactivity disorder and a generic, group-based programme: a multi-centre, randomised controlled trial of the New Forest Parenting Programme versus Incredible Years	Parental wellbeing measures were used for screening, not obtained as outcome measures
(Van Den Hoofdakker et al., 2007)	Effectiveness of behavioural parent training for children with ADHD in routine clinical practice: a randomized controlled study	Routine Clinical Care was delivered concurrently with parent training, and not detailed sufficiently to ascertain what intervention components constituted routine clinical care

## **Appendix E: Data Extraction Template**

Items extracted are based on recommendations from the Cochrane Collaboration

### **Title, author, year of publication**

#### **Study characteristics**

Study inclusion criteria  
 Study exclusion criteria  
 Number and type of conditions  
 Measurement schedule  
 Recruitment strategy  
 Sample size and retention

#### **Participants**

Parent gender, age, income, education, relationship status  
 Both parents attending the program  
 Child age, gender

#### **Hyperactivity, Impulsivity, Inattention**

Assessment of HII/ADHD  
 % of children with ADHD diagnosis  
 Medication status of children  
 Parent HII measured.

#### **Intervention:**

Name of program  
 Theoretical orientation  
 Teaching methods  
 Content  
 Structure and format  
 Child present for sessions

Study	Name of outcome measure	Colour coded study design and measurement schedule for extraction of outcome data								
		Pre	Post	Follow up	Pre	Post	Follow up	Pre	Post	Follow up
Abikoff							x			
Aghetabi				x			x	x	x	x
Au								x	x	x
Azevedo 2013				x			x	x	x	x
Azevedo 2014							x	x	x	x
Azevedo 2015			x			x		x	x	x
Behbahani								x	x	x
Bor				x			x			x
Chesterfield							x	x	x	x
Hoath				x			x	x	x	x
Khademi				x			x	x	x	x
Lange				x			x	x	x	x
Leckey			x			x			x	
Leung							x	x	x	x
Liu				x			x	x	x	x
Mah				x			x	x	x	x
Matos								x	x	x
Sayal			x			x			x	
Sonuga-Barke 01										
Sonuga-Barke 04				x			x	x	x	x
Thompson 09								x	x	x
Turan				x			x	x	x	x
Yusuf				x			x	x	x	x

## Appendix F: Summary of Parental Wellbeing Measures

All screening and outcome measures that were administered to parents of children with HII in the included studies are detailed below. The measures were used to assess parenting behaviour, parental wellbeing, satisfaction with intervention and parental ADHD symptoms. The measures are ordered alphabetically.

**ADHD rating scale (AARS)** Barkley R, Murphy K (1998) Attention deficit hyperactivity disorder: a clinical workbook. The Guilford Press, New York

The adult ADHD rating scale (AARS) assesses adult ADHD symptoms. It is an 18-item self-report scale based on the DSM-IV definition of symptoms of ADHD. Behaviour is from the past 6 months, rated on a 4-point scale, ranging from (0 Rarely) to (3 Very often). It has good psychometric properties and is correlated with parental and cohabiting partner ratings of symptoms. **Measure used by:** Thompson et al., 2009

**Adult ADHD Self Report Scale (ASRS):** Kessler RC, Adler L, Ames M, et al. 2005

The ASRS is a brief ADHD screening measure for adults that can be used with the general population. **Measure used by:** Lange et al., 2018;

**Beck Depression Inventory (BDI;** Beck, Steer, & Garbin, 1988)

Becks Depression Inventory is a 21-item self-report measure that assesses depressive symptoms. Each item is scored on a scale from 1 to 4, with higher total scores indicating a greater degree of depression. It has been extensively used and shown to have good internal consistency ( $\alpha = .81$  for nonpsychiatric samples), moderate to high test-retest reliability (ranging from  $r = .60$  to  $r = .90$  for nonpsychiatric populations), as well as satisfactory



discriminant validity between clinical and general populations. **Measure used by:** Matos et al., 2009; Bor et al., 2002

**Behaviour Rating Inventory of Executive Function–Adult Version (BRIEF-A;** Roth et al., 2005)

Behaviour Rating Inventory of Executive Function–Adult Version (BRIEF-A; Roth et al., 2005) is a 75-item self-report measure of executive functioning in adults. Items are rated on a 3-point Likert-type scale, with higher scores reflecting greater executive dysfunction. This measure uses T-scores, with scores of 50 and under reflecting the normal range, scores of 60 and above reflecting the clinical range, and scores of 51 to 59 reflecting the borderline clinical range. **Measure used by:** Mah et al., 2021;

**Client Service Receipt Inventory (CSRI)** Beecham J, Knapp M (2001) psychiatric interventions.

Client Service Receipt Inventory is a tool that retrospectively collects health economic data from parents. It obtains socio-demographic information, and service-related and non-service-related data including care service use (health clinics, health visitors, GPs, paediatric and mental health services); educational support (school nurses, educational psychologist); and social services. **Measure used by** Sayal et al., 2016;

**Client Satisfaction Questionnaire (CSQ).**

The Client Satisfaction Questionnaire (CSQ) is a 13-item assessment of service quality from the parents perspective. The CSQ includes how well the program met the parents' needs, the degree to which it increased the parents' skills, and decreased the child's problem behaviours; and whether the parent would recommend the program to others. The

CSQ uses a composite score of program satisfaction ratings with a 7-point scales (a maximum score of 91 and a minimum score of 13). The scale has high internal consistency ( $\alpha = .96$ ), an item–total correlation of .66 and interitem correlations of .30–.87. **Measure used by:** Abikoff et al., 2015; Bor et al., 2002; Hoath & Sanders, 2002;

**Child Abuse Potential Inventory** (Milner, 1986).

The Child Abuse Potential Inventory classifies parents as abusing, non-abusing, or nurturing parents. The measure includes three validity scales—lie, random response, and inconsistency scales—to assess common types of response distortion. **Measure used by:** Bor et al., 2002, Aghetabi et al., 2014;

**Depression Anxiety Stress Scales** (DASS; P. F. Lovibond & S. H. Lovibond, 1995a).

The DASS is a 42- item, or 21-item, questionnaire that assesses symptoms of depression, anxiety, and stress in adults. Respondents rate items on a 4 points scale, ranging from 0 (never applied to me) to 3 (Applied to be all of the time) for experiencing within the past week. Higher scores indicate higher levels of depression, anxiety or stress. **Measure used by:** Bor et al., 2002; Leung et al., 2017; Aghetabi et al., 2014; Hoath & Sanders, 2002;

**Dyadic Parent–Child Interaction Coding System** (DPICS; Eyberg and Robinson 1981)

Dyadic Parent–Child Interaction Coding System is an observational measure that evaluates parent–child interaction quality. Behaviour is categorised as present or absent in 5-min segments of a 25 min lab-based interaction situation. **Measure used by:** Azevedo et al., 2013; Azevedo et al., 2014; Leung et al., 2017;

### **Family Assessment Device** (Epstein, Baldwin, & Bishop, 1983).

Family Assessment Device This scale developed by Epstein et al. is a self-report scale that evaluates the needs and functioning of families according to their own perceptions. It consists of seven parts, with 60 items in total. **Measure used by:** Turan et al., 2021; Yusuf et al., 2019;

### **Family Background Questionnaire**

The Family Background Questionnaire elicits family history information. A brief version assesses parental responsiveness, child maltreatment, and parental substance use. The Family Background Questionnaire elicits biographical information of the child, Parents' marital status and relationship with the child; parents employment status, educational background and total family income. **Measure used by:** Hoath & Sanders, 2002; Khademi, et al., 2019;

### **Family Experiences Inventory** (FEI; Bauermeister, Matos & Reina 1999)

The FEI was developed to assess stressful experiences associated with parenting and includes: parent-child relationship, family social life, parent's relationship with the child's teacher, family finances, and siblings relationships. **Measures used by:** Matos et al., 2009;

### **Family Strain Index** (FSI)

The Family Strain Index is a measure of stress specific to families with a children with ADHD. The scale is a 6-item parent-report questionnaire with a higher score indicating greater impairment in family functioning. **Measure used by:** Lange et al., 2018;

### **Five-Facet Mindfulness Questionnaire (FFMQ)**

The Five-Facet Mindfulness Questionnaire (FFMQ) is self-reported scale used to evaluate mindful awareness. The FFMQ consists of 39 items rated on a five-point Likert scale, and generates a total score and five subscales: observations, descriptions, acting with awareness, non-judgmental inner experience, nonreactivity. A higher score indicates a higher level of mindfulness. **Measure used by:** Liu et al., 2021;

### **General Health Questionnaire (GHQ) (Goldberg, 1978)**

The General Health Questionnaire assesses mood-related conditions such as depression and anxiety. Scores from the 30 items are combined to produce an overall rating. The 12-item version is completed with items scored from 0 to 3. Those with a score of 11 or more are likely to experience mental health difficulties. **Measure used by** Sonuga-Barke et al., 2001; Sonuga-Barke et al., 2004; Thompson et al., 2009; Lange et al., 2018;

### **Global impressions of parent–child interactions-revised (GIPCI-R)**

The GIPCI rates parent and child behaviours on a scale ranging from 1-5. Higher scores indicate a higher frequency of positive parent-child interaction. Child behaviour items include social skills. Parent ratings include responsiveness, warmth, praise, enjoyment, scaffolding, effectiveness, aggression and criticism/punishment. **Measure used by:** Thompson et al., 2009; Lange et al., 2018; Abikoff et al., 2015

### **Hamilton Anxiety Scale (HAMA)**

Hamilton Anxiety Scale (HAMA) assessed anxiety symptoms in adults and includes anxious mood, tension, fear. Higher total scores indicate greater frequency and intensity of anxiety symptoms. **Measure used by:** Liu et al., 021;

### **Hamilton Depression Scale (HAMD)**

The Hamilton Depression Scale (HAMD) measures depression symptoms in adults. HAMD consists of 17 items. Of those, 10 items are scored using a five-point Likert scale, and 7 items are scored on a three-point Likert scale. A higher total score indicates greater range and intensity of depression symptoms. **Measure used by:** Liu et al., 2021;

### **Interpersonal Mindfulness in Parenting Scale (IEM-P; Duncan, 2007)**

The Interpersonal Mindfulness in Parenting Scale is a 10-item questionnaire assessing parents' attention, emotional awareness, nonjudgmental openness, and nonreactivity toward their children during parent-child interactions. Items are rated on a 5-point Likert-type scale, with higher total scores reflecting more mindfulness in parenting. **Measure used:** by Mah et al., 2021;

### **Malaise Inventory (Rodgers et al. 1999)**

The Malaise Inventory is a 24 item self-report questionnaire that assesses somatic and emotional indicators of distress. Dichotomous answers (yes/no), with higher score indicating a higher level of distress. **Measure used by:** Sayal et al., 2016;

### **Parental Attitude Research Instrument (PARI): Schafer ES, Bell RQ. 1958**

The Parental Attitude Research Instrument consists of five components. Control, anxiety, and difficult parenting attitudes; Attitudes, encouraging supportive and collaborative relationships; Angry, stressed, and distressed attitudes in relation to children; relational conflict between parents; punishment and strictness. **Measure used by:** Yusuf et al., 2019

### **Problem Setting and Behaviour Checklist (PSBC; Sanders & Woolley, 2003)**

The PSBC is a 28-item rating scale that assesses parental confidence in responding to challenging child behaviour across a range of settings. Items are rated from 0 (certain I cannot do it) to 100 (certain I can do it) with intervals of 10. Half of the items relate to child behaviours and half to settings. Higher scores indicate greater confidence in their perception of parenting skills in different settings. **Measure used by:** Hoath & Sanders, 2002;

### **Parental bounding instrument (PBI)**

The PBI is a 25-item questionnaire, with a total score and two subscales. 12 items relate to 'care' items and 13 to 'overprotection'. **Measure used by:** Aghetabi et al., 2014;

### **Parental expressed emotion Pre-school 5-min speech sample (PFMSS)**

Parental expressed emotion assesses the emotional climate within the parent-child relationship. Ratings include relationship, parental warmth, emotional over-involvement, frequency of criticism and positive comments. **Measure used by:** Thompson et al., 2009

### **Parenting Scale (PS; Arnold et al. 1993)**

The Parenting Scale is a 30-item self-report measure used to assess parenting practices. Items are scores on a 7-point Likert scale, with a higher score indicating an increased likelihood of discipline practices being ineffective. The parenting scale provides three subscales: Verbosity, Overreactivity, and Laxness. **Measure used by:** Azevedo et al., 2013, Bor et al., 2002; Azevedo 2014; Mah et al., 2021; Aghetabi et al., 2014; Hoath & Sanders, 2002; Khademi et al., 2019; Leckey et al., 2019;

### **Parenting Sense of Competence (PSOC) (Johnston and Mash, 1989)**

The Parental Sense of Competence scale is a 17-item questionnaire assessing parents' perception of their competence. Items are rated on a 6-point scale ranging from 1 = strongly agree to 6 = strongly disagree, higher scores indicate higher competence. The PSOC includes two subscales: Parenting Satisfaction and Parenting Efficacy. Parenting Satisfaction relates to the parents' experience of parenting a particular child. Parenting Efficacy relates to a parent's sense of control over his or her child's behaviour. **Measure used by:** Sonuga-Barke et al., 2001; Sonuga-Barke et al., 2004; Azevedo et al., 2013; Bor et al., 2002; Mah et al., 2021; Au et al., 2014; Khademi et al., 2019; Lange et al., 2018;

### **Parent Practices Inventory (PPI; Salas-Serrano, 2003)**

The PPI assesses parental monitoring and supervision, parental involvement, and discipline. Higher scores indicate the use of more effective parenting practices. **Measures used by:** Abikoff et al., 2015; Matos et al., 2009;

### **Parent Problem Checklist (PPC)**

The PPC is a 16-item questionnaire that measures cooperation and conflict between co-parents. Six items relate to parental agreement with rules and discipline; six items relate to the frequency of open conflict regarding parenting issues; four items relate to the impact each parent has on the relationship between the child and co-parent. The PPC has a moderately high internal consistency ( $\alpha = .70$ ) and high test-retest reliability ( $r = .90$ ) established by (Dadds & Powell, 1991). **Measure used by:** Bor et al., 2002; Hoath & Sanders, 2002; Khademi et al., 2019

### **Parenting Stress Index–Short form (PSI–SF)**

The Parent Stress Index–Short Form is an abbreviated version of the full-length PSI. The PSI assess parenting stress, and consists of three subscales: parental distress, stress related to parent-child interactions and stress related to the child. All 36 items are rated on a 1 (strongly disagree) to 5 (strongly agree) scale. Higher scores indicate higher levels of stress. Validity and test-retest reliability have been independently verified and established as reliable with multiple populations (Abidin, 2012; Roggman et al., 1994) **Measure used by** Abikoff et al, 2015; Behbehani et al., 2018; Liu et al., 2021; Mah et al., 2021; Leung et al., 2017; Chesterfield et al., 2021; Leckey et al., 2019; Turan et al., 2021;

### **Parent’s Self-Reported Program Satisfaction: Consumer Satisfaction**

Consumer satisfaction is assessed with a 7 point scale (ranging from 1 = not satisfied to 7 = very satisfied) relating to the degree of difficulty and value of different teaching methods and strategies, the group leaders’ skills, and other participants. A higher score indicates a higher level of satisfaction. Developed by the Incredible Years program’s author (Webster-Stratton 2001). **Measure used by:** Azevedo et al., 2013;

### **Relationship Quality Index (RQI; Turner, Markie-Dadds & Sanders, 1998).**

The RQI is a 6-item questionnaire that assesses relationship satisfaction. Five items are rated on a 7-point scale from 1 (very strongly disagree) to 7 (very strongly agree). One item uses a 10-point scale from 1 (unhappy) to 10 (perfectly happy). **Measure used by:** Hoath & Sanders, 2002;



### **Self-Compassion Scale (SCS)**

The Self-Compassion Scale (SCS) is a self-reported scale developed by Neff (2003). It includes 26 items assessed with a five-point Likert scale. The SCS includes six subscales: common humanity, self-kindness, isolation, self-judgment, over-identification and mindfulness. The 26 items provide a total score and subscale scores. Higher scores indicate a higher level of self-compassion. **Measure used by:** Liu et al., 2021;

### **Strengths and Difficulties Questionnaire (SDQ) (Goodman1999)**

The SDQ is a brief behavioural screening tool for 2–17-year-olds. It has an additional impact assessment that includes one question relating to burden, with a total score range of 0-4. The psychometric properties of the SDQ do not relate to the supplementary question regarding parental burden. **Measure used by:** Sayal et al., 2016;

### **Service Needs Questionnaire (SNQ; Leung, Lau, Chan, Lau, & Chui, 2010)**

The SNQ is a 29-item measure that assesses the needs of families with children with developmental disabilities on a 5-point scale (ranging from 1 = do not endorse at all to 5 = endorse a lot). There are two parts in the questionnaire: A 9-item measure of individual and family stress, and a 20-item assessment of service needs. **Measure used by:** Au et al., 2014;

### **Therapy Attitude Inventory (TAI; Eyberg, 1993)**

The TAI is a consumer satisfaction measure relating to parental confidence using discipline skills, quality of the parent-child interaction from parents perspective, child behaviour, and overall family adjustment. The TAI has been shown to have adequate reliability, validity, and sensitivity to treatment effects (Brestan et al., 1999). **Measure used by:** Matos et al., 2009; Chesterfield et al., 2021;

**Treatment Evaluation Scale (TES; Matos, 1997)**

This scale assessed parent perceptions of treatment satisfaction and includes open-ended questions relating to the use of program strategies at home, the quality of the therapist-client relationship, and changes recommended to the program from the participants perspective. **Measure used by;** Matos et al., 2009;

## **Appendix G: Parenting Program Summaries**

The parenting programs evaluated by the studies in this review were:

### **1-2-3 Magic**

The 1-2-3 Magic parenting program is a three-session program that aims to improve the parent-child relationship, increase positive child behaviour, and teach parents effective behaviour management strategies. The parenting practices, or behaviour management strategies, include positive reinforcement, praise, rewards, behaviour charts, and natural consequence to encourage positive behaviour, time out, loss of privileges. The 1-2-3 Magic program incorporates behavioural principles from operant conditioning and social learning such as modelling appropriate behaviour, and some cognitive behavioural techniques are taught to help parents reframe misattributions. The 1-2-3 Magic parenting program includes two DVDs, 1-2-3 Magic: Managing Difficult Behaviour in Children 2–12 and More 1-2-3 Magic: Encouraging Good Behaviour, Independence and Self-Esteem, and printed material.

### **Helping the Non-Compliant Child (HNC)**

Helping the Non-Compliant Child is based on behavioural principles and social learning theory, and teaching parents to change the pattern of interaction with their child. It was delivered over eight weekly sessions for one hour, though is not usually provided with a fixed number of sessions. Ordinarily, parents progress through the program by meeting behavioural criteria of implementing the parenting skills with their child, similarly to the Parent Child Interaction Therapy approach. The parenting practices taught to participants include differential attention for appropriate child behaviour, descriptive praise, rewards through physical affection in conjunction with ignoring minor inappropriate behaviour. Parents are taught how to give clear instructions and a sequential process for getting their child's attention and following up with positive reinforcement or discipline.

### **Incredible Years (IY)**

The Incredible Years is a group-based parenting program that is based on guided by the principles of behavioural and social learning theory. The Incredible Years consists of eight weekly sessions that are two hours in duration. Teaching methods include group discussions and role plays as well as DVD material to demonstrate various parenting strategies and scenarios. The programme promotes child-directed play, strengthening of parent-child relationships, the prevention of behavioural difficulties by reinforcing pro-social behaviour and setting limits, and managing challenging behaviour with effective non-violent discipline. Core skills include descriptive commenting and coaching, modelling emotional regulation and making social values explicit, offering praise and rewards such as incentive charts, establishing household rules and routines, giving clear instructions. Parents are also taught strategies for their emotional regulation, in addition to ignoring, time-out and consequences to support the management of challenging child behaviour and problem-solving skills. Homework includes parenting skills practice, review phone calls with another group member or facilitator and reading content related to the weekly topics.

### **Mindful Parenting**

The Mindful Parenting Programs were all based on the Kabat-Zinn protocol and the work of Bögels et al. (2014). Mindfulness is taught and applied to parenting situations, with the emphasis on parental emotional regulation and awareness rather than specific strategies and planned responses to child behaviour. The primary focus of mindful parenting programs is on the parent's internal state, their awareness of their bodily sensations, emotion, and cognition, and supports parents to notice how these components can influence the ways that parents respond to their child. The mindfulness practices and role of emotions, perception and parental

responses are discussed in relation to parent-child interactions, the parent-child relationship, and parental responses to challenging behaviour. The programs delivered by Behbahani and colleagues (2018) and Liu and colleagues (2021) consisted of eight sessions and included the same structure and content, with mindfulness practices, parenting discussions, reflection and homework. The session-by-session outline provided by each study has been combined below.

<b>Contents of the training sessions based on the Kabat-Zinn protocol and Bögels and colleagues (2014)</b>		
<b>Session</b>	<b>Content of the training sessions</b>	<b>Homework</b>
1	Automatic Parenting Getting started, meditation, introducing oneself, stepping out of automatic pilot: eating a raisin mindfully, morning stress exercise (rational for the mindful parenting course), and body scan training	Body scan; mindfully seeing children; mindful eating or mindful routine activity
2	Beginner's Mind Parenting Body scan + inquiry, observation of one's child: child as raisin exercise, morning stress from the perspective of a friend, mindful seeing, gorilla in the midst, and gratitude practice	Body scan; mindful breathing; routine activity with a child with mindfulness; pleasant-moment recording
3	Reconnecting with Our Body as a Parent Sitting meditation: breathing and physical sensations, savoring pleasant moments, 3-minute breathing space, yoga (lying and sitting), watching the body during parenting stress, bringing kindness to oneself	Mindful lying yoga; mindfulness of breathing and body sensations; breathing space; routine activity with a child with mindfulness; stressful-moment recording
4	Responding versus Reacting to Parenting Stress Adding meditation to sounds and thoughts; reading Koan (illustrating the "train of thoughts" in which parents can get caught up); discussing stressful parenting event in dyads; grasping and pushing away; demonstrating fight, flight, freeze, and dance; and 3-minute breathing space under stress. Imagination: awareness and acceptance of stress using the breathing space and doors, halfway evaluation, and standing yoga	Mindful standing yoga; mindfulness of sounds and thoughts; breathings pace in stressful moments; memoir of childhood experiences with parents
5	Parenting Patterns and Schemas Adding meditation to emotions, introducing reactive parenting and schema modes, 3-minute breathing space, walking meditation inside, and holding ones' emotions	Mindfulness of emotion; breathing space when the child acts badly; parental stress and schema-mode recognition daily
6	Conflict and Parenting Introducing choice-less awareness, walking meditation outside, perspective taking, reading a poem: "Autobiography in Five Chapters"	Self-chosen practices for 40 min or choiceless awareness; repairing in conflicts
7	Love and Limits: Cultivating Compassion Loving-kindness meditation, review of mindfulness day, What do I need? limits, role-play: limits, review of home practice, and "The Two Wolves"	Practices for 40 min; lovingkindness; mindful setting of limits; bringing in a gift

8	Are We There Yet? A Mindful Path Body scan+inquiry, review of home practice, gratitude practice, meditation on what has been learned, meditation plan for the next 8 weeks, process descriptions with objects, reading some suggestions for everyday mindful parenting, and closing meditation	Own practice
9	Each Time, Beginning Anew Sitting meditation, sharing the experience of the last 8 weeks (in pairs), group sharing of the last 8 weeks, mountain meditation for parents, stone meditation, wishing well, and individual evaluation	

The mindful parenting delivered by Mah and colleagues (2021) is a combination of multiple parenting programs (COPE and Incredible Years), with a mindful parenting element based on the Kabat-Zinn protocol and the work of Bögels et al. (2014) in addition to Mindfulness based Cognitive Therapy (Segal et al., 2002). Mah and colleagues' intervention combined formal teaching of meditation and mindfulness practices with informal daily mindfulness techniques, as with the mindful parenting program outline, alongside teaching specific behavioural management techniques that are informed by social learning theory and behaviourism. Each session included: (a) 30-min group check-in, discussion of home practice and problem solving (b) 30-min mindfulness exercise and discussion, (c) 10-min break, (d) 20-min pre-sensation of new topic, and (e) 30 min of discussion, questions and homework preparation.

### **New Forest Parenting Program (NFPP)**

The New Forest Parenting Program is an individually delivered program for parents of children under five years old, with ADHD. The central components include psychoeducation to improve parents' understanding of their child's pattern of behaviour, behavioural and play based strategies to develop the child's self-regulation skills, increasing positive parent-child interactions and reducing parenting stress. A distinctive feature of NFPP is that the parents are taught to facilitate the development of self-regulation skills in their

child through games and activities that target impulsivity and attention, in addition to the traditional behavioural parent training approaches that teach parents to engage with their child in a way that promotes positive, reciprocal interactions and structured behavioural support. The standard behavioural parenting techniques taught by NFPP are aligned with an authoritative parenting style and include increasing both the quality and quantity of positive parent–child interaction and reducing parental negativity towards the child. Parental negativity is addressed by educating parents about ADHD, reducing blame towards the child, and increasing parental understanding in addition to reducing reactive parenting behaviours. As NFPP is provided in-home and with the child present, the teaching methods include the facilitator modelling skills to the parent by engaging with the child, in addition to the provision of videos, structured discussion and teaching of skills.

### **Parents Plus Children Program (PPCP)**

The Parents Plus Children Program teaches positive parenting and discipline strategies based on behavioural and social learning theories. The program aims to support positive parent-child relationships and encourage pro-social behaviour. The program was implemented over 9 weeks, and teaching methods involved discussion, videos, role-play, practice, planning and homework. The session-by-session content, as described by the program, is detailed below:

<b>Group Session</b>	<b>Positive Parenting</b>	<b>Positive Discipline</b>
<b>1</b>	Providing positive attention	Pressing the pause button
<b>2</b>	Setting aside play and special time	Using do's rather than don'ts
<b>3</b>	Child-centered play	Establishing routines
Individual session—practice play/establish routine chart		
<b>4</b>	Encouragement and praise	Using consequences
<b>5</b>	Encouraging homework and learning	Using sanction systems
Individual session—problem solve/establish discipline		
<b>6</b>	Prevention plans	Assertive parenting/dealing with disrespect
<b>7</b>	Problem-solving with children	Step-by-step discipline
<b>8</b>	Active listening and problem-solving	Dealing with special needs

9	Family listening/family problem-solving	Parent self-care
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(Coughlin et al., 2009; Turan et al., 2021)

### **Parent Child Interaction Therapy (PCIT)**

Parent Child Interaction Therapy seeks to enhance the warmth and responsiveness of parents to their children and prioritises establishing a mutually fulfilling relationship prior to addressing behavioural challenges. PCIT is based on social learning and attachment theory and uses traditional behaviour parent training techniques. The teaching method includes instruction, modelling and role playing prior to a dyadic play situation where the parents receive in vivo coaching by a PCIT therapist while they interact with their child. The coaching occurs with a therapist observing the parent-child interactions behind a one-way mirror and communicating with the parent via an earpiece. This scenario means that the child can play with their parent while the PCIT therapist provides immediate feedback to support the parents' implementation and use of communication and engagement skills with their child. There are two phases of the intervention: child-directed interaction and parent-directed interaction. The core skills in the child-directed interaction phase are praise, reflecting their child's speech in conversation, imitating, and joining the child's play, describing appropriate behaviours when the child does them, and being enthusiastic towards the child and shared activities. Progression from the child-directed interaction stage to parent-directed interaction is based on the parenting demonstrating a minimum frequency of skill use. Specifically, 10 labeled praises, 10 reflective statements, 10 behaviour descriptions, and less than 3 commands, questions, or criticisms within a 5-minute period. In the study completed by Matos and colleagues (2009), additional discussions were included relating to how the parent can make recommendations and share the skills with their extended family to limit, and prevent, conflicting advice and parenting practices disrupting the PCIT process, and to enable the child to experience consistency. During the parent-directed interaction phase the parents



learn how to manage behaviour to increase prosocial behaviour and reduce the frequency or intensity or challenging behaviour. The behaviour management strategies include clear, direct commands and positive descriptions of behaviour, and use of consequences to increase or decrease behaviour, including time-out.

### **Triple P Positive Parenting Program (Triple P)**

The Positive Parenting Program uses ecological principles of child development to prevent challenging behaviour by modifying the child's environment. Environmental amelioration of maintaining factors that reinforce challenging behaviour is one component of improving the parent-child relationship. In addition to the social learning, attachment and behavioural influences in the parenting practices that are taught, Triple P emphasises the importance of parental self-regulation and teaches parents skills to this end. It is hypothesised that parental self-regulation models emotional self-management, behavioural monitoring and problem-solving skills to the child as well as creating a foundation for warm, responsive relationships and parent-child interactions. Group sessions of Triple P involve instruction and information sharing from facilitators, discussion, role play, video vignettes and demonstration of parenting skills, observation, and feedback as well as encouraging parents to reflect on and review their implementation of the skills. Parents receive a workbook and complete homework between sessions (Markie-Dadds et al., 2009)

### **Unnamed program**

The unnamed 'standard' parenting program delivered by Mah et al. (2021) combined the manuals of the Community Parent Education Program (Cunningham, 2005) and Incredible Years with ADHD specific content from Taking Charge of ADHD (Barkley, 2013). The theoretical foundation of the 'standard' program is social learning theory and behaviourism. The parenting practices include child-centred play, differential attention, collaborative problem

solving, effective limit setting and incentive charts. Each session followed the same structure: a group check-in, presentation of a new topic, video content and discussion from the COPE program, questions and preparing homework.