ENCYCLOPEDIA
on Early Childhood
Development

Anxiety and depression

Last update: July 2025
Topic Editor:
Prof. Ronald M. Rapee, Macquarie University, Centre for Emotional Health, Australia

Table of content

Topic funded by:

Synthesis

How important is it?

Mental health problems experienced in adulthood often begin in childhood and adolescence. It is estimated that 1 in 7 children suffer from mental health problems worldwide. One of the major types of mental health issues found in childhood is internalizing problems. Internalizing problems are characterized by emotional distress turned inward, which makes these problems difficult to recognize. Unlike normal fear, shyness and sadness, internalizing problems impair a young child's functioning and development.

Internalizing problems include depression and anxiety. Symptoms of depression in older children include feelings of sadness, eating/weight problems, sleep disturbance, loss of energy and low self-esteem. Although the controversy about diagnosing depression in young children is ongoing, symptoms can be experienced as early as 3 years of age. By 2030, the World Health Organization expects depression to become the second most important burden of disease after HIV/AIDS.[1]

Anxiety disorders can also cause significant distress and impairment in young children and merit special consideration. Anxiety problems exist when children's emotional reactions are disproportionate to the nature of the situation they are facing (ex.: tearful outbreaks when being separated from a parent) and when they interfere with the child's life. Anxiety disorders often precede major depression.

Although distinct from each other, depressive and anxiety symptoms often overlap and co-occur. This is especially obvious in posttraumatic stress disorder (PTSD). PTSD is a severe psychological condition that can develop following exposure to a trauma and seriously impairs a person's functioning. An early traumatic experience can lead to long-lasting effects and children who live through it are at risk for developing PTSD.

What do we know?

One of the reasons for the controversy in diagnosing a child with depression or an anxiety disorder is that traditional assessment tools were developed for adults and do not adequately capture impairments that are specific to different developmental stages (e.g., disturbance in

family routine). In addition, it is often difficult for young children to explain how they feel. Fortunately, new innovative methods such as puppet interviews and picture tests have been used to help children express their emotions.

The first signs of internalizing problems are often observed in the peer group, where depression and anxiety can manifest themselves as self-consciousness, fearfulness, preoccupation and nervousness. Children with internalizing problems often struggle with initiating contact or conversation, talk very little and make infrequent eye contact. These socially withdrawn behaviours make them more likely to be victimized by peers. The friendships of anxious or depressed children also tend to be less frequent, of poorer quality, and with children who also display internalizing problems, which can worsen existing problems. However, having at least one close friend can also protect a child from some of the detrimental effects of internalizing problems. Engaging in prosocial behaviours, having friends and supportive parents, and having high emotion regulation can protect bullied, victimized, and rejected youth from internalizing problems.

Both genes and environment put children at risk for developing internalizing problems. One of the most robust risk factors for anxiety is behavioural inhibition, an early temperament trait characterized by intense fear, distress and reactivity to new situations. The odds of developing anxiety disorders in later life are much higher for children who are behaviourally inhibited in early childhood. Children who are behaviourally inhibited are often socially withdrawn and, as a consequence, are at risk for peer rejection, which can exacerbate feelings of anxiety and isolation.

The link between behavioural inhibition and social withdrawal appears to be particularly strong for children who display attentional bias to threat, a cognitive distortion often related to anxiety. Skills involving executive functions such as cognitive monitoring and inhibitory control can also elevate anxiety in behaviourally inhibited children.

Environmental risk for internalizing problems includes certain parenting behaviours. The magnitude of the effect of parenting is small, but appears to be a consistent risk in the development of internalizing problems. Moreover, parental responses may have a greater impact on anxiety in early childhood. Children of parents who are overprotective, overcritical or use harsh discipline tend to have poor emotion regulation skills and are more susceptible to emotional health difficulties. Parents who are themselves anxious can also put children at risk for

anxiety disorders by modeling avoidant or anxious behaviours. The effects of these parenting behaviours are especially strong for children with behavioural inhibition.

Poor attachment is another risk factor for the development of anxiety and depression. Caused by a history of unresponsive and insensitive caregiving environment, an insecure attachment can lead children to develop poor emotion regulation skills and a negative sense of self, both associated with internalizing problems.

What can be done?

An initial necessary step in understanding the development of childhood depression and anxiety is to expand assessment of these conditions in the clinical and research setting through multi-method, multi-session and multi-informant techniques. While including a screening for internalizing problems during standard check-ups might be ideal, targeting at risk children and families may represent a more cost-efficient and realistic method to prevent or reduce negative consequences associated with internalizing problems. For instance, accurate screening in locations where children are at risk for experiencing trauma (e.g., hospitals) or identifying children who are behaviourally inhibited at an early age can have a major impact on children, their families and society at large.

Parents can be reassured that several individual treatments have been found to help children who are depressed or anxious, although consistent treatment programs remain to be developed. Anti-depressant medications have been used with some success among children as young as 6 years, but their use is now limited as a last resort option because of health concerns. Cognitive behavioural therapy (CBT) is the most common and effective method to treat anxiety and depression in childhood. CBT focuses on helping children identify and confront their own distorted thinking habits and involves behavioural techniques that gradually expose children to anxiety-provoking situations. Play-based CBT has been used with children as young as 4 years of age.

Involving parents in treatment is beneficial in reducing symptoms of depression and anxiety. CBT often includes parents in the treatment agenda by coaching them on exposure techniques and teaching them management skills pertaining to anxiety. These interventions further enable parents to optimally adjust their parenting style to their child’s temperament, by becoming less overprotective and less anxious. In cases of posttraumatic stress disorder, interventions should

target both the needs of the child and the parents to reduce distress of all parties and promote family functioning.

Early intervention that includes psychoeducation, parental involvement and coping skills training is also key to preventing the development of serious and enduring mental health problems. Early social interactions with peers should be supervised by parents and teachers to check for early signs of internalizing problems, and can even be an ideal target for early intervention focused on social skills training. A collaborative effort between parents, health professionals and child care workers promises to be most effective in creating a stable and coherent environment for children.

Policy makers interested in children's mental health should give priority to evidence-based programs and quality intervention studies examining treatment effectiveness for depression and anxiety in childhood. Information should be disseminated to service providers about the manifestation of anxiety and depression in early childhood as these internalizing problems often go undetected. Service providers dealing with childhood trauma should also be aware of the systemic impact of a traumatic experience on the family as a whole.

Note:

[1] World Health Organization. Global Health Estimates: Life expectancy and leading causes of death and disability. http://www.who.int/topics/global_burden_of_disease/en/. Accessed September 17, 2024.

Recognition and Assessment of Anxiety & Depression in Early Childhood

[1]Nicholas D. Mian, PhD, [1]Megan McKinnon, [2]Alice S. Carter, PhD

[1]University of New Hampshire, Department of Life Sciences, USA, [2]University of Massachusetts Boston, Department of Psychology, USA

December 2023, Éd. rév.

Introduction

Anxiety disorders are characterized by emotional arousal associated with fear, worry, or nervousness that is out of proportion to the situation. Significant fears in preschool-aged children have been documented since the 1920's,[1] but were not widely recognized as clinically impairing and deserving of specialized treatment until early in the 21st century. Young children's anxiety often manifests as fearfulness, defiance, or tearful outbursts in stressful situations (e.g., separating from a caregiver). Diagnosis of depression in early childhood remains rare, but symptoms seen in older children, including sadness, appetite/weight problems, sleep problems, low energy, irrational guilt, and low self-esteem can represent a distinct syndrome in young children,[2] and the clinical syndrome of preschool-onset Major Depressive Disorder has been validated.[3] Evidence suggests that anxiety and depressive symptoms in young children are correlated but distinct entities, with unique symptom trajectories.[4] To meet diagnostic criteria, symptoms must be severe enough to impair normal functioning. Most young children with depressive symptoms do not meet the criteria for a formal DSM-5 diagnosis, but experts agree that children can experience the core symptoms of depression by age 3.[2]

In psychopathology *research*, assessment is designed to capture psychological phenomena to deepen understanding of disorder presentation, course, risk factors, and treatments. Assessment in a *clinical* context refers to gathering screening and/or clinical data to inform clinical judgments regarding the diagnostic presentation of a specific child and to tailor individualized interventions to promote optimal social, academic, and family functioning. The key to valid, reliable assessment is employing a multi-method, multi-informant approach that includes repeated clinical observations, diagnostic interviews, developmental history, and standardized, comprehensive symptom checklists.[5]

Subject

Studies that focused on the prevalence of psychiatric disorders in preschool-aged children have reported prevalence rates as high as 9% for anxiety disorders and around 2% for depression among preschool children.[3,6,7] While most childhood fears and transient sadness are normative, some children suffer from emotional problems that cause significant distress and impairment, limiting their ability to develop age-appropriate social and pre-academic skills and/or participate in age-appropriate activities and settings. Assessment is necessary to understand the phenomenology of emotional symptoms and identify young children with mental health needs, which is paramount to connecting them with ameliorative services.

Problems

Researchers struggle to distinguish variations in *temperament*, (stable individual differences relating to reactivity and self-regulation), from symptoms of *psychopathology*. There is also inconsistency regarding studying anxiety and depressive symptoms as a single "internalizing domain" or as two clinically distinct presentations.[8,9] Similar issues with taxonomy are reflected in the lack of consensus relating to whether emotional problems should be conceptualized and studied in a categorical versus dimensional fashion.[10] Diagnostic criteria (DSM-5)[11] are often insufficient for young children and do not capture developmentally salient types of impairment (e.g., disruption in family routine), which makes it difficult to apply psychiatric research methods. One diagnostic manual, the DC: 0-5, was developed specifically to aid diagnostic decisions in young children.[12] It includes a multi-axial approach for addressing relational, developmental, medical, and other environmental contextual factors and includes some disorders that are not in the DSM-5.

Despite significant advances in the assessment, recognition, and treatment of early childhood emotional disorders,[13-15] rates of mental health service receipt and participation in prevention programs remain low, especially for ethnic minority children and those living in poverty.[16-19] Low levels of service utilization in this age group also likely reflects societal attitudes that have been slow to accept the seriousness of preschool-age mental health problems as well as ongoing stigmatization of mental health and parents of children with clinically significant mental health concerns.[20]

Research Context

Serious emotional symptoms tend to be relatively stable throughout childhood if they are not identified and treated,[21,22] emphasizing the importance of assessment tools. Several widely-used parent-report "checklist-style" assessments (e.g., Child Behavior Checklist,[23] Infant-Toddler Social and Emotional Assessment,[24] Behavior Assessment System for Children[25]) cover a broad range of functioning, including internalizing, externalizing, and other problematic behaviors in early childhood. Other methods include semi-structured diagnostic interviews with parents, which mirror empirically-based diagnostic practices in adults. The most widely used is the Preschool Age Psychiatric Assessment.[26] Young children are often unable to describe their own emotional experiences using traditional methods. Hence, the Berkeley Puppet Interview uses child-friendly puppets to help preschool-aged children identify symptoms.[27] Another assessment method uses observation of the child's behavioral symptoms, which minimizes bias associated with parent or self-reported instruments. One such instrument, the Anxiety Dimensional Observational Scale (Anx-DOS) uses "presses" designed to evoke different dimensions related to anxiety, such as separation distress and fear of novel or potentially frightening toys.[28] The challenge with observational methods is converting the observations into quantifiable data. While many of the methods described here can be very useful from a research standpoint, they are often difficult to adapt for clinical contexts. For example, observational assessments such as the Anx-DOS are routinely rated from recordings in research settings. In contrast, most clinical observational tools are designed to be rated live, or in real-time during the assessment administration.

Advancing the study of emotional assessment in young children necessitates a conceptual distinction between temperament and internalizing symptomology. For example, behavioral inhibition (prominent shyness in novel and social situations[29]) has long been considered a normative temperamental profile that increases the risk of developing an anxiety disorder later in childhood,[30] but for some children may represent an early onset of disorder.[13,31] Unfortunately, most assessments do not capture child or family impairment, which is one way to distinguish between normative and clinical concerning variations within these constructs. Further, both early emerging symptoms of anxiety and temperamental measures have been used to successfully identify children with concurrent and later anxiety disorders.[32,33]

Whereas emotional symptoms reflect biological processes and mechanisms, there currently exists no biological "test." While psychophysiological assessments can identify anxiety-related patterns of autonomic arousal (electrodermal activity (EDA), heart rate variability (HRV),

breathing rate, stress cortisol), these vary greatly from one child to the next. Hence, while they can help researchers study emotional arousal in the laboratory, they have limited utility for making diagnostic decisions. A clinical diagnosis still requires a diagnostic interview to assess symptom onset, duration, severity, and associated impairment.

Key Research Questions

Key research questions include:

1. How can screening and assessment methods be improved to minimize reliance on parent report, while remaining minimally labor intensive?
2. How can assessments differentiate between normative variations in temperament and clinically significant emotional symptoms?
3. What criteria should be used to diagnose anxiety and depressive disorders in young children, or would employing a dimensional approach be advantageous?
4. How can awareness and recognition be improved to increase participation in prevention and early intervention efforts?

Recent Research Results

Significant advances have been made in assessment methods and age-appropriate diagnostic criteria for emotional disorders in young children.[12,34,35] Differentiation between symptoms of individual anxiety disorders (e.g., separation anxiety, generalized anxiety) has been found as early as two years of age.[8] Assessment tools for children aged 3-5, including the Preschool Anxiety Scale - Revised, captures these various dimensions of anxiety symptoms.[36] Further, requiring evidence of impairment for diagnosis can minimize over-pathologizing.[37]

The most notable research advances in assessment are in the area of studying clinically-relevant units of analysis that can be measured objectively. These include constructs that may be behavioral, cognitive, or neurobiological, which underlie clinical syndromes (diagnoses).[38] This approach represents a departure from previous research that aimed to study diagnostic syndromes themselves, which are characterized by variations in presentation and a clinical approach to assessment, frustrating research progress.

Attention bias to threat—a cognitive profile in which children show more attention to potentially threatening stimuli—has been identified as a correlate or risk factor for anxiety disorders.[39] To study this and other cognitive phenomena, researchers have employed the use of event-related potentials (ERP), which are minute voltage changes detected by electroencephalogram, to measure brain activity in a specific region. This application of ERP has provided evidence of neural indicators related to attention bias to help uncover relationships to anxiety symptoms.[40]

Other research in young children has focused on physiological measures of arousal of the autonomic nervous system, which governs fear and emotional responses to trauma. Current research is investigating how risk and exposure to trauma can disrupt the nervous system functions, including affecting heart-rate variability as it relates to memory for traumatic events.[41] While these constructs may not aid current diagnostic procedures, they are helping researchers understand underlying constructs that may constitute risk for later emotional disorders.[42]

Regarding depression, novel findings have used functional magnetic resonance imaging (fMRI) to identify distinct patterns of brain activation, which were similar to those of adults with depression.[43] Recent fMRI research has indicated that children with preschool-onset depression showed a specific relationship between the volume of the hippocampus (which plays a role in the way fear learning and experiences of stress) and emotional responsivity in subcortical brain structures.[44] Finally, researchers have also used ERPs to measure changes in reward responses in the brain as a neural indicator of anhedonia in the context of a treatment study for preschool-onset depression.[45] These examples illustrate how modern psychological research is merging with neuroscience to clarify the relationship between clinical syndromes and brain function.

Finally, although a genetic test for anxiety and depressive disorders does not exist, the novel field of epigenetics research provides insight into how gene expression can be altered by the environment. Exposure to trauma, especially in childhood, can change gene expression and influence the risk of future generations developing similar conditions.[46]

Research Gaps

More research is needed to fully understand the phenomenology and diagnostic presentation of emotional disorders in young children. Also, research can improve the integration of data from observational systems, clinical interviews, child-report assessments, and measures of child and family impairment. Research that identifies meaningful ways of distinguishing between

temperament and clinically significant emotional symptoms is also needed. While there have been significant advances in research on the underlying neurological functions as they relate to emotional disorders in young children, these have yet to dramatically improve assessment in clinical contexts. Finally, research is needed on best practices for increasing awareness of clinically significant emotional disturbances in young children to better engage parents, pediatricians, and educators in early identification, prevention, and intervention efforts.

Conclusions

Recent advances in assessment methods have made it clear that young children can suffer from serious emotional disorders. These disorders are distressing and impairing to young children and their families and present similarly to disorders in older children. Advancements have led to improved assessment methods (i.e., diagnostic interviews, observational systems, child-report assessments, psychophysiological tests) that reduce sole reliance on parent reports and increase diagnostic validity and reliability. Major advances in neuroscience and psychophysiological assessments of emotional functioning have contributed to a greater understanding of emotional disorders in young children. While these advances mark substantial progress, more research is needed. Despite availability, screening tools for identifying young children at risk are underutilized, partly due to limited awareness among pediatricians, parents, and educators. Even when identified, rates of parent participation in clinical services remain low.

Implications for parents, services and policy

The lack of awareness regarding the importance of identifying and ameliorating young children's emotional disturbances is one of the greatest challenges facing advances in assessment and identification of early childhood emotional problems. This problem is manifested by low levels of treatment-seeking behavior by parents,[17] as well as the rarity of referrals from pediatricians and early educators. Compared with externalizing problems, such as aggression, emotional symptoms tend to be more difficult to recognize and assess, and because they are less disruptive, they are less likely to get noticed. However, it is clear that young children can struggle with distressing and impairing emotional problems that warrant sophisticated assessment and treatment approaches. Emotional disorders reflect neurological function and interfere with important aspects of development. With this in mind, researchers continue to explore and refine assessment tools and screening measures to identify young children in need of services, but dissemination and broad systems for implementation are still developing.

References

1. Freud S. Analysis of a phobia in a five-year-old boy (little Hans). *Revue Francaise de Psychanalyse.* 1928;2, 3.
2. Luby JL, Belden AC, eds. Mood disorders: Phenomenology and a developmental emotion reactivity model. In: Luby JL, ed. *Handbook of preschool mental health: Development, disorders, and treatment*. New York, NY US: Guilford Press; 2006:209-230.
3. Donohue MR, Whalen DJ, Gilbert KE, Hennefield L, Barch DM, Luby J. Preschool depression: a diagnostic reality. *Current Psychiatry Reports.* 2019;21(12):128.
4. Carter AS, Godoy L, Wagmiller RL, Veliz P, Marakovitz S, Briggs-Gowan MJ. Internalizing trajectories in young boys and girls: The whole is not a simple sum of its parts. *Journal of Abnormal Child Psychology*. 2010;38(1):19-31.
5. DelCarmen-Wiggins R, Carter A. *Handbook of infant, toddler, and preschool mental health assessment*. New York, NY US: Oxford University Press; 2004.
6. Egger HL, Angold A. Common emotional and behavioral disorders in preschool children: Presentation, nosology, and epidemiology. *Journal of Child Psychology and Psychiatry*. 2006;47(3):313-337.
7. Wichstrøm L, Berg-Nielsen TS, Angold A, Egger HL, Solheim E, Sveen TH. Prevalence of psychiatric disorders in preschoolers. *Journal of Child Psychology and Psychiatry.* 2012;53(6):695-705.
8. Mian ND, Godoy L, Briggs-Gowan MJ, Carter AS. Patterns of anxiety symptoms in toddlers and preschool-age children: Evidence of early differentiation. *Journal of Anxiety Disorders*. 2012;26(1):102-110.
9. Eley TC, Stevenson J. Using genetic analyses to clarify the distinction between depressive and anxious symptoms in children. *Journal of Abnormal Child Psychology*. 1999;27(2):105-114.
10. Brown TA, Barlow DH. Dimensional versus categorical classification of mental disorders in the fifth edition of the Diagnostic and statistical manual of mental disorders and beyond: Comment on the special section. *Journal of Abnormal Psychology*. 2005;114(4):551-556.
11. American Psychiatric Association. *Diagnostic and Statistical Manual of Mental Disorders.* Fifth ed. Washington, DC: American Psychiatric Association; 2013.

12. Zero to Three. *DC:0–5TM Diagnostic classification of mental health and developmental disorders of infancy and early childhood. Version 2.0.* Washington, DC: Zero to Three; 2021.

13. Kennedy SJ, Rapee RM, Edwards SL. A selective intervention program for inhibited preschool-aged children of parents with an anxiety disorder: Effects on current anxiety disorders and temperament. *Journal of the American Academy of Child & Adolescent Psychiatry*. 2009;48(6):602-609.

14. Hirshfeld-Becker DR, Masek B, Henin A, et al. Cognitive behavioral therapy for 4- to 7-year-old children with anxiety disorders: A randomized clinical trial. *Journal of Consulting and Clinical Psychology*. 2010;78(4):498-510.

15. Luby JL, Lenze S, Tillman R. A novel early intervention for preschool depression: Findings from a pilot randomized controlled trial. *Journal of Child Psychology and Psychiatry.* 2012;53(3):313-322.

16. Swanson ME, Wall S, Kisker E, Peterson C. Health disparities in low-income families with infants and toddlers: Needs and challenges related to disability. *Journal of Child Health Care.* 2011;15(1):25-38.

17. Kataoka SH, Zhang L, Wells KB. Unmet need for mental health care among U.S. children: Variation by ethnicity and insurance status. *The American Journal of Psychiatry*. 2002;159(9):1548-1555.

18. Bjørknes R, Jakobsen R, Nærde A. Recruiting ethnic minority groups to evidence-based parent training. Who will come and how? *Children and Youth Services Review*. 2011;33(2):351-357.

19. Godoy L, Carter AS. Identifying and addressing mental health risks and problems in primary care pediatric settings: A model to promote developmental and cultural competence. *American Journal of Orthopsychiatry*. In press.

20. Mukolo A, Heflinger CA, Wallston KA. The stigma of childhood mental disorders: A conceptual framework. *Journal of the American Academy of Child & Adolescent Psychiatry*. 2010;49(2):92-103.

21. Bosquet M, Egeland B. The development and maintenance of anxiety symptoms from infancy through adolescence in a longitudinal sample. *Development and Psychopathology*. 2006;18(2):517-550.

22. Luby JL, Todd RD, Geller B. Outcome of depressive syndromes: Infancy to adolescence. In: Shulman KI, Tohen M, Kutcher SP, eds. *Mood disorders across the life span.* New York, NY, US: Wiley-Liss; 1996:83-100.

23. Achenbach TM, Rescorla LA. *Manual for the ASEBA preschool forms and profiles*. Burlington, VT: University of Vermont, Department of Psychiatry; 2000.

24. Carter AS, Briggs-Gowan MJ. *ITSEA Infant-Toddler Social and Emotional Assessment.* San Antonio, TX: Psychological Corporation Harcourt Press; 2006.

25. Reynolds CR, Kamphaus RW. *Behavior Assessment System for Children-Second Edition (BASC-2).* Circle Pines, MN: AGS; 2004.

26. Egger HL, Angold A. The Preschool Age Psychiatric Assessment (PAPA): A structured parent interview for diagnosing psychiatric disorders in preschool children. In: DelCarmen-Wiggins R, Carter A, eds. *Handbook of infant, toddler, and preschool mental health assessment.* New York, NY US: Oxford University Press; 2004:223-243.

27. Measelle JR, Ablow JC, Cowan PA, Cowan CP. Assessing young children's views of their academic, social, and emotional lives: An evaluation of the self-perception scales of the Berkeley Puppet Interview. *Child Development*. 1998;69(6):1556-1576.

28. Mian ND, Carter AS, Pine DS, Wakschlag LS, Briggs-Gowan MJ. Development of a novel observational measure for anxiety in young children: The anxiety dimensional observation scale. *Journal of Child Psychology and Psychiatry.* 2015;56(9):1017-1025.

29. Kagan J. Behavioral inhibition to the unfamiliar. *Child Development*. 1984;55(6):2212-2225.

30. Kagan J, Snidman N. Early childhood predictors of adult anxiety disorders. *Biological Psychiatry*. 1999;46(11):1536-1541.

31. Egger HL, Angold A. Anxiety Disorders. In: Luby JL, ed. *Handbook of preschool mental health: Development, disorders, and treatment.* New York, NY US: Guilford Press; 2006:137-164.

32. Briggs-Gowan MJ, Carter AS, McCarthy K, Augustyn M, Caronna E, Clark R. Clinical validity of a brief measure of early childhood social–emotional/behavioral problems. J*ournal of Pediatric Psychology.* 2013;38(5):577-587.

33. Bayer JK, Prendergast LA, Brown A, et al. Prediction of clinical anxious and depressive problems in mid childhood amongst temperamentally inhibited preschool children: a

population study. *European Child & Adolescent Psychiatry*. 2023;32:267-281.

34. Luby JL. Affective Disorders. In: DelCarmen-Wiggins R, Carter A, eds. *Handbook of infant, toddler, and preschool mental health assessment.* New York, NY US: Oxford University Press; 2004:337-353.
35. Scheeringa MS, Zeanah CH, Myers L, Putnam FW. New findings on alternative criteria for PTSD in preschool children. *Journal of the American Academy of Child & Adolescent Psychiatry.* 2003;42(5):561-570.
36. Edwards SL, Rapee RM, Kennedy SJ, Spence SH. The assessment of anxiety symptoms in preschool-aged children: The revised Preschool Anxiety Scale. *Journal of Clinical Child and Adolescent Psychology.* 2010;39(3):400-409.
37. Zeanah CH, Carter AS, Cohen J, et al. The Diagnostic Classification of Mental Health and Developmental Disorders of Infancy and Early Childhood DC:0–5: Selective reviews from a new nosology for early childhood psychopathology. *Infant Mental Health Journal.* 2016;37(5):471-475.
38. Beauchaine TP, Hinshaw SP. RDoC and psychopathology among youth: Misplaced assumptions and an agenda for future research. *Journal of Clinical Child and Adolescent Psychology*. 2020;49(3):322-340.
39. Briggs-Gowan MJ, Pollak SD, Grasso D, et al. Attention bias and anxiety in young children exposed to family violence. *Journal of Child Psychology and Psychiatry.* 2015;56(11):1194-1201.
40. Rayson H, Ryan ZJ, Dodd HF. Behavioural inhibition and early neural processing of happy and angry faces interact to predict anxiety: A longitudinal ERP study. *Developmental Cognitive Neuroscience*. 2023;60:1-10.
41. Gray SAO, Lipschutz RS, Scheeringa MS. Young children's physiological reactivity during memory recall: Associations with posttraumatic stress and parent physiological synchrony. *Journal of Abnormal Child Psychology.* 2018;46(4):871-880.
42. Nikolić M, Aktar E, Bögels S, Colonnesi C, Vente W. Bumping heart and sweaty palms: Physiological hyperarousal as a risk factor for child social anxiety. *Journal of Child Psychology and Psychiatry.* 2018;59(2):119-128.
43. Barch DM, Gaffrey MS, Botteron KN, Belden AC, Luby JL. Functional brain activation to emotionally valenced faces in school-aged children with a history of preschool-onset major

depression. *Biological Psychiatry.* 2012;72(12):1035-1042.

44. Suzuki H, Botteron KN, Luby JL, et al. Structural-functional correlations between hippocampal volume and cortico-limbic emotional responses in depressed children. *Cognitive, Affective & Behavioral Neuroscience*. 2013;13(1):135-151.

45. Barch DM, Whalen D, Gilbert K, et al. Neural indicators of anhedonia: Predictors and mechanisms of treatment change in a randomized clinical trial in early childhood depression. *Biological Psychiatry*. 2020;88(11):879-887.

46. Nöthling J, Malan-Müller S, Abrahams N, Hemmings SMJ, Seedat S. Epigenetic alterations associated with childhood trauma and adult mental health outcomes: A systematic review. *The World Journal of Biological Psychiatry*. 2020;21(7):493-512.

Posttraumatic Stress Disorder in Young Children

[1]Lisa J.G. Krijnen, PhD Student, [2,3]Justin Kenardy, PhD, [4]Alexandra De Young, PhD

[1]Child and Adolescent Studies, Utrecht University, Utrecht, Netherlands, [2]School of Psychology, University of Queensland, Brisbane, QLD, Australia, [3]Jamieson Trauma Institute, Royal Brisbane Hospital, Herston, QLD, Australia, [4]Queensland Centre for Perinatal and Infant Mental Health, Children's Health Queensland, Hospital Health Service, Brisbane, QLD, Australia

December 2023, Éd. rév.

Introduction

Posttraumatic stress disorder (PTSD) is one of the more serious and debilitating mental disorders that can occur following trauma. Research indicates that - consistent with older children and adolescents - young children also typically manifest with the traditional three PTSD symptom clusters of re-experiencing the event (e.g., through nightmares, posttraumatic play), avoidance of reminders of the event and physiological hyperarousal (e.g., irritability, sleep disturbance, exaggerated startle).[1] However, research has shown that the Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (DSM-IV- TR)[2] PTSD criteria does not adequately capture the symptom manifestation experienced by infants and preschool children and underestimates the number of children experiencing posttraumatic distress and impairment.[3] Therefore, the fifth edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-5), which was released in 2013, included specific diagnostic criteria for PTSD in children under the age of 6.[4]

Prevalence, course, and consequences of trauma reactions

In community samples, a prevalence rate of 0.5% has been reported in children aged 0-6 years old.[5] In trauma-exposed children, a PTSD prevalence rate of 24.8% has been reported in children under the age of 6.[6] However, the prevalence rate largely varies between studies due to multiple reasons. One of the reasons is that the type of trauma may affect the likelihood that a child develops PTSD. Repeated trauma's – as opposed to single event trauma's – along with interpersonal trauma seem to increase chances of developing PTSD by threefold. The highest rates of PTSD typically follow physical or sexual abuse, i.e., 26 and 60%.[1,3,7] Another reason that makes it challenging to determine the prevalence rate, are the different criteria being used across studies to assess PTSD. Some studies use age-specific PTSD criteria, whereas other

studies have used DSM-IV criteria which has been shown to underestimate PTSD diagnoses in children below 6 years of age.[8] Furthermore, children aged 0-6 years old undergo rapid developmental changes, and some of the behaviors during a specific phase overlap with PTSD symptomatology (e.g., tantrum during the 'terrible two's' or sleep regression at the 4th month of infancy). Most children with PTSD experience comorbid disorders, i.e., 73%-89% of the children with PTSD.[9–11] Depression, separation anxiety disorder (SAD), oppositional defiant disorder (ODD) are often diagnosed in addition to PTSD.[9,10]

Research with children of all ages has shown that untreated PTSD can follow a chronic and debilitating trajectory.[9,12,13] These findings are concerning given that young children's neurophysiological systems, including the stress modulation and emotional regulation systems, are still in the process of rapid development.[14] Additionally, trauma during childhood has been associated with permanent structural[15] and functional[16] brain impairment as well as the onset of psychiatric disorders,[17] health risk behaviours and physical health conditions in adulthood.[18] Therefore, trauma that occurs during early childhood may have even greater ramifications for developmental trajectories than traumas that occur at a later stage of development.

The role of parents

When working with traumatised children it is also important to be aware that the child's trauma and the child's response to the trauma can also be traumatic for parents and can be a source of chronic stress. Results of two recent meta-analyses showed that parental PTSD rates following a child's trauma largely vary, depending on the type of trauma. The first meta-analysis reported an estimated prevalence of 17% and only included children with single-event traumas, such as a traffic accident or burn.[19] The second meta-analysis investigated parental PTSD following a child's medical trauma, and reported a prevalence rate of 30%.[20] Parental PTSD rates seemed to be lowest following a child's injury (12.6%), but increased when the child had to be admitted to the pediatric or neonatal intensive care unit (around 20%). The highest rates for parental PTSD were reported for children that had a transplantation (30%) or a cancer diagnosis (40.7%). In addition to PTSD, parents can experience clinically elevated levels of acute stress, anxiety, depression and stress within the first 6 months of their child's trauma.[21–23] While the majority of parents are likely to be resilient or improve to below clinical levels over time, parental distress during the acute phase has been shown to contribute to the development and maintenance of trauma symptomatology in injured children.[21,23,24] There is evidence that parents with PTSD may have more difficulties in showing sensitive behaviors towards their children's needs, which in

turn results in higher levels of PTSS in children.[25,26] Furthermore, parents with PTSD seem to be less receptive to their child's traumatic symptoms, which may hinder them in providing adequate care.[27] Therefore, it is important to also treat parental PTSD following a child's traumatic event.[28]

It is widely recognised that the quality of the parent-child attachment, parental mental health and parenting behaviours are crucial factors that influence a child's adjustment following trauma.[14,28–30] For young children, the parent-child relationship is particularly important as they lack the coping capacities to regulate strong emotion and are therefore dependent on a sensitive and emotionally available caregiver to assist with affect regulation during times of distress.[14,29] Additionally, young children are particularly reliant on their parents' reactions to determine how to interpret or respond to an event and may therefore model their parents' fear responses and maladaptive coping responses.[31,32] Parents may also directly influence their child's exposure to traumatic reminders (e.g., allowing avoidance of conversations), and thereby impede their child's habituation to the event.[31]

Adverse psychological responses in the parent are likely to impact the development of children's trauma symptoms as well as the quality of the parent-child relationship. It is therefore important to also attend to the needs of parents to reduce their own distress and to support their ability to assist their children. Interventions that target child distress, parent distress and the parent-child relationship are likely to be beneficial in reducing the subsequent development of parent and child posttraumatic stress reactions. Research has shown that parental behaviors characterized by coping assistance, emotional processing assistance, modeling and encouraging seeking social support have been associated with higher resilience in the child after a traumatic event.[28]

Prevention and early intervention

It is clear that early identification and intervention to prevent the development of acute and persistent PTSS after early childhood trauma are of considerable public health significance. There is considerable potential for intervention in settings such as hospitals and early childcare settings to reduce the risk or prevent the onset of traumatic stress reactions through screening and indicated prevention or early intervention programs.[33] Early identification and intervention when symptoms first present, can prevent problems from becoming entrenched or at least minimise the impact of these problems on the child, family, and society. However, the challenge is to be able to differentiate between children who experience acute transient distress and those that are at risk of developing chronic PTSD[13] and other psychopathology so as not to over-burden

scarce mental health resources. It is also important to know whom will benefit from intervention, as some research has shown that early intervention for some children could have detrimental effects as it may intervene with their natural recovery.[34] This may be the case for ongoing traumatic event, such as wars.[34]

In the pediatric trauma literature, a stepped-care model has been introduced in which 1) *universal interventions* are aimed at all children following exposure to a potentially traumatic event, 2) *selective interventions* are targeted towards children experiencing elevated PTSS and/or have identifiable risk factors present and 3) *indicated interventions* are for children presenting with PTSD and additional risk factors for poor long-term outcomes. At the universal level, there are now several excellent evidence-based information provision resources available to support young children, caregivers, early childhood educators, teachers, disaster response teams, mental health clinicians, and other community providers (e.g., The National Child Traumatic Stress Network: http://www.nctsn.org/trauma-types; Healthcare Toolbox: https://www.healthcaretoolbox.org/; Community Trauma Toolkit: https://emergingminds.com.au/resources/toolkits/community-trauma-toolkit/; Birdie's Tree: https://www.childrens.health.qld.gov.au/our-work/birdies-tree-natural-disaster-recovery). There are also a growing number of evidence-based storybooks that have been written to support young children and families who have experienced a range of different potentially traumatic experiences, including natural disasters, pandemics, and medical trauma (e.g., https://www.childrens.health.qld.gov.au/our-work/birdies-tree-natural-disaster-recovery; https://piploproductions.com/).

In the first phase of the stepped-care model, i.e., the *universal level*, screening is recommended as a simple and cost-effective method for identifying children and parents who should continue to be monitored for risk or referred for more comprehensive targeted assessment or treatment. Screening and assessment tools for identifying children at risk for PTSD have been developed and have been used in children under the age of 6 (see for an overview[8,35]). These tools have shown acceptable reliability and validity for preschool aged children. However, for infants (<12 months), no validated screening methods are available which is a significant gap in the field.

Recently, a *selective intervention* was developed and evaluated for young children specifically (1-6 years old) who had been involved in an accidental traumatic injury.[36] The *CARE Trauma Resilience Program* is a brief targeted early intervention (2-4 sessions) for families where a young child (1-5 years) has experienced a traumatic event and experiencing mild to moderate

levels of PTSS and/or anxiety. A multi-site randomised control trial has provided promising preliminary evidence for the efficacy of the CARE intervention was found to be effective in reducing PTSS, functional impairment and behavioral problems, compared to children who received treatment as usual.[36]

Clinically *indicated interventions* that are recommended for treating PTSD in children are Eye Movement Desensitization and Reprocessing (EMDR) and Trauma-focused Cognitive Behavioural Therapy (TF-CBT). Protocols of these treatments have been adjusted for younger children, but the effectiveness of these treatments is mostly studied in older children with just a few studies including children <6 years of age. In younger children (4-10 years of age), two case studies have reported on the effectiveness of EMDR and showed that PTSS reduced in 85% to 100% of the children.[37,38] However, another study, in which one to three EMDR sessions were provided, did not show any improvement in PTSS for children of preschool age.[39] TF-CBT has been studied in preschool aged children (3-6 years of age), and according to a systematic literature review incorporating 11 studies, TF-CBT was effective in reducing PTSS.[40] In addition, Scheeringa and colleagues (2011) have shown that a 12-session TF-CBT with 3-6 year old children exposed to a variety of traumatic events was feasible and effective in reducing established posttraumatic stress symptoms.[41]

Few studies have included an intervention component that also targets parent distress following a child's trauma. Kenardy and colleagues found that psychoeducation provided to parents within 72 hours of their child's accident was effective at reducing parental posttraumatic symptoms at the 6-month follow-up.[42] Melnyk et al have examined the effectiveness of an early intervention program for parents of children (2-7 years) who were admitted to a paediatric intensive care unit.[43] They found that parents in the intervention group had significantly lower stress, depression and PTSD symptoms and their children exhibited fewer internalising and externalising difficulties post discharge.

Implications for Parents, Services and Policy

Recognition and understanding of the impact of trauma during early childhood has grown over the past 15 years. However, a lack of empirical research and significant knowledge gaps of how to assess, diagnose, and treat traumatic stress responses during early childhood remain. Further research is needed to (a) determine the nature, frequency, and trajectories of PTSS and other psychological consequences across different stages (infants, toddlers, and preschoolers), trauma

types and from underrepresented communities, (b) identify risk and protective factors and identify interactions that moderate or mediate PTSS over time, and (c) develop and validate age-appropriate and culturally sensitive psychological screening and assessment tools and interventions across stepped-care models.

Despite the knowledge gaps, implications for clinical practice and policy can be drawn from the current evidence base. Parents, health services, early childhood education settings and policy makers need to be aware that some (young) children are exposed to traumatic events, potentially on a regular basis. This can result in serious psychological, physical, and social consequences and can have short- and long-term implications and costs across the lifespan. Hospitals and early childcare centres are ideal settings to support child recovery following trauma. Investments are needed to support service and workforce development in early childhood mental health across the continuum of care - from universal mental health promotion, including screening and prevention, to intensive and specialized mental health care. However, any screening and intervention programme needs to be linked into a clinical service with the capacity to deliver appropriate, and developmentally sensitive care, when needed. Furthermore, it is crucial to focus on the parents' mental health, as children's recovery from stressful events occurs best in the context of healing relationships. Young children regulate affect within relationships through co-regulation and learn how to interpret and cope with events by watching how their caregiver reacts. It is therefore essential that evidence-based resources and services are available to support parental wellbeing following a child's trauma, alongside services targeting children's wellbeing.

References

1. Scheeringa MS, Zeanah CH, Myers L. & Putnam FW. New findings on alternative criteria for PTSD in preschool children. *Journal of the American Academy of Child and Adolescent Psychiatry* 2003;42(5):561-570.
2. American Psychiatric Association. *Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition.* Washington, DC: American Psychiatric Association; 1994.
3. Scheeringa MS, Zeanah CH, Drell MJ, Larrieu JA. Two approaches to the diagnosis of posttraumatic stress disorder in infancy and early childhood. *Journal of the American Academy of Child and Adolescent Psychiatry* 1995;34(2):191-200.

4. American Psychiatric Association. *Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition*. Washington, DC: American Psychiatric Association; 2013.
5. Vasileva M, Graf RK, Reinelt T, Petermann U, Petermann F. Research review: A meta-analysis of the international prevalence and comorbidity of mental disorders in children between 1 and 7 years. *Journal of Child Psychology and Psychiatry and Allied Disciplines* 2021;62(4):372-381.
6. Woolgar F, Garfield H, Dalgleish T, Meiser-Stedman R. Systematic review and meta-analysis: Prevalence of posttraumatic stress disorder in trauma-exposed preschool-aged children. *Journal of the American Academy of Child and Adolescent Psychiatry* 2022;61(3):366-377.
7. Levendosky AA, Huth-Bocks AC, Semel MA, Shapiro DL. Trauma symptoms in preschool-age children exposed to domestic violence. *Journal of Interpersonal Violence* 2002;17(2):150-164.
8. De Young AC, Landolt MA. PTSD in children below the age of 6 years. Current Psychiatry Reports 2018;20(11):97.
9. De Young AC, Kenardy JA, Cobham VE, Kimble R. Prevalence, comorbidity and course of trauma reactions in young burn-injured children. *Journal of Child Psychology and Psychiatry and Allied Disciplines* 2012;53(1):56-63.
10. Løkkegaard SS, Egebæk SAB, Elklit A. Are trauma and post-traumatic stress disorder connected to psychiatric comorbidity in Danish pre-schoolers? *Journal of Child & Adolescent Traum*a 2017;10(4):353-361.
11. Scheeringa MS. Untangling psychiatric comorbidity in young children who experienced single, repeated, or hurricane Katrina traumatic events. *Child Youth Care Forum* 2015;44(4):475-492.
12. Scheeringa MS, Zeanah CH, Myers L, Putnam FW. Predictive validity in a prospective follow-up of PTSD in preschool children. *Journal of the American Academy of Child and Adolescent Psychiatry* 2005;44(9):899-906.
13. Le Brocque RM, Hendrikz J, Kenardy JA. The course of posttraumatic stress in children: Examination of recovery trajectories following traumatic injury. *Journal of Pediatric Psychology* 2010;35(6):637-645.

14. Carpenter GL, Stacks AM. Developmental effects of exposure to intimate partner violence in early childhood: A review of the literature. *Children and Youth Services Review* 2009;31(8):831-839.

15. Carrion VG, Weems CF, Reiss AL. Stress predicts brain changes in children: a pilot longitudinal study on youth stress, posttraumatic stress disorder, and the hippocampus. *Pediatrics* 2007;119(3):509-516.

16. Perry BD, Pollard RA, Blakley TL, Baker WL, Vigilante D. Childhood trauma, the neurobiology of adaptation, and 'use-dependent' development of the brain: How 'states' become 'traits'. *Infant Mental Health Journal* 1995;16(4):271-291.

17. Green JG, McLaughlin KA, Berglund PA, et al. Childhood adversities and adult psychiatric disorders in the National Comorbidity Survey Replication I: Associations with first onset of DSM-IV disorders. *Archives of General Psychiatry* 2010;67(2):113-123.

18. Felitti VJ, Anda RF, Nordenberg D, et al. Relationship of childhood abuse and household dysfunction to many of the leading causes of death in adults: The Adverse Childhood Experiences (ACE) Study. *American Journal of Preventive Medicine* 1998;14(4):245-258.

19. Wilcoxon LA, Meiser-Stedman R, Burgess A. Post-traumatic stress disorder in parents following their child's single-event trauma: a meta-analysis of prevalence rates and risk factor correlates. *Clinical Child and Family Psychology Review* 2021;24(4):725-743.

20. Burgess A, Wilcoxon L, Rushworth I, Meiser-Stedman R. Meta-analysis found high rates of post-traumatic stress disorder and associated risk factors in parents following paediatric medical events. *Acta Paediatrica* 2021;110(12):3227-3236.

21. Landolt MA, Ystrom E, Sennhauser FH, Gnehm HE, Vollrath ME. The mutual prospective influence of child and parental post-traumatic stress symptoms in pediatric patients. *Journal of Child Psychology and Psychiatry and Allied Disciplines* 2012;53(7):767-774.

22. Hall E, Saxe G, Stoddard F, et al. Posttraumatic stress symptoms in parents of children with acute burns. Journal of Pediatric Psychology. 2006;31(4):403-412.

23. De Young AC, Hendrikz J, Kenardy JA, Cobham VE, Kimble RM. Prospective evaluation of parent distress following pediatric burns and identification of risk factors for young child and parent posttraumatic stress disorder. *Journal of Child and Adolescent Psychopharmacology* 2014;24(1):9-17.

24. Le Brocque RM, Hendrikz J, Kenardy JA. Parental response to child injury: Examination of parental posttraumatic stress symptom trajectories following child accidental injury. *Journal of Pediatric Psychology* 2010;35(6):646-655.

25. Greene CA, Chan G, McCarthy KJ, Wakschlag LS, Briggs-Gowan MJ. Psychological and physical intimate partner violence and young children's mental health: The role of maternal posttraumatic stress symptoms and parenting behaviors. *Child Abuse & Neglect* 2018;77:168-179.

26. Scheeringa MS, Myers L, Putnam FW, Zeanah CH. Maternal factors as moderators or mediators of ptsd symptoms in very young children: a two-year prospective study. *Journal of Family Violence* 2015;30(5):633-642.

27. Stover CS, Hahn H, Berkowitz S, Im JJY. Agreement of parent and child reports of trauma exposure and symptoms in the peritraumatic period. *Psychological Trauma : Theory, Research, Practice and Policy* 2010;2(3):159-168a.

28. Wise AE, Delahanty DL. Parental factors associated with child post-traumatic stress following injury: a consideration of intervention targets. *Frontiers in Psychology* 2017;8:1412.

29. Lieberman AF. Traumatic stress and quality of attachment: Reality and internalization in disorders of infant mental health. *Infant Mental Health Journal* 2004;25(4):336-351.

30. Scheeringa MS, Zeanah CH. A relational perspective on PTSD in early childhood. *Journal of Traumatic Stress* 2001;14(4):799-815.

31. Nugent NR, Ostrowski S, Christopher NC, Delahanty DL. Parental posttraumatic stress symptoms as a moderator of child's acute biological response and subsequent posttraumatic stress symptoms in pediatric injury patients. *Journal of Pediatric Psychology* 2007;32(3):309-318.

32. Humphreys KL, Zeanah CH, Scheeringa MS. Infant development: the first 3 years of life. In: Tasman A, Kay J, Lieberman JA, First MB, Riba MB, eds. *Psychiatry, 4th ed*. John Wiley & Sons, Ltd; 2015:134-158

33. Kazak AE, Kassam-Adams N, Schneider S, Zelikovsky N, Alderfer MA, Rourke M. An integrative model of pediatric medical traumatic stress. *Journal of Pediatric Psychology* 2006;31(4):343-355.

34. Tol WA, Komproe IH, Jordans MJ, et al. Outcomes and moderators of a preventive schoolbased mental health intervention for children affected by war in Sri Lanka: a cluster randomized trial. *World Psychiatry* 2012;11(2):114-122.

35. Moner N, Soubelet A, Barbieri L. & Askenazy F. Assessment of PTSD and posttraumatic symptomatology in very young children: A systematic review. *Journal of Child and Adolescent Psychiatric Nursing* 2022;35(1):7-23.

36. Haag AC, Landolt MA, Kenardy JA, Schiestl CM, Kimble RM, De Young AC. Preventive intervention for trauma reactions in young injured children: results of a multi-site randomised controlled trial. *Journal of Child Psychology and Psychiatry and Allied Disciplines* 2020;61(9):988-997.

37. Lempertz D, Vasileva M, Brandstetter L, Bering R. & Metzner F. Short-term eye movement desensitization and reprocessing (EMDR) therapy to treat children with posttraumatic stress symptoms after single trauma: A case series. *Clinical Child Psychology and Psychiatry* 2023;28(2):450-464.

38. Olivier E, de Roos C, Bexkens A. Eye movement desensitization and reprocessing in young children (ages 4–8) with posttraumatic stress disorder: a multiple-baseline evaluation. *Child Psychiatry and Human Development* 2022;53(6):1391-1404.

39. Hensel T. EMDR with children and adolescents after single-incident trauma an intervention study. *Journal of EMDR Practice and Research* 2009;3(1):2-9.

40. McGuire A, Steele RG. & Singh MN. Systematic review on the application of trauma-focused cognitive behavioral therapy (tf-cbt) for preschool-aged children. *Clinical Child and Family Psychology Review* 2021;24(1):20-37.

41. Scheeringa MS, Weems CF, Cohen JA, Amaya-Jackson L, Guthrie D. Trauma-focused cognitive-behavioral therapy for posttraumatic stress disorder in three-through six year-old children: A randomized clinical trial. *Journal of Child Psychology and Psychiatry and Allied Disciplines* 2011;52(8):853–860.

42. Kenardy J, Thompson K, Le Brocque R, Olsson K. Information-provision intervention for children and their parents following pediatric accidental injury. *European Child & Adolescent Psychiatry* 2008;17(5):316-325.

43. Melnyk BM, Alpert-Gillis L, Feinstein NF, et al. Creating opportunities for parent empowerment: program effects on the mental health/coping outcomes of critically ill young

children and their mothers. *Pediatrics* 2004;113(6):e597-e607.

Parent-Child Relationships in Early Childhood and Development of Anxiety & Depression

Gemma Sicouri, PhD, Jennifer L. Hudson, PhD

Black Dog Institute & School of Psychology, University of New South Wales, Australia

December 2023, Éd. rév.

Introduction

Parents play a role in shaping children's emotional wellbeing, particularly in early childhood. Parental reactions to children's emotions, their modelling of affect and expression of emotions are important for children's emotion socialisation, and influence the development of children's emotional regulation capacity and emotional understanding.[1] There is also evidence that parent-child relationships play a specific role in the development of anxiety and depression in young children. This research has focused on parent-child relationship factors that may increase the child's sense of threat and limit opportunities for the child develop a sense of mastery over their environment. Broadly, these are categorised into: (1) parenting behaviours (control, rejection/low warmth); (2) modelling and/or information transfer and (3) insecure attachment.

Subject

The key feature of anxiety disorders is avoidance of feared stimuli. Parenting behaviours that reinforce a children's avoidant behaviours, discourage independence or limit confidence in coping are likely to impact on the maintenance and development of anxiety disorders. For example, parental control (excessive regulation, overprotection, intrusiveness and low autonomy granting) may undermine children's sense of autonomy and safety and reinforce avoidant behaviours, increasing the risk of anxiety.[2-6] Parental rejection (punitiveness, excessive criticism or dismissal) and low warmth (coldness or low support) may also lead children to believe their environment is hostile or threatening, and children are less likely to develop a sense of competence.[6,7] Parental rejection and low warmth also undermines children's self-esteem and can lead to hopelessness and a negative sense of self, which may increase the risk of depression.[6,7]

Parents who model anxious behaviour and/or verbally communicate threat-relevant information to their child may also increase a child's fears and risk of developing anxiety disorders.[2,4] Parents who are anxious or depressed themselves are more likely to exhibit these kinds of behaviours.

Although most research has focused on a top-down parent-effect (i.e., parents transferring risk to their child), it is well-recognised that children's internalising symptoms might also affect parents (i.e., child eliciting parent behaviours).[2,4] Further, the effect of modelling/information transfer and overcontrol may be exacerbated when the child has an inhibited or anxious temperament.[4]

An insecure attachment has also been identified as a risk factor for the development of anxiety and depression.[8] Attachment is defined as the intimate emotional bond that forms between a child and caregiver.[9] An insecure attachment is one in which the child experiences the caregiver as unpredictable or unresponsive or does not experience comfort from the relationship. This can lead children to develop poor emotion regulation skills or a negative sense of self, which are both associated with anxiety and depression.[10-12]

Problems

A significant problem in this area of study is the accurate measurement of parent-child relationships. Early research examining overcontrol and parental rejection/low warmth focused on retrospective reports from adults with anxiety and depression, leading to potentially biased reports.[6] Prospective or contemporaneous questionnaire measures are also subject to response bias.[3,7] To overcome these difficulties, some researchers have used observational methods to assess these behaviours.[12-14] Observational methods, however, are not without problems, as parents may behave differently or more positively when being observed in a research laboratory or at home.

Research Context

Parenting is a valuable research target as it is a potentially modifiable risk factor for the development of anxiety and depression. Despite this, meta-analyses indicate that overall parenting accounts for only 4% of child anxiety[3] and 8% of child depression,[4] which is smaller compared to other risk factors, such as genetic influences.[15] However, there is a large amount of variation in the research literature, and the relationship between parenting and child anxiety and depression varies according to how parental control is operationalised and measured. For example, there are stronger effects between parenting and child anxiety/depression in studies that use observational measures compared to questionnaire measures.[3,4] Further, the majority of studies examining the relation between parenting behaviour and anxiety and depression are cross-sectional in design which limits their ability to test causality. A few longitudinal studies,

and a small number of experimental studies, have been conducted allowing an improved estimate of the causal impact of parenting behaviour on anxiety and depression. Most research focuses on school-aged children but there are a few studies investigating parent-child relationships in younger children.

Key Research Questions

1. What parenting behaviours are associated with anxiety and depression in early childhood?
2. Is there a causal relationship between parenting behaviours and anxiety and depression in early childhood? Is there a bidirectional relationship?
3. Is the impact of parenting behaviours greater for some children over others? In other words, do these parenting behaviours increase the risk of anxiety and depression in all children or only in children already at risk for anxiety (e.g., inhibited children)?

Recent Research Results

A number of studies have shown that parental control is associated with child anxiety disorders. The majority of these studies are cross-sectional, however a few longitudinal studies have emerged showing that parental control (particularly overprotection) in early childhood is associated with later anxiety disorders.[16-18,20] For example, Hudson and Dodd[16] followed a group of inhibited and uninhibited children from the age of 4 years. In this study, children's anxiety at age 9 was predicted by the child's anxiety and inhibition at age 4 but also by maternal anxiety and maternal control. Thus, greater maternal anxiety and maternal over-involvement predicted greater child anxiety. This suggests that the relationship between risk factors for child anxiety is additive (that is, the presence of one risk factor in the face of another risk factor does not affect either's impact). When longer term outcomes were considered, Hudson et al.[17] found evidence for interaction of risks (that is, the presence of one risk factor in the face of another alters its impact). Specifically, inhibited children at age 4 years predicted anxiety symptoms at age 12 years, but *only* for children whose mothers were controlling at 4 years. In these studies, the security of a child's attachment and maternal negativity did not predict later anxiety.

Other longitudinal studies indicate that observed maternal controlling behaviour and negativity predicts preschoolers' anxious symptoms one year later.[18] In contrast, no such prediction is shown when the child is in early adolescence,[19] which suggests that parental responses may have a greater impact on anxiety in early childhood.

Experimental studies have also provided support for a causal effect of parental control on child anxiety. In a study of non-clinical mother-child dyads (child at age 4-5 years), mothers were trained to behave in controlling ways while helping their child prepare to give a presentation. Children showed more anxiety when their mothers behaved with more control, although this relationship was only evident in children with higher trait anxiety.[20]

There is also increasing evidence of a bidirectional relationship between child anxiety and parental control. For example, one study demonstrated reciprocal effects between maternal control and child anxiety based on maternal report across a one-year period in preschoolers. In contrast, paternal reports showed that control behaviours predicted later child anxiety.[18]

There have been a few studies demonstrating that parent anxiety can be transmitted through modelling and verbal transmission of threat and avoidant information.[21,22] In one experimental study, young infants showed increased fearfulness and avoidance of a stranger following exposure to a socially-anxious mother-stranger interaction, and the effect was stronger for children with an inhibited temperament.[21] Naturalistic longitudinal studies have demonstrated similar findings, with higher maternal and paternal expressed social anxiety being associated with later infant avoidance of a stranger.[23,24] Research has also shown that early parental anxious modelling (at child age 12 months) predicted anxious responding in children at 30 months, although parent behaviour measured concurrently did not.[23] Again, this suggests that there may be sensitive periods for the impact of parent modelling.

Empirical evidence has demonstrated a relationship between insecure attachment to caregivers and higher anxiety and depressive symptoms in children, but results are mixed and inconsistent.[12,25,26] This is partly due to methodological variability across studies. One meta-analysis measured attachment in infancy through observational studies only and found that a child with an insecure attachment is twice as likely to have internalising problems as a child with secure attachment,[12] although the causal relationship is unknown. There is some evidence that there are differences between maternal and paternal influence on child outcomes;[26,27] with father-child attachment predicting clinical levels of anxiety whereas mother-child attachment did not.[26]

Research Gaps

The majority of research remains questionnaire-based and cross-sectional. Although there are studies that have used longitudinal or experimental designs, more research is needed to assess

the causal role of parental behaviours in the development of anxiety and depression. At the same time, far more sophisticated work is needed to understand the complex interplay between parent behaviours and the age of the child, informant source and parent gender. Indeed, research to date has focused mostly on mothers, although recent research investigating the unique role of fathers in the development of anxiety and depression in early childhood has emerged.[26,27] Most of the research has also been conducted in predominantly Western populations, and research on the relationship between parenting and emotional health across diverse cultures is needed. Another difficulty of research examining the role of parents in child anxiety and depression is to examine the impact of parental behaviours independent of the influence of shared genes.

Conclusions

Together, evidence shows that parent-child relationships have a small but significant impact on the development of anxiety and depression in young children. The most consistent evidence for this relationship has come from research examining maternal control and child anxiety. While higher parental control may be a normative response to a child's anxious or inhibited behaviour, these behaviours may lead to an increased risk of a child developing anxiety and depression in some circumstances. Further research is needed to better understand the intricacies of this relationship and, particularly, its reciprocal nature, as well as the interplay with other factors.

Evidence also supports the idea that parents can have an impact on their child through modelling anxiety and verbal transmission of threat information. Research which shows the impact of this modelling on anxiety development, over and above shared genes and across developmental stages, is needed.
The security of a child's attachment with their parent has been linked to later psychopathology. Given the overlap with other constructs (such as the child's temperament, other parenting behaviours) and wide variation in methods across studies, the degree to which attachment independently predicts child outcomes is uncertain.

Implications for Parents, Services and Policy

Understanding which parenting behaviours increase a child's risk for later anxiety and depression has direct implications for early intervention. The findings to date suggest that reducing the degree of parental control and reducing anxious modelling/verbal transmission of threat and avoidance may be important for preventing later internalising problems. Parenting

strategies that encourage children's non-avoidant behaviours and increase opportunities to develop confidence in coping may particularly beneficial. Evidence indicates that these parenting strategies should be targeted at parents of at-risk children, namely children who are behaviourally inhibited. For a child who is uninhibited or displays low levels of anxious behaviours, the increased risk conferred by parenting behaviours may be inconsequential.

References

1. Morris AS, Silk JS, Steinberg L, Myers SS, Robinson LR. The role of the family context in the development of emotion regulation. *Social Development (Oxford, England).* 2007;16(2):361-388.
2. Rapee R. Family Factors in the Development and Management of Anxiety Disorders. *Clinical Child and Family Psychology Review*. 2012;15(1):69-80.
3. McLeod BD, Wood JJ, Weisz JR. Examining the association between parenting and childhood anxiety: A meta-analysis. *Clinical Psychology Review.* 2007;27(2):155-172.
4. Murray L, Creswell C, Cooper PJ. The development of anxiety disorders in childhood: an integrative review. *Psychological Medicine*. 2009;39(9):1413-1423.
5. Wei C, Kendall PC. Parental involvement: Contribution to childhood anxiety and its treatment. *Clinical Child and Family Psychology Review*. 2014;17(4):319-339.
6. Rapee RM. Potential role of childrearing practices in the development of anxiety and depression. *Clinical Psychology Review*. 1997;17(1):47-67.
7. 7.McLeod BD, Weisz JR, Wood JJ. Examining the association between parenting and childhood depression: A meta-analysis. *Clinical Psychology Review*. 2007;27(8):986-1003.
8. Warren SL, Huston L, Egeland B, Sroufe L. Child and adolescent anxiety disorders and early attachment. *Journal of the American Academy of Child and Adolescent Psychiatry*. 1997;36(5):637-644.
9. Ainsworth MDS, Blehar MC, Waters E, Wall S. Patterns of attachment: A psychological study of the strange situation. Hillsdale, NJ: Erlbaum; 1978.
10. Shamir-Essakow G, Ungerer JA, Rapee RM. Attachment, Behavioral Inhibition, and Anxiety in Preschool Children. *Journal of Abnormal Child Psychology.* 2005;33(2):131-143.

11. Bogels SM, Brechman-Toussaint ML. Family issues in child anxiety: Attachment, family functioning, parental rearing and beliefs. *Clinical Psychology Review*. 2006;26(7):834-856.
12. Madigan S, Atkinson L, Laurin K, Benoit D. Attachment and Internalizing Behavior in Early Childhood. *Developmental Psychology*. 2013;49(4):672-689.
13. Hudson JL, Rapee RM. Parent-child interactions and anxiety disorders: An observational study. *Behaviour Research and Therapy*. 2001;39(12):1411-1427.
14. Buss KA, Zhou AM, Trainer A. Bidirectional effects of toddler temperament and maternal overprotection on maternal and child anxiety symptoms across preschool. *Depression and Anxiety*. 2021;38(12):1201-1210.
15. Beesdo K, Knappe S, Pine DS. Anxiety and anxiety disorders in children and adolescents: Developmental issues and implications for DSM-V. Psychiatric Clinics of North America. 2009;32(3):483-524.
16. Hudson JL, Dodd HF. Informing early intervention: Preschool predictors of anxiety disorders in middle childhood. *PLoS ONE*. 2012;7(8):e42359.
17. Hudson JL, Murayama K, Meteyard L, Morris T, Dodd HF. Early childhood predictors of anxiety in early adolescence. *Journal of Abnormal Child Psychology*. 2019;47(7):1121-1133.
18. Edwards SL, Rapee RM, Kennedy S. Prediction of anxiety symptoms in preschool-aged children: Examination of maternal and paternal perspectives. *Journal of Child Psychology and Psychiatry*. 2010;51(3):313-321.
19. Johnco CJ, Magson NR, Fardouly J, Oar EL, Forbes MK, Richardson C, et al. The role of parenting behaviors in the bidirectional and intergenerational transmission of depression and anxiety between parents and early adolescent youth. *Depression and Anxiety*. 2021;38(12):1256-1266.
20. Thirlwall K, Creswell C. The impact of maternal control on children's anxious cognitions, behaviours and affect: An experimental study. *Behaviour Research and Therapy*. 2010;48(10):1041-1046.
21. de Rosnay M, Cooper PJ, Tsigaras N, Murray L. Transmission of social anxiety from mother to infant: An experimental study using a social referencing paradigm. *Behaviour Research and Therapy*. 2006;44(8):1165-1175.

22. Gerull FC, Rapee RM. Mother knows best: The effects of maternal modeling on the acquisition of fear and avoidance behaviour in toddlers. *Behaviour Research and Therapy*. 2002;40(3):279-287.

23. Aktar E, Majdandžić M, de Vente W, Bögels SM. Parental social anxiety disorder prospectively predicts toddlers' fear/avoidance in a social referencing paradigm. *Journal of Child Psychology and Psychiatry, and Allied Disciplines.* 2014;55(1):77-87.

24. Murray L, de Rosnay M, Pearson J, Sack C, Schofield E, Royal-Lawson M, et al. Intergenerational transmission of social anxiety: The role of social referencing processes in infancy. *Child Development.* 2008;79(4):1049-1064.

25. Colonnesi C, Draijer EM, Stams GJ, Van der Bruggen CO, Bogels SM, Noom MJ. The relation between insecure attachment and child anxiety: A meta-analytic review. *Journal of Clinical Child and Adolescent Psychology*. 2011;40(4):630-645.

26. Breinholst S, Tolstrup M, Esbjorn BH. The direct and indirect effect of attachment insecurity and negative parental behavior on anxiety in clinically anxious children: It's down to dad. *Child and Adolescent Mental Health*. 2019;24(1):44-50.

27. Van der Bruggen CO, Stams GJJ, Bogels SM. Research review: The relation between child and parent anxiety and parental control: A meta-analytic review. *Journal of Child Psychology and Psychiatry, and Allied Disciplines*. 2008;49:1257-1269.

Temperament in Early Childhood and the Development of Anxiety and Depression

Nathan A. Fox, PhD, Tahl I. Frenkel, MA

University of Maryland, USA

March 2013

Introduction

Anxiety disorders, in general, and Social Anxiety Disorder (SAD) in particular, produce considerable acute suffering and increase the risk for long-term adverse outcomes. Most adult anxiety disorders begin in childhood or adolescence,[1] with exceedingly common rates between 5% and 10%; and rates of SAD varying from 1.6% to 8.5%.[2-4] In prospective research, the temperamental trait of behavioural inhibition emerges as the best known predictor of risk for later anxiety.[5,6]

The topic of this chapter is to briefly examine relations between this temperament and the emergence of anxiety disorders. We will examine the research on two cognitive processes, attention and executive processes, which contribute to the onset of anxiety disorders amongst behaviourally inhibited children. Finally, in line with recent evidence suggesting that behavioural inhibition may not only represent a specific predisposition to anxiety but rather a more general risk factor for internalizing disorders,[7] we will review the existing (yet limited) literature linking early temperament and later development of depression.

Subject

Behavioural inhibition is a temperament that can be identified in infancy and early childhood. Infants with this temperament display heightened distress and motor reactivity to novel stimuli. As toddlers and young children they avoid social encounters and tend to withdraw from unfamiliar social situations making them less assertive[5,6] and prone to peer rejection,[8,9] with its associated negative self-perceptions.[10] As such, inhibited children have fewer friends,[11] and report greater anxiety and loneliness.[12]

Research on risk for anxiety focuses on early temperament, particularly behavioural inhibition.[10, 13,14] For example, Schwartz et al.[6] found that 61% of 13 year olds, identified as behaviourally

inhibited at age two, demonstrated clear signs of anxiety during social interactions, compared to only 27% of those who were not inhibited. Similarly, Chronis-Tuscano et al.[15] reported four-fold increased odds of a lifetime diagnosis of social anxiety disorder among adolescents with consistently high levels of behavioural inhibition from ages 1 to 7. Data from both studies suggest that early temperament constrains, but does not rigidly determine, outcome. Only about half of inhibited children manifest risk, and anxiety tends to wax and wane over time.[16]

We contend that childhood temperament shapes the manner in which individuals perceive their surroundings, which influences their social interactions in a reciprocal manner and eventual social and mental health outcomes.[17] This dynamic is particularly evident in early adolescence during which the emergence of the peer group as a more salient influence on development coincides with sharp increases in psychopathology,[16] particularly SAD.[6,15,18] Temperament also shapes vital cognitive processes, such as attention and certain executive processes which provide the foundation from which children perceive and respond to social cues in the environment.

Problems

Questions remain concerning the functional and structural relations between temperament and anxiety.[19] Several reviews[10,17,20,21] have noted a variety of behavioural and physiological similarities as well as distinctions between inhibited temperament groups and anxious individuals. Conceptualized as separate constructs, temperament can either place a child at risk for developing anxiety or influence the stability or severity of anxiety disorders once they have emerged.[10] Alternately, these terms may simply refer to different aspects of the same underlying construct with distinctions between them simply imposed from the field.[21]

Research Context

Literature suggests that perturbations in *both* "*bottom up*" attention mechanisms and "*top down*" executive control processes may play a central role in the etiology and maintenance of anxiety.[22] These perturbations extend to both emotionally charged and affectively neutral stimuli, reflecting both preferential treatment of specific categories of stimuli (i.e., bias to threat cues) and heightened vigilance of one's own performance and behaviour (i.e., cognitive monitoring).

Anxious children[23-25] and adults[26,27] show attention biases to threat stimuli. Prior work has found[28,29] that clinically anxious adolescents display perturbations in the *amygdala* and ventrolateral

prefrontal cortex (vlPFC) responses to threat while completing an attention bias task. As such, biases to threat represent early, automatic "bottom up" attention mechanisms that shape cognition and behaviour. Research also implicates a distributed network within the prefrontal cortex through which attention is deployed to closely monitor performance, incorporating feedback, as individuals then call on more specialized cognitive control mechanisms to modify subsequent behaviour.[30-32] Anxiety related perturbations in this pattern are evident in both children[33] and adults.[34] Imaging studies have implicated the *anterior cingulate cortex (ACC)* in this process, as it appears to be hyperactive in anxious individuals during tasks requiring cognitive or "top down" control.[35]

Key Research Questions

Amongst typically developing, Caucasian children in the United States, around 15-20% manifest the temperament of behavioural inhibition in early childhood. Longitudinal studies have found that around half of these behaviourally inhibited children go on to develop anxiety disorders as adolescents or young adults. A key research question from a perspective of early intervention is to identify what factors contribute to these different trajectories over time. That is, what factors (either within the caregiving environment or within the child) either protect or enhance risk for anxiety.

Recent Research Results

Attention bias to threat

Results from recent studies suggest that behavioural inhibition is marked by perturbations in attention control.[36,37] Two recent longitudinal studies[18,38] have examined the link between childhood behavioural inhibition, attention bias to threat and later emergence of social withdrawal. Pérez-Edgar et al.[18] found that adolescents who were behaviourally inhibited as young children showed heightened attention bias to threat. In addition, attention bias to threat moderated the relation between childhood behavioural inhibition and adolescent social withdrawal. In a separate study, Pérez-Edgar et al.[38] found that behavioural inhibition in toddlerhood predicted high levels of social withdrawal in early childhood. Again, this relation was moderated by attention bias, such that this behavioural inhibition-social withdrawal association was only evident for children who displayed an attention bias toward threat. These data provide support for viewing attention bias to threat as a significant moderator of

behavioural inhibition and the later emergence of clinical anxiety.

Executive processes: Inhibitory control and cognitive monitoring

Inhibitory control describes the ability to inhibit and override dominant responses and behaviours in favor of more appropriate or subdominant responses and behaviours.[39] Cognitive monitoring reflects the ability to attend to one's own performance, notice errors and correct behaviour as a result of feedback. These executive processes are thought to play a role in the regulation of negative emotions and temperamental reactivity.[40-42]

A number of studies have found that inhibitory control moderated the temperament of behavioural inhibition to predict heightened anxious behaviours. Behaviourally inhibited children with high levels of inhibitory control were found to be more socially anxious,[43] less socially competent, and more socially withdrawn[44] than behaviourally inhibited children with low levels of inhibitory control. Similarly, White et al.[45] found that high levels of inhibitory control increased the risk for anxiety disorders amongst high behaviourally inhibited children.

Parallel work has found enhanced cognitive monitoring to be associated with heightened anxiety both in adults[46,47] and children.[48] McDermott et al.,[49] found that cognitive monitoring was higher in adolescents with high childhood behavioural inhibition as compared to adolescents low on childhood behavioural inhibition. Moreover, heightened monitoring moderated relations between early behavioural inhibition and later anxiety disorders.[49] Thus, like attention bias to threat, executive processes of inhibitory control and cognitive monitoring moderate child temperament towards heightened risk for anxiety.

Research Gaps

Developmental change occurs as a result of reciprocal interactions between the intrinsic characteristics of a child and his environmental context, making the child both the producer and product of the environment.[50] Behavioural inhibition may initiate a child in one of a number of directions, and the targeted outcome can result from a host of predisposing pathways.[10] Research must therefore account for a number of potential moderating factors that can come into play at various points throughout development. There is limited research examining the discontinuous nature of behavioural inhibition and possible intervening protective factors that may contribute to discontinuity in behavioural inhibition trajectories and subsequent prevention of psychopathology. Discontinuity of these patterns provides an important opportunity for the identification of factors which may potentially be applied in preventive interventions.

Additionally, the link between behavioural inhibition and depression has received less empirical attention. In considering the relations between behavioural inhibition and depression, it is important to note that individuals suffering from anxiety disorders are at an increased risk for developing depression in comparison to non-anxious individuals,[51] and evidence suggests that in many instances the presence of an anxiety disorder precedes the development of major depression.[52] Given such temporal relations between anxiety and depression, it is important to consider that associations between behavioural inhibition and depression may be largely contingent upon the presence of anxiety. In fact, one study found that social anxiety fully mediated the relation between behavioural inhibition and depression.[53] Similarly, other studies,[54] revealing associations between behavioural inhibition and anxiety and depression employed structural equations modeling which found that a pathway in which behavioural inhibition results in anxiety, which in turn leads to depression, provided the best fit for the data.

Additional studies investigated the specificity of the social versus nonsocial components of self-reported behavioural inhibition during childhood and their relation with young adults' current symptoms of anhedonic depression, social anxiety and anxious arousal. Findings were mixed with some studies revealing that nonsocial behavioural inhibition (''fearfulness''), but not social behavioural inhibition, increased risk for future depression[55] and other studies revealing that symptoms of depression were more strongly related to social rather than nonsocial behavioural inhibition in childhood.[56]

Interestingly, Sportel[57] investigated the additive and interacting effects of behavioural inhibition and attentional control on internalizing dimensions in a sample of non-clinical adolescents. Findings revealed stronger associations of behavioural inhibition than of attentional control with anxiety symptoms and stronger associations of attentional control than of behavioural inhibition with depressive symptoms. Furthermore, while behavioural inhibition was associated with both anxiety and depression, attentional control moderated this association thus reducing the impact of high behavioural inhibition on the generation of both internalizing dimensions.

Finally, in considering temperament as a vulnerability factor for depression, it is important to note that in addition to behavioural inhibition several theorists have developed temperament models that link additional temperamental styles, particularly Positive Emotion (PE) and Negative Emotion (NE) to depression.[58] Many cross-sectional studies have reported that youth and adults with depressive symptoms exhibit diminished levels of PE and elevated levels of NE [59,60,61] and the combination of these have been associated with concurrent depressive symptoms in clinical[62,63] and community samples.[61,64,65] Furthermore, longitudinal studies have found that lower levels of PE[60,66,67] and higher level of NE in childhood[68-70] predict the development of depressive

symptoms and disorders. For instance, low PE in preschool-aged children predicted higher levels of depressotypic cognitive styles at age 7 and depressive symptoms at age 10.[71,72]

Conclusions

Behavioural inhibition is a risk factor for the development of internalizing disorders, though research suggests that not all children with this temperament develop a disorder. Current research is focused on describing the complex interplay between temperament and potential moderating factors which may alter temperamental trajectories. Research on endogenous factors suggest that both attention and executive processes are important moderators of behavioural inhibition toward anxiety or resilience from these disorders. While not covered in this review, there is a good deal of work on the role of exogenous factors in moderating the temperament of behavioural inhibition.[16,73]

Implications for Parents, Services and Policy

Identification of young children who are at risk for anxiety disorders and the implementation of prevention efforts to reduce risk are important outcomes of research on behavioural inhibition. Due to the compliant and nondisruptive nature of behaviourally inhibited children, teachers and parents do not necessarily identify these children early in childhood and elementary school. Because only some children with behavioural inhibition go on to develop anxiety disorders it is important to identify both the endogenous and exogenous factors that moderate temperament psychopathology relations. Preliminary research suggests an optimistic picture for preventative strategies and easily accessible education programs for the parents and caregivers of inhibited preschool children.[74] Such programs are aimed at educating the caregivers regarding the nature of temperament and withdrawal and providing techniques through which they may help behavioural inhibition children develop the ability to regulate reactivity to novelty thus promoting the development of social skills and decreasing inhibited and anxious behaviour over time. Finally, innovative approaches including attention and executive process training may effectively reduce anxious withdrawal in this temperamentally at risk population.

References

1. Pine DS, Cohen P, Gurley D, Brook J, Ma Y. The risk for early-adulthood anxiety and depressive disorders in adolescents with anxiety and depressive disorders. *Archives of General Psychiatry*. Jan 1998;55(1):56-64.
2. Essau CA, Conradt J, Petermann F. Frequency and comorbidity of social phobia and social fears in adolescents. *Behavior Research and Therapy*. Sep 1999;37(9):831-843.

3. Fergusson DM, Horwood LJ, Lynskey MT. Prevalence and comorbidity of DSM-III-R diagnoses in a birth cohort of 15 year olds. *Journal of the American Acadamy of Child and Adolescent Psychiatry.* Nov 1993;32(6):1127-1134.
4. McGee R, Feehan M, Williams S, Partridge F, Silva PA, Kelly J. DSM-III disorders in a large sample of adolescents. *Journal of the American Acadamy of Child and Adolescent Psychiatry.* Jul 1990;29(4):611-619.
5. Hayward C, Killen JD, Kraemer HC, Taylor CB. Linking self-reported childhood behavioral inhibition to adolescent social phobia. *Journal of the American Acadamy of Child and Adolescent Psychiatry.* Dec 1998;37(12):1308-1316.
6. Schwartz CE, Snidman N, Kagan J. Adolescent social anxiety as an outcome of inhibited temperament in childhood. *Journal of the American Acadamy of Child and Adolescent Psychiatry.* Aug 1999;38(8):1008-1015.
7. Schofield CA, Coles ME, Gibb BE. Retrospective reports of behavioral inhibition and young adults' current symptoms of social anxiety, depression, and anxious arousal. *Journal of Anxiety Disorders.* Oct 2009;23(7):884-890.
8. Kagan J. Temperamental contributions to affective and behavioral profiles in childhood. In: Hoffman SG, Dibartolo, P.M., ed. *From social anxiety to social phobia: Multiple perspectives.* Needham Heights, MA: Allyn & Bacon; 2001:216-234.
9. Prior M, Smart D, Sanson A, Oberklaid F. Does shy-inhibited temperament in childhood lead to anxiety problems in adolescence? *Journal of the American Acadamy of Child and Adolescent Psychiatry.* Apr 2000;39(4):461-468.
10. Perez-Edgar K, Fox NA. Temperament and anxiety disorders. *Child and Adolescent Psychiatric Clinics of North America.* Oct 2005;14(4):681-706, viii.
11. Garcia C, Kagan J, Resnick JS. Behavioral inhibition in young children. *Child Development.* 1984;55(3):1005-1019.
12. Wichmann C, Coplan R, Daniels T. The social cognitions of socially withdrawn children. *Social Development.* 2004(13):377-392.
13. Biederman J, Hirshfeld-Becker DR, Rosenbaum JF, et al. Further evidence of association between behavioral inhibition and social anxiety in children. *American Journal of Psychiatry.* Oct 2001;158(10):1673-1679.
14. Hirshfeld DR, Rosenbaum JF, Biederman J, et al. Stable behavioral inhibition and its association with anxiety disorder. *Journal of the American Acadamy of Child and Adolescent Psychiatry.* Jan 1992;31(1):103-111.
15. Chronis-Tuscano A, Degnan KA, Pine DS, et al. Stable early maternal report of behavioral inhibition predicts lifetime social anxiety disorder in adolescence. *Journal of the American Acadamy of Child and Adolescent Psychiatry.* Sep 2009;48(9):928-935.
16. Fox NA, Henderson HA, Marshall PJ, Nichols KE, Ghera MM. Behavioral inhibition: linking biology and behavior within a developmental framework. *Annual Review of Psychology.* 2005;56:235-262.
17. Lonigan CJ, Vasey MW, Phillips BM, Hazen RA. Temperament, anxiety, and the processing of threat-relevant stimuli. *Journal of Clinical Child and Adolescent Psychology.* Mar 2004;33(1):8-20.
18. Perez-Edgar K, Bar-Haim Y, McDermott JM, Chronis-Tuscano A, Pine DS, Fox NA. Attention biases to threat and behavioral inhibition in early childhood shape adolescent social withdrawal. *Emotion.* Jun 2010;10(3):349-357.
19. Rapee RM, Coplan RJ. Conceptual Relations Between Anxiety Disorder and Fearful Temperament. *Social Anxiety in Childhood: Bridging Developmental and Clinical Perspectives.* 2010;127:17-31.
20. Degnan KA, Fox NA. Behavioral inhibition and anxiety disorders: multiple levels of a resilience process. *Developmental Psychopathology.* Summer 2007;19(3):729-746.
21. Lahey BB. Commentary: role of temperament in developmental models of psychopathology. *Journal of Clinical Child and Adolescent Psychology.* Mar 2004;33(1):88-93.
22. Bar-Haim Y, Lamy D, Pergamin L, Bakermans-Kranenburg MJ, Van-IJzendoorn MH. Threat-related attentional bias in anxious and nonanxious individuals: a meta-analytic study. *Psychological Bulletin.* Jan 2007;133(1):1-24.

23. Roy AK, Vasa RA, Bruck M, et al. Attention bias toward threat in pediatric anxiety disorders. *Journal of the American Acadamy of Child and Adolescent Psychiatry.* Oct 2008;47(10):1189-1196.

24. Waters AM, Henry J, Mogg K, Bradley BP, Pine DS. Attentional bias towards angry faces in childhood anxiety disorders. *Journal of Behavior Therapy and Experimental Psychiatry.* Jun 2010;41(2):158-164.

25. Waters AM, Mogg K, Bradley BP, Pine DS. Attentional bias for emotional faces in children with generalized anxiety disorder. *Journal of the American Acadamy of Child and Adolescent Psychiatry.* Apr 2008;47(4):435-442.

26. Mathews A, MacLeod C. Selective processing of threat cues in anxiety states. *Behavior Research and Therapy.* 1985;23(5):563-569.

27. Wilson E, MacLeod C. Contrasting two accounts of anxiety-linked attentional bias: selective attention to varying levels of stimulus threat intensity. *Journal of Abnormal Psychology.* May 2003;112(2):212-218.

28. Monk CS, Nelson EE, McClure EB, et al. Ventrolateral prefrontal cortex activation and attentional bias in response to angry faces in adolescents with generalized anxiety disorder. *American Journal of Psychiatry.* Jun 2006;163(6):1091-1097.

29. Monk CS, Telzer EH, Mogg K, et al. Amygdala and ventrolateral prefrontal cortex activation to masked angry faces in children and adolescents with generalized anxiety disorder. *Archives of General Psychiatry.* May 2008;65(5):568-576.

30. Ridderinkhof KR, van den Wildenberg WP, Segalowitz SJ, Carter CS. Neurocognitive mechanisms of cognitive control: the role of prefrontal cortex in action selection, response inhibition, performance monitoring, and reward-based learning. *Brain and Cognition.* Nov 2004;56(2):129-140.

31. Botvinick MM, Braver TS, Barch DM, Carter CS, Cohen JD. Conflict monitoring and cognitive control. *Psychological Review.* Jul 2001;108(3):624-652.

32. Eysenck MW, Derakshan N, Santos R, Calvo MG. Anxiety and cognitive performance: attentional control theory. *Emotion.* May 2007;7(2):336-353.

33. Ladouceur CD, Dahl RE, Birmaher B, Axelson DA, Ryan ND. Increased error-related negativity (ERN) in childhood anxiety disorders: ERP and source localization. *Journal of Child Psychology and Psychiatry.* Oct 2006;47(10):1073-1082.

34. Hajcak G, McDonald N, Simons RF. Anxiety and error-related brain activity. *Biological Psychology.* Oct 2003;64(1-2):77-90.

35. Ursu S, Stenger VA, Shear MK, Jones MR, Carter CS. Overactive action monitoring in obsessive-compulsive disorder: evidence from functional magnetic resonance imaging. *Psychological Science.* Jul 2003;14(4):347-353.

36. Fox NA, Hane AA, Pine DS. Plasticity for affective neurocircuitry - How the environment affects gene expression. *Current Directions in Psychological Science.* Feb 2007;16(1):1-5.

37. Fox NA, Henderson HA, Perez-Edgar K, White L. The Biology of temperament: An integrative approach. In: Nelson C, Luciana M, eds. *The handbool of developmental cognitive neuroscience.* Cambridge, MA: MIT Press; 2008:839-854.

38. Perez-Edgar K, Reeb-Sutherland BC, McDermott JM, et al. Attention biases to threat link behavioral inhibition to social withdrawal over time in very young children. *Journal of Abnormal Child Psychology.* Aug 2011;39(6):885-895.

39. Rothbart MK, Ellis LK, Rueda MR, Posner MI. Developing mechanisms of temperamental effortful control. *J Pers.* Dec 2003;71(6):1113-1143.

40. Derryberry D, Rothbart MK. Reactive and effortful processes in the organization of temperament. *Development and Psychopathology.* Fall 1997;9(4):633-652.

41. Lonigan CJ, Phillips BM. Temperamental basis of anxiety dosorders in children. In: Vasey MW, Dadds M, eds. *The Developmental Psychopathology of anxiety.* New York: Oxfor University Press; ; 2001:60-91.

42. Waters AM, Valvoi JS. Attentional bias for emotional faces in paediatric anxiety disorders: an investigation using the emotional Go/No Go task. *Journal of Behavior Therapy and Experimental Psychiatry.* Jun 2009;40(2):306-316.

43. Thorell L, Bohlin G, Rydell A. Two types of inhibitory control: predictive relations to social functioning. *International Journal of Behavioral Development*. 2004; 28:193–203.

44. Fox NA, Henderson HA. Temperament, emotion, and executive function: Influences on the development of self-regulation. Paper presented at the Annual Meeting of the Cognitive Neuroscience Society. San Francisco, 2000, April.

45. White LK, McDermott JM, Degnan KA, Henderson HA, Fox NA. Behavioral inhibition and anxiety: the moderating roles of inhibitory control and attention shifting. *Journal of Abnormal Child Psychology*. Jul 2011;39(5):735-747.

46. Righi S, Mecacci L, Viggiano MP. Anxiety, cognitive self-evaluation and performance: ERP correlates. *Journal of Anxiety Disorders*. Dec 2009;23(8):1132-1138.

47. Sehlmeyer C, Konrad C, Zwitserlood P, Arolt V, Falkenstein M, Beste C. ERP indices for response inhibition are related to anxiety-related personality traits. *Neuropsychologia*. Jul 2010;48(9):2488-2495.

48. Hum KM, Manassis K, Lewis MD. Neural mechanisms of emotion regulation in childhood anxiety. *Journal of Child Psychology and Psychiatry*. In Press. 2012.

49. McDermott JM, Perez-Edgar K, Henderson HA, Chronis-Tuscano A, Pine DS, Fox NA. A history of childhood behavioral inhibition and enhanced response monitoring in adolescence are linked to clinical anxiety. *Biological Psychiatry*. Mar 1 2009;65(5):445-448.

50. Lerner RM, Hess LE, Nitz KA. Developmental perspective on psychopathology. In: Herson M, Last CG, eds. *Handbook of child and adult psychopathology: a longitudinal perspective*. Elmsford, NY: Pergamon Press; 1991:9-32.

51. Stein MB, Fuetsch M, Muller N, Hofler M, Lieb R, Wittchen HU. Social anxiety disorder and the risk of depression: a prospective community study of adolescents and young adults. *Archives of General Psychiatry*. Mar 2001;58(3):251-256.

52. Brown TA, Campbell LA, Lehman CL, Grisham JR, Mancill RB. Current and lifetime comorbidity of the DSM-IV anxiety and mood disorders in a large clinical sample. *Journal of Abnormal Psychology*. Nov 2001;110(4):585-599.

53. Gladstone GL, Parker GB. Is behavioral inhibition a risk factor for depression? *Journal of Affective Disorders*. Oct 2006;95(1-3):85-94.

54. Muris P, Merckelbach H, Schmidt H, Gadet B, Bogie N. Anxiety and depression as correlates of self-reported behavioural inhibition in normal adolescents. *Behaviour Research and Therapy*. 2001;39(9):1051-1061.

55. Hayward C, Killen JD, Kraemer HC, Taylor CB. Linking self-reported childhood behavioral inhibition to adolescent social phobia. *Journal of the American Academy of Child & Adolescent Psychiatry*. Dec 1998;37(12):1308-1316.

56. Neal JA, Edelmann RJ, Glachan M. Behavioural inhibition and symptoms of anxiety and depression: is there a specific relationship with social phobia? *British Journal of Clinical Psychology*. Nov 2002;41(Pt 4):361-374.

57. Sportel BE, Nauta MH, de Hullu E, de Jong PJ, Hartman CA. Behavioral Inhibition and Attentional Control in Adolescents: Robust Relationships with Anxiety and Depression. *Journal of Child and Family Studies*. Apr 2011;20(2):149-156.

58. Clark LA, Watson D, Mineka S. Temperament, personality, and the mood and anxiety disorders. *Journal of Abnormal Psychology*. Feb 1994;103(1):103-116.

59. Brown TA, Chorpita BF, Barlow DH. Structural relationships among dimensions of the DSM-IV anxiety and mood disorders and dimensions of negative affect, positive affect, and autonomic arousal. *Journal of Abnormal Psychology*. May 1998;107(2):179-192.

60. Caspi A, Moffitt TE, Newman DL, Silva PA. Behavioral observations at age 3 years predict adult psychiatric disorders. Longitudinal evidence from a birth cohort. *Archives of General Psychiatry*. Nov 1996;53(11):1033-1039.

61. Lonigan CJ, Hooe ES, David CF, Kistner JA. Positive and negative affectivity in children: confirmatory factor analysis of a two-factor model and its relation to symptoms of anxiety and depression. *Journal of Consulting and Clinical Psychology*. Jun 1999;67(3):374-386.

62. Joiner TE, Jr., Catanzaro SJ, Laurent J. Tripartite structure of positive and negative affect, depression, and anxiety in child and adolescent psychiatric inpatients. *Journal of Abnormal Psychology*. Aug 1996;105(3):401-409.

63. Lonigan CJ, Carey MP, Finch AJ, Jr. Anxiety and depression in children and adolescents: negative affectivity and the utility of self-reports. *Journal of Consulting and Clinical Psychology*. Oct 1994;62(5):1000-1008.

64. Anthony JL, Lonigan CJ, Hooe ES, Phillips BM. An affect-based, hierarchical model of temperament and its relations with internalizing symptomatology. *Journal of Clinical Child and Adolescent Psychology*. Dec 2002;31(4):480-490.

65. Chorpita BF. The tripartite model and dimensions of anxiety and depression: an examination of structure in a large school sample. *Journal of Abnormal Child Psychology*. Apr 2002;30(2):177-190.

66. Block JH, Gjerde PF. Personality antecedents of depressive tendencies in 18-year-olds: a prospective study. *Journal of Personality and Social Psychology*. May 1991;60(5):726-738.

67. van Os J, Jones P, Lewis G, Wadsworth M, Murray R. Developmental precursors of affective illness in a general population birth cohort. *Archives of General Psychiatry*. Jul 1997;54(7):625-631.

68. Clark LA, Watson D, Mineka S. Temperament, personality, and the mood and anxiety disorders. *J Abnorm Psychol*. Feb 1994;103(1):103-116.

69. Lonigan CJ, Phillips BM, Hooe ES. Relations of positive and negative affectivity to anxiety and depression in children: evidence from a latent variable longitudinal study. *Journal of Consultunf and Clinical Psychology*. Jun 2003;71(3):465-481.

70. Rende RD. Longitudinal relations between temperament traits and behavioral syndromes in middle childhood. *Journal of the American Academy of Child Adolescent Psychiatry*. Mar 1993;32(2):287-290.

71. Dougherty LR, Klein DN, Durbin CE, Hayden EP, Olino TM. Temperamental Positive and Negative Emotionality and Children's Depressive Symptoms: A longitudinal prospective study from age three to age ten. *Journal of Social and Clinical Psychology*. 2010;29(4):462-488.

72. Hayden EP, Klein DN, Durbin CE, Olino TM. Positive emotionality at age 3 predicts cognitive styles in 7-year-old children. *Development and Psychopathology*. Spring 2006;18(2):409-423.

73. Lahat A, Hong M, Fox NA. Behavioural inhibition: is it a risk factor for anxiety? *International Review of Psychiatry*. Jun 2011;23(3):248-257.

74. Rapee RM. The development and modification of temperamental risk for anxiety disorders: prevention of a lifetime of anxiety? *Biological Psychiatry*. Nov 15 2002;52(10):947-957.

Young Children's Peer Relations: Links with Early Developing Anxiety and Depression

[1]Robert J. Coplan, PhD, [2]Laura L. Ooi, PhD

[1]Department of Psychology, Carleton University, Ottawa, Canada, [2]Public Health Agency of Canada, Ottawa, Canada

December 2023, Éd. rév.

Introduction

The peer group represents an important and unique context for the development of a wide range of skills and competencies in early childhood.[1] Simply stated, ‘playing with friends’ helps young children acquire and practice social (e.g., resolving conflicts), cognitive (e.g., perspective-taking), emotional (self-regulation) and communicative skills that provide foundations for their subsequent development. However, for many young children, the peer group also represents the first setting where the earliest signs of internalizing problems (such as anxiety and depression) are manifested. In the peer group, anxious children may experience feelings of fear, worry, uneasiness, and self-consciousness. Symptoms of depression in the early childhood peer group may include anhedonia (inability to experience pleasure), excessive guilt, and changes in appetite and activity levels.[2,3,4] Of note, symptoms of anxiety and depression can often co-occur.[5,6]

Problems

Research exploring links between internalizing problems and peer relations in early childhood typically rely on parent and teacher reports, and less frequently on naturalistic observations. Parents and teachers have the advantage of being able to observe children’s behaviours across a wide range of time and contexts but may also bring biases to their responses.[7] Observations provide a potentially more objective perspective but are typically more limited in their context and are comparatively costly and time consuming.[8] A particular challenge for assessing internalizing problems is their ‘covert’ nature. That is, many of the emotional and cognitive symptoms of anxiety and depression may not be externally evident and young children may have difficulties expressing their inner states.

Research Context

Children's peer relations can be studied at multiple levels.[1] For example, at the level of *peer interactions*, the focus is on children's prosocial (e.g., cooperation, sharing, empathy), antisocial (e.g., aggressive) and asocial (e.g., socially withdrawn) behaviours with peers. *Peer relationships* typically refer to aspects of mutual friendships (e.g., intimacy, conflict), whereas *peer groups* pertain to children's experiences within a wider social circle (e.g., exclusion, victimization).

Key Research Questions

1. Do young children with elevated symptom levels of anxiety and depression behave in characteristic ways with peers? Do peer group behaviours predict the later development of internalizing problems?
2. How do peers behave and respond towards young anxious and depressive children?
3. What is the impact of peer relations on the development of anxiety and depression in childhood? How might peers act as a risk or protective factor for young children prone to internalizing problems?

Recent Research Results

Social behaviours of anxious and depressive young children

Results from a growing number of studies suggest that young children prone to internalizing problems display characteristic socially withdrawn behaviours amongst peers.[8] That is, when faced with opportunities for social interaction, be it at preschool, playgroup, or on the playground, anxious and depressive children tend to keep to themselves, refrain from talking, and rarely initiate social exchanges with other children. As well, both anxious and depressive young children demonstrate deficits in social skills (e.g., making eye contact, initiating conversational requests) that may further impede their abilities to participate in peer activities.[9,10,11]

Although anxious children might be interested in social interaction, this desire to approach others is often inhibited by social reticence. As a result, they tend to spend more time watching other children without joining and hovering on the edge of social groups.[8] Although less studied, there is some evidence to suggest that young depressive children also experience social impairment.[12] For example, children who display greater depressive symptoms are more likely to avoid social interactions.[13] Moreover, symptoms of depression in early childhood are associated with negative peer experiences, including peer rejection, exclusion, and victimization.[14,15,16] There

is also substantial longitudinal evidence linking social withdrawal in childhood with the later development of more significant internalizing problems.[17,18,19] For example, Katz and colleagues[20] followed over 700 children from early childhood to young adulthood and described a pathway linking social withdrawal at age 5 years – to social difficulties with peers at age 15 years – to diagnoses of depression at age 20 years.

Peer responses to anxious and depressive children

Even in early childhood, anxious and depressive children tend to experience negative responses from peers.[21] For example, as mentioned earlier, young children who display symptoms of internalizing problems are more likely to be disliked, excluded, and victimized by peers.[14,15,16] There is also evidence (predominantly with older children) that anxious and depressive children have fewer friends, and that their friendships tend to be of lower quality.[5,22] Furthermore, children (for various reasons) tend to have friends with similar levels of anxious or depressive symptoms,[23,24] which may exacerbate their own social difficulties.[25] Although it has been suggested that symptoms of anxiety and depression can be difficult to detect in childhood,[26] it seems clear that the group behaviours of anxious and depressive children do not go unnoticed by peers. It is likely the behavioural characteristics of anxious and depressive children evoke more negative responses from peers. For instance, social withdrawal and other socially unskilled behaviours (regardless of whether they arise from feelings of anxiety/depression) are strong predictors of concurrent and subsequent peer rejection and victimization.[27,28]

Impact of peer relations on the development of anxiety and depression

Being excluded, rejected, and victimized by peers can have long-term negative consequences for young children.[1] In particular, the experience of peer victimization or having no friends in early childhood can promote the later development of anxiety and depression.[29,30] Unfortunately, not only are anxious and depressive children more prone to experience problematic peer relations, they also appear to be particularly vulnerable to the negative impact of these experiences.[31,32] For example, Gazelle and Ladd[33] found that kindergarten children displaying early signs of anxiety who were also excluded by peers were more likely to remain anxious and develop depressive symptoms through the 4th grade. In contrast, young anxious children who were not excluded were less likely to remain anxious and did not tend to develop signs of depression. However, there is also at least some evidence to suggest that socially withdrawn, anxious and depressive children can also particularly benefit from positive peer relationships.[34,35,36] For example, Laursen

and colleagues[37] reported that having at least one close friend attenuated links between social isolation and the development of internalizing problems in early childhood.

Research Gaps

Despite increased attention towards the early signs of internalizing problems in young children, there remains limited research specifically examining the potentially important role of peers, particularly in relation to depressive symptoms.[38] Indeed, although there has been some movement towards assisting young anxious and depressed children,[39] there remains little research explicitly acknowledging the potentially important role that peers might play in early intervention programs.

Peer difficulties are likely only part of a more complex process linking other behaviours and skills (e.g., conduct problems, executive functioning) to internalizing problems.[40,41] There is also growing evidence suggesting that there may be other factors to consider that may heighten or lower risks for negative outcomes related to peer difficulties and internalizing problems among young children. For example, having lower inhibitory control and fewer perceived positive relationships appears to increase the risk for internalizing problems among those who are victimized at a young age.[42] In contrast, there is some indication that engaging in prosocial behaviours,[43] having friends and supportive parents,[44] and having high emotion regulation[30,45] can buffer (or protect) bullied, victimized, and rejected youth from internalizing problems. Future research is needed to further understand the pathways and processes linking peer relations and internalizing problems among children in order to better inform prevention and intervention efforts. For example, it may be beneficial for intervention programs to simultaneously target internalizing and peer problems,[14] as well as other potentially relevant factors, in order to address at-risk children's needs.

Conclusions

Peers play an important and unique role in children's development. The peer group is also a common setting for young children to display early signs of internalizing problems, such as anxiety and depression. Anxious and depressive young children often experience significant challenges in their social relationships with peers. To begin with, young children prone to such internalizing problems tend to be quiet and withdrawn in the company of peers and may also display poor social skills. Perhaps as a result, young children with internalizing problems are

more frequent targets for peer exclusion and victimization. In and of themselves, such negative peer experiences carry an increased risk for a host of later social, emotional and academic difficulties. Unfortunately, young children prone to internalizing problems also appear to be particularly vulnerable to these negative effects – which often heighten symptoms of anxiety and depression. This can create a negative cycle that serves to exacerbate risk for longer term maladaptive outcomes. However, there is at least some preliminary evidence (particularly among older children) that positive peer relationships (e.g., a close friendship) can help to protect anxious and depressive children from some of the negative consequences of early internalizing difficulties.

Implications

Some potentially important implications can be derived from this review for parents, early childhood educators, teachers, and practitioners. First, we need to continue to raise awareness about the early emergence of anxiety and depression in young children, as symptoms of internalizing problems can often go unnoticed by others. Second, parents, teachers, and others should monitor young children's early social interactions as a potential window into their emotional well-being. For example, a child who frequently displays quiet, reticent and socially withdrawn behaviours when amongst peers may warrant closer attention. Similarly, early evidence of peer group difficulties such as exclusion or victimization should not be allowed to continue unaddressed. In this regard, peer group behaviours can serve as potential 'marker variables' (i.e., early warning signs) of internalizing problems. Finally, appropriate early intervention has been shown to effectively decrease symptoms of internalizing problems in young children.[46,47,48] The peer group may provide an important context for supporting these early intervention approaches. Moreover, building social skills and promoting positive peer relationships may have direct benefits for young anxious and depressive children.

References

1. Rubin KH, Bukowski W, Bowker JC. Children in peer groups. In: Bornstein MH, Leventhal T, eds. *Handbook of child psychology and developmental science: Volume 4, Ecological settings and processes in developmental systems* (7th ed). New York: Wiley-Blackwell; 2015:175-222.

2. Bufferd SJ, Olino TM, Dougherty LR. Quantifying severity of preschool-aged children's internalizing behaviors: A daily diary analysis. *Assessment* 2023;30(1):190-209.

3. Hopkins J, Gouze KR, Lavigne JV, Bryant FB. Multidomain risk factors in early childhood and depression symptoms in 6-year-olds: A longitudinal pathway model. *Developmental Psychopathology* 2020;32(1):57-71.

4. Steinsbekk S, Ranum B, Wichstrøm L. Prevalence and course of anxiety disorders and symptoms from preschool to adolescence: A 6-wave community study. *Journal of Child Psychology and Psychiatry* 2022;63(5):527-534.

5. de Lijster JM, van den Dries, Michiel A., van der Ende J, et al. Developmental trajectories of anxiety and depression symptoms from early to middle childhood: A population-based cohort study in the Netherlands. *Journal of Abnormal Child Psychology* 2019;47(11):1785-1798.

6. Tsotsi S, Goh S, Coplan RJ, et al. Co-occurrence of internalizing difficulties and aggression in early childhood and risk of mental health problems in middle childhood. *International Journal of Behavioral Development* 2023;47(5):384-396.

7. Navarro MC, Orri M, Nagin D, Tremblay RE, Oncioiu S, Ahun, MN, Melchior, M, van der Waerden, J, Galera, C, Cote, SM. Adolescent internalizing symptoms: The importance of multi-informant assessments in childhood. *Journal of Affective Disorders* 2020;266:702-709.

8. Coplan RJ, Ooi LL, Hipson WE. Solitary activities from early childhood to adolescence: Causes, content, and consequences. In: Coplan RJ, Bowker, JC, Nelson LJ, eds. *The handbook of solitude: Psychological perspectives on social Isolation, social withdrawal, and the experience of being alone* (2nd ed). New York: Wiley-Blackwell; 2021:105-116.

9. Coplan RJ, Arbeau KA, Armer M. Don't fret, be supportive! Maternal characteristics linking child shyness to psychosocial and school adjustment in kindergarten. *Journal of Abnormal Child Psychology* 2008;36:359-371.

10. Gal-Szabo DE, Spinrad TL, Eisenberg N, Sulik MJ. The relations of children's emotion knowledge to their observed social play and reticent/uninvolved behavior in preschool: Moderation by effortful control. *Social Development* 2019;28(1):57-73.

11. Vaughn BE, Santos AJ, Monteiro L, Shin N, Daniel JR, Krzysik L, Pinto A. Social engagement and adaptive functioning during early childhood: Identifying and distinguishing among subgroups differing with regard to social engagement. *Developmental Psychology* 2016;52(9):1422-1434.

12. Perren S, Alsaker FD. Depressive symptoms from kindergarten to early school age: Longitudinal associations with social skills deficits and peer victimization. *Child and Adolescent Psychiatry and Mental Health* 2009;3(28):1-10.

13. Coplan RJ, Ooi LL, Xiao B, Rose-Krasnor L. Assessment and implications of social withdrawal in early childhood: A first look at social avoidance. *Social Development* 2018;27(1):125-139.

14. Forbes MK, Fitzpatrick S, Magson NR, Rapee RM. Depression, anxiety, and peer victimization: Bidirectional relationships and associated outcomes transitioning from childhood to adolescence. *Journal of Youth and Adolescence* 2019;48(4):692-702.

15. Hoglund WLG, Chisholm CA. Reciprocating risks of peer problems and aggression for children's internalizing problems. *Developmental Psychology* 2014;50(2):586-599.

16. Solis I, Serna L, Stephen JM, Ciesielski KTR. Early behavioral markers of anxiety and reduced frontal brain alpha may predict high risk for bullying victimization. *Child Psychiatry and Human Development.* 2022.

17. Kopala-Sibley D, Klein DN. Distinguishing types of social withdrawal in children: Internalizing and externalizing outcomes of conflicted shyness versus social disinterest across childhood. *Journal of Research in Personality* 2017;67:27-35.

18. Ladd GW. Peer rejection, aggressive or withdrawn behavior, and psychological maladjustment from ages 5 to 12: An examination of four predictive models. *Child*

Development 2006;77(4):822-846.

19. Zdebik MA, Boivin M, Battaglia M, Tremblay RE, Falissard B, Côté SM. Childhood multi-trajectories of shyness, anxiety and depression: Associations with adolescent internalizing problems. Journal of Applied Developmental Psychology 2019;64:12.

20. Katz SJ, Conway CC, Hammen CL, Brennan PA, Najman JM. Childhood social withdrawal, interpersonal impairment, and young adult depression: A mediate model. *Journal of Abnormal Child Psychology* 2011;39(8):1227-1238.

21. Christina S, Magson NR, Kakar V, Rapee RM. The bidirectional relationships between peer victimization and internalizing problems in school-aged children: An updated systematic review and meta-analysis. *Clinical Psychology Review* 2021;85:19.

22. Parkes A, Sweeting H, Wight D. Early childhood precursors and school age correlates of different internalising problem trajectories among young children. *Journal of Abnormal Child Psychology* 2016;44(7):1333-1346.

23. Poirier CS, Brendgen M, Girard A, Vitaro F, Dionne G, Boivin M. Friendship experiences and anxiety among children: A genetically informed study. *Journal of Clinical Child and Adolescent Psychology* 2016;45(5):655-667.

24. Stone LL, Giletta M, Brendgen M, Otten R, Engels RCME, Janssens JMAM. Friendship similarities in internalizing problems in early childhood. *Early Childhood Research Quarterly* 2013;28(2):210-217.

25. Neal JW, Veenstra R. Network selection and influence effects on children's and adolescents' internalizing behaviors and peer victimization: A systematic review. *Developmental Review* 2021;59:17.

26. Berg-Nielsen TS, Solheim E, Belsky J, Wichstrom L. Preschoolers' psychosocial problems: In the eyes of the beholder? Adding teacher characteristics as determinants of discrepant parent–teacher reports. *Child Psychiatry and Human Development* 2012;3:393-413.

27. Ooi LL, Baldwin D, Coplan RJ, Rose-Krasnor L. Young children's preference for solitary play: Implications for socio-emotional and school adjustment. *British Journal of Developmental Psychology* 2018;36(3):501-507.

28. van der Wilt F, van der Veen C, van Kruistum C, van Oers B. Why do children become rejected by their peers? A review of studies into the relationship between oral communicative competence and sociometric status in childhood. *Educational Psychology Review* 2019;31(3):699-724.

29. Kamper-DeMarco KE, Ostrov JM. Prospective associations between peer victimization and social-psychological adjustment problems in early childhood. *Aggressive Behavior* 2017;43(5):471-482.

30. Memba GV, Ostrov JM. The role of peer victimization in predicting aggression and internalizing problems in early childhood: The moderating effect of emotion regulation and gender. *Early Education and Development* 2021;34(1):53-70.

31. Greco LA, Morris TL. Factors influencing the link between social anxiety and peer acceptance: Contributions of social skills and close friendships during middle childhood. *Behavior Therapy* 2005;36:197-205.

32. Wang C, Williams KE, Shahaeian A, Harrison LJ. Early predictors of escalating internalizing problems across middle childhood. *School Psychology Quarterly* 2018;33(2):200-212.

33. Gazelle H, Ladd GW. Anxious solitude and peer exclusion: A diathesis-stress model of internalizing trajectories in childhood. *Child Development* 2003;74(1):257-278.

34. Erath SA, Flanagan KS, Bierman KL. Early adolescent school adjustment: Associations with friendship and peer victimization. *Social Development* 2008;17(4):853-870.

35. Markovic A, Bowker JC. Friends also matter: Examining friendship adjustment indices as moderators of anxious-withdrawal and trajectories of change in psychological maladjustment. *Developmental Psychology* 2017;53(8):1462-1473.

36. Schrepferman LM, Eby J, Snyder J, Stropes J. Early affiliation and social engagement with peers: Prospective risk and protective factors for childhood depressive behaviors. *Journal of Emotional and Behavioral Disorders* 2006;14(1):50-61.

37. Laursen B, Bukowsko WM, Aunola K, Nurmi J-E. Friendship moderates prospective associations between social isolation and adjustment problems in young children. *Child Development* 2007;78(4):1395-1404.

38. Whalen DJ, Luby JL, Tilman R, Mike A, Barch D, Belden AC. Latent class profiles of depressive symptoms from early to middle childhood: Predictors, outcomes, and gender effects. *Journal of Child Psychology and Psychiatry* 2016;57(7):794-804.

39. Baughman N, Prescott SL, Rooney R. The prevention of anxiety and depression in early childhood. *Frontiers in Psychology* 2020;11:517896.

40. Gooren EM, van Lier PA, Stegge H, Terwogt MM, Koot HM. The development of conduct problems and depressive symptoms in early elementary school children: The role of peer rejection. *Journal of Clinical Child and Adolescent Psychology* 2011;40(2):245-253.

41. Wang Y, Zhou X. Longitudinal relations between executive function and internalizing problems in grade school: The role of peer difficulty and academic performance. *Developmental Psychology* 2019;55(10):2147-2158.

42. Denio EB, Keane SP, Dollar JM, Calkins SD, Shanahan L. Children's peer victimization and internalizing symptoms: The role of inhibitory control and perceived positive peer relationships. *Merrill-Palmer Quarterly* 2020;66(1):24.

43. He J, Koot HM, Buil JM, Lier PAC. Impact of low social preference on the development of depressive and aggressive symptoms: Buffering by children's prosocial behavior. *Journal of Abnormal Child Psychology* 2018;46(7):1497-1507.

44. Healy KL, Sanders MR. Mechanisms through which supportive relationships with parents and peers mitigate victimization, depression and internalizing problems in children bullied by peers. *Child Psychiatry and Human Development* 2018;49(5):800-813.

45. Cooley JL, Blossom JB, Tampke EC, Fite PJ. Emotion regulation attenuates the prospective links from peer victimization to internalizing symptoms during middle childhood. *Journal of Clinical Child and Adolescent Psychology* 2022;51(4):495-504.

46. Chronis-Tuscano A, Novick DR, Danko CM, Smith KA, Wagner NJ, Wang CH, Druskin L, Dougherty LR, Rubin KH. Early intervention for inhibited young children: A randomized controlled trial comparing the Turtle Program and Cool Little Kids. *Journal of Child Psychology and Psychiatry* 2022;63(3):273-281.

47. Fisak B, Penna A, Mian ND, Lamoli L, Margaris A, Dela Cruz, Sonia Ann Marie F. The effectiveness of anxiety interventions for young children: A meta-analytic review. *Journal of Child and Family Studies* 2023;32(8):2546-2557.

48. Silverman WK, Pettit JW. Developmental window of opportunity: Implications of parent-child psychotherapy for early childhood depression treatment. *American Journal of Psychiatry* 2018;175(11):1051-1053.

Treatment of Clinical Anxiety and Depression in Early Childhood

Sam Cartwright-Hatton, D.Phil; Clin.Psy.D.

School of Psychology, University of Sussex, United Kingdom

March 2013

Introduction

Relatively little is known about anxiety and depression in early childhood, and diagnosis and treatment options for both are limited. However, interest in the area is growing.

Subject

There is increasing recognition that young children do experience symptoms of anxiety and depression, and are capable of experiencing these at clinical levels of severity. However, research into these conditions in young children has lagged substantially behind that of older children and adolescents.

Problems and Research context

Despite symptoms of anxiety and depression being common in this age group, we have very few treatment options specifically targeted to young children. Treatment research that has included this age group has often also included much older children and has not reported the results separately for different age groups. Therefore, treatments that, superficially, appear appropriate for younger children, may not be so.

The question of whether we need to treat young children with these symptoms also remains. While in older children there appears to be some moderate degree of continuity of symptoms into adolescence and adulthood,[1,2] we simply do not know whether this is the case for younger children. Although unlikely, it is possible that younger children's symptoms remit with time and that treatment is an unnecessary burden. Similarly, while experiencing early anxiety and depression is associated with difficulties in other areas, such as academic and interpersonal functioning,[3] it is not known whether this is a cause or a consequence of the child's mental health difficulties, nor whether these difficulties remit with successful treatment.

Key Research Questions

1. Should we treat symptoms of anxiety and depression in younger children?
2. How should we treat anxiety and depression in younger children?

Recent Research Results

Although we know that some temperament styles are associated with increased risk of mental health difficulties later on, we know very little about the predictive validity of early symptoms of anxiety and depression. This difficulty is compounded by the fact that, in early life, it can be difficult to distinguish between features of a healthy but inhibited temperament, and symptoms of emotional difficulties or anxiety, and in reality the edges are very blurred. For example, high levels of shyness can be part of the personality of a healthy child, or symptoms of a nascent social anxiety disorder. While we might wish to treat a child with an anxiety disorder, it might be inappropriate to pathologize a quiet temperament. Where early intervention is offered, it needs to be done sensitively.

Cognitive Behaviour Therapy-based approaches

Initially, researchers attempted to "downsize" adult treatments for anxiety and depression, in particular, cognitive behaviour therapy (CBT).[4] CBT for children has focussed on teaching them to recognize and challenge problematic thoughts, and using techniques such as exposure and behavioural activation, which are borrowed and modified, from the adult literature. These studies have tended to report fairly positive results[5,6] with an average of around 50-60% of children recovering from their primary diagnosis. However, these studies have generally included a wide range of ages, and, due to limited sample sizes, have been unable to look specifically at outcomes for younger children. In the case of depression, studies have typically not included children younger than nine years of age. However, there is some evidence from the anxiety literature that when applied sensitively, standard CBT approaches might be effective in children aged as young as six[7,8] and, when adapted further, using a play-based approach, to as young as four.[9]

Parenting-based approaches

A second approach, particularly in the anxiety literature, has been to work with parents of these young clients to enable families to provide a style of parenting that is best suited to their child's

temperament. For example, one parent-based intervention targeted at symptoms of anxiety in preschool children with a behaviourally-inhibited temperament, reduced diagnoses of anxiety disorders in participants.[10] Another parenting-based approach is Parent Child Interaction Therapy (PCIT), a play-based, parent and child therapy informed by behavioural and social learning theories, that has shown some promise in the treatment of anxiety in young children.[11] Similarly, a parent-only, group-based cognitive-behavioural parenting intervention, aimed at providing young anxious children with a warm, calm, consistent parenting environment yielded significant reductions in anxiety diagnoses compared to an untreated group.[12] These parenting-based approaches tend to have been applied to the younger end of the age spectrum.

In practice, both the parenting-based and the cognitive behaviour therapy-based approaches tend to employ elements of the other: Parenting-based approaches usually coach parents in CBT-based exposure techniques, and most CBT interventions involve parents to some extent, teaching them some basic anxiety- or behaviour-management skills. However, despite evidence of high risk of family dysfunction in families of depressed children, few approaches to the treatment of depression that involve the family have been developed for young children.

Medication

Medication for anxiety and depression is generally recommended only as a last resort in young children. Although research has shown some efficacy for medication in depressed children aged as young as 6 years, safety concerns have led some national regulatory authorities to restrict or prohibit the use of SSRIs (selective serotonin reuptake inhibitors) in childhood.[13]

Unlike treatments for adults, and sometimes adolescents, treatments aimed at younger children tend to be quite generic, aiming to treat all types of anxiety or depression, rather than focussing on sub-diagnoses. This is probably quite appropriate, given our limited understanding of the validity of the different diagnostic categories in this age group.

Research Gaps

There is little research in this area, so there are many large gaps. We urgently need to know more about how and when symptoms of anxiety and depression in young children predict future mental health problems, and if so, at what stage we should attempt to intervene. In particular, we need to know when a normal, quiet temperament, which should be nurtured and celebrated, tips over into a disabling condition. If intervening, we need to know which approach works best

for this age group. Input from cognitive developmental psychologists is likely to be beneficial in this endeavour, guiding the therapist towards features of the developmental process that have gone awry, and helping them to develop techniques that are most appropriate for clients at each developmental stage.

All of the promising psychological approaches to treating young children that are described above (with the exception of standard cognitive behaviour therapy) have thus far reported only a single small trial, wherein the intervention was compared to a no-treatment control. Further larger studies, from external research groups, employing placebo, and preferably other active treatment conditions, are needed.

Substantially more research into the treatment of depression in younger children is needed, as there are currently no interventions that have been tested for children younger than 9 years.

Conclusions and Implications

Much research is still needed to understand anxiety and depression in young children. Even when anxious and depressed young children are identified, many do not receive effective treatment. Although we are making some headway in understanding the causes of these conditions, and the contextual factors that influence them, evidence-based treatment options for this younger age group are very limited. Treatment research seems to have lagged behind the basic science, and rather than being based on our new-found understanding of the development of these conditions, has often developed downsized versions of adult treatments, such as cognitive behaviour therapy. While there is some modest evidence for the utility of these approaches in older children and adolescents, the research has not really focussed on young children, and there is considerable room for improvement. For depression in particular, where contextual factors (family breakdown, parental mental health, social and educational factors) have been shown to be critical in the development of the disorder, these have not generally been the focus of the treatments that appear in the research literature.

Although currently not clearly demonstrated, it seems very likely that significant symptoms of anxiety and depression at this age are predictive of future psychological disorders, and of social, academic, occupational and physical wellbeing. Therefore, it is likely that effective identification and treatment strategies that are focussed on early childhood will have substantial benefits not just for the individual, but at an economic and societal level too, and are, therefore, worth

investing in. The most effective approaches are likely to involve parents, clinicians and child care settings working in partnership, in order to provide the most supportive environment for the child.

References

1. Mesman J, Koot HM. Early Preschool Predictors of Preadolescent Internalizing and Externalizing DSM-IV Diagnoses. *Journal of the American Academy of Child & Adolescent Psychiatry.* 2001;40(9):1029–36.
2. Carballo JJ, Baca-Garcia E, Carlos Blanco M, Perez-Rodriguez M, Jimenez Arriero MA, Artes-Rodriguez A, et al. Stability of childhood anxiety disorder diagnoses: a follow-up naturalistic study in psychiatric care. *European Child and Adolescent Psychiatry.* 2010.
3. Van Ameringen M, Mancini C, Farvolden P. The impact of anxiety disorders on educational achievement. *Journal of Anxiety Disorders.* 2003;17(5):561-71.
4. Kendall PC. Treating Anxiety Disorders in Children: Results of a Randomized Clinical Trial. *Journal of Clinical Child Psychology.* 1994;62(1):100-10.
5. Cartwright-Hatton S, Roberts C, Chitsabesan P, Fothergill C, Harrington R. Systematic Review of the Efficacy of Cognitive Behaviour Therapies for Childhood and Adolescent Anxiety Disorders. *British Journal of Clinical Psychology.* 2004;43:421-36.
6. Compton SN, Burns BJ, Egger HL, Robertson E. Review of the evidence for treatment of childhood psychopathology: Internalizing disorders. *Journal of Consulting and Clinical Psychology.* 2002;70(6):1240-66.
7. Silverman WK, Kurtines WM, Ginsburg GS, Weems CF, White Lumpkin P, Hicks Carmichael DH. Treating Anxiety Disorders in Children with Group Cognitive-Behavioral Therapy: A Randomized Clinical Trial. *Journal of Consulting and Clinical Psychology.* 1999;67(6):995-1003.
8. Shortt AL, Barrett PM, Fox TL. Evaluating the FRIENDS Program: A cognitive-behavioral group treatment for anxious children and their parents. *Journal of Clinical Child Psychology.* 2001;30(4):525-35.
9. Hirshfeld-Becker DR, Masek B, Henin A, Blakely LR, Pollock-Wurman RA, McQuade J, et al. Cognitive behavioral therapy for 4- to 7-year-old children with anxiety disorders: A randomized clinical trial. *Journal of Consulting and Clinical Psychology.* 2010;78(4):498-510.
10. Rapee RM, Kennedy S, Ingram M, Edwards S, Sweeney L. Prevention and early intervention of anxiety disorders in inhibited preschool children. *Journal of Consulting & Clinical Psychology.* 2005;73(3):488-97.
11. Coplan RJ, Schneider BH, Matheson A, Graham A. 'Play skills' for shy children: development of a Social Skills Facilitated Play early intervention program for extremely inhibited preschoolers. *Infant and Child Development.* 2010;19(3):223-37.
12. Cartwright-Hatton S, McNally D, Field AP, Rust S, Laskey B, Dixon C, et al. A New Parenting-Based Group Intervention for Young Anxious Children: Results of a Randomized Controlled Trial. *Journal of the American Academy of Child & Adolescent Psychiatry.* 2011;50(3):242-51.e6.
13. Excellence NIfHaC. Depression in children and young people (CG28). London National Institute for Health and Clinical Excellence.: National Institute for Health and Clinical Excellence. 2005.

Early Intervention and Prevention of Anxiety and Depression

Jordana K. Bayer, PhD, Ruth Beatson, PhD

Murdoch Childrens Research Institute, Australia

March 2013

Introduction

The World Health Organisation predicts that by 2030 depression will be second only to HIV/AIDS in international burden of disease.[1] Mental health problems that are first identified in adolescence and adulthood, including debilitating depression, anxiety disorders and drug misuse, can have their origins in pathways that begin much earlier in life with childhood mental health problems.[2,3,4]

Subject

In childhood, mental health problems primarily consist of emotional and behavioural problems. Australia's national youth mental health survey reported that these affect one in every seven children aged 4-17 years.[5] Similar rates are reported internationally.[6,7,8] Emotional problems include anxiety and depression. Characterised by inner emotional distress that may not be obvious to others, these disorders are also known as "internalising" problems.

Problems

Cost-benefit economic studies show that, as a general rule, intervening earlier in the life course can be cheaper and more effective than later treatment.[9] Studies following children in the community over time have highlighted persistence of internalising symptoms, from early- to mid-childhood[10,11] and from childhood into adolescence and adulthood.[12,13]

Research Context

While emotional functioning continues to develop from childhood into adulthood, the early years constitute a potential window of opportunity for early intervention and prevention. Children's internalising problems are in part inherited and in part due to environmental[14] factors. Longitudinal research studies show that the single strongest precursor of internalising problems

in young children is “temperamental inhibition,” manifested as fearfulness and a tendency to withdraw from new situations.[15,16,17,18] Additional known risks for young children’s internalising problems are harsh and/or overprotective parenting interactions, and parents’ own internalising problems.[11,18,19,20,21,22,23]

Key Research Questions

What is the best way to intervene very early in children’s emotional trajectories to prevent anxiety and depression? This article presents current evidence for this question. Preventive intervention in the early childhood years focuses primarily on optimising the child’s environment, with a view to managing or preventing the development of internalising difficulties. Parenting interactions have been shown to be the most important environmental factor to influence a young child’s behaviour. Parental over-involvement/protection (i.e., shielding from natural challenges in life) and/or harsh discipline (i.e., smacking and yelling) predict young children’s internalising symptoms.[19,24] Therefore the main goal of early intervention and prevention programs is to develop parents’ skills to identify and respond to their child’s emotionally distressed behaviours in effective ways.

Recent Research Results

A recent systematic review of evidence-based preventive interventions for internalising problems among young children (ages 0-8 years)[25] identified randomised controlled trials as the ‘gold standard’ methodology to assess program effectiveness. The review highlighted that relatively few preventive interventions specifically attended to internalising problems compared to a large evidence-base that exists for child behaviour (externalising/conduct) problems.

Regarding interventions commencing in infancy, Early Start[26,27] had the best balance of evidence for reducing child internalising problems.[25] Early Start is a individual home visiting program in New Zealand that targets at-risk and stressed mothers over two to three years. Services in primary care screened all families for risk, and then coordinated weekly home visits by family support workers given five weeks training. One randomised trial evaluation with a three-year follow up found this intervention improved child internalising problems, parenting interactions (including abuse) and preschool attendance.

Regarding interventions commencing at preschool age, two programs had the best balance of evidence for reducing internalising problems.[25] In Canada, a brief (three month) psycho-

educational group-based program tested in a controlled trial with parents of children exhibiting behavioural problems was found to also reduce child anxiety. However, the wait-list control design of this trial means that program effectiveness beyond a few weeks is unknown. In Australia, Cool Little Kids is a brief (three month) program targeting parents with temperamentally-inhibited preschool-age children.[28,29,30] Two randomised trial evaluations including six month and three year follow up showed the program effectively prevented child internalising disorders.

In the Cool Little Kids trials, parents of temperamentally-inhibited preschool age children were invited to participate in fortnightly 1.5 hour parenting groups delivered by a clinical psychologist. Targeting child inhibition and overprotective parenting, this program aims to build preschool children's resilience to situational fears and distressing worries. It teaches parents strategies to modify their preschool child's fear and distress, as well as their own (if relevant). The first trial demonstrated that intervention children developed significantly fewer anxiety disorders than controls by age five years (50% vs. 64%), with even larger effects by age seven years (40% vs. 69%). The second trial targeted parents with anxiety disorders and again found the program significantly impacted inhibited preschool children's anxiety disorders (53% intervention vs. 93% controls). Cool Little Kids is thereby the first (and only, thus far) effective early childhood prevention program for internalising disorders.

Research Gaps

Very few effective interventions exist for young children's internalising problems. With a focus on anxiety, Cool Little Kids is at the cutting edge of early intervention research in the field. Long-term effectiveness data (more than 5 years) need to be collected for relatively brief prevention programs such as Cool Little Kids, which requires sufficient research funding. Another challenge is to assess the effectiveness of the program when delivered across large population representative samples.[31] The potential to systematically screen "at risk" children (temperamentally-inhibited) via a universal preschool service platform and deliver this intervention is currently being investigated in a population-level randomised trial. Further, few studies have reported economic evaluations for early intervention programs for children's mental health.[7,25,32] Such evaluations could include implementation service costs (training, program materials, provider salaries), costs to families (time off work, transport costs), and later health/welfare costs saved from implementing an early intervention.

A very new area for research is identifying depression at preschool age and designing innovative early intervention programs. While the existence of depressive disorders as early as preschool age is gaining recognition,[33,34] a recent review of prevention programs for child depression did not include such young children.[35] Very recently the first pilot work has been conducted on Parent-Child Interaction Therapy as a potential early intervention for preschool children's depression.[33] An absence of treatment programs for young children's depression, together with increasing rates of antidepressant medications being prescribed to children with unknown efficacy, highlight the urgent need to develop and evaluate psychotherapeutic interventions.[33]

Conclusions

Since the 1990s, recognition has grown that young children can experience internalising problems (anxiety and depression), with debilitating effects when they persist over time. Key known risks for young children's internalising problems include both inherited and environmental components (i.e., child temperamental inhibition, parental anxiety/depression, overprotective and/or harsh parenting interactions). An evidence base of preventive early intervention programs for young children's anxiety and depression is starting to develop. The current volume of research on preventive intervention for young children's internalising problems remains small, in comparison to 30 years of research on early intervention for behaviour (conduct) problems. Further research is urgently needed on early prevention for both anxiety and (especially) depression. For anxiety, to date the Cool Little Kids parenting program has the best evidence supporting its efficacy. Advantages of this program include its brevity, targeted approach and evidence that it prevents later anxiety disorders. A population level randomised trial of Cool Little Kids is currently underway in Australia.[31] The existence of depression in preschool age children has only recently been recognised, and the development of innovative early intervention is urgently required.[33]

Implications

Current knowledge of early intervention and prevention for internalising problems has implications for parents, services and policy. Parents can be reassured that effective early intervention for young anxious children exists. Health and education services could plan staff development to implement only early intervention programs with a sound evidence-base. Policy makers could prioritise funding to a) disseminate evidence-based programs and b) conduct more quality early intervention research for young children's anxiety and depression. To disseminate

preventive interventions, Geisen and colleagues[36] note the following important principles:

- Programs should have staff that are properly trained and adhere to program content.
- Intervention “dosage” should be maximised by providing out-of-hours sessions for working parents and on-site childcare.
- It is essential that a professional consultant experienced with the program works closely with new providers, to ensure that components essential for effectiveness are maintained while minimal aspects are tailored to local needs.
- The ability to reduce children’s anxiety and depression problems early in life could narrow cumulative disparities in mental health and disadvantage later in life.

References

1. Mathers, C.D., & Loncar, D. Projections of global mortality and burden of disease from 2002 to 2030, *PLoS Med* 2006; 3(11): e44.
2. Jokela M, Ferrie J, & Kivimaki M. Childhood problem behaviours and death by midlife: the British National Child Development Study. *J Am Acad Child Adolesc Psychiatry* 2009; 48(1): 19-24.
3. Kessler RC, Amminger GP, Aguilar-Gaxiola S, Alonso J, Lee S, Ustun TB. Age of onset of mental disorders: a review of recent literature. *Curr Opin Psychiatry* 2007; 20: 359-364.
4. Mrazek PJ & Haggerty RJ. *Reducing the risk for mental disorders*. Washington: National Academy Press; 1994.
5. Sawyer MG, Arney FM, Baghurst PA, Clark JJ, Graetz BW, Kosky RJ, Nurcombe B, Patton GC, Prior MR, Raphael BR, Rey JM, Whaites LC, Zubrick SR. The mental health of young people in Australia: key findings from the child and adolescent component of the national survey of mental health and well-being. *Aust NZ J Psychiat* 2011; 35: 806–814.
6. Rescorla L, Achenbach T, Ivanova MY, Dumenci L, Almqvist F, Bilenberg N, et al. Behavioural and emotional problems reported by parents of children ages 6 to 16 in 31 societies. *Journal of Emotional and Behavioral Disorders* 2007; 15(3): 130-142.
7. Kieling C, Baker-Henningham H, Belfer M, Conti G, Ertem I, Omigbodun O, Rohde LA, Srinath S, Ulkuer N, Rahman A. Child and adolescent mental health worldwide: evidence for action. *The Lancet* 2011; 378(9801): 1515-1525.
8. Verhulst FC, & Koot HM. *The Epidemiology of Child and Adolescent Psychopathology.* London: Oxford University Press; 1995.
9. Heckman J. *Invest in the very young. Chicago: Ounce of Prevention Fund and the University of Chicago Harris School of Public Policy Analysis*; 2000.
10. Bayer JK, Sanson AV, & Hemphill SA. Early childhood aetiology of internalising difficulties: a longitudinal community study. *Int J Ment Health Promotion* 2009; 11(1): 22-32.
11. Bayer JK, Ukoumunne OC, Lucas N, Wake M, Scalzo K, Nicholson J. Risk factors for childhood mental health symptoms: National Longitudinal Study of Australian Children. *Pediatrics* 2011; 128(4): 865-879.
12. Asendorpf JB, Denissen JJA, van Aken MAG. Inhibited and aggressive preschool children at 23 years of age: personality and social transitions into adulthood. *Dev Psychol* 2008; 44(4): 997-1011.

13. Bosquet M, & Egeland B. The development and maintenance of anxiety symptoms from infancy through adolescence in a longitudinal sample. *Dev Psychopathol* 2006; 18: 517-550.

14. Cicchetti D & Toth SL. The development of depression in children and adolescents. *American Psychologist* 1998; 53(2): 221-241.

15. Biederman J, Rosenbaum JF, Bolduc-Murphy EA, Faraone SV, Chaloff J, Hirschfield DR, & Kagan J. A 3-year follow-up of children with and without behavioural inhibition. *J Am Acad Child Adolesc Psychiatry* 1993; 32(4): 805-821.

16. Prior M, Smart D, Sanson A, & Oberklaid F. Does shy-inhibited temperament in childhood lead to anxiety problems in adolescence? *J Am Acad Child Adoles Psychiatry* 2000; 39(4): 461-468.

17. Rapee RM & Szollos AA. Developmental antecedents of clinical anxiety in childhood. *Behav Change* 2002; 19(3): 146-157.

18. Rosenbaum JF, Biederman J, Bolduc-Murphy EA, Faraone SV, Chaloff J, Hirshfeld DR & Kagan J. Behavioural inhibition in childhood: a risk factor for anxiety disorders. *Harv Rev Psychiatry* 1993; 1(1): 2-16.

19. Bayer JK, Sanson AV, & Hemphill SA. Parent influences on early childhood internalising difficulties. *J Appl Dev Psychol* 2006; 27: 542-559.

20. Bayer JK, Hiscock H, Ukoumunne OC, Price A, & Wake M . Early childhood aetiology of mental health problems: a longitudinal population-based study. *J Child Psychol Psychit* 2008; 49(11): 1166-1174.

21. Coplan RJ, Arbeau KA, & Armer M Don't fret, be supportive! Maternal characteristics linking child shyness to psychosocial and school adjustment in kindergarten. *J Abnorm Child Psychol* 2008; 36: 359-371.

22. Rapee RM, Schniering CA, & Hudson JL. Anxiety disorders during childhood and adolescence: origins and treatment. *Annu Rev Clin Psychol* 2009; 5: 311-341.

23. Rubin KH, Burgess KB & Hastings PD. Stability and social-behavioural consequences of toddlers' inhibited temperament and parenting behaviours. *Child Dev* 2002; 73(2): 483-495.

24. Bayer JK, Ukoumunne OC, Mathers M, Wake M, Abdi N, Hiscock H. Development of children's internalising and externalising problems from infancy to five years of age. *Aust NZ J Psychiat* 2012; 46(7): 659-668.

25. Bayer JK, Hiscock H, Scalzo K, Mathers M, McDonald M, Morris A, Birdseye J, & Wake M.. Systematic review of preventive interventions for children's mental health: what would work in Australian contexts? *Aust NZ J Psychiat* 2009; 43: 695-710.

26. Ferguson D, Grant H, Horwood L, Ridder E. Randomized trial of the early start program of home visitation. *Pediatrics* 2005; 116(6): 803-809.

27. Ferguson D, Grant H, Horwood L, Ridder E. Randomized trial of the early start program of home visitation: parent and family outcomes. *Pediatrics* 2006; 117: 781-786.

28. Rapee RM, Kennedy S, Ingram M, Edwards S, & Sweeney L. Prevention and early intervention of anxiety disorders in inhibited preschool children. *J Consult Clin Psychol* 2005; 73(3): 488-497.

29. Rapee RM, Kennedy SJ, Ingram M, Edwards SL, & Sweeney L. Altering the trajectory of anxiety in at-risk young children. *Am J Psychiatry* 2010; 167(12): 1518-1525.

30. Kennedy SJ, Rapee RM, & Edwards SL. A selective intervention program for inhibited preschool-aged children of parents with an anxiety disorder: effects on current anxiety disorders and temperament. *J Am Acad Child Adoles Psychiatry* 2009; 48(6): 602-609.

31. Bayer JK, Rapee R, Hiscock H, Ukoumunne OC, Mihalopoulos C, Clifford S, & Wake M (2011). The Cool Little Kids randomised controlled trial: Population level early prevention for anxiety disorders. *BMC Public Health* 2011:11: 2-9.

32. Mihalopoulos C, Vos T, Pirkis J, Carter R. The economic analysis of prevention in mental health programs. *Annu Rev Clin Psychol* 2011; 7: 169-201.

33. Luby J, Lenze S, & Tillman R. A novel early intervention for preschool depression: findings from a pilot randomised controlled trial. *J Child Psychol Psychiat* 2012; 53(3): 313-322.

34. Wichstrom L, Berg-Nielsen TS, Angold A, Egger HL, Solheim E, & Sveen TH. Prevalence of psychiatric disorders in preschoolers. *J Child Psychol Psychiat* 2012; 53(6): 695-705.

35. Merry SN, Hetrick SE, Cox GR, Brudevolde-Iversen T, Bir JJ, & McDowell H. Psychological and educational interventions for preventing depression in children and adolescents. *Cochrane Database of Systematic Reviews* 2011; Issue 12, Art No CD003380. DOI: 10.1002/14651858.CD003380.pub3.

36. Giesen F, Searle A, Sawyer M. Identifying and implementing prevention programmes for childhood mental health problems. *J Paediatr Child Health* 2007; 43: 785-789.