CHILDREN'S MENTAL HEALTH RESEARCH

Quarterly

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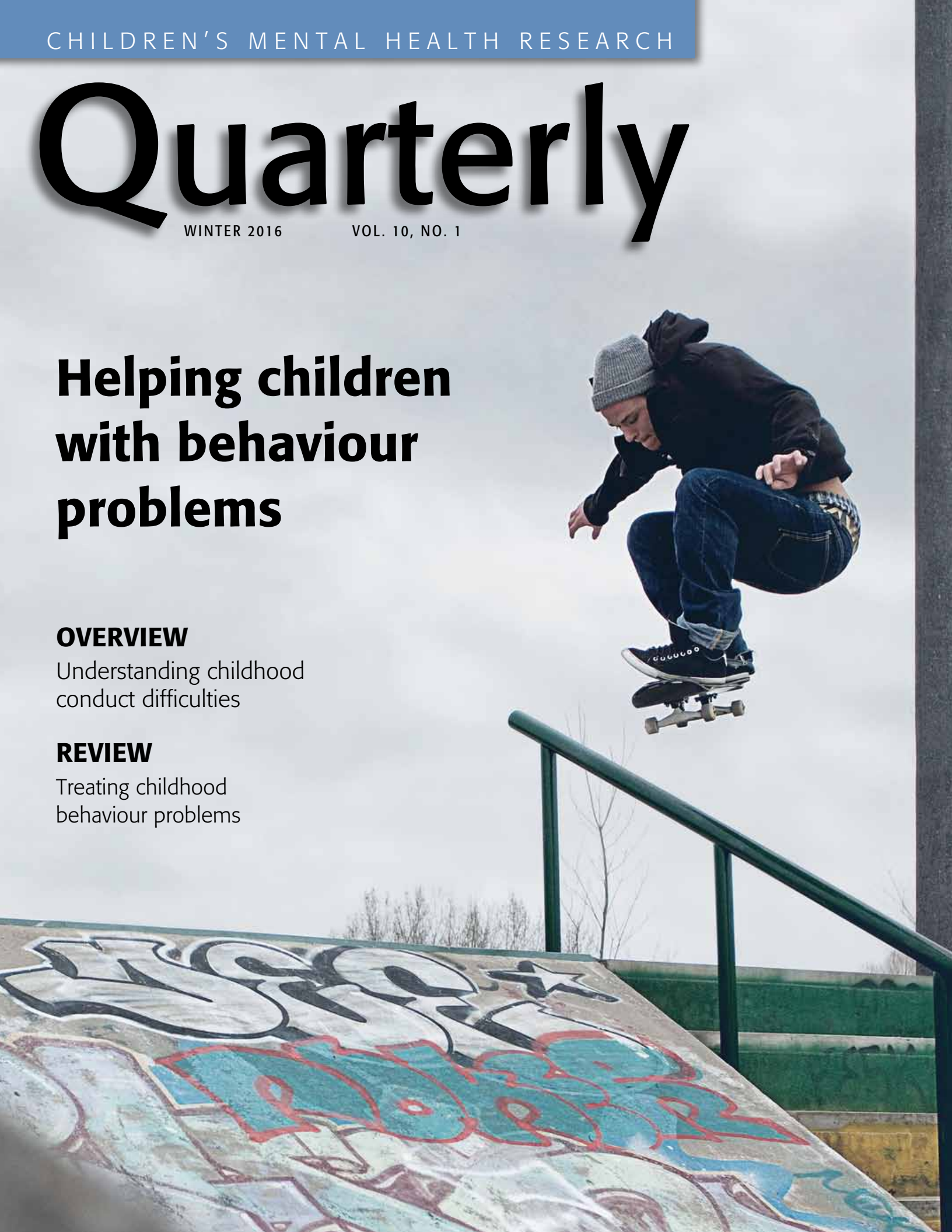

Helping children with behaviour problems

OVERVIEW

Understanding childhood conduct difficulties

REVIEW

Treating childhood behaviour problems

Winter

Quarterly

VOL. 10, NO. 1 2016

Children's Health Policy Centre

About the Children's Health Policy Centre

We are an interdisciplinary research group in the Faculty of Health Sciences at Simon Fraser University. We focus on improving social and emotional well-being for all children, and on the public policies needed to reach these goals. To learn more about our work, please see childhealthpolicy.ca.

About the *Quarterly*

We summarize the best available research evidence on a variety of children's mental health topics, using systematic review and synthesis methods adapted from the *Cochrane Collaboration* and *Evidence-Based Mental Health*. We aim to connect research and policy to improve children's mental health. The BC Ministry of Children and Family Development funds the *Quarterly.*

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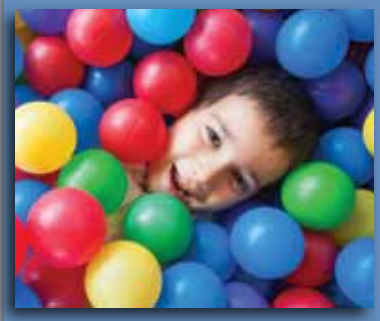
This Issue



NEXT ISSUE

Preventing anxiety for children

Anxiety disorders are the most common mental health problems that children face. We identify what can be done to prevent them.

How to Cite the *Quarterly*

We encourage you to share the *Quarterly* with others and we welcome its use as a reference (for example, in preparing educational materials for parents or community groups). Please cite this issue as follows:

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Understanding childhood conduct difficulties

There are no bad kids. There are kids who are in bad circumstances, who have made bad choices. If you help change their circumstances…you can do good things with these kids.

— Canadian policymaker [1]

We can help children by mitigating the causes of serious behaviour problems before they develop.

Every child engages in challenging behaviours from time to time. In fact, for toddlers, occasional aggression is typical.[2] It is also common for school-age children to lose their temper at times and for adolescents to periodically argue with adults. For most young people, however, challenging behaviour does not interfere with their development or well-being.

For a small proportion of young people, though, behaviour challenges can become more extreme — stopping them from thriving at home, at school or in the community. Studies that have followed children over long periods of time have shown that a small minority engage in consistently high levels of aggression.[3] So when a young person has persistent angry and irritable moods, or repeatedly engages in argumentative and defiant behaviours, or shows serious aggression, the possibility of a clinically significant disorder needs to be considered.

To clarify the presence of a behaviour disorder, a qualified practitioner — ideally working in an interdisciplinary children's mental health team — must conduct a thorough assessment. This includes ensuring that problematic behaviours are not due to unaddressed social causes, such as basic developmental needs not being met, or child maltreatment occurring but not being addressed. As well, practitioners must ascertain that a child's behaviour is not due to another undetected, or concurrent, mental disorder — such as anxiety, depression, a learning disorder or substance misuse — which can cause symptoms of irritability, anger and aggression. Diagnoses of either *oppositional defiant disorder* or *conduct disorder,* the two main psychiatric diagnoses pertaining to childhood behaviour problems, should be made only after a comprehensive assessment

The two main psychiatric diagnoses pertaining to childhood behaviour problems should be made only after a comprehensive assessment.

is completed. Table 1 outlines the current criteria for diagnosing these two disorders.

Table 1: Criteria for Diagnosing Childhood Behaviour Disorders*[4]

Disorder	Description
Oppositional Defiant Disorder	• Child's mood is persistently angry or irritable, as indicated by frequent loss of temper, easily being annoyed and often being resentful • Child's behaviour is frequently argumentative, defiant or vindictive, including refusing to comply with rules or deliberately annoying others
Conduct Disorder	• Child is often aggressive to people or animals, including bullying or threatening others and initiating physical fights • Child deliberately destroys property • Child engages in theft or significant deceitfulness, including frequently lying or stealing valuable items • Child often breaks serious rules, including recurrent truancy or running away from home overnight before age 13

* Prior to making either diagnosis, a comprehensive assessment is needed to ensure that there is no other underlying cause for the symptoms, such as unmet developmental needs or another mental disorder. As well, for both diagnoses, symptoms must be repetitive and persistent and interfere with the child's functioning.

How common are behaviour disorders?

According to rigorous epidemiological surveys, approximately 2.4% of children meet criteria for oppositional defiant disorder at any given time.[5–6] Similarly, a review of nine high-quality surveys found that approximately 2.1% of young people meet diagnostic criteria for conduct disorder at any given time.[7] Extrapolating from BC and Canadian population figures,[8] an estimated 30,000 children and youth in BC and 240,000 in Canada are likely experiencing one or both of these conditions at any given time.

What causes serious childhood behaviour problems?

We can help children by mitigating the causes of serious behaviour problems before they develop. However, to do so, causal mechanisms and pathways must first be identified. A number of studies have made some importance advances in this area.

While no one study is sufficient for establishing causation, a unique "natural experiment" provided early evidence for a link between socio-economic disadvantage and childhood behaviour disorders. In this study, researchers initially followed a representative sample of 1,420 children from North Carolina for eight years.[9] Halfway through the study, Native American families living on a "reservation" began receiving biannual income supplements, which resulted in 14% of study families moving out of poverty.[9] By the end of the study, young people in families who were no longer poor showed a 40% decrease in symptoms of oppositional defiant and conduct disorders.[9] In contrast, children in families who remained poor had *increases* in behavioural symptoms, while children from families who were never poor experienced steady low levels of behavioural

How does poverty affect parenting?

The finding that children experienced significant reductions in behaviour problems after their families were lifted from poverty is particularly compelling. The researchers who uncovered this relationship conducted additional statistical analyses to determine why this occurred. One variable stood out: parental supervision. In fact, parental supervision accounted for roughly 77% of the effect that reducing poverty levels had on children's mental health symptoms.[9] In essence, the researchers found that as parents moved out of poverty, they could spend more time with their children, resulting in better supervision and better child mental health.[9]

symptoms.[9] Strikingly, the level of behavioural problems in children from formerly poor families became almost identical to that of the never poor children.[9]

Another hallmark study followed almost 1,000 New Zealand children from birth until age 26 to better understand the impact that genes and the environment had on behavioural problems.[10] Researchers found that boys who had been maltreated and had "low activity" for the monoamine oxidase A gene (MAOA), which plays a role in metabolizing selected neurotransmitters, were significantly more likely to engage in antisocial behaviour.[10] Specifically, maltreated boys who also had low MAOA activity showed:

- nearly three times greater odds of being diagnosed with conduct disorder during adolescence
- nearly 10 times greater odds of being convicted of a violent crime in adulthood
- a greater likelihood of having symptoms of antisocial personality disorder, and
- a greater likelihood of being disposed to violence.[10]

In other words, having experienced *both* child maltreatment *and* this specific gene profile greatly increased the likelihood of developing severe antisocial behaviour. This finding suggests that environmental factors such as child maltreatment may influence gene expression in the causation of behaviour disorders over time.[11]

Environments where behaviour problems emerge

Studies have identified other risk factors for childhood behaviour disorders. For instance, a British study examined the impact of mothers' parenting beliefs on the behaviour of more than 11,000 children.[12] Researchers found that when mothers endorsed more authoritarian approaches — such as believing that children should follow parents' commands without explanation — children were more likely to have conduct problems at age 10. Notably, even after adjusting for variation in socio-economic status and levels of maternal distress, children whose mothers had the most authoritarian parenting attitudes (the highest 20%) were 1.5 times more likely to develop conduct problems such as lying, stealing, bullying and fighting.[12]

Another study, which followed nearly 1,000 children in New Zealand from birth until mid-adolescence, examined the relationships between a host of variables and behaviour problems.[13] Researchers identified the following risk factors for developing symptoms of conduct and oppositional defiant disorders:

- maternal smoking during pregnancy
- changes in caregivers (e.g., parental separation, divorce or death, or entering foster care)
- family socio-economic disadvantage
- child maltreatment, including physical abuse and exposure to interpersonal violence
- lower child cognitive ability, and
- children's affiliation with deviant peers.

[We] can make a difference for young people by enacting and supporting policies that address…overall child poverty levels.

As well, being male and having parents with a history of substance misuse and criminality were significant risk factors for developing symptoms of conduct disorder but not oppositional defiant disorder.[13]

Learning from the experiences of Canadian children

Studies of Canadian children have corroborated the roles of gender, parenting and socio-economic status in the development of serious behaviour problems in children. In one study, researchers followed more than 7,000 Canadian children for six years.[3] Four variables were significant in predicting aggression: being male; being from a low-income family; having a mother who did not complete high school; and having a mother who used hostile, ineffective parenting strategies.[3]

Similarly, researchers assessed which factors predicted rule breaking in a study following almost 2,000 Quebec children from infancy through to age six.[14] The following factors were found to be predictive of rule breaking: being male; having a mother with a history of antisocial behaviour; and having a mother or father with depressive symptoms.[14] Researchers also found that the likelihood of children's rule breaking increased as the number of risk factors increased.[14]

In aggregate, these findings suggest a causal link between socio-economic disadvantage and the development of childhood oppositional defiant and conduct disorders. These findings also suggest that child maltreatment, likely as a result of family disadvantage, may be an important mechanism by which socio-economic disadvantage negatively affects young people. At the same time, both socio-economic disadvantage and problematic parenting can be altered through psychosocial interventions.

Applying the research to better help children

Policy-makers, practitioners and members of the public can make a difference for young people by enacting and supporting policies that address socio-economic disadvantage, including overall child poverty levels.[15] For example, evaluations of income-supplement programs have suggested that increasing the incomes of poor families by just $5,000 a year for two or three years could produce large improvements in children's behaviour.[15] And, given that living in poverty poses multiple risks for child well-being,[16] poverty reduction may also avert other risks. For example, family socio-economic disadvantage has also been linked to children having chronically activated stress pathways, with consequent effects on their immune systems.[15]

The available causal evidence also suggests that practitioners may have an added role to play by directly helping parents — given that parenting appears to be another important modifiable factor in the development of children's behavioural problems. In the Review article that follows, we highlight interventions found to be effective in treating these challenges.

Treating childhood behaviour problems

The two parenting programs aimed to promote positive behaviour in young children with significant conduct problems by increasing positive parenting.

Given that from 30% to 50% of referrals to children's mental health services are for behaviour problems,[17] practitioners need effective approaches to address them. To determine which treatments work best, we conducted a systematic review of the research literature.

Our review examined randomized controlled trials (RCTs) published within the past 10 years. To meet our inclusion criteria, the children had to be experiencing significant behavioural concerns, including a treatment referral for behaviour problems, a diagnosis of oppositional defiant disorder or conduct disorder, *or* a history of arrest. As well, the intervention had to specifically focus on treating these concerns. To determine the benefits for children, we included only those studies that assessed relevant child behaviour outcomes, using more than one informant (children, parents, teachers, clinicians or court records). (For more information, please see our Methods.)

We accepted eight RCTs evaluating six interventions: *Strongest Families* (one RCT); *Incredible Years* (*Basic* — one RCT; *Standard* — one RCT); *Protocol for On-site Nurse administered Intervention* (*PONI* — one RCT); *Project Support* (two RCTs); *Multidimensional Treatment Foster Care* (one RCT); and quetiapine (one RCT).[17–34] We then categorized these interventions according to type: parenting programs, child and family programs, and medications.

Parenting programs

The two parenting programs — *Strongest Families* and *Incredible Years* (*Basic* and *Standard* versions) aimed to promote positive behaviour in young children with significant conduct problems by increasing positive parenting. Parents were taught strategies such as paying attention to children's good behaviour and using praise and rewards, as well as effective discipline techniques.[18–19] While both programs used videos to teach parenting techniques, *Incredible Years* also used parenting groups that promoted discussion between group members and encouraged participants to practise the skills at home.[19, 23] In contrast, *Strongest Families* was predominantly a self-directed program, supported by weekly telephone coaching sessions.[18]

Incredible Years Basic *led to numerous positive benefits at approximately five and 10 years after the program ended.*

Incredible Years Standard supplemented the parenting intervention by teaching parents to promote children's reading skills over eight group sessions and two home visits.[22] The researchers included this component citing a connection between children's reading difficulties and behaviour problems.[22] Table 2 gives more information on these studies of parenting programs.

Table 2: Parenting Program Evaluations

Program (Duration)	**Components**	**Country** (Sample size*)	**Children's ages**
Strongest Families [18] (3½ months)	12-session self-directed parenting program supported by 14 telephone coaching sessions	Canada (80)	3–7 years
Incredible Years Basic [38] (3–3½ months)	13–16 group parenting sessions + weekly telephone support	UK (120)	3–7 years
Incredible Years Standard [22–23] (6½ months)	12 group parenting sessions, 10 literacy-promotion sessions + 6 combined parenting + literacy promotion sessions	UK (112)	4–6 years

* Sample size indicates number of children at point of randomization.

Child and family programs

Three programs provided interventions to both parents and children. In *PONI*, nurses delivered three core program components to families during six sessions.[25] First, nurses taught parenting skills, including encouraging positive behaviours, using praise and rewards, and discouraging negative behaviours by withdrawing privileges.[25] Next, children learned cognitive-behavioural techniques to address concerns including anger control and social skill deficits.[25] Finally, children and parents received education and skills training together, including discussing family rules and practising problem-solving.[25] Nurses provided up to four additional sessions, on an as-needed basis, reviewing program components and/or covering new topics, such as managing crises and children's behaviours at school.[25]

Both versions of *Project Support* aimed to assist children with behaviour problems who were residing with their mothers in shelters for families who had experienced intimate-partner violence.[28, 30] As these mothers and children transitioned from a shelter, the program provided practical social supports, such as addressing safety concerns and helping families acquire needed household items.[30] Then, during home visits, mothers learned parenting skills, including effectively using praise and positive attention, giving appropriate instructions, and addressing non-compliance and aggressive behaviour.[28] Children also spent time with a pro-social adult mentor who provided support.[28]

Multidimensional Treatment Foster Care focused on adolescent girls whom courts had mandated to out-of-home care because of chronic delinquency.[33] Girls were placed with highly trained and well-supported foster parents.[34] Foster parents completed daily reports on the girls' behaviours, which they then used

At two-year follow-up, children in Project Support I *had six times lower odds of being diagnosed with either conduct or oppositional defiant disorder compared to control children.*

to reward positive behaviours and discourage negative ones.[34] Girls engaged in weekly individual therapy to further address their behavioural challenges.[34] They also worked with a life skills trainer to increase their social skills and their involvement in community activities.[34] Finally, a family therapist worked with parents who planned to resume caring for their daughters, to improve their skills as well.[34] Table 3 gives more information on these studies of child and family programs.

Table 3: Child and Family Program Evaluations

Program (Duration)	**Components**	**Country** (Sample size)	**Children's ages**
PONI [25,27] (3–6 months)	6 sessions divided between teaching parenting skills, teaching children cognitive-behavioural strategies + teaching families problem-solving; up to 4 supplemental sessions to review program components or new concerns, such as managing crises	US (163)	6–11 years
Project Support [28–31] (8 months)	*I*: 23 (average) home visits teaching parenting + problem-solving skills plus providing supports after transitioning from a shelter for women + children exposed to intimate-partner violence; children mentored by pro-social adult	US (36)	4–9 years
	II: as above except 20 (average) home visits	US (66)	4–9 years
Multidimensional Treatment Foster Care [33] (6 months)	Youth placed with trained + supported foster parents, provided with weekly individual therapy to address challenging behaviours + life skills trainer to increase social skills + community participation; parents provided with parenting sessions	US (81)	13–17 years

Medication

The one medication trial evaluated quetiapine, a newer antipsychotic, for adolescents with a primary diagnosis of conduct disorder and at least moderate levels of aggressive behaviour.[17] Youth started with a 50 mg daily dose.[17] Doses were then titrated until parents reported meaningful clinical benefits or until problematic side effects occurred, up to a maximum daily dose of 800 mg.[17] By the end of the study, the average daily dose was 294 mg (with a range of 200 to 600 mg).[17] Of note, this study had a very small sample (only 19 youth) and the primary author received funding from the drug's manufacturer.[17] Table 4 gives more information on this medication study.

Table 4: Medication Evaluation

Medication (Duration)	**Components**	**Country** (Sample size)	**Children's ages**
Quetiapine [17] (6 weeks)	Youth received quetiapine morning + evening, starting with total daily dose of 50 mg, titrated to maximum daily dose of up to 800 mg, with average daily dose of 294 mg	US (19)	12–17 years

What was measured?

Many of the RCTs measured a variety of child and parent outcomes across several time periods. Given our purpose, however, we focused on *child behaviour outcomes* at the final assessment point for each study. For all studies, we identified outcomes where there were statistically significant differences between intervention and comparison children. We also reported the degree to which statistically significant gains were clinically meaningful. In other words, we identified what are called "effect sizes" — whether benefits for children were classified as small, medium or large — for those studies that calculated them.

Outcomes for parenting programs

The *Strongest Families* RCT assessed one child behaviour outcome — oppositional defiant disorder diagnostic rates — at five-month follow-up. Children whose parents participated in the program were twice as likely to be diagnosis-free compared with controls at this follow-up, but differences were not statistically significant.[18]

Both *Incredible Years* RCTs assessed outcomes many years after the program ended — and produced quite different results. *Incredible Years Basic* led to numerous positive benefits at approximately five and 10 years after the program ended. These included intervention children having significantly reduced odds of being diagnosed with oppositional defiant disorder (22% versus 53%), as well as significantly fewer symptoms of this disorder, with a large effect size.[21] As well, they engaged in less antisocial behaviour (such as frequent fighting) and had fewer "antisocial personality traits" (such as being unconcerned with others' feelings and lacking feelings of guilt), with the latter showing a moderate effect size.[21]

Outcomes for *Incredible Years Basic* were particularly compelling because not only were they sustained long after the program ended, but also the program was compared against an active treatment rather than a no-treatment control group. Specifically, parents and children in the comparison group received individualized care from local mental health clinics.[21]

In contrast, the more intensive *Incredible Years Standard* failed to produce any gains for children four to 7½ years after the program ended.[21] The same four outcomes that were significant for the *Basic* program — oppositional defiant disorder diagnoses and symptoms and antisocial behaviours and personality traits — were not significant for the *Standard* version. The

Choose your words carefully

Some readers may be surprised and concerned to learn that researchers used measures purportedly assessing "antisocial personality traits" and "psychopathic features" among preschool children. We share this concern. While we support measuring problem behaviours, such as a lack of guilt after misbehaving, we strongly believe in always using caution in labelling children.

When young children are described as having "antisocial personality traits," some people may view these children as having fixed characteristics — overlooking the enormous changes that occur as children grow and develop. Such labelling also implies that change is not possible. Perhaps even more importantly, such labelling fails to acknowledge factors influencing child development, including family socio-economic status, parenting, and supports for children and families within the wider community. Consequently, we believe the potential harms in using such labels outweigh any possible benefits.

differing findings for the two RCTs cannot be explained by the participants as both included similar populations of disadvantaged British families.[21] Table 5 outlines the child behaviour outcomes for the parenting programs we reviewed.

Table 5: Child Behaviour Outcomes for Parenting Programs

Program	Assessed at	Positive outcomes	No significant difference
Strongest Families [18]	5-month follow-up	None	Oppositional defiant disorder diagnoses
Incredible Years Basic [21]	8-year follow-up (average)	↓ Oppositional defiant disorder diagnoses ↓ Oppositional defiant disorder symptoms ↓ Antisocial behaviours* ↓ "Antisocial personality traits"	Delinquency
Incredible Years Standard [21]	6-year follow-up (average)	None	Oppositional defiant disorder diagnoses Oppositional defiant disorder symptoms Antisocial behaviours "Antisocial personality traits" Delinquency

* Significant for parent but not teacher ratings of antisocial behaviour.

Outcomes for child and family programs

The three child and family programs results in mixed findings. *PONI* failed to produce any behavioural gains for children at one-year follow-up relative to the comparison group.[25] Notably, though, comparison children received quite intensive services, including a comprehensive assessment by a mental health practitioner followed by eight hours of treatment, on average.[25] This is likely why fewer children in *both* the intervention and comparison groups met diagnostic criteria for either oppositional defiant disorder or conduct disorder at one-year follow-up compared to pretest (rates reduced from 64% to 37% for *PONI*, compared to 63% to 30% for the comparison group).[25]

In contrast, children made multiple gains in both *Project Support* RCTs. At two-year follow-up, children in *Project Support I* had six times lower odds of being diagnosed with either conduct or oppositional defiant disorder compared to control children (15% versus 53%).[29] They also had six times lower odds of being within the clinical range on behaviour problems (15% versus 53%).[29] The replication trial of *Project Support* also resulted in many gains for children. One year after the program ended, *Project Support II* children had fewer behaviour problems, with a moderate effect size.[30] They also showed fewer symptoms, such as being callous or narcissistic, also with a moderate effect size.[31]

For the third program, approximately 16 months after *Multidimensional Treatment Foster Care* ended, adolescent girls who participated were significantly less likely to engage in delinquency relative to comparison girls.[33] As well, the

Intervening early can create efficiencies where treatment resources are scarce.

effect size for this measure — which included number of criminal referrals, number of days in a locked setting as well as girls' self-reported legal violations — was moderate.[33] Table 6 outlines the child behaviour outcomes for the child and family programs we reviewed.

Table 6: Child Behaviour Outcomes for Child and Family Programs

Program	Assessed at	Positive outcomes	No significant difference
PONI[25]	1-year follow-up	None	Conduct disorder or oppositional defiant disorder diagnoses Behaviour problems Overall functioning
Project Support I[29]	2-year follow-up	↓ Conduct disorder or oppositional defiant disorder diagnoses ↓ Behaviour problems*	None
Project Support II[30–31]	8-month – 1-year follow-up	↓ Behaviour problems ↓ "Psychopathic features"	Oppositional behaviours
Multidimensional Treatment Foster Care[32–33]	1 ½-year follow-up (on average)	↓ Delinquency	None

* Significant for behaviour rating scores above clinical cut-off but not average scores.

Outcomes for medication

Quetiapine, the one medication included in our review, showed some benefit. Adolescents who took this medication had fewer behaviour problems overall, as well as less intense behavioural concerns.[17] However, this medication also produced significant side effects after only six weeks of use. Specifically, youth on quetiapine had higher average heart rates than youth on placebo, although none stopped the medication because of this side effect. As well, among the nine youth randomized to receive quetiapine, one developed akathisia, a movement disorder characterized by restlessness and excessive fidgeting. The akathisia stopped within 48 hours of the youth discontinuing the medication. No other significant different side effects were reported.[17] Table 7 outlines the child behaviour outcomes for the medication study we reviewed.

Table 7: Child Behaviour Outcomes for Medication

Medication	Assessed at	Positive outcomes	No significant difference
Quetiapine[17]	Post-test only	↓ Behaviour problems* ↓ Behaviour problem intensity	Aggression

* Significant for clinician but not parent ratings of behaviour problems.

Implications for practice and policy

Our review uncovered three highly effective psychosocial programs to help children with behaviour problems across a range of developmental periods.

- *Incredible Years Basic* taught socio-economically disadvantaged mothers and fathers with young children effective parenting techniques in 13 to 16 group sessions. Up to 10 years after parents completed this program, children had significantly lower rates of oppositional defiant disorder diagnoses and symptoms, as well as fewer antisocial behaviours and characteristics than comparison children. Notably, *Incredible Years* is also effective in *preventing* child behaviour problems — making it a program that can be used for both prevention and treatment.
- *Project Support* focused on treating young children with oppositional defiant or conduct disorder who were living in shelters with their mothers following exposure to intimate-partner violence. *Project Support* provided practical and emotional support to these disadvantaged families and taught mothers effective parenting and problem-solving skills over eight months. The program also provided children with a pro-social adult mentor. Between eight months and two years after the programs ended, children had fewer oppositional defiant or conduct disorder diagnoses and fewer behaviour problems relative to comparison children.
- *Multidimensional Treatment Foster Care* provided a range of services to teenage girls deemed chronic delinquents by the courts. Socio-economically disadvantaged girls were placed with trained and supported foster parents for an average of six months. Foster parents used a points-based rewards system to encourage positive behaviours. Biological parents were also taught this system, as well as ways to provide better supervision and limits when girls returned home. Girls also participated in individual therapy to address their behavioural challenges and worked with a life skills trainer to increase their social skills and their involvement in community activities. More than a year after this program ended, girls had significantly lower rates of delinquency than comparison girls.

By teaching effective parenting skills when children are younger, behaviour problems can be reduced before they become entrenched.

In addition, our review found that medication can help some adolescents with conduct disorder. A very small and very brief drug company–funded trial found that quetiapine reduced overall behaviour problems as well as the intensity of the problems. However, quetiapine was also associated with significant side effects.

Our review also suggests six recommendations for the most effective ways to help children with serious behaviour problems:

1. **Prior to beginning treatment, a comprehensive assessment should occur.** A thorough assessment by an interdisciplinary mental health team can help to ensure that any unaddressed social causes of behavioural problems are part of

the treatment plan. For example, practitioners with *Project Support* began their work with each family by first ensuring that children's safety and other basic needs were met.

2. **Parents need to be included.** Considering the well-established link between parenting practices and behaviour problems in children,[19] it makes sense that all three successful psychosocial interventions taught effective parenting techniques, such as paying attention to good behaviour as well as using praise and rewards. Notably, *Incredible Years Basic* focused exclusively on parents, with no child components. These findings suggest that parents need to be included in childhood behaviour interventions.
3. **Intervening early prevents problems from continuing.** By teaching effective parenting skills when children are younger, behaviour problems can be reduced before they become entrenched. And when childhood behaviour problems are addressed earlier, significant — and costly — hardships such as involvement in the youth criminal justice system may even be avoided entirely.
4. **Intervention intensity should match the level of need.** The successful interventions we identified varied considerably in their intensity. For example, *Incredible Years Basic*, a brief group parenting program, was sufficient to reduce clinically significant behaviour problems in young children. Yet for children who had exposure to intimate-partner violence and for older teens with criminal involvement, much more intensive interventions — namely, *Project Support* and *Multidimensional Treatment Foster Care* — proved successful. This also suggests intervening early is best, before children experience hardships such as maltreatment or before they become older and problems are more entrenched.
5. **Treatment helps with more than behaviour.** All three successful psychosocial programs showed benefits beyond improving child behaviour. *Incredible Years Basic* improved children's reading abilities.[21] *Project Support* reduced clinically significant emotional problems for children and also helped mothers use less physical aggression toward children.[29] And *Multidimensional Treatment Foster Care* improved girls' school attendance and homework completion.[34]
6. **Psychosocial interventions are the first choice for child behaviour disorders.** Given the effectiveness of psychosocial interventions in addressing clinically significant behaviour problems, they should always be offered to children and families first — before medication is ever considered. As a last resort, after psychosocial interventions have been tried and have failed, quetiapine may be helpful. However, this antipsychotic medication is associated with significant cardiovascular and other side effects, necessitating close monitoring.[35]

All three successful psychosocial programs showed benefits beyond improving child behaviour.

Addressing child behaviour problems early is a wise public investment

By intervening when children are younger and the parenting challenges — and ensuing child behaviour problems — are less entrenched, significant public costs can be averted. For example, the costs averted by preventing one high-risk 14-year-old from engaging in crime throughout the lifespan — including criminal justice system costs, costs for victims, and lost productivity for the young person — are estimated to range from $3.9 to $7.1 million (2015 Canadian dollars, converted from $3.2 to $5.8 million in 2007 US dollars).[36] As well, given that from 30% to 50% of referrals to children's mental health treatment services are attributable to behaviour problems, intervening earlier can create efficiencies where treatment resources are scarce.[17]

The bottom line is that an integrated spectrum of psychosocial interventions is needed to help parents and address child behaviour problems beginning as early as possible. This includes offering effective prevention programs for all at-risk children and their parents, then providing effective treatments for all children and families who have not been reached by prevention.[7, 37] All the evidence suggests that this approach will not only help children flourish, but will also make wise use of public funds.

For more information on our research methods, please contact

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We conducted a comprehensive search to identify high-quality research evidence on the effectiveness of programs aimed at treating behaviour problems in children. We used methods adapted from the *Cochrane Collaboration* and *Evidence-Based Mental Health* and applied the search strategy outlined in Table 8.

Table 8: Search Strategy

Sources	• CINAHL, ERIC, Medline and PsycINFO
Search Terms	• Conduct disorder, oppositional defiant disorder, child behaviour disorder, aggressive behaviour or juvenile delinquency *and* prevention, intervention or treatment*
Limits	• Peer-reviewed articles published in English between 2005 and 2015 that were either original randomized controlled trials (RCTs) or follow-up RCTs • Children aged 18 years or younger • RCT methods used

* Even though our review was focused on treatment, we still included prevention as a search term, to ensure that we captured all relevant treatment trials.

We then hand-searched reference lists of previous *Quarterly* issues and two Children's Health Policy Centre research reports to identify additional RCTs. Using these approaches, we identified 82 potentially relevant RCTs. Two team members then independently assessed each RCT, applying the inclusion criteria outlined in Table 9, to limit our review to include only the highest-quality studies.

Table 9: Inclusion Criteria for RCTs

- Clear descriptions were provided of participant characteristics, settings and interventions
- Interventions were evaluated in high-income countries (according to World Bank standards), for comparability with Canadian policy and practice settings
- Interventions aimed to treat significant child behaviour problems
- At study outset, most study participants had conduct or oppositional defiant disorder diagnoses, had been referred for treatment for behaviour problems or had been arrested
- Child outcome indicators included symptoms and/or diagnoses of conduct and/or oppositional defiant disorders
- Reliability and validity of all primary outcome measures or instruments was documented
- Levels of statistical significance were reported for primary outcome measures

Psychosocial Treatment Studies

- Participants were randomly assigned to intervention and comparison groups at study outset
- Follow-up was three months or more (from the end of the intervention)
- Attrition rates were below 20% at follow-up and/or intention-to-treat approach was used
- Child behaviour symptoms were assessed using two or more informant sources (e.g., child, parent, teacher, researcher) at follow-up
- At least one outcome rater was blinded to participants' group assignment

Medication Studies

- Participants were randomly assigned to intervention and placebo at study outset
- Attrition rates were below 20% at post-test and/or intention-to-treat approach was used
- Child behaviour symptoms were assessed using two or more informant sources (e.g., child, parent, teacher, researcher) at post-test
- Double-blinding procedures were used

Eight RCTs met all the inclusion criteria. Data from these RCTs were then extracted, summarized and verified by two or more team members. Throughout our process, any differences between team members were resolved by consensus.

References

BC government staff can access original articles from BC's Health and Human Services Library.

1. Waddell, C., Lavis, J. N., Abelson, J., Lomas, J., Shepherd, C. A., Bird-Gayson, T., … Offord, D. R. D. (2005). Research use in children's mental health policy in Canada: Maintaining vigilance amid ambiguity. *Social Science and Medicine, 61,* 1649–1657.
2. Salvas, M., Brendgen, M., Lacourse, E., & Tremblay, R. E. (2010). Interplay between friends' aggression and friendship quality in the development of child aggression during the early school years. *Social Development, 20,* 645–663.
3. Côté, S. M., Vaillancourt, T., LeBlanc, J. C., Nagin, D. S., & Tremblay, R. E. (2006). The development of physical aggression from toddlerhood to pre-adolescence: A nation wide longitudinal study of Canadian children. *Journal of Abnormal Child Psychology, 34,* 71–85.
4. American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders: DSM-5* (5th ed.). Arlington, VA: American Psychiatric Association.
5. Ford, T., Goodman, R., & Meltzer, H. (2003). The British Child and Adolescent Mental Health Survey 1999: The prevalence of DSM-IV disorders. *Journal of the American Academy of Child and Adolescent Psychiatry, 42,* 1203–1211.
6. Costello, E. J., Mustillo, S., Erkanli, A., Keeler, G., & Angold, A. (2003). Prevalence and development of psychiatric disorders in childhood and adolescence. *Archives of General Psychiatry, 60,* 837–844.
7. Waddell, C., Shepherd, C., Schwartz, C., & Barican, J. (2014). *Child and youth mental disorders: Prevalence and evidence-based interventions.* Vancouver, BC: Children's Health Policy Centre, Simon Fraser University.
8. Statistics Canada. (2015). *Population by year, by province and territory*. Retrieved October 2, 2015, from http://www.statcan.gc.ca/tables-tableaux/sum-som/l01/cst01/demo02a-eng.htm
9. Costello, E. J., Compton, S. N., Keeler, G., & Angold, A. (2003). Relationships between poverty and psychopathology: A natural experiment. *Journal of the American Medical Association, 290,* 2023–2029.
10. Caspi, A., McClay, J., Moffitt, T. E., Mill, J., Martin, J., Craig, I. W., … Poulton, R. (2002). Role of genotype in the cycle of violence in maltreated children. *Science, 297,* 851–854.
11. Uher, R. (2014). Gene-environment interactions in common mental disorders: An update and strategy for a genome-wide search. *Social Psychiatry and Psychiatric Epidemiology, 49,* 3–14.
12. Thompson, A., Hollis, C., & Dagger, D. R. (2003). Authoritarian parenting attitudes as a risk for conduct problems: Results from a British national cohort study. *European Child and Adolescent Psychiatry, 12,* 84–91.
13. Boden, J. M., Fergusson, D. M., & Horwood, L. J. (2010). Risk factors for conduct disorder and oppositional/defiant disorder: Evidence from a New Zealand birth cohort. *Journal of the American Academy of Child and Adolescent Psychiatry, 49,* 1125–1133.

14. Petitclerc, A., Boivin, M., Dionne, G., Zoccolillo, M., & Tremblay, R. E. (2009). Disregard for rules: The early development and predictors of a specific dimension of disruptive behavior disorders. *Journal of Child Psychology and Psychiatry and Allied Disciplines, 50,* 1477–1484.
15. Yoshikawa. H., Aber, J. L., & Beardslee, W. R. (2012). The effects of poverty on the mental, emotional, and behavioral health of children and youth. *American Psychologist, 67,* 272–284.
16. Komro, K. A., Flay, B. R., Biglan, A., & Promise Neighborhoods Research Consortium. (2011). Creating nurturing environments: A science-based framework for promoting child health and development within high-poverty neighborhoods. *Clinical Child and Family Psychology Review, 14,* 111–134.
17. Connor, D. F., McLaughlin, T. J., & Jeffers-Terry, M. (2008). Randomized controlled pilot study of quetiapine in the treatment of adolescent conduct disorder. *Journal of Child and Adolescent Psychopharmacology, 18,* 140–156.
18. McGrath, P. J., Lingley-Pottie, P., Thurston, C., MacLean, C., Cunningham, C., Waschbusch, D. A., … Chaplin, W. (2011). Telephone-based mental health interventions for child disruptive behavior or anxiety disorders: Randomized trials and overall analysis. *Journal of the American Academy of Child and Adolescent Psychiatry, 50,* 1162–1172.
19. Scott, S., Spender, Q., Doolan, M., Jacobs, B., & Aspland, H. (2001). Multicentre controlled trial of parenting groups for childhood antisocial behaviour in clinical practice. *British Medical Journal, 323,* 194–198.
20. Scott, S. (2005). Do parenting programmes for severe child antisocial behaviour work, and for whom? One year follow-up of a multi-centre controlled trial. *Behavioural and Cognitive Psychotherapy, 33,* 403–421.
21. Scott, S., Briskman, J., & O'Connor, T. G. (2014). Early prevention of antisocial personality: Long-term follow-up of two randomized controlled trials comparing indicated and selective approaches. *American Journal of Psychiatry, 171,* 649–657.
22. Sylva, K., Scott, S., Totsika, V., Ereky-Stevens, K., & Crook, C. (2008). Training parents to help their children read: A randomized control trial. *British Journal of Educational Psychology, 78*, 435–455.
23. Scott, S., Sylva, K., Doolan, M., Price, J., Jacobs, B., Crook, C., & Landau, S. (2010). Randomised controlled trial of parent groups for child antisocial behaviour targeting multiple risk factors: The SPOKES Project. *Journal of Child Psychology and Psychiatry, 51,* 48–57.
24. Scott, S., & O'Connor, T. G. (2012). An experimental test of differential susceptibility to parenting among emotionally-dysregulated children in a randomized controlled trial for oppositional behavior. *Journal of Child Psychology and Psychiatry and Allied Disciplines, 53,* 1184–1193.
25. Kolko, D. J., Campo, J. V., Kelleher, K., & Cheng, Y. (2010). Improving access to care and clinical outcome for pediatric behavioral problems: A randomized trial of a nurse-administered intervention in primary care. *Journal of Developmental and Behavioral Pediatrics, 31*, 393–404.

26. Kolko, D. J., Cheng, Y., Campo, J. V., & Kelleher, K. (2011). Moderators and predictors of clinical outcome in a randomized trial for behavior problems in pediatric primary care. *Journal of Pediatric Psychology, 36,* 753–765.
27. Lindhiem, O., & Kolko, D. J. (2011). Trajectories of symptom reduction during treatment for behavior problems in pediatric primary-care settings. *Administration and Policy in Mental Health, 38,* 486–494.
28. Jouriles, E. N., McDonald, R., Spiller, L., Norwood, W. D., Swank, P. R., Stephens, N., … Buzy, W. M. (2001). Reducing conduct problems among children of battered women. *Journal of Consulting and Clinical Psychology, 69,* 774–785.
29. McDonald, R., Jouriles, E. N., & Skopp, N. A. (2006). Reducing conduct problems among children brought to women's shelters: Intervention effects 24 months following termination of services. *Journal of Family Psychology, 20,* 127–136.
30. Jouriles, E. N., McDonald, R., Rosenfield, D., Stephens, N., Corbitt-Shindler, D., & Miller, P. C. (2009). Reducing conduct problems among children exposed to intimate partner violence: A randomized clinical trial examining effects of Project Support. *Journal of Consulting and Clinical Psychology, 77,* 705–717.
31. McDonald, R., Dodson, M. C., Rosenfield, D., & Jouriles, E. N. (2011). Effects of a parenting intervention on features of psychopathy in children. *Journal of Abnormal Child Psychology, 39,* 1013–1023.
32. Leve, L. D., Chamberlain, P., & Reid, J. B. (2005). Intervention outcomes for girls referred from juvenile justice: Effects on delinquency. *Journal of Consulting and Clinical Psychology, 73,* 1181–1185.
33. Chamberlain, P., Leve, L. D., & Degarmo, D. S. (2007). Multidimensional Treatment Foster Care for girls in the juvenile justice system: 2-year follow-up of a randomized clinical trial. *Journal of Consulting and Clinical Psychology, 75,* 187–193.
34. Leve, L. D., & Chamberlain, P. (2007). A randomized evaluation of Multidimensional Treatment Foster Care: Effects on school attendance and homework completion in juvenile justice girls. *Research on Social Work Practice, 17,* 657–663.
35. Waddell, C., Schwartz, C., Barican, J., Gray-Grant, D., Mughal, S., & Nightingale, L. (2013). Troubling trends in prescribing for children. *Children's Mental Health Research Quarterly, 7*(4), 1–20. Vancouver, BC: Children's Health Policy Centre, Faculty of Health Sciences, Simon Fraser University.
36. Cohen, M. A., & Piquero, A. R. (2009). New evidence on the monetary value of saving a high risk youth. *Journal of Quantitative Criminology, 25,* 25–49.
37. Waddell, C., Schwartz, C., Barican, J., Andres, C., & Gray-Grant, D. (2015). *Improving children's mental health: Six highly effective psychosocial interventions.* Vancouver, BC: Children's Health Policy Centre, Simon Fraser University.

Links to Past Issues

2015 / Volume 9

4 - Promoting positive behaviour in children
3 - Intervening for young people with eating disorders
2 - Promoting healthy eating and preventing eating disorders in children
1 - Parenting without physical punishment

2014 / Volume 8

4 - Enhancing mental health in schools
3 - Kinship foster care
2 - Treating childhood obsessive-compulsive disorder
1 - Addressing parental substance misuse

2013 / Volume 7

4 - Troubling trends in prescribing for children
3 - Addressing acute mental health crises
2 - Re-examining attention problems in children
1 - Promoting healthy dating

2012 / Volume 6

4 - Intervening after intimate partner violence
3 - How can foster care help vulnerable children?
2 - Treating anxiety disorders
1 - Preventing problematic anxiety

2011 / Volume 5

4 - Early child development and mental health
3 - Helping children overcome trauma
2 - Preventing prenatal alcohol exposure
1 - Nurse-Family Partnership and children's mental health

2010 / Volume 4

4 - Addressing parental depression
3 - Treating substance abuse in children and youth
2 - Preventing substance abuse in children and youth
1 - The mental health implications of childhood obesity

2009 / Volume 3

4 - Preventing suicide in children and youth
3 - Understanding and treating psychosis in young people
2 - Preventing and treating child maltreatment
1 - The economics of children's mental health

2008 / Volume 2

4 - Addressing bullying behaviour in children
3 - Diagnosing and treating childhood bipolar disorder
2 - Preventing and treating childhood depression
1 - Building children's resilience

2007 / Volume 1

4 - Addressing attention problems in children
3 - Children's emotional wellbeing
2 - Children's behavioural wellbeing
1 - Prevention of mental disorders