



## UvA-DARE (Digital Academic Repository)

### Incredible Years parenting interventions: current effectiveness research and future directions

Gardner, F.; Leijten, P.

**DOI**

[10.1016/j.copsyc.2017.02.023](https://doi.org/10.1016/j.copsyc.2017.02.023)

**Publication date**

2017

**Document Version**

Final published version

**Published in**

Current Opinion in Psychology

[Link to publication](#)

**Citation for published version (APA):**

Gardner, F., & Leijten, P. (2017). Incredible Years parenting interventions: current effectiveness research and future directions. *Current Opinion in Psychology*, 15, 99-104. <https://doi.org/10.1016/j.copsyc.2017.02.023>

**General rights**

It is not permitted to download or to forward/distribute the text or part of it without the consent of the author(s) and/or copyright holder(s), other than for strictly personal, individual use, unless the work is under an open content license (like Creative Commons).

**Disclaimer/Complaints regulations**

If you believe that digital publication of certain material infringes any of your rights or (privacy) interests, please let the Library know, stating your reasons. In case of a legitimate complaint, the Library will make the material inaccessible and/or remove it from the website. Please Ask the Library: <https://uba.uva.nl/en/contact>, or a letter to: Library of the University of Amsterdam, Secretariat, Singel 425, 1012 WP Amsterdam, The Netherlands. You will be contacted as soon as possible.

*UvA-DARE is a service provided by the library of the University of Amsterdam (<https://dare.uva.nl>)*

# Incredible Years parenting interventions: current effectiveness research and future directions

Frances Gardner<sup>1</sup> and Patty Leijten<sup>1,2</sup>

The Incredible Years parenting intervention is a social learning theory-based programme for reducing children's conduct problems. Dozens of randomized trials, many by independent investigators, find consistent effects of Incredible Years on children's conduct problems across multiple countries and settings. However, in common with other interventions, these average effects hide much variability in the responses of individual children and families. Innovative moderator research is needed to enhance scientific understanding of why individual children and parents respond differently to intervention. Additionally, research is needed to test whether there are ways to make Incredible Years more effective and accessible for families and service providers, especially in low resource settings, by developing innovative delivery systems using new media, and by systematically testing for essential components of parenting interventions.

## Addresses

<sup>1</sup>University of Oxford, Department of Social Policy and Intervention, Barnett House, 32 Wellington Square, Oxford OX1 2ER, UK

<sup>2</sup>University of Amsterdam, Child Development & Research Priority Area YIELD, P.O. Box 15776, 1001 NG Amsterdam, Netherlands

Corresponding author: Gardner, Frances ([frances.gardner@spi.ox.ac.uk](mailto:frances.gardner@spi.ox.ac.uk))

Current Opinion in Psychology 2017, 15:99–104

This review comes from a themed issue on **Parenting**

Edited by **Marinus H van IJzendoorn** and **Marian J Bakermans-Kranenburg**

<http://dx.doi.org/10.1016/j.copsyc.2017.02.023>

2352-250X/© 2017 Published by Elsevier Ltd.

## Introduction

Parenting programmes aim to help parents improve the quality of parenting that their child receives, and, in turn, the child's development and behaviour. Formal programmes were first developed in the 1960s, by pioneering researchers such as Gerald Patterson, whose seminal work in Oregon built a theory of how children's conduct problems develop and are maintained in the family [1,2]. These are common, costly, and persistent problems, sometimes also termed disruptive, oppositional or antisocial behaviour [1,3]. From this theory, and his clinical observations, Patterson went on to develop and carefully

test home-based interventions to help parents undo these coercive processes [1,4], replacing them with more consistent and positive parenting. Along with other groups working on similar problems [5,6], this research forms the groundwork of current parenting programmes based on social learning theory, such as Incredible Years (IY). At their core, these programmes apply principles such as modelling and reinforcement to family relationships, as well as strategies from cognitive-behavioural and developmental theory about building warm relationships with children, and managing parental stress [5–8].

The primary aim of these parenting programmes is to improve child behaviour through improving parent–child relationships, reducing harsh and abusive parenting, and increasing parental involvement and sensitivity, in children at risk of, or showing, conduct problems. For some populations, the aim is to reduce or prevent physical maltreatment by parents [9,10]. Although programmes exist for all ages from infancy to adolescence, most research has been conducted with preschool and primary age children. Social learning theory-based parenting programmes are remarkable for the extent of rigorous testing they have undergone [10–12,13\*]—from the first randomised controlled trial (RCT) in the 1970s, there are, we estimate, some 200 RCTs in the age group 2–9 alone [12,14\*].

## Incredible Years

IY is one of these parenting programmes, developed in Seattle by Carolyn Webster-Stratton [15,16\*]. Like many others, it was originally aimed at treatment of children aged 3–8 with identified conduct problems, and then subsequently was employed as a preventive programme for families at risk of these problems. A distinctive feature of IY is its collaborative group-based model, enabling parents to recognise their skills, and empowering them to identify effective strategies to achieve their goals, in ways that fit with their own family context and values. Access to groups is facilitated by providing food, child care and sometimes transport. Parenting behaviour change is aided by practice-based methods including problem solving, discussion of videos illustrating different parenting strategies, role-play practice and homework assignments. Parents work together weekly in groups of 10–14, for 12–14 weeks with two trained and certified group leaders [15,16\*].

Most of the evidence for IY (and hence, the research underpinning this paper) is based on RCTs of this

'BASIC' 12–14 week programme, compared most commonly to waiting-list control groups [17<sup>•</sup>], although newer versions are available for specific age groups, including babies, toddlers and school age, some with 18 or more sessions [16<sup>•</sup>]. The parent programme (Figure 1) encourages warm relationships between parents and children, by emphasising the importance of responsive play with children [5], and encouraging positive behaviours through limit-setting and constructive discipline strategies. IY has a particularly strong emphasis on fidelity to the programme, through a rigorous training system, involving regular supervision, and submission of videotaped group material, for feedback and eventual certification [15,16<sup>•</sup>]. The process is exacting, but ensures the programme is delivered with fidelity, such that it should achieve similar results in the 'real world' to those obtained in randomised trials.

### Evidence for effects of IY

There have been numerous evaluations of the IY parenting programme in many countries and settings. A recent meta-analysis of 50 IY trials [17<sup>•</sup>] found an average effect size on child conduct problems of  $d = .30$ , when outcomes were based on parent report, and  $d = .37$ , when based on independent observations of child behaviour. Generally, the quality of the evidence was quite high, with 82% of trials using randomised designs, and two-thirds conducted by research teams that were independent of the programme developer. The effects in these trials were not different from those found in developer-led trials [17<sup>•</sup>]. IY trials show low to moderate risk-of-bias in systematic reviews [11,18]. An individual participant data (IPD) meta-analysis pooled data from 14 IY trials conducted independently of the developer in 7 European countries [18]. IPD meta-analysis advances our confidence in trial evidence, as it reduces bias by re-analysing raw data according to a consistent intent-to-treat protocol, and enhances statistical power [19<sup>•</sup>,20]. This meta-analysis found a mean effect size of  $d = .35$  for parent-reported conduct problems and  $d = .30$  for ADHD [18], but, unlike some individual trials and reviews [21 but not 22], it found no effect on parental mental health. A recent meta-analysis compared the effectiveness of IY in the USA, where it was originally developed, and in other countries, and found no difference [14<sup>•</sup>]. This is the case more generally for evidence-based parenting interventions, even when implemented in quite different service systems from those in the USA [23]. In line with the programme's strong emphasis on fidelity, IY thus indeed yields similar effects across countries [14<sup>•</sup>,23]. It is less clear how sustainable the effects of IY are in the long term: although many trials have reported good maintenance of effects over 1 year [21,22], most of these use wait-list comparisons that offer the intervention to control-group participants at a later stage. With this design, no longer-term randomised comparisons can be made, a

limitation of the evidence-base that future trials must address [24].

### Moderators of outcome

The evidence base for IY suggests consistent effects across multiple countries and settings. Nevertheless, these average effects hide a good deal of variation in outcome across families, which can be explored through moderator analyses that identify the factors predicting the extent to which an individual family benefits from IY [19<sup>•</sup>]. Moderator analyses are invaluable for understanding who benefits less or more, how best interventions can be targeted at different subgroups, and whether further tailoring for individual families is needed.

Most previous research on moderators has tested whether family demographics and baseline levels of severity of child behaviour problems help distinguish between families that benefit more and families that benefit less. This approach provides some valuable insights. First, it shows that children with more marked levels of conduct problems tend to benefit most from the intervention, suggesting it is more suitable for high-risk prevention or treatment, rather than universal prevention of these problems [17<sup>•</sup>]. Second, the evidence is quite mixed on the question of whether socioeconomically disadvantaged or ethnic minority families, or those where parents are depressed, benefit less or more, from existing reviews of moderators and predictors [13<sup>•</sup>,25–27]. One reason for these unclear findings about effects of family disadvantage is that moderators are poorly captured by conventional meta-analysis [19<sup>•</sup>,20], where moderator effects can only be indexed at the trial average level, thus masking rich individual-level variation in outcome. Randomised trials can examine moderator effects at individual level, but are rarely powered for these analyses [19<sup>•</sup>]. This problem can be addressed by IPD meta-analysis [19<sup>•</sup>], where pooled individual-level data provide substantially greater power and transparency for analysing moderators. The cross-European IPD meta-analysis underway of 1800 families participating in IY will address these questions in a more powerful and generalisable way [13<sup>•</sup>].

The current data from IY trials, albeit likely to be underpowered for moderator analyses, at least suggests promising evidence that IY may be as effective for disadvantaged and distressed families as it is for more average ones, and that is as acceptable and effective for families from ethnic minorities [28<sup>•</sup>,29–31]. In many ways, this finding matches with the way IY is set up to meet the diverse needs of individual families. Although the programme is manualised, it has much inbuilt flexibility. Rather than teaching pre-set 'recipes', IY encourages parents to develop their own goals and strategies, and its explicit discussion of barriers to parenting change allows for cultural sensitivity and aligning the programme to values of individual families [32<sup>•</sup>].

Although this suggestion of a lack of moderators is in a way encouraging, it does not solve the problem that much variation exists in outcome across families, and that around a third of families do not benefit, and some may benefit only modestly [33]. Rigorous research is needed on identifying modifiers of effectiveness, beyond demographics and baseline problem severity. One approach is to study alternative moderators, such as cognitive or biological markers of children’s (and perhaps parental—after all, parents are the first learners in the intervention) differential susceptibility to environmental stimuli such as rewards and punishments [34], or genetic factors in the child or parent that may underpin variation in response [35]. Alternatively, patterns of responders versus non-responders might not be as systematic as previously assumed and therefore hard to identify. For example, whether families are able to implement and maintain newly learned behaviours at home might depend on dynamic rather than static factors. These dynamic and static factors might be related such that families with certain more static factors (e.g., socioeconomic disadvantage) are more likely to encounter certain dynamic factors (e.g., job loss, moving house). Yet, other dynamic factors such as development of therapist-client alliance, death of a family member, or a difficult school

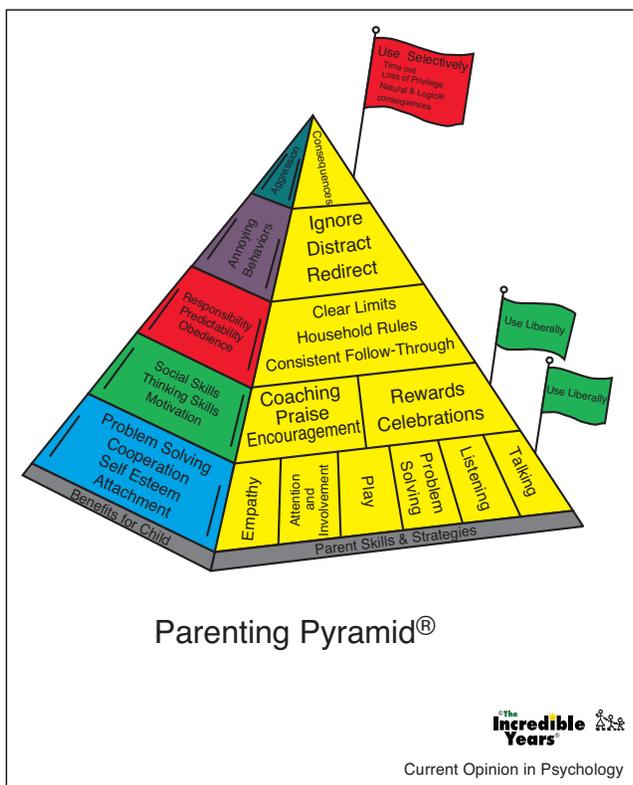
situation, might also operate relatively independently of static factors in influencing intervention effectiveness. If this were true, then we need a shift from testing baseline characteristics as moderators to testing what happens in families’ lives during and after intervention.

**Implementation and dissemination**

IY is being implemented in an increasing number of countries. Yet, still only a small proportion of the families that could potentially benefit has access to evidence-based parenting programmes such as IY. One notable barrier is the cost of materials and certification to be an IY therapist. Although IY has been shown to be cost-effective in several contexts [36,37], including these training costs, the initial investment in time and money may not be feasible for many service providers in the face of budgetary restraints, and particularly in low- and middle income countries [38]. This raises questions about the extent to which there might be ways to enhance the efficiency and scalability of IY and other parenting interventions. One approach is to use innovative media-based versions of parenting interventions, such as through TV, web-based or podcast delivery, which have been tested in RCTs, especially by the Triple-P developers [39–42].

Methods also exist to systematically optimize the effectiveness of interventions. For example, the Multiphase Optimization Strategy [43] provides a framework to experimentally (i.e., in a factorial experiment) test the empirical merit of intervention components, taking into account factors such as costs, time, and effectiveness [43]. Coming from engineering, these systematic optimization methods are rarely used to try to optimize parenting interventions. In addition to its value for strengthening the scalability of IY, and related programmes, this strategy would improve our understanding of the essential components that drive the effects of parenting interventions. This understanding in turn refines our knowledge of parent-child interaction development. For example, if a requirement for social learning theory-based parenting programmes to be effective is that they begin with sessions about improving parent-child relationships (e.g., through sensitive/child-led play), then this clarifies the role of the parent-child relationship in impacting child development—above and beyond adequate positive reinforcement and disciplining. Similarly, empirically testing the components that matter most for successful training of therapists may increase insights into the therapist-client alliance factors that are most critical for bringing about change. These insights in turn help understand how parenting behaviour is shaped and modified, and how this then shapes and modifies children’s conduct problems. Some research has been done on increasing our understanding of the specific factors, or components, of parenting interventions that underlie intervention effectiveness. Specifically, these studies test which characteristics of interventions are associated with intervention

Figure 1



Pyramid showing IY parenting intervention components.

success in meta-analysis [44], and which parenting behaviours taught in interventions causally affect children's conduct problems in randomized 'microtrials' [45–47]. Our understanding of how interventions work can also be enhanced by analyses of mediating mechanisms, which test the intervention processes associated with change in child outcomes. Some intervention trials have found that positive parenting partially mediates the effects of IY on child behaviour outcomes [22,28\*], although we should be cautious about these findings, as these trials, like many in the field, are likely to be underpowered for such analyses, and lack adequate longitudinal data that allow separation in time of intervention, mediator and outcome. Studies are needed with greater methodological rigour [see 48 for a review] and power, for example using IPD meta-analysis, are needed to replicate and fully understand mediation effects. For achieving more efficient and effective dissemination, a systematic program of research is needed to expand and translate these findings to strengthen the effects of parenting interventions, through better understanding of the specific intervention approaches that work best—and for whom.

## Conclusions

Incredible Years is a social learning theory-based parenting programme, which has been found in dozens of randomised trials to be effective for reducing child conduct problems, and improving parenting skills and parent–child relationships. However, in common with other programmes, much variation is found in the responses of individual children and families, meaning that further innovative moderator research is needed. This should focus, for example, on more powerful methods for synthesising individual-level data across trials, and enhancing our scientific understanding of individual differences in child and parent responses to intervention [49, this issue]. There is also a need for trials testing its longer-term effects, and for more rigorous and well-powered investigation of intervention mediation effects. Despite individual family differences, there are robust effects across countries and cultures, perhaps due to the strong focus of IY on a collaborative and flexible approach to parenting goals and strategies, combined with rigorous training and emphasis on fidelity. Nevertheless, research is needed to test whether there are ways to make IY more accessible for service providers, especially in low resource settings, by developing innovative delivery systems using new media, and by systematically testing for essential components of parenting interventions.

## Conflict of interest statement

Both authors have been involved in the evaluation of the Incredible Years parenting intervention, as well as other parenting interventions. They have no conflicts of interest to declare.

## Acknowledgement

This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

## References and recommended reading

Papers of particular interest, published within the period of review, have been highlighted as:

- of special interest
1. Patterson GR: *Coercive Family Process*. Castalia Press; 1982.
  2. Patterson GR: **Coercion theory: the study of change**. In *The Oxford Handbook of Coercive Relationship Dynamics*. Edited by Dishion TJ, Snyder JJ. OUP; 2016.
  3. Scott S: **Oppositional and conduct disorders**. In *Rutter's Child and Adolescent Psychiatry*. Edited by Thapar A, Pine DS, Leckman JF, Scott S, Snowling MJ, Taylor E. Wiley-Blackwell; 2015:911–930.
  4. Wiltz NA, Patterson GR: **An evaluation of parent training procedures designed to alter inappropriate aggressive behavior of boys**. *Behav Ther* 1974, **5**:215–221.
  5. Kaehler LA, Jacobs M, Jones DJ: **Distilling common history and practice elements to inform dissemination: Hanf-Model BPT programs as an example**. *Clin Child Family Psychol Rev* 2016, **19**:236–258.
  6. Forehand RL, McMahon RJ: *Helping the Noncompliant Child: A Clinician's Guide to Parent Training*. Guilford Press; 1981.
  7. Pickering J, Sanders MR: **The triple P-positive parenting program: an example of a public health approach to evidence-based parenting support**. *Fam Matters* 2014, **96**:53–63.
  8. Forgatch MS, Kjøbli J: **Parent Management Training Oregon Model: Adapting intervention with rigorous research**. *Family Proc* 2016, **55**(3):500–513.
  9. Barlow J, Johnston I, Kendrick D, Polnay L, Stewart-Brown S: **Individual and group-based parenting programmes for the treatment of physical child abuse and neglect**. *Cochrane Database Syst Rev* 2006, **3**.
  10. Vlahovicova K, Melendez-Torres GJ, Leijten P, Knerr W, Gardner F: **Parenting programs for the prevention of child physical abuse recurrence: a systematic review and meta-analysis**. *Clin Child Fam Psychol Rev* 2017. in press.
  11. Furlong M, McGilloway S, Bywater T, Hutchings J, Smith SM, Donnelly M: **Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years**. *Cochrane Database Syst Rev* 2012, **2**.
  12. Piquero AR, Jennings WG, Diamond B, Farrington DP, Tremblay RE, Welsh BC, Gonzalez JM: **A meta-analysis update on the effects of early family/parent training programs on antisocial behavior and delinquency**. *J Exp Crim* 2016:1–20.
  13. Leijten P, Raaijmakers MAJ, Orobio de Castro B, Matthys W: **Does socioeconomic status matter? A meta-analysis on parent training effectiveness for disruptive child behavior**. *J Clin Child Adolesc Psychol* 2013, **42**:384–392.
  - This study shows how moderators of parenting interventions sometimes interact with each other in influencing the effectiveness of parenting interventions (i.e., socioeconomic disadvantage was related to reduced intervention effectiveness only in families with less severe disruptive child behavior).
  14. Leijten P, Melendez-Torres GJ, Knerr W, Gardner F: **Transported versus homegrown parenting interventions for reducing disruptive child behavior: a multilevel meta-regression study**. *J Am Acad Child Adolesc Psychiatry* 2016, **55**:610–617.
  - This study shows that parenting interventions transport well across countries. The Incredible Years parenting program, and similar parenting interventions, were not less (or more) effective in countries other than the country where they had been developed.
  15. Webster-Stratton C, Reid MJ: **The Incredible Years parents, teachers and children training series: a multifaceted treatment**

- approach for young children with conduct problems.** In *Evidence based Psychotherapies for Children and Adolescents*, 2nd edn. Edited by Weisz J, Kazdin A. Guilford Press; 2010:194-210.
16. Webster-Stratton C: **The Incredible Years series: a developmental approach.** In *Family-Based Prevention Programs for Children and Adolescents: Theory, Research, and Large-Scale Dissemination*. Edited by Van Ryzin M, Kumpfer K, Fosco G, Greenberg M. Psychology Press; 2016:42-67.
- Useful description of the suite of IY programmes for parents, teachers and children.
17. Menting ATA, Orobio de Castro B, Matthys W: **Effectiveness of the Incredible Years parent training to modify disruptive and prosocial child behavior: a meta-analytic review.** *Clin Psychol Rev* 2013, **33**:901-913.
- Comprehensive systematic review and meta-analysis of the effects of Incredible Years.
18. Leijten P, Gardner F, Landau S, Harris V, Mann J, Hutchings J, Beecham J, Bonin E, Scott S: **IPD Harnessing the power of individual participant data in a meta-analysis of the benefits and harms of the Incredible Years parenting program for children's conduct problems.** *J Child Psychol Psychiatry* 2017. in revision.
  19. Brown CH, Sloboda Z, Faggiano F, Teasdale B, Keller F, Burkhart G, Vigna-Taglianti F, Howe G, Masyn K, Wang W: **Methods for synthesizing findings on moderation effects across multiple randomized trials.** *Prev Sci* 2013, **14**:144-156.
- A review of different research strategies to integrate moderation effects across trials, including a thorough comparison of the strengths and limitations of each of the research strategies.
20. Riley RD, Lambert PC, Abo-Zaid G: **Meta-analysis of individual participant data: rationale, conduct, and reporting.** *BMJ* 2010, **340**:c221.
  21. Hutchings J, Bywater T, Daley D, Gardner F, Whitaker C, Jones K: **Parenting intervention in Sure Start services for children at risk of developing conduct disorder: pragmatic randomised controlled trial.** *BMJ* 2007, **334**:678.
  22. Gardner F, Burton J, Klimes I: **Randomised controlled trial of a parenting intervention in the voluntary sector for reducing child conduct problems: outcomes and mechanisms of change.** *J Child Psychol Psychiatry* 2006, **47**:1123-1132.
  23. Gardner F, Montgomery P, Knerr W: **Transporting evidence-based parenting programs for child problem behavior (age 3–10) between countries: systematic review and meta-analysis.** *J Clin Child Adolesc Psychol* 2016, **45**:749-762.
  24. van Aar J, Leijten P, Orobio de Castro B, Overbeek G: **Sustained, fade-out or sleeper effects? A multilevel meta-analysis of parenting interventions for disruptive child behavior.** *Clin Psychol Rev* 2017, **51**:153-163.
  25. Lundahl B, Lundahl B, Risser HJ, Lovejoy MC: **A meta-analysis of parent training: moderators and followup effects.** *Clin Psychol Rev* 2006, **26**:86-104.
  26. Reyno SM, McGrath PJ: **Predictors of parent training efficacy for child externalizing behavior problems—a meta-analytic review.** *J Child Psychol Psychiatry* 2006, **47**:99-111.
  27. Shelleby EC, Shaw DS: **Outcomes of parenting interventions for child conduct problems: a review of differential effectiveness.** *Child Psychiatry Hum Dev* 2014, **45**:628-645.
  28. Gardner F, Hutchings J, Bywater T, Whitaker C: **Who benefits and how does it work? Moderators and mediators of outcome in an effectiveness trial of a parenting intervention.** *J Clin Child Adolesc Psychol* 2010, **39**:568-580.
- Example of an Incredible Years trial where mediators and moderators were tested.
29. Reid M, Webster-Stratton C, Beauchaine TP: **Parent training in head start: a comparison of program response among African American, Asian American, Caucasian, and Hispanic mothers.** *Prev Sci* 2001, **2**:209-227.
  30. Leijten P, Raaijmakers MAJ, Orobio de Castro B, van den Ban E, Matthys W: **Effectiveness of the Incredible Years parenting program for families with socioeconomically disadvantaged and ethnic minority backgrounds.** *J Clin Child Adolesc Psychol* 2015:1-15.
  31. Scott S, O'Connor TG, Futh A, Matias C, Price J, Doolan M: **Impact of a parenting program in a high-risk, multi-ethnic community: the PALS trial.** *J Child Psychol Psychiatry* 2010, **51**:1331-1341.
  32. Webster-Stratton C: **Affirming diversity: multi-cultural collaboration to deliver the Incredible Years parent programs.** *Int J Child Health Human Dev* 2009, **2**:17-32.
- Explanation of the various approaches used in the Incredible Years parenting program to individualize the program to the needs and cultural values of individual families.
33. Scott S, Spender Q, Doolan M, Jacobs B, Aspland H: **Multicentre controlled trial of parenting groups for childhood antisocial behaviour in clinical practice.** *BMJ* 2001, **323**:194-197.
  34. Matthys W, Vanderschuren LJ, Schutter DJ, Lochman JE: **Impaired neurocognitive functions affect social learning processes in oppositional defiant disorder and conduct disorder: implications for interventions.** *Clin Child Fam Psychol Rev* 2012, **15**:234-246.
  35. Bakermans-Kranenburg M, van IJzendoorn M: **The hidden efficacy of interventions: gene × environment experiments from a differential susceptibility perspective.** *Annu Rev Psychol* 2015, **66**:381-409.
  36. Edwards RT, Ceilleachair A, Bywater T, Hughes DA, Hutchings J: **Parenting programme for parents of children at risk of developing conduct disorder: cost effectiveness analysis.** *BMJ* 2007, **334**:682.
  37. Charles JM, Bywater T, Edwards RT: **Parenting interventions: a systematic review of the economic evidence.** *Child Care Health Dev* 2011, **37**:462-474.
  38. Ward C, Sanders MR, Gardner F, Mikton C, Dawes A: **Preventing child maltreatment in low-and middle-income countries.** *Child Abuse Negl* 2016, **54**:97-107.
  39. Sanders MR, Montgomery DT, Brechman D, Toussaint ML: **The mass media and the prevention of child behavior problems: the evaluation of a television series to promote positive outcomes for parents and their children.** *J Child Psychol Psychiatry* 2000, **41**:939-948.
  40. Sanders MR, Baker S, Turner KM: **A randomized controlled trial evaluating the efficacy of Triple P Online with parents of children with early-onset conduct problems.** *Behav Res Ther* 2012, **50**:675-684.
  41. Morawska A, Tometzki H, Sanders MR: **An evaluation of the efficacy of a Triple P-positive parenting program podcast series.** *J Dev Behav Pediat* 2014, **35**:128-137.
  42. Sourander A, McGrath PJ, Ristkari T, Cunningham C, Huttunen J, Lingley-Pottie P, Hinkka-Yli-Salomäki S, Kinnunen M, Vuorio J, Sinokki A, Fossum S: **Internet-assisted parent training intervention for disruptive behavior in 4-year-old children: a randomized clinical trial.** *JAMA Psychiatry* 2016, **73**:378-387.
  43. Collins LM, Murphy SA, Strecher V: **The multiphase optimization strategy (MOST) and sequential multiple assignment randomized trial (SMART): new methods for more potent eHealth interventions.** *Am J Prev Med* 2008, **32**:S112-S118.
  44. Kaminski JW, Valle LA, Filene JH, Boyle CL: **A meta-analytic review of components associated with parent training program effectiveness.** *J Abnorm Child Psychol* 2008, **36**:567-589.
  45. Leijten P, Dishion TJ, Thomaes S, Raaijmakers MAJ, Orobio de Castro B, Matthys W: **Bringing parenting interventions back to the future: How randomized controlled microtrials may benefit parenting intervention efficacy.** *Clin Psychol Sci Pract* 2015, **22**:47-57.
  46. Leijten P, Gardner F, Melendez-Torres GJ, Knerr W, Overbeek G: **Why children comply: a multilevel meta-analysis of parenting behaviors that shape child compliance.** 2017. submitted for publication.

47. Howe GW, Beach SR, Brody GH: **Microtrial methods for translating gene-environment dynamics into preventive interventions.** *Prevent Sci* 2010, **11**:343-354.
48. Forehand R, Lafko N, Parent J, Burt KB: **Is parenting the mediator of change in behavioral parent training for externalizing problems of youth?** *Clin Psychol Rev* 2014, **34**:608-619.
49. Overbeek G: **Parenting intervention effects on children's externalizing behavior: the moderating role of genotype and temperament.** *Curr Opin Psychol* 2017. (this issue).