SNAP® Boys (formerly SNAP® Outreach Program – SNAP® ORP)
And SNAP® Girls (formerly SNAP® Girls Connection – SNAP® GC)

Research & Program Evaluation Studies

Canada’s longest sustained empirically based program for children under 12 years of age in conflict with the law.

This document provides general information about some of the research studies on the SNAP® Boys and SNAP® Girls. For complete information, please reference the original reports.

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Table 1A – Internal RCT/Comparison/Waitlist Evaluation Study Designs – SNAP® Boys AND Girls-- See SNAP® bibliography for a complete list of studies completed

<table>
<thead>
<tr>
<th>Citation information</th>
<th>Design or purpose of study</th>
<th>Sample size</th>
<th>Measures</th>
<th>Informants</th>
<th>General comments</th>
<th>Effects (CBCL)</th>
</tr>
</thead>
</table>
| 1. Day, D. M., & Augimeri, L.A. (1996). Serving children at risk for juvenile delinquency: An evaluation of the Earlscourt Under 12 Outreach Project (SNAP® ORP). Submitted to the Department of Justice. Earlscourt Child and Family Centre. | SNAP® ORP--To test the effectiveness of the SNAP® ORP using a RCT design. Participants were randomly assigned to an SNAP® ORP or control group condition for Phase 1 (three months). For Phase 2, the two groups switched service modalities (the control group received the SNAP® ORP and vice versa). Measures were obtained at admission (baseline), 3, 6 and 18 months. | 32 (24 boys, 8 girls) | A total of eighteen measures were used to assess behavioral change and treatment moderators (see pp. 13-18). | • Parent  
• Teacher  
• Child  
• Clinician  
• Observers (fidelity) | Detailed random control trial that demonstrated significant CBCL effects for the SNAP® ORP treatment versus control group. Provided tolerably convincing evidence of the program’s effectiveness. | Range of effect 0.13-1.11 avg. .58 |
| 2. Augimeri, L.K., Farrington, D.P., Koegl, C.J., & Day, D.M. (2007). The SNAP® Under 12 Outreach Project: Effects of a community based program for children with conduct problems. Journal of Child and Family Studies, 16, 799-807. | SNAP® ORP--Using the same participant pool as Study 2, this paper provides a more conservative re-analysis of the data that includes a focus on how levels of treatment intensity and fidelity explain the sustained effects of the SNAP® ORP. | 30 (22 boys, 8 girls) | CBCL (Aggression & Delinquency) and official criminal offending records up to age 18. | • Parent  
• Criminal Records | Very large positive treatment effect sizes were found for the SNAP® ORP treatment. Lower treatment intensity and fidelity explained why the original control group did not improve after receiving the SNAP® ORP after Phase 2 of the study. | Del = 1.18  
Agg = 0.79  
No other means reported (have data file) |
| 3. Koegl, C.J., Farrington, D.P., & Augimeri, L.K. & Day (2008). Evaluation of a targeted cognitive-behavioural program for children with conduct problems – the SNAP® Under 12 Outreach Project: Service intensity, age and gender effects on short and long term outcomes. Clinical Child Psychology and Psychiatry, 13, 441-456. | SNAP® ORP –This study assessed pre to post treatment changes in relation to age, sex and treatment intensity variables. The sample included 30 cases used in the original RCT study (Studies 2, 3) plus 50 additional cases matched on age, sex and delinquency. | 80 (59 boys, 21 girls) | CBCL (Major Aggression, Minor Aggression & Delinquency – modified scales using raw scores) and official criminal offending records up to age 18. | • Parent  
• Criminal Records | Results indicated significant pre-post changes for SNAP® ORP children, but not for the non-treatment group. Positive relationships between the amount of individual SNAP® ORP components received and CBCL change scores were also found. In this regard, statistical associations tended to be larger for girls and older children (i.e., 10-11 years old) who may have been more cognitively advanced. | No effect reported in article. See charts attached for means and SD’s. |
| 4. Pepler, D., Walsh, M., Yule, A., Levene, K., Vaughan, A, Jiang, D., & Webber, J., (2010). Bridging the Gender Gap: Interventions with Aggressive Girls and Their Parents. Prevention Science. | SNAP® GC–A prospective study assessed girls referred to the program between 2002 and 2004. Using a RCT design, girls were randomly assigned to either immediate treatment or to a wait-list control group. Mixed model analysis was used to assess change in behaviours after treatment and differences between treatment and control groups. | 81 girls (intent to treat) | CBCL, TRF, NLSCY, Social Skills Questionnaire | • Parent  
• Teacher  
• Child | Overall, results indicated a significant treatment effect of the program. There were significant treatment effects (treatment vs. control) on: parents’ CBCL reports of girls’ aggression, rule breaking, conduct disorder, social and internalizing problems; parents’ reports of parenting practices, and girls’ reports of relationship quality with their parents. | article—based on population (SD = 10)  
EXT = 0.51; CD = 0.46; INT = 0.41 Sample est. SD effects:  
Ext = 0.82, RB = 0.59, Agg = 0.55, Alt = 0.60  
CD = 0.83, ADHP = 0.77, Opp = 0.27, Social = 0.64, Int = 0.62, Anx/Dep = 0.38, Withdrawn = 0.37, TodDep = 0.82 |
| 5. Pepler, D., Walsh, M., Yule, A., Levene, K., Vaughan, A, Jiang, D., & Webber, J., (2010). Bridging the Gender Gap: Interventions with Aggressive Girls and Their Parents. Prevention Science. | SNAP® GC–A prospective study assessed girls referred to the program between 2002 and 2004. Using a RCT design, girls were randomly assigned to either immediate treatment or to a wait-list control group. Mixed model analysis was used to assess change in behaviours after treatment and differences between treatment and control groups. | 69 girls (pre/pre – pre/post analysis) | CBCL, TRF, NLSCY, Social Skills Questionnaire | • Parent  
• Teacher  
• Child | Overall, results indicated a significant treatment effect of the program. There were significant treatment effects (treatment vs. control) on: parents’ CBCL reports of girls’ aggression, rule breaking, conduct disorder, social and internalizing problems; parents’ reports of parenting practices, and girls’ reports of relationship quality with their parents. | EXT = 0.84  
CD = 0.62  
OPP = 0.27  
AGG = 0.58  
RB = 0.59  
INT = 0.68  
Anx/Dep = 0.42  
WdDep = 0.46  
TodProb = 0.84  
Attention = 0.61 |

*Indicates earlier versions of CBCL (prior to 2001) which included a delinquency scale –
### Table 1B – External RCT/Comparison/Waitlist Evaluation Study Designs -- of the SNAP® Boys AND Girls-- See SNAP® bibliography for a complete list of studies completed

<table>
<thead>
<tr>
<th>Citation information</th>
<th>Design or purpose of study</th>
<th>Sample size</th>
<th>Measures</th>
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<th>General comments</th>
<th>Effects(CBCL)</th>
</tr>
</thead>
<tbody>
<tr>
<td>6. Lipman, E., Kenny, M., Sniderman, C. (2007). Banyan Community Service Under 12 Outreach Program: Final Evaluation Report. January 2007. Offord Centre for Child Studies. Lipman, E.L., Kenny, M., Sniderman, C., O’Grady, S., Augimeri, L., Khayutin, S., &amp; Boyle, M.H. (2008). Evaluation of a community-based program for young boys at risk of antisocial behaviour: Results and issues. Journal of the Canadian Academy of Child and Adolescent Psychiatry, 17, 1, 12-19.</td>
<td>SNAP® ORP This is multi-phase, 3rd party external evaluation as it was implemented in Hamilton, Ontario, Canada. The report contains findings from a three phase study which includes analysis of client demographics; pre to post changes with long-term follow-up (up to 24 months); treatment versus waitlist comparison; a process evaluation; cost-per case analysis; and criminal records search.</td>
<td>299 boys</td>
<td>Note that the sample size varies depending on the phase of the study.</td>
<td>CBCL, TRF, EEARL-20B, BCFPI, Court Records, Key informant interviews, satisfaction questionnaires, group observation, focus groups (see pp. 26-36).</td>
<td>• Parent • Teacher • Child • Clinicians • Community members • Police records</td>
<td>This large study provides strong support for the effectiveness of the SNAP® ORP. Large treatment effect sizes were obtained for several of the CBCL and TRF subscales, and overall, where there were positive effects, treatment gains were maintained at least up to 12 months.</td>
</tr>
<tr>
<td>7. Lipman, E., Kenny, M., Wymouth, M. (2007). Banyan Community Service Girls Connection Program: Final Evaluation Report. June 2007. Offord Centre for Child Studies.</td>
<td>SNAP® GC This is a 3rd party external evaluation as it was implemented in Hamilton, Ontario, Canada. The report includes analysis of client demographics; pre to post changes at 6 month follow-up; a process evaluation.</td>
<td>213 girls</td>
<td>Note that the sample size varies depending on the pre only or pre/post data.</td>
<td>CBCL, TRF, Key informant interviews, satisfaction questionnaires, group observation,</td>
<td>• Parent • Teacher • Child</td>
<td>This study provides encouraging support for the effectiveness of the SNAP® GC. Significant decreases were obtained for across several of the CBCL subscales, and overall, where there were positive effects for teacher and child report. Parents reported more consistent parenting strategies with the girls reporting more positive relationships with caregivers and siblings.</td>
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</table>

**Background:** This qualitative study examines parent and child experiences of participation in a multi-component community-based program aimed at reducing offending behaviour, and increasing social competence in boys 6 to 11 years old in Hamilton, Ontario, Canada. The program builds on the concept of crime prevention through social development, and includes structured groups for the identified boy, parents, and siblings.

**Methods:** A sample of 35 families participating in the multi-component program took part in the qualitative study. Individual interviews with the boys, parents and siblings asked about changes in themselves, relationships with family and peers, and school after the group. Interviews were taped, transcribed and content analysis was used to code and interpret the data.

**Total: 35 families**
- 42 parents
- 39 boys
- 17 siblings

<table>
<thead>
<tr>
<th>CBCL TRF Telephone interview</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Child</strong></td>
</tr>
<tr>
<td><strong>Parent</strong></td>
</tr>
<tr>
<td><strong>Siblings</strong></td>
</tr>
</tbody>
</table>

**Results:** Parents reported improvement in parenting skills and attainment of more effective communication skills, particularly with their children. Parents also found the relationships they formed with other parents in the program and the advice that they gained to be beneficial. Boys who participated in the program also benefited, with both parents and boys reporting improvements in boys’ anger management skills, social skills, impulse control, and ability to recognize potentially volatile situations. Both parents and boys described overall improvement in family relationships and school-related success.

**Conclusions:** The qualitative data revealed that parents and boys participating in the multi-component program perceived improvements in a number of specific areas, including social competence of the boys. This has not been demonstrated as clearly in other evaluations of the program.

Only qualitative outcomes

The implementation of this program by two community providers is compared to standard treatment options for youth showing criterion levels of aggressive, rule-breaking or antisocial behavior. The present analyses contrast change between groups during the initial 3 month group treatment component of SNAP. Results: On primary behavioral outcomes of interest, both groups showed significant declines; those in the SNAP condition showed significantly greater reduction in Child Behavior Checklist measures of Aggressive Behavior, Conduct Problems and overall Externalizing Behavior, as well as on Child Symptom Inventory measures of Oppositional Defiant Disorder and Attention Deficit Hyperactivity Disorder symptoms. On average, those in the SNAP group moved out of the clinical range of behavioral problems; effect sizes for significant differences between the groups on behavioral measures ranged between small to medium. Further analyses indicated that the SNAP program was more effective among those with a higher severity of initial behavioral problems, and that significant group differences were also found for measures of depression. Those not in SNAP showed a worsening trend with respect to targeted behaviors at 15 month follow-up. SNAP parents significantly differed in experiencing lower stress related to interactions with their child and to difficult child behavior. They were also significantly more likely to report using positive parenting practices over time.

<table>
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<tr>
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<th>Sample size</th>
<th>Measures</th>
<th>Informants</th>
<th>General comments</th>
<th>Effects(CBCL)</th>
</tr>
</thead>
<tbody>
<tr>
<td>9. Burke, J. and Loeber, R. (2014). The effectiveness of the Stop Now and Plan (SNAP) Program for boys at risk for violence and delinquency. Society for Prevention Research, 15, 1-12, DOI 10.1007/s11121-014-0490-2.</td>
<td>The implementation of this program by two community providers is compared to standard treatment options for youth showing criterion levels of aggressive, rule-breaking or antisocial behavior. The present analyses contrast change between groups during the initial 3 month group treatment component of SNAP. Results: On primary behavioral outcomes of interest, both groups showed significant declines; those in the SNAP condition showed significantly greater reduction in Child Behavior Checklist measures of Aggressive Behavior, Conduct Problems and overall Externalizing Behavior, as well as on Child Symptom Inventory measures of Oppositional Defiant Disorder and Attention Deficit Hyperactivity Disorder symptoms. On average, those in the SNAP group moved out of the clinical range of behavioral problems; effect sizes for significant differences between the groups on behavioral measures ranged between small to medium. Further analyses indicated that the SNAP program was more effective among those with a higher severity of initial behavioral problems, and that significant group differences were also found for measures of depression. Those not in SNAP showed a worsening trend with respect to targeted behaviors at 15 month follow-up. SNAP parents significantly differed in experiencing lower stress related to interactions with their child and to difficult child behavior. They were also significantly more likely to report using positive parenting practices over time.</td>
<td>Total = 130 boys (130 treatment, 122 control)</td>
<td>CBCL, CSI, Earlscourt Family Information Form, CASA, Inventory of Callous-Unemotional Traits, Kaufmann Brief Intelligence Test-2</td>
<td>Child, Parent</td>
<td>Conclusions: The SNAP Program, when contrasted with standard services alone, was associated with greater, clinically meaningful, reductions in targeted behaviors. It may be more appropriate for youth with more severe behavioral problems, and may also yield improvements in internalizing problems as well as behavioral concerns.</td>
<td>EXT = 0.53, CD = 0.35, AGG = 0.55, RB = 0.26, INT = 0.36, Anxi/Dep = 0.40, W/Depres = 0.21, ODD = 0.42</td>
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</table>
Table 1C--Pre/Post and Long-term Follow-up Evaluation Designs-- SNAP® Boys AND Girls—See SNAP® bibliography for a complete list of studies completed

<table>
<thead>
<tr>
<th>Citation information</th>
<th>Design or purpose of study</th>
<th>Sample</th>
<th>Measures</th>
<th>Informants</th>
<th>General comments</th>
<th>Effects (CBCL)</th>
</tr>
</thead>
<tbody>
<tr>
<td>10. Hrynkw-Augimeri, L., Pepler, D., &amp; Goldberg, K. (1993).</td>
<td>To assess and compare levels of child behavior pre- (admission), post-SNAP® ORP (discharge) and at six and twelve months follow-up.</td>
<td>64 (54 boys, 10 girls)</td>
<td>Child Behavior Checklist (Internalizing, Externalizing, Total, Social Competence) &amp; Teacher Report Form (TRF)</td>
<td>Parent • Teacher</td>
<td>First evaluation of the SNAP® ORP. Significant changes were found from pre to post on the CBCL (But not TRF), and these gains were maintained at follow up.</td>
<td>See attached charts</td>
</tr>
<tr>
<td>11. Augimeri, L.K. (2005).</td>
<td>Using the same sample of children in Study 4, this study more closely examines the relationship between early childhood risk factors for future offending and violence as measured by the EARL-20B and treatment effectiveness of the SNAP® ORP.</td>
<td>379 boys</td>
<td>CBCL (Delinquency); official criminal offending records, EARL-20B risk scores.</td>
<td>Parent • Clinical files • Independent Raters</td>
<td>This study examined the psychometric properties of the EARL-20B for a sample of 379 boys who had historically received the SNAP® ORP. Pre to post changes on CBCL measures demonstrated that the SNAP® ORP is effective. Additional analyses show that certain clusters of EARL factors are related to positive treatment outcomes than others.</td>
<td>No effects reported</td>
</tr>
<tr>
<td>12. Augimeri, L.K., Jiang, D., Koegl, C.J. &amp; Carey, J.</td>
<td>To assess pre to post treatment changes of the SNAP® ORP with a six month follow-up. Risk assessment scores based on the Early Assessment Risk List (EARL-20B) along with criminal offending records (obtained 8 years post admission, on average) were compared in relation to CBCL Delinquency change scores.</td>
<td>379 boys</td>
<td>CBCL (Delinquency); official criminal offending records, EARL-20B risk scores.</td>
<td>Parent • Clinical files • Independent Raters</td>
<td>Overall, the analyses show that the SNAP® ORP is effective, although more effective for children with moderate to low levels of delinquency. For the most extreme children, enhanced treatment (i.e., additional SNAP® ORP components) was shown to decrease delinquency. Measured risk factors (EARL-20B scores) were also related to initial levels of delinquency and treatment outcome.</td>
<td>Effect size - approximately 0.9</td>
</tr>
<tr>
<td>13. Day, D. &amp; Hunt, A.C. (1996).</td>
<td>Based on SNAP® ORP-treated children, a five item Risk Assessment Instrument (RAI) was used to predict CBCL Delinquency subscale scores at admission and 6 months follow-up.</td>
<td>85 (69 boys, 16 girls)</td>
<td>CBCL, RAI (based on referral, intake, progress notes &amp; discharge reports)</td>
<td>Parent • Clinicians</td>
<td>Based on the pre CBCL scores all 5 RAI factors correlated significantly with each other, but only 2 factors – severity of aggression and variety of antisocial behaviors – predicted delinquency.</td>
<td>See attached charts</td>
</tr>
<tr>
<td>14. Day, D.M. (1998).</td>
<td>To conduct long-term follow-up of SNAP® ORP children using court contact records as a primary outcome measure. Nine indicator/predictor variables coded from clinical files &amp; compared to youth court records (contact).</td>
<td>203 (173 boys, 30 girls)</td>
<td>CBCL, TRF, demographic questionnaires based on the clinical file</td>
<td>Parent • Teacher • Child • Clinician • Youth Court Data</td>
<td>Findings: 48.3% of the SNAP® ORP children had at least one Youth Court Contact in the follow-up period (which ranged from 4-11 years after age 12). Likeability and history of abuse predicted court contact for boys and girls, respectively.</td>
<td>See attached charts</td>
</tr>
<tr>
<td>15. Day, D.M. (2003).</td>
<td>SNAP® ORP External evaluation of the implementation of the in Durham, Ontario, Canada. This study assessed pre to post treatment changes of the SNAP® ORP with a three month follow-up using a range of objective measures.</td>
<td>32 (27 boys, 5 girls)</td>
<td>Self-report Antisocial Behavior Scale (SRA-C; SRA-P); Young Children's Social Desirability Scale; Parent Dimensions Inventory (PDI); Perceived Ineffectiveness Index (PII);</td>
<td>Parent • Child</td>
<td>Findings revealed a significant decrease in the number of delinquent behaviors as reported by parents and children. There were also improvements in prosocial thinking, parenting behaviour, perceived parenting efficacy, and organization around household routines.</td>
<td>See attached charts</td>
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This study used a retrospective longitudinal design to examine the relationship between early childhood and family risk factors and subsequent involvement in criminal activities, contact with the health care system, and the associated costs of these events for a clinic-referred sample of children with conduct problems. (females).

Sample size: 446 (379 males, 67 females), and between the ages of 12 and 21 for health encounters (N=234 males, 39 females).

Measures: Early Assessment Risk Lists (EARL) for Boys and Girls, and followed up to an average age of 28 for criminal offending.

Outcome measures using official records from provincial and federal authorities.

Informants: Parent

General comments: Results revealed that the EARL total score significantly predicted prevalence of crime for both males and females. For males, the total score also predicted frequency of convictions and membership within a number of high-risk offending groups based on offending onset, persistence and frequency. Analyses of individual risk factors revealed that poor academic performance, holding antisocial attitudes, having police contact and being unresponsive to treatment were noteworthy individual predictors of future criminality in males. For health outcomes, the EARL total score significantly predicted frequency of emergency room encounters for both males and females. The findings from the monetary cost of crime and cost of health service use analyses largely paralleled those based on count data. Further analyses on the costs of crime indicated that high-risk offenders cost society upwards of 1.4 million dollars per case, suggesting that crime prevention programs can benefit a small fraction of children and still produce enormous savings to society.

Effect Sizes: No effect sizes reported. See attached tables.


The Provincial Centre of Excellence for Child and Youth Mental Health at CHEO Program Evaluation Grant: # RG-976

This study was part of a cross-sector collaboration with researchers and practitioners to further examine the predictive quality and content validity of the EARLs by using clinician rated assessments in a prospective sample of boys and girls. Study II further examined the predictive validity of the EARLs. Analyses were conducted to assess the fit between the EARL total and subscale scores, in a sample of clinically referred high risk children.

Sample size: Study I 343 (195 boys; 148 girls) Study II 1150 (573 boys and 380 girls)

Measures: 1) Early Assessment Risk List for Boys (EARL-20B) and Girls (EARL-21G); 2) Child Behavior Checklist (CBCL; Achenbach & Rescorla, 2001); and 3) Criminal Record Data obtained from the Royal Canadian Mounted Police (RCMP) and the Ministry of Children and Youth Services (MCYS) through a court order under the Youth Criminal Justice Act (YCJA).

Informants: Parent

General comments: Study I. For boys, the clinician-rated EARL sample generated a similar 3-Factor Model structure as previously reported (Augimeri, 2005). For girls, the current findings did not replicate previous Confirmatory Factor Analysis (CFA) findings - a 3-Factor Model was produced with a new Relational Disturbance factor. Study II. Criminal record data retrieved showed that 8% of boys and 5% of girls had one or more criminal offences. Survival Curve analysis showed that the probability of criminal offence for boys was 2.5 times that of girls.

Effect Sizes: No effect sizes reported. See attached tables.


A retrospective case file study was performed on the files of girls who participated in the SNAP@ GC program from its inception in 1996 through to 2000. The analysis examined behavioural change comparing admission, six, and twelve month externalizing behaviour scores.

Sample size: TOTAL = 98 girls

Measures: Standardized Client Information System, a measure based on the CBCL (Offord & Boyle, 1996)

Informants: Clinical files

General comments: At both follow up periods, girls showed significant improvements in terms of externalizing behaviours, which is an aggregation of conduct and oppositional problem behaviours. The girls also displayed a statistically significant improvement in social skills behaviour, from admission to the six-month follow up.

Effect Sizes: Ext = 0.42-6 month; 0.49-12 month Social relations = -0.72-6 month; 0.51-12 month
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<th>Design or purpose of study</th>
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<tbody>
<tr>
<td>19. Lewis, M.D., Granic, I., Lamm, C., Zelazo, P.D., Steiben, J., Todd, R.M., Moadab, I., &amp; Pepler, D. (2008). Changes in the neural bases of emotion regulation associate with clinical improvement in children with behaviour problems. <em>Development and Psychopathology, 20</em>, 913-939.</td>
<td>Neurophysiological markers associated with emotion regulation were examined in children comorbid for externalizing and internalizing problems before and after treatment. It was hypothesized that treatment success would correspond with reduced ventral prefrontal activation, and increased dorsomedial prefrontal activation, at the time point of an event-related potential (ERP) associated with inhibitory control. All children completed an emotion-induction go/no-go task while fitted with a 128-channel electrode net at each test session.</td>
<td>42 boys (27 clinical, 15 non-clinical)</td>
<td>CBCL; TRF; CAFAS; ERP task (emotion induction go/no-go task adapted from Garavan, Ross, and Stein, 1999); Self-report emotion-induction check</td>
<td>Teacher • Parent • Clinician • Independent coders</td>
<td>Child 'Improvers' showed an overall reduction in ventral prefrontal activation from pretreatment to post-treatment, bringing them in line with non-clinical children, whereas ventral activation remained high for child nonimprovers. Both improvers and nonimprovers showed high dorsal activation relative to non-clinical children. While these results are preliminary and require replication, they constitute the first record of brain changes corresponding with the successful treatment of children's behavior problems.</td>
<td>No effect sizes reported. See attached charts.</td>
</tr>
<tr>
<td>20. Granic, I., O'Hara, A., Pepler, D., &amp; Lewis, M. (2007). A dynamic system analysis of parent-child changes associated with successful 'real-world' interventions for aggressive children. <em>J Abnorm Child Psychol, 35</em>(5), 845-857. Printed On-Line: DOI 10.1007/s10802-007-9133-4.</td>
<td>Studies have shown that improved parenting mediates treatment outcomes for aggressive children, but empirical research lacks descriptions of how parent-child interactions change with treatment. The parent-child interactions of those who showed clinically significant improvements (IMPs) were compared to those of children who did not improve (NIMPs). At pre- and post-treatment, home visits were videotaped while parents and children discussed consecutively: a positive topic, a mutually unresolved problem, and another positive topic.</td>
<td>38 (34 boys, 4 girls) and their mothers</td>
<td>A modified version of the Issues Checklist (Robin &amp; Weiss, 1980); CAFAS; CBCL (externalizing)</td>
<td>Child • Parent • Clinician • Trained observers (coding)</td>
<td>Results showed that significant improvements in children's externalizing behaviour were associated with increases in parent-child emotional flexibility during the problem-solving discussion. Dyads who improved still expressed negative emotions, but they acquired the skills to repair conflicts, shifting out of their negative interactions to mutually positive patterns.</td>
<td>No effect sizes reported. See attached charts.</td>
</tr>
<tr>
<td>21. Levene, K. S., Walsh, M. M., Augimeri, L. K., &amp; Pepler, D. J. (2004). Linking identification and treatment of early risk factors for female delinquency. In M. M. Moretti, C. L. Odgers &amp; M. A. Jackson (Eds.), <em>Girls and Aggression: Contributing Factors and Intervention Principles. Perspectives in Law &amp; Psychology Series, Volume 19</em> (pp. 41-56). New York: Kluwer Academic/ Plenum.</td>
<td>A retrospective examination of the reliability and validity of the EARL-21G was conducted. A search of criminal records was performed in order to determine long-term involvement in crime. Intra-class correlation coefficients were calculated for total scores derived from three coders who assessed 30 common files.</td>
<td>TOTAL = 30 girls</td>
<td>EARL-21G</td>
<td>• Clinical files • Criminal records</td>
<td>In terms of official criminal involvement, total scores derived for 67 files were used to divide the sample at the median to compare the prevalence of offending between the bottom (mean = 12.7, range = 5-17) and top (mean = 22.3, range = 18-30) ends of the distribution. Official conviction data showed that, overall, only 18 out of 67 (27%) of the girls were found guilty of committing an offense at follow-up, and although higher EARL-21G scores were related to more offending (34% versus 20%) the difference between the two groups failed to reach statistical significance.</td>
<td>No effect sizes reported.</td>
</tr>
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</table>

Table 1D –Studies Based on SNAP® Boys and Girls Children -- not Directly Testing Program Effectiveness
Background: The current study directly investigated whether changes in the neural correlates of self-regulation (SR) are associated with the effectiveness of treatment for the externalizing problems of children.

Methods: Seventy-one children 8–12 years of age with clinical levels of externalizing behavior and their families completed a 3-month cognitive behavioral therapy program with a parent management training component. Electroencephalogram correlates of SR were evaluated before and after treatment with a go/no-go task requiring inhibitory control.

Total = 95
Treatment group (71: 51 boys, 20 girls); comparison group (24 non-clinical: 17 boys and 7 girls)

Behavioural
CBCL (used for inclusion criteria)
CAFAS (home, school, community and behaviour towards others)
Self-report rating scales
EEG Data
Executive function tasks on computer

Child
Parent
Other significant adults in child's life (i.e. grandparents, teachers)

Results showed that neural markers of SR, such as the N2 and frontal P3 event-related potential magnitudes, differed between the clinical sample and a matched comparison group before treatment: the clinical sample had larger N2 magnitudes and smaller frontal P3 magnitudes. Children who improved with treatment demonstrated a marked decrease in the magnitude of the N2 in comparison with children who did not improve. For improvers only, source analyses during the time period of the N2 estimated activation decreases in medial and ventral prefrontal cortex as well as the anterior medial temporal lobe. A decrease in N2 magnitudes and corresponding source activation in children who improved with treatment might reflect improved efficiency in the neural mechanisms of SR.

Background:

The current study directly investigated whether changes in the neural correlates of self-regulation (SR) are associated with the effectiveness of treatment for the externalizing problems of children.

Methods: Seventy-one children 8–12 years of age with clinical levels of externalizing behavior and their families completed a 3-month cognitive behavioral therapy program with a parent management training component. Electroencephalogram correlates of SR were evaluated before and after treatment with a go/no-go task requiring inhibitory control.

Total = 95
Treatment group (71: 51 boys, 20 girls); comparison group (24 non-clinical: 17 boys and 7 girls)

Behavioural
CBCL (used for inclusion criteria)
CAFAS (home, school, community and behaviour towards others)
Self-report rating scales
EEG Data
Executive function tasks on computer

Child
Parent
Other significant adults in child's life (i.e. grandparents, teachers)

Results showed that neural markers of SR, such as the N2 and frontal P3 event-related potential magnitudes, differed between the clinical sample and a matched comparison group before treatment: the clinical sample had larger N2 magnitudes and smaller frontal P3 magnitudes. Children who improved with treatment demonstrated a marked decrease in the magnitude of the N2 in comparison with children who did not improve. For improvers only, source analyses during the time period of the N2 estimated activation decreases in medial and ventral prefrontal cortex as well as the anterior medial temporal lobe. A decrease in N2 magnitudes and corresponding source activation in children who improved with treatment might reflect improved efficiency in the neural mechanisms of SR.

No effect sizes reported.

Background:

The current study directly investigated whether changes in the neural correlates of self-regulation (SR) are associated with the effectiveness of treatment for the externalizing problems of children.

Methods: Seventy-one children 8–12 years of age with clinical levels of externalizing behavior and their families completed a 3-month cognitive behavioral therapy program with a parent management training component. Electroencephalogram correlates of SR were evaluated before and after treatment with a go/no-go task requiring inhibitory control.

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