



# After-School Programmes

## Toolkit technical report

Hannah Gaffney, David P. Farrington and Howard White

June 2021

*This report is produced in collaboration with staff from the Campbell Collaboration Secretariat. It is a derivative product, which summarises information from Campbell systematic reviews, and other reviews, to support evidence-informed decision making’.*

### **Abstract/Plain Language summary**

The objective of this technical report is to review the evidence on the effect of after-school programmes on children's involvement in crime and violence. This technical report is based on two systematic reviews: Kremer et al. (2015) and Taheri & Welsh (2016).

Taheri and Welsh (2016; p. 275) describe after-school programmes as 'any organised programme implemented in the after-school hours, targeting children and youth who would otherwise be unoccupied or unsupervised'. Examples of after-school programmes include recreation-based activities, drop-in-clubs, or tutoring services.

Kremer et al. (2015) distinguish between after-school intervention programmes and extra-curricular activities (e.g., sports, drama, chess). After-school programmes are those that offer more than one activity and occur after-school hours. For example, an after-school programme may be composed of intervention components that offer academic support or enrichment and also recreational or skill development activities.

The purpose of after-school programmes is to provide a "safe, supervised after-school environment" (Kremer et al., 2015, p. 3).

After-school programmes are commonly funded in disadvantaged neighbourhoods, areas of social deprivation, and target children from under-performing schools (Kremer et al., 2015). However, programmes are voluntary and may be subject to self-selection effects.

Children are more likely to become involved in crime and violence during after-school hours, in the time between youth finishing school and most adults returning from work. Therefore, after-school programmes which supervise children and young people during these hours could have a diversion effect. Programmes that provide children and young people with

structured activities, may lead to skill development and greater school engagement, and socialisation to reinforce pro-social behaviours (Taheri & Welsh, 2016).

Overall, after school programmes are moderately effective in reducing delinquency. The observed effect size of 0.062 corresponds to a decrease in delinquency of approximately 8%. The evidence rating is 4.

Both reviews test for moderators. The most interesting result from both reviews is that after-school programmes that only include recreation or non-academic activities were the least effective. Therefore, we recommend that after-school programmes should include academic or skills training elements. Given the current evidence, after-school programmes may be more effective in reducing externalising behaviour with middle school children (i.e., aged 11 – 14 years old) and programmes that include weekly or daily sessions are associated with the greatest effectiveness.

There is one UK/Ireland study included in the reviews which is a reading programme for young children from deprived areas. It had a desirable effect on teacher-reported child behaviour.

It would be useful to have long-term follow-up studies after early interventions in UK/Ireland, as well as an updated systematic review of after-school programmes, and a review of long-term follow-ups of all childhood programmes intended to reduce youth crime in later life.

### **Objective and approach**

The objective of this technical report is to review the evidence on the effect of after-school programmes on children's involvement in crime and violence.

This technical report is based on two systematic reviews: Kremer et al. (2015) and Taheri & Welsh (2016). Kremer et al. (2015) published a systematic review and meta-analysis of the effect of after-school programmes on externalising behaviour and school attendance. Taheri and Welsh (2016) published a systematic review and meta-analysis on the effect of after-school programmes on juvenile delinquency outcomes.

The following inclusion and exclusion criteria were used to inform selection of systematic reviews.

#### *Inclusion criteria*

To be included in this report, a systematic review must include evaluations of after-school programmes that aim to reduce or prevent crime, violence or related outcomes (e.g., truancy, anti-social behaviour, externalising behaviour) and report a meta-analysis of outcomes. The included primary evaluations should report data on quantitative measures of behavioural outcomes and study both an experimental and control group.

#### *Exclusion criteria*

Reviews were excluded for the following reasons:

- The review studied other school-based programmes that were implemented during school hours (e.g., anti-bullying programmes, Gaffney et al., 2019)
- The review studied programmes that were most likely implemented after-school hours and connected to school systems, but the intervention was exclusively a different approach (e.g., mentoring programmes, Tolan et al., 2013).
- The review was conducted more than 10 years ago, and there was a sufficient and more recent review available (e.g., Zief et al., 2006).
- The review was not conducted using systematic search methods, including specific inclusion/exclusion criteria and rigorous coding protocols (e.g., narrative reviews).

#### **Outcomes**

Taheri and Welsh (2016) examined the effectiveness of after-school programmes on outcomes of delinquency, measured by both self-reports and official records such as police records of arrests. Kremer et al. (2015) reported the effects of after-school programmes on outcomes of school attendance and youth externalising behaviours. Externalising behaviours

were defined as “any acting out or problematic behaviour” (Kremer et al., 2015, p. 8) and could include outcomes such as disruptive behaviour, substance use, or delinquency.

### **Description of interventions**

Taheri and Welsh (2016; p. 275) describe after-school programmes as ‘any organised programme implemented in the after-school hours, targeting children and youth who would otherwise be unoccupied or unsupervised’. Examples of after-school programmes include recreation-based activities, drop-in-clubs, or tutoring services. Kremer et al. (2015, p. 3) highlight that one purpose of after-school programmes is to provide a “safe, supervised after-school environment” . The provision of such an environment could act as a form of diversion for children and young people vulnerable to involvement in crime or violence.

Kremer et al. (2015) categorised interventions according to the grade level of participants. Most interventions were implemented with students from a mixture of elementary, middle school and high school age (from a US grading system) or with middle school children (typically aged 11 – 14 years old). Taheri and Welsh (2016) found that at the start of after-school programmes, the ages of participants varied but the majority of evaluations reported a mean age of between 9 and 16 years old. The activities that are incorporated in after-school programmes should be age appropriate.

After-school programmes are commonly funded in low socio-economic neighbourhoods, areas of social deprivation, and target children from under-performing schools (Kremer et al., 2015). In the United States, the Afterschool Alliance (2014) report that there is more demand or need for after-school programmes for children and adolescents from low-income or ethnic minority families, but there are substantial barriers to access amongst these populations<sup>1</sup> (Kremer et al., 2015).

---

<sup>1</sup> [http://afterschoolalliance.org/documents/AA3PM-2014/AA3PM\\_National\\_Report.pdf](http://afterschoolalliance.org/documents/AA3PM-2014/AA3PM_National_Report.pdf)

Taheri and Welsh (2016) distinguish between single-modal and multi-modal after-school programmes. Our understanding of multi-modal programmes in this context is as those that included multiple intervention activities. For example, a multi-modal after-school programme may involve academic and homework help activities, counselling and mentoring components, social or cognitive skill development, and recreational activities. Included, single-modal programmes provided youth with one intervention activity. Taheri and Welsh identified two single-modal after-school programmes that offered participants with job skills training or a recreational service (Taheri & Welsh, 2016). After-school programmes mostly do not include a manualised intervention structure, and those that do include structured intervention activities frequently only use a manual for part of the programme (Kremer et al., 2015).

There are many possible after-school activities that children can participate in, including normal sports clubs or recreational activities. To distinguish between after-school intervention programmes and “other content-specific or sports related extra-curricular activities”, Kremer et al. (2015) stated that an after-school programme must offer more than one activity. For example, an after-school programme to reduce or prevent delinquency may be composed of intervention components that offer academic support or enrichment, and also recreational or skill development activities. Therefore, programmes such as mentoring programmes, that occurred in after-school hours but only included this one intervention element, were excluded.

### *Targeted or Universal*

After-school programmes are most often targeted intervention programmes. Generally, after-school programmes aim to work with children vulnerable to involvement in crime or violence. However, programmes are voluntary and may be subject to self-selection effects. Kremer et al. (2015, p. 4) highlight that some after-school programmes will explicitly or implicitly aim to “reduce crime, delinquency and other problematic behaviours in and out of school”. After-school programmes may also aim to reduce substance use, and improve social and emotional skills, school engagement and school attendance.

### *Implementation setting and personnel*

After-school programmes are typically implemented in school buildings, but often not by school personnel. After-school programmes can also be implemented in community locations such as community centres or public housing developments (Taheri & Welsh, 2016).

Most after-school programmes are implemented in a group format, but can be delivered to individual children, or involve a mixture of group-based and individual-based activities (Taheri & Welsh, 2016).

### *Duration and Scale*

After-school programmes are generally implemented over a number of months or years (Taheri and Welsh, 2016). Kremer et al. (2015) specified that after-school programmes should take place after school hours and during the regular academic year. It follows that after-school programmes take place during the school week (i.e., Monday – Friday). Most after-school programmes involve sessions that last between 3 and 4 hours per day and on 3-5 days per week (Kremer et al., 2015).

### **Theory of change/presumed causal mechanisms**

After-school programmes are presumed to prevent and/or reduce children's involvement in crime and violence through mechanisms of informal social control and formal supervision.

Research suggests that after-school hours, in the time between children finishing school and most adults returning from work, are a time when children are likely to be vulnerable to involvement in crime and violence (e.g., Newman et al., 2000). Moreover, Kremer et al. (2015) refer to numerous previous studies that have found a relationship between parental supervision, unstructured time after school and children and young people engaging in crime, substance use, and risk-taking behaviours (e.g., Biglan et al., 1990; Gottfredson et al., 2001). Therefore, after-school programmes aim to reduce crime and violence by supervising children during these hours, thus having a diversion effect, and to provide them with structured



activities, which may lead to skill development and greater school engagement, and socialisation to reinforce pro-social behaviours (Taheri & Welsh, 2016).

Researchers have argued that after-school programmes may be associated with adverse effects. It is possible that after-school programmes may mean children meet and become influenced by peers who are already involved in crime or violence (see Taheri & Welsh, p. 275 for more research). One way in which this effect may occur is through the voluntary nature of after-school programmes. Rorie et al. (2011) suggested that children who participate in after-school programmes may 'self-select' themselves into intervention activities that are less structured, thus allowing them to socialise more freely and possibly interact with anti-social peers without appropriate adult supervision.

## **Evidence base**

### *Descriptive overview*

Taheri and Welsh (2016) included 17 evaluations of after-school programmes in their meta-analysis. The majority of the evaluations were conducted in the USA ( $n = 15$ ) but one was conducted in Canada and one in Sweden. The earliest evaluation was conducted in the 1950s, with the majority published after 2000. The mean age of participants in after-school programmes was between 9 and 16 years old. The sample sizes ranged from 200 participants to 4,262 participants and a number of the after-school programmes involved external organisations, such as the Young Men's Christian Association and the Boys and Girls Clubs of America.

Kremer et al. (2015) included 31 reports of evaluations of after-school programmes published mostly between 2000 and 2009. The majority of studies were conducted in the US and one study was evaluated in Ireland. The effects of after-school programmes were evaluated using data from 109,282 participants and the researchers reported on outcomes of school attendance and externalising behaviours. In many studies, the sample were predominantly Black (45.8% of studies) and Kremer et al. (2015) reported that the gender of participants was evenly split. Student participants were identified as being 'at-risk' using criteria such as the percentage of students from a low-income household, students with low academic

achievement, or the proportion of students from an ethnic minority background (Kremer et al., 2015). The majority of after-school programmes were implemented in school settings (54.2%), and others were implemented in community settings (20.8%) or a mixture of settings. Programmes were mostly a mixture of academic and non-academic programmes (41.7%) and were implemented locally (70.8%).

#### *Assessment of the strength of evidence*

We have confidence that, at the time of writing, the reviews by Kremer et al. (2015) and Taheri and Welsh (2016) are the best available evidence on the effectiveness of after-school programmes. Our decision rule for determining the evidence rating is summarised in the technical guide.

Two independent coders used a modified version of the AMSTAR2 critical appraisal tool to appraise the reviews by Kremer et al. (2015) and Taheri & Welsh (2016). According to this tool, the review by Kremer et al. (2015) was rated 'high' and the review by Taheri and Welsh (2016) was rated 'medium'. The results are summarised in Annex 3.

Both reviews adequately specified the research questions and the inclusion/exclusion criteria. The inclusion criteria included components relating to the population, intervention, comparison group and outcome of interest. Specifically, Taheri and Welsh (2016) included a specific operational definition of after-school programmes and state that evaluations must include outcomes of delinquency and participants who were children or adolescents.

Kremer et al. (2015) specify that they created a review protocol before undertaking the review but do not state whether or not the protocol was published. Taheri and Welsh (2016) refer to a coding protocol but similarly do not specify whether or not this was published.

Kremer et al. (2015) included experimental and quasi-experimental evaluations that measured outcomes in an intervention group and a comparison group at baseline and following implementation of an after-school programme. Taheri and Welsh (2016) also

specify that included evaluations must be conducted using a randomised controlled trial design or a quasi-experimental design that included a control group.

Both reviews reported a comprehensive literature search strategy including a number of different databases, designated keywords and search strategies. Neither of the reviews restricted inclusion criteria to only peer-reviewed publications or only reports in English. Taheri and Welsh (2016) specify that they searched for reports published in English, German and French. Kremer et al. (2015) do not state that they searched for reports published in any particular language. However, Kremer et al. (2015) limited included studies to those conducted in predominantly English-speaking countries, i.e., the USA, the UK, Canada, Ireland and Australia. The authors justify this restriction because educational systems vary greatly around the world.

Evaluations that met inclusion criteria for the Kremer et al. (2015) review were coded by two authors and inter-rater agreement was measured. Studies included in the Taheri and Welsh (2016) were coded by one member of the research team, and they state that any questions about the coding of studies were discussed amongst the researchers.

Kremer et al. (2015) evaluated risk of bias analysis using the EPOC risk of bias tool (Higgins et al., 2011), as suggested by the Cochrane Collaboration, and conducted a series of analyses to evaluate the impact of possible risk of bias on outcomes. Taheri and Welsh (2016) did not conduct any risk of bias analyses, beyond normal publication bias analysis.

Taheri and Welsh (2016) state that no funding was received for their review and Kremer et al. (2015) do not provide information about funding.

Each of the reviews conducted a meta-analysis and reported detailed information on the synthesis and estimation of weighted effect sizes and adequately reported the heterogeneity between primary effects. Each of the meta-analyses reported separate weighted effect sizes for independent outcomes and assessed multiple moderators as possible explanations for heterogeneity among primary effect sizes.

Taheri and Welsh (2016) provide a direct estimate of the effect on delinquency based on 12 studies. However, the results are highly heterogeneous ( $I^2=93\%$ ) and the review rated ‘medium’ as per the AMSTAR tool, so the overall evidence rating for the impact is 4. This our preferred headline estimate for effects on violence and crime outcomes.

Kremer et al. (2015) present an estimate for externalising behaviour based on 14 studies with high heterogeneity ( $I^2=80\%$ ), so the evidence rating for the impact is 4. Due to the indirect nature of this estimate for violence and crime outcomes, the evidence rating is 2 for these.

## Impact

### *Summary impact measure*

Based on the two meta-analyses that inform the current technical report, the findings suggest that after-school programmes have a small desirable impact on juvenile delinquency outcomes. Taheri and Welsh (2016) found that the weighted mean effect size for delinquency was not statistically significant. Kremer et al. (2015) found that the weighted mean effect size for externalising behaviours was not statistically significant, but they did not disaggregate results for different types of externalising behaviours. These mean effect sizes are summarised in Table 1.

Table 1

### *Mean effect sizes for crime and violence outcomes*

Review	ES ( <i>d</i> and OR)	CI (ES)	<i>p</i>	% reduction	Evidence rating for review outcomes	Evidence rating for crime and violence outcomes
Kremer et al. (2015);	<i>g</i> = 0.11 OR = 1.22	-0.05, 0.28	n.s.	14%	4	2

externalising behaviours						
Taheri & Welsh (2016) Delinquency	$d = 0.062$ OR = 1.12	-0.098, 0.223	.449	8%	4	n.a.

Note: ES = the weighted mean effect size; CI = 95% confidence intervals for the mean ES;  $p$  = the statistical significance of the mean ES; n.s. = not significant; OR = odds ratio;  $d$  = Cohen's  $d$ ;  $g$  = Hedges'  $g$

In order to convert the  $d$  and  $g$  measures to a percentage reduction, we first used the equation:  $\ln(\text{OR}) = d / 0.5513$  (Lipsey & Wilson, 2001, p. 202). Hedges'  $g$  is similar to Cohen's  $d$  and so the equation works for both types of effect sizes. Then we assumed that there were equal numbers ( $n = 100$ ) in the experimental and control conditions, and that 25% of persons in the control condition were delinquent (or demonstrated externalising behaviour). With these assumptions, the OR of 1.22 for Kremer et al. (2015) translated to 21.46% of experimental persons showing externalising behaviour problems, which is a 14% relative decrease. For Taheri and Welsh (2016), the OR of 1.12 translated into 22.94% of the experimental persons being delinquent, an 8% relative reduction<sup>2</sup>.

A prevalence of delinquency of 25% is a plausible assumption; for example, in the Cambridge Study in Delinquent Development, which is a prospective longitudinal survey of 411 London boys, 25% were convicted between ages 10 and 17 (Farrington, 2012). Similarly, Farrington et al. (1990) found that 24% of these boys had serious conduct problems by age 10. However, prevalence can vary greatly, for example depending on the time, place, sample, definition and measurement of delinquency or anti-social behaviour. Nevertheless, these numbers are not greatly affected by different assumptions about the prevalence of delinquency or externalising behaviour. For example, in relation to Kremer et al. (2015), the 14% decrease would become 12% if we assumed a 40% prevalence of externalising behaviour and 16.5% if

<sup>2</sup> Taheri and Welsh (2016, p. 284) report that their mean effect size translates to a 3% reduction in delinquency. However, information about how their Cohen's  $d$  effect size was transformed to a percentage value is not provided. Brandon Welsh said that they were reporting an absolute rather than a relative reduction.

we assumed a 10% prevalence of externalising behaviour. Annex 1 provides more information about the estimated reductions.

Kremer et al. (2015) also evaluated the effects of after-school programmes on school attendance outcomes. The results suggested that after-school programmes did not have a statistically significant impact on school attendance ( $g = 0.04$ , 95% CI -0.02, 0.10).

### *Moderators and mediators*

Taheri and Welsh (2016) reported significant heterogeneity between primary effect sizes ( $Q = 235.16$ ,  $df = 11$ ,  $p < .001$ ) and a number of moderators were explored as possible explanations for this variance. Moderator variables included: intervention type (i.e., academic, recreation, or skills training/mentoring), intervention setting (i.e., in community or school settings) and format (i.e., individual intervention or group-based activities), risk-level of participants, age of participants, duration of the intervention and whether or not a secondary intervention was included.

The result of moderator analyses are most likely influenced by the number of studies in subgroups, but possibly the most interesting result from both reviews is that after-school programmes that only include recreation or non-academic activities were the least effective. Therefore, we recommend that after-school programmes should include academic or skills training elements to reduce delinquency and/or externalising behaviour. Given the current evidence, after-school programmes may be more effective in reducing externalising behaviour with middle school children (i.e., aged 11 – 14 years old), and programmes that include weekly or daily sessions are associated with the greatest effectiveness.

None of the weighted mean effect sizes for different types of after-school programmes were statistically significant. The mean effect size for after-school programmes categorised as skill development/mentoring showed a desirable impact on juvenile delinquency but not statistically significantly so. The mean effect size for after-school programmes that were categorised as recreation activities showed an undesirable effect on juvenile delinquency,

suggesting that juvenile delinquency was greater in the experimental group than in the control group but not statistically significantly so.

Table 2

*Mean effect sizes for juvenile delinquency outcomes and moderator variables*

Review	ES ( <i>d</i> and OR)	SE	<i>p</i>	% change
Taheri & Welsh (2016); academic interventions (5 studies)	<i>d</i> = 0.059 OR = 1.11	0.070	n.s.	8% decrease
Taheri & Welsh (2016); recreation interventions (2 studies)	<i>d</i> = -0.371 OR = 0.51	0.313	n.s.	58% increase
Taheri & Welsh (2016); skills training/mentoring (5 studies)	<i>d</i> = 0.269 OR = 1.63	0.193	n.s.	32% decrease

*Note.* ES = weighted mean effect size under a random effects meta-analysis; OR = odds ratio; *d* = Cohen’s *d*; SE = standard error; *p* = statistical significance; n.s. = not significant

Furthermore, none of the other moderators examined by Taheri and Welsh (2016) were associated with statistically significant effects on juvenile delinquency.

Kremer et al. (2015) also conducted a series of moderator analyses to examine possible reasons for the heterogeneity observed between effect sizes for both externalising behaviour and school attendance outcomes. A number of methodological and contextual moderators were included. In summary, the moderator analyses found that, in relation to externalising behaviour outcomes:

- After-school programmes implemented with middle school students (*d* = 0.14, 95% CI -0.01, 0.30, *n* = 17 studies) or mixed age groups (*d* = 0.15, 95% CI -0.52, 0.83, *n* = 19 studies) were most effective in comparison to programmes implemented with elementary school students (*d* = 0.07, 95% CI -0.47, 0.62, *n* = 3 studies).
- After-school programmes that included weekly sessions were associated with the largest effect sizes (*d* = 0.25, 95% CI -1.17, 1.67, *n* = 4 studies). Programmes that involved daily sessions were also associated with large effect sizes (*d* = 0.21, 95% CI -

0.54, 0.95,  $n = 13$  studies). Most programmes involved sessions 3 to 4 times a week, but these were associated with the smallest effect sizes ( $d = 0.02$ , 95% CI -0.13, 0.17,  $n = 26$  studies).

- After-school programmes with an academic focus were associated with the largest mean effect sizes ( $d = 0.20$ , 95% CI -0.40, 0.75,  $n = 5$  studies). Programmes with a mixed academic and non-academic focus were associated with reductions in externalising behaviour ( $d = 0.11$ , 95% CI -0.16, 0.38  $n = 32$  studies) but programmes that were solely non-academic were associated with increased externalising behaviour problems ( $d = -0.04$ , 95% CI -1.04, 0.97,  $n = 11$  studies). This result is concordant with findings from Taheri and Welsh (2016) summarised in Table 2.

### **Implementation and Cost analysis**

Neither of the reviews report information on the implementation of after-school programmes or any data for cost-benefit analyses. However, evidence is available from a small number of UK and Ireland evaluations.

Only two evaluations focused on after-school programmes in the UK and Ireland are included – the evaluation by Ives et al. (2007) of a programme in Camden Town, London and an evaluation of the school homework programme in Fettercairn, Dublin. Hence additional information was gathered from two evaluations of the extended schools programme which included childcare from 8 a.m. to 6 p.m. amongst their components and one study of after-school programmes in England but with a focus on physical activity.

### **Success factors**

The process evaluations support the value of after-school activities, and their ability to productively engage children. Parents and children alike commented that there would be nothing to do otherwise, or they would just be at home watching television. Parents also commented that children who previously struggled with or who shied away from homework now complete it, and even take obvious pride in it. These findings support the evidence that



after school programmes can have desirable effects through diversion, improving self-worth and increasing school engagement and performance.

Both of the after-school evaluations cover programmes which operate off school premises. In the case of Fettercairn, the children are collected from home by bus, which ensures good attendance. In the case of Camden Town, the offsite location is said to be an advantage, because many child participants and their parents are distrustful of official agencies.

Other success factors included having interesting and fun things to do so that children are keen to attend – which the qualitative data suggest is indeed the case. In Fettercairn, participants commented that “It’s very cool” and that “More people should go to the club because it is great”. In Camden Town, a girl said she liked the ‘fun and games’, the trips, friends and football.

Both evaluations of the offsite after-school programmes note that the more liberal environment is appreciated by children as it allows wider range of acceptable behaviour, with limits enforced in a less authoritarian way. In the words of one child from the Camden Town project, ‘Staff are kind and if you do something wrong, they tell you the right thing to do, like walk away’. More information about implementation is given in Annex 2.

### *Challenges*

Funding is a major constraint. A survey of after-school clubs found that schools had more inactive clubs than active ones (Davies et al., 2014). The assessment of extended schools published in 2007 noted that there were multiple opportunities for funding but concerns about sustainability (Cummings et al., 2007). And by the time of the 2018 evaluation, the authors argued that the original policy intent of providing childcare from 8 a.m. to 6 p.m. and other services had not been matched by putting in place the required statutory framework which was associated with the subsequent funding shortfalls. There was no longer a focus on statutory provision but rather reliance on charity and individuals who could only provide sporadic coverage (Haddad et al., 2018).

Other issues which arise, but which are not reported consistently across the studies, are the time needed to engage with other services, ensuring that the correct children benefit (e.g. taking account of the fact that children who are not good at sports will not participate in sports clubs), having sufficient staff with the correct skills (including administrative ability), and lack of parental engagement (though some children consider that this is desirable).

### **Findings from UK/Ireland**

Kremer et al. (2015) included one evaluation of an after-school programme evaluated in Dublin, Ireland (i.e., Biggart et al., 2013). This study evaluated 'Doodle Den', an after-school programme for children in deprived areas who were having difficulties in learning to read. The intervention was implemented in a group format in three 90-minute sessions after school hours each week. The programme lasted 36 weeks and the manualised intervention curriculum was delivered by two trained facilitators, one of whom was a teacher and the other was a youth worker. Intervention activities followed a structured outline and incorporated both academic and recreational activities (e.g., art, P.E., drama or music; Biggart et al., 2013). The main aim of the programme was to improve children's literacy.

The Doodle Den programme was evaluated using a randomised controlled trial with children from 8 primary schools. Children were referred to the programme by their teachers, and 311 children were included in the intervention group ( $n = 144$  girls and  $n = 167$  boys). The mean age was 5.62 years old. The control group included 310 children ( $n = 149$  girls and  $n = 161$  boys). The mean age was 5.64 years old. The majority of children in the intervention group were not classified as having a special educational need (as measured by teacher report,  $n = 233$ ) and the majority were White ( $n = 167$ ). Overall, the sample was predominantly White Irish, and 17% of the sample came from ethnic minority backgrounds (e.g., Nigerian, Eastern European, and Irish Traveller).

The impact of the Doodle Den programme was evaluated on a range of outcomes, including child-reported literacy ability, teacher-reports of general literacy ability and ADHD related behaviours. School attendance was also measured. The results showed that the programme had a desirable effect on teacher-reported child behaviour ( $d = 0.18$ , 95% CI 0.02, 0.35,  $p =$

.001; Biggart et al., 2013, p. 136). This is equivalent to a 22.5% decrease. The findings also suggested that the programme was more effective for male participants in comparison to female participants. Biggart et al. (2013) also compared the effectiveness of the programme in relation to the ethnicity of participants. Overall, the results suggested that the programme worked similarly on literacy outcomes for all children.

### **What do we need to know? What don't we know?**

Studies of after-school programmes for younger children often focus on outcomes other than crime and violence, such as cognitive skills and externalizing behaviour. It would be useful to have long-term follow studies of these programmes to examine effects on crime and violence in the teenage years. It would also be useful to have a review of long-term effects on these outcomes across all early years interventions.

The existing reviews should be updated, including both externalizing behaviour and crime and violence outcomes. It would be particularly interesting to update the moderator analysis of Taheri and Welsh (2016) with additional studies. It is also recommended to include time use as an outcome, as in the review of Zief et al. (2006), to examine the diversionary hypothesis.

## References

- Biggart, A., Kerr, K., O'Hare, L., & Connolly, P. (2013). A randomised control trial evaluation of a literacy after-school programme for struggling beginning readers. *International Journal of Educational Research*, 62, 129 – 140. <https://doi.org/10.1016/j.ijer.2013.07.005>
- Biglan, A., Metzler, C. W., Wirt, R., Ary, D., Noell, J., Ochs, L., French, C., & Hood, D. (1990). Social and behavioral factors associated with high-risk sexual behavior among adolescents. *Journal of Behavioral Medicine*, 13(3), 245 – 261.
- Cionnaith, C. M. (2016) *An Evaluation of an After School Homework Programme in Fettercairn, West Tallaght*. Dublin: Fettercairn Community and Youth Centre.
- Cummings , C. et al. (2007) *Evaluation of the Full Service Extended Schools Initiative: Final Report*. London: Department of Education and Skills Research Report RR852.
- Davies, B. , Wood, L. , Banfield, K. , Edwards, M. and Jago, R. (2014) The Provision of Active After-School Clubs for Children in English Primary Schools: Implications for Increasing Children's Physical Activity. *Open Journal of Preventive Medicine*, 4, 598-605. doi: [10.4236/ojpm.2014.47069](https://doi.org/10.4236/ojpm.2014.47069).
- Farrington, D. P. (2012). Childhood risk factors for young adult offending: Onset and persistence. In F. Lösel, A. Bottoms, & D.P. Farrington (Eds.) *Young Adult Offenders: Lost in Transition?* (pp. 48-64). Abingdon: Routledge.
- Farrington, D. P., Loeber, R., & van Kammen, W.B. (1990). Long-term criminal outcomes of hyperactivity-impulsivity-attention deficit and conduct problems in childhood. In L.N. Robins & M. Rutter (Eds.), *Straight and Devious Pathways from Childhood to Adulthood* (pp. 62-81). Cambridge: Cambridge University Press.
- Gaffney, H., Ttofi, M. M., & Farrington, D. P. (2019). Evaluating the effectiveness of school-bullying prevention programs: An updated meta-analytical review. *Aggression and Violent Behavior*, 45, 111 – 133. <https://doi.org/10.1016/j.avb.2018.07.001>
- Gottfredson, D. C., Gottfredson, G. D., & Weisman, S. A. (2001). The timing of delinquent behavior and its implications for after-school programs. *Criminology & Public Policy*, 1, 61 – 86.

- Haddad, M., Lambie-Mumford, H and Sims, L. (2018) *Extended Schools*. London: Child Poverty Action Group.
- Ives, R. and Wyvill B. (2007) *Evaluation of the Junior Youth Inclusion Programme*. London: Educari.
- Kremer, K. P., Maynard, B. R., Polanin, J. R., Vaughn, M. G., & Sarteschi, C. M. (2015). Effects of after-school programs with at-risk youth on attendance and externalizing behaviors: A systematic review and meta-analysis. *Journal of Youth & Adolescence*, 44(3), 616 – 636. <https://doi.org/10.1007/s10964-014-0226-4>
- Lipsey, M.W. & Wilson, D.B. (2001). *Practical meta-analysis*. Thousand Oaks, CA: Sage.
- Newman, S.A., Fox, J.A., Flynn, E.A. & Christeson, W. (2000). *America's after-school choice: The prime time for juvenile crime, or youth enrichment and achievement*. Washington, DC: Fight Crime, Invest in Kids.
- Taheri, S. A., & Welsh, B. C. (2016). After-school programs for delinquency prevention: A systematic review and meta-analysis. *Youth Violence and Juvenile Justice*, 14(3), 272 – 290. <https://doi.org/10.1177/1541204014567542>
- Tolan, P., Henry, D., Schoeny, M., Bass, A., Lovegrove, P., & Nichols, E. (2013). Mentoring interventions to affect juvenile delinquency and associated problems: A systematic review. *Campbell Systematic Reviews*, 10. <https://doi.org/10.4073/csr.2013.10>
- Rorie, M., Gottfredson, D. C., Cross, A., Wilson, D., & Connell, N. M. (2011). Structure and deviancy training in after-school programs. *Journal of Adolescence*, 34, 105 – 117.
- Zief, S. G., Lauver, S., & Maynard, R. A. (2006). Impacts of after-school programs on student outcomes. *Campbell Systematic Reviews*, 2(1), 1 – 51.

## Annex 1: Effect size calculations

This annex shows the calculations based on the results and assumptions given in the text. We assume 200 youth, evenly divided between treatment and comparison groups. That means there are 100 youth in the control group and 100 youth in the treatment group. Assuming that 25% of youth in the control group reported delinquency or externalising behaviours, the mean effect sizes for both reviews can be easily transformed to a percentage reduction in the relevant outcome.

If the odds ratio for delinquency is 1.12 (Taheri & Welsh, 2016), then using the table below and the formula for an OR, we can estimate the value of X. The odds ratio is estimated as:  $A*D/B*C$ , where A is the number of children not involved in delinquency in the treatment group, B is the number of children involved in delinquency in the treatment group, C is the number of children not involved in delinquency in the control group, and D is the number of children involved in delinquency in the control group. Therefore, the value of X is 22.94 in the case of Taheri & Welsh (2016).

	Not involved in delinquency	Involved in delinquency	Total
Treatment	100-x	x	100
Control	75	25	100

Therefore, the relative reduction in delinquency is  $(25 - 22.94)/25 = 8.24\%$ . In relation to the review by Kremer et al. (2015) the value of X is 21.46 and the relative reduction in externalising behaviour is 14.16%.

The prevalence of delinquency and externalising behaviour is likely to vary between different studies and can be influenced greatly by the type of report (e.g., self-report or parent-report), the survey used, the questions asked (e.g., frequency of delinquency in the past couple of months versus the frequency of delinquency in the past year, or ever), etc. If we were to

adjust our assumption that 25% of the control group are delinquent, the relative reduction in the treatment group is not greatly affected.

For example, if we assume that 10% of the control group are involved in delinquency, the 2x2 table would be as follows and the value of X would 9.03 for the Taheri & Welsh (2016) review. Therefore, the relative reduction is 9.75% (i.e.,  $(10 - 9.03)/10 \times 100$ ).

	Not		
	involved in	Involved in	
	delinquency	delinquency	Total
Treatment	100-x	x	100
Control	90	10	100

Similarly, if we assume that 40% of the control group are involved in delinquency, the value of X is 37.31 for the Taheri & Welsh (2016) review, and the relative reduction in delinquency is 6.73%. Given, the dramatic difference in the assumed prevalence of delinquency, the percentage relative reduction does not vary greatly. Table 3 shows this further.

Table 3

*Variation of the relative reduction in delinquency/externalising behaviour depending on different assumptions.*

	Taheri & Welsh (2016); delinquency OR = 1.12	Kremer et al. (2015); externalising behaviour OR = 1.22
Assumed prevalence	Relative reduction	
10%	9.73%	16.5%
25%	8.24%	14.16%
40%	6.73%	11.65%

## Annex 2: Implementation analysis

Intervention	Success factors	Challenges	What children say
<p>Full Service Extended Schools Initiative :</p> <p>support the development of schools which provide a comprehensive range of services, including study support and 8am to 6pm childcare. Most FSES served areas of disadvantage and in the first year were located in Behaviour Improvement Programme areas</p>	<p>Well resourced, could attract resources from multiple sources</p> <p>Trust as a basis for information sharing</p> <p>Formal structures for staff and families to address problems</p>	<p>Time taken to establish relationships with other agencies</p> <p>Sustainability</p>	
<p>The Provision of Active After-School Clubs for Children in English Primary Schools:</p>		<p>A lot of clubs inactive</p> <p>Lack of funding sources</p>	



Implications for Increasing Children's Physical Activity (Davies et al, 2014)		Children inhibited from participating if they don't have the skills	
Extended Schools (Haddad et al., 2018)		Original policy intent not being matched by the appropriate statutory framework; of funding shortfalls; and of a political environment that has shifted away from statutory provision towards a mixture of individual self-reliance and charity plugging some gaps	
School homework programme in Fettercairn, Dublin, 2015	Good, open working environment	Funding limits activities Picking children who will benefit most Lack of skills in staff Parental engagement	"It's very cool" (Female aged 8) "It's good" (male aged 9) "I want to bring a friend into it, I don't like all the dinners" (Female aged 10) "More people should go to the

		Lack of contact with school	club because it is great” (Male aged 11) “Best thing of the club is the computers” (Male aged 10)
Junior Youth Inclusion Programme (Castlehaven), Camden Town (Ives et al. 2007)	Continuity (5 days a week and in holidays) and longevity Not being an ‘official agency’ Being enjoyable Allow a wider range of ‘acceptable behaviour’	Insufficient attention to administration Lack of clarity on longer term aims, even at level of participants	‘Staff are kind and if you do something wrong, they tell you the right thing to do, like walk away  What she liked about it was the ‘fun and games’ the trips, friends and football.

### Annex 3: AMSTAR Rating

Modified AMSTAR item		Scoring guide	After schools	
			Taheri and Welsh 2016	Kremer et al. (2015)
1	Did the research questions and inclusion criteria for the review include the components of the PICOS?	To score 'Yes' appraisers should be confident that the 5 elements of PICO are described somewhere in the report	Yes	Yes
2	Did the review authors use a comprehensive literature search strategy?	At least two bibliographic databases should be searched (partial yes) plus at least one of website searches or snowballing (yes).	Yes	Yes
3	Did the review authors perform study selection in duplicate?	Score yes if double screening or single screening with independent check on at least 5-10%	Partial Yes	Yes
4	Did the review authors perform data extraction in duplicate?	Score yes if double coding	Partial Yes	Yes
5	Did the review authors describe the included studies in adequate detail?	Score yes if a tabular or narrative summary of included studies is provided.	Yes	Yes

6	Did the review authors use a satisfactory technique for assessing the risk of bias (RoB) in individual studies that were included in the review?	Score yes if there is any discussion of any source of bias such as attrition, and including publication bias.	Partial Yes	Yes
7	Did the review authors provide a satisfactory explanation for, and discussion of, any heterogeneity observed in the results of the review?	Yes if the authors report heterogeneity statistic. Partial yes if there is some discussion of heterogeneity.	Yes	Yes
8	Did the review authors report any potential sources of conflict of interest, including any funding they received for conducting the review?	Yes if authors report funding and mention any conflict of interest	Yes  Medium	Yes  High



[www.youthendowmentfund.org.uk](http://www.youthendowmentfund.org.uk)

The Youth Endowment Fund Charitable Trust

Registered Charity Number: 1185413