EARLY
INTERVENTION
FOUNDATION

Covid-19 and early intervention

Evidence, challenges and risks relating to virtual and digital delivery

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About EIF

The Early Intervention Foundation (EIF) is an independent charity established in 2013 to champion and support the use of effective early intervention to improve the lives of children and young people at risk of experiencing poor outcomes.

Effective early intervention works to prevent problems occurring, or to tackle them head-on when they do, before problems get worse. It also helps to foster a whole set of personal strengths and skills that prepare a child for adult life.

EIF is a research charity, focused on promoting and enabling an evidence-based approach to early intervention. Our work focuses on the developmental issues that can arise during a child's life, from birth to the age of 18, including their physical, cognitive, behavioural and social and emotional development. As a result, our work covers a wide range of policy and service areas, including health, education, families and policing.

Disclaimer

This review has been produced rapidly in order to inform the ongoing sector response to the Covid-19 crisis. While we are satisfied that our work provides a high-quality and independent overview of the evidence related to the virtual and digital delivery of services to children and young people, the limitations of the methodological approach, including the limited set of bibliographic databases searched, mean that there is a possibility that we have missed key sources of evidence and interventions. The findings and conclusions should be read with this risk in mind.

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Summary

In response to the Covid-19 crisis and its impact on public services across the UK, the Early Intervention Foundation (EIF) has conducted a rapid review of the evidence relating to the virtual and digital delivery of interventions for children and young people. We are defining virtual and digital services as those which can be delivered remotely without any traditional face-to-face interaction between provider and participant. This may include delivery via digital interfaces, such as video conferencing and online training courses, as well as contact by phone, email or chatroom.

The findings of our work are intended to support the sector as it rapidly adapts to the constraints on delivery imposed by widespread social distancing and lockdown.

In this report we set out the evidence on virtual and digital delivery of interventions across a range of relevant domains, highlight the challenges and risks associated with virtual and digital delivery, and provide the findings from an EIF survey asking intervention developers and providers about their response to the crisis.

We find:

- There are over 100 virtual and digital interventions for children and young people listed on clearinghouses and online programme databases.
  - The majority of these are focused on education or physical health; there are fewer interventions focused on issues such as mental health, substance misuse, risky sexual behaviour, crime and antisocial behaviour and child maltreatment.
  - The interventions identified cover a wide range of delivery models, including one-to-one or group-based services, unguided self-help, and games and apps, aimed at various age groups and target cohorts.
- Synthesis studies, aggregating findings from multiple studies investigating the impact of individual interventions, provide a clear and consistent set of messages about virtual and digital interventions.
  - Virtual and digital interventions can be effective in improving outcomes for young people across a wide range of intervention types and outcome measures.
  - There is little evidence to suggest that virtual and digital interventions are more effective than traditional face-to-face approaches. When these comparisons are made, typically, virtual and digital interventions are found to be less effective, or equally as effective.
  - In general, interventions which have some form of personalisation and/or contact with a practitioner – rather than self-directed, non-interactive learning – are more likely to improve outcomes.
  - In common with other interventions in the field, the evidence is strongest for short-term outcomes measured immediately after the intervention has been completed; there is less evidence on long-term outcomes.
  - In terms of achieving larger and more enduring effects, the evidence seems to be stronger for interventions focusing on mental health and wellbeing than for those focusing on substance misuse, risky sexual behaviour and teen pregnancy, or crime, violence and antisocial behaviour.

  - Virtual and digital interventions often face high levels of attrition, where participants drop out or fail to complete the intervention. Overcoming challenges in keeping children and young people engaged in an intervention will be an essential element of successful remote delivery.
- The sector is rapidly mobilising to allow remote delivery of interventions. In an EIF survey of 88 programme developers and providers – most of whom are working in the UK – the great majority (91%) were continuing to deliver interventions. However over three-quarters of respondents were doing so with major adaptations to standard delivery.
  - Adaptations included moving resources and content online to facilitate remote access, and using phones, messaging services such as Whatsapp, and video conferencing software such as Skype, Zoom, and Microsoft Teams to deliver sessions. Some developers have begun to redesign the content and format of their interventions to make them easier to deliver remotely.
  - Although continuing with services, several providers had paused the delivery of some components of interventions, such as group sessions or certain therapies and activites that have yet to be adapted for remote delivery. This means that some interventions currently being run are not delivering the full, standard complement of sessions and content, and may not be as effective as a result.
  - Interventions that already used virtual and digital components in their delivery were more likely to have seen only minor adaptions to the way in which they are being provided. On the other hand, the eight interventions that have stopped delivery all reported having no virtual and digital components in their existing delivery model.
  - Some programme developers expressed an interest in retaining or further incorporating virtual and digital components devised in response to the Covid-19 crisis into the standard delivery of their interventions in the future.

In the final chapter of the report, we draw a set of conclusions for developers, providers and commissioners about what our findings mean for how they support vulnerable children and young people during the pandemic and beyond, and make a series of recommendations.

Broadly, these recommendations include:

- developing plans to address the challenges we identify, such as issues of retention and getting vulnerable children and young people to engage with services
- focusing on the importance of contact between participants and practitioners
- clearly identifying the core components of an intervention that must be maintained in any adaptation from face-to-face to virtual and digital delivery
- developing monitoring systems to identify quickly if interventions are struggling to reach their intended recipients or attrition rates are concerningly high
- working collaboratively to design evaluations which will improve the evidence base on effective approaches to virtual and digital delivery of interventions for children and young people beyond the immediate crisis.

Background

1. Introduction

The Covid-19 pandemic has created a global public health crisis that is having and will continue to have a profound impact on every area of life. As the crisis progresses, many are questioning the impact that social isolation and the closing of day-to-day services will have on people's mental health and wellbeing. A rapid evidence review published in the *Lancet* in February 2020 highlighted the psychological impacts of quarantine observed in previous epidemics. These effects included negative psychological impacts such as post-traumatic stress symptoms, confusion and anger, with key stressors including longer quarantine duration, infection fears, frustration, boredom, inadequate supplies, inadequate information, financial loss, and stigma (Brooks et al., 2020).

The impact of social isolation on children and families will be significant. Although the extent of this impact will be highly dependent on the length of time that restrictions are in place and the specifics of the government's response, it is likely to include:

- **child poverty increasing** as unemployment rises and the economy slows
- **stresses on families increasing**, including parents struggling to deal with difficult child behaviour
- **a rise in child abuse and neglect** as vulnerable children spend more time in the home, the pressure on parents increases, and there are fewer contacts with agencies responsible for identifying and referring children at risk
- **the development gap widening between economically disadvantaged children and their peers** as the impact of closure of early years providers and schools falls most heavily on lower-income households
- **parental conflict and domestic abuse rising** as the impact of social isolation and economic uncertainty take hold
- **a deterioration in adolescent mental health** due to social isolation, combined with the anxiety of missing exams, putting further pressure on already strained services
- **risks of cyberbullying and online grooming increasing** as young people spend more time online.

Many services for children and families will face significant disruption, as a wide range of services – such as parenting classes, home visiting programmes, youth work, counselling services and school-based services – have traditionally been delivered face-to-face. There were providers who, prior to the crisis, offered interventions delivered either partially or entirely remotely, but they were the minority.

Six models of remote delivery

We know that in response to Covid-19 many providers are rapidly adapting their services to allow remote delivery. It is likely that many different models of delivery will emerge.

Drawing on the classification used by Thomas Berger (2017), we see some of the main models as:

- **Remote delivery of programmes delivered on a one-to-one basis:** the provision of services to individuals via virtual or digital mediums allowing synchronous communication, such as phone or videoconference for audio- and/or video-based communication, or chatrooms for real-time messaging with a practitioner. Includes, for example, individual counselling and psychotherapeutic services delivered digitally.
- **Remote delivery of group-based programmes:** moving or adapting programmes traditionally delivered to groups of children, young people or parents – and which rely in part on group dynamics and peer interaction – into a virtual or digital setting.
- **Digital delivery of guided self-help content:** programmes that make use of reading material, slides, videos, quizzes and exercises to deliver content and which are supplemented with some contact with a practitioner, by videoconferencing, email or phone.
- **Digital delivery of unguided self-help content:** programmes that provide reading material and explanatory videos for individuals to work through independently and that do not include contact with practitioners.
- **Digital delivery of interactive content:** programmes that provide interactive content above and beyond reading materials and watching videos, such as quizzes, activities, tasks or other gamified content that is provided and conducted digitally, including via apps, games and computerised interventions.
- **Brief text-based messaging interventions:** interventions that enable asynchronous communication to young people or parents via text, email or other technologies, of content including information, tips, exercises or reflective questions, with the aim of driving behaviour change.

This list broadly describes the range of virtual and digital delivery models that are the focus of our rapid evidence review and this report.

Addendum

Please note that a small number of revisions were made to this report in May 2020, including the addition of three systematic reviews and further notes on the methodology employed. These revisions have no impact on the headline findings or recommendations of the report.

2. Purpose of this report

Our mission at the Early Intervention Foundation (EIF) is to ensure that effective early intervention is available and used to improve the lives of children and young people at risk of experiencing poor outcomes. The Covid-19 crisis has driven many service providers to rapidly adapt traditional face-to-face delivery models so that vital services can continue. In order to support the sector during this period of unprecedented change, and to help ensure that vulnerable children and young people, and their families, continue to receive services that are grounded in the evidence of 'what works', we have undertaken this rapid review of the evidence relating to the delivery of what we are terming **virtual and digital services** (V&D). This is a deliberately broad term which includes but is not limited to digital services delivered via the internet. Formally, we are defining a V&D service as one which can be delivered remotely, using technology, without any traditional, physical face-to-face interaction between providers and participants. This incorporates interventions using the six delivery models outlined in the previous chapter, alongside other formats and methods.

In this report, we bring together what we do and do not know about the current delivery of V&D services and their effectiveness; the opportunities, challenges and risks associated with remote delivery; and the emerging sector response. Our aim is to provide a high-quality and impartial view of the current evidence base to help guide those making important service decisions at this time, and to enable EIF to provide rapid advice to government and the wider community on the delivery of V&D services.

Note that this report does not focus solely on services that target the specific outcomes that we may expect to worsen as a result of the Covid-19 crisis (as described in chapter 1), but captures a broader set of V&D services targeting outcomes of interest to EIF, early intervention, early help and prevention.

The report is centred around our findings on five main research questions, as follow, leading to a short summary of these findings, conclusions and recommendations GO.

- **What are the different types of virtual and digital delivery employed across early intervention and prevention services?** (see chapter 5 GO)
- **To what extent have virtual and digital interventions been shown to be effective?** (see chapter 6 GO)
- **What are the crucial components of effective virtual and digital interventions?** (see chapter 7 GO)
- **What are the advantages, challenges and other issues associated with delivering virtual and digital interventions successfully?** (see chapter 8 GO)
- **How has the early intervention and prevention sector responded to Covid-19, in terms of moving toward virtual and digital delivery of programmes?** (see chapter 9 GO)

Before addressing these questions, we provide a brief overview of the key differences between traditional face-to-face delivery and V&D services.

3. Context: traditional and V&D approaches to delivering services

The focus of EIF's work is on interventions for children, young people and families who, in the main, have a high level of need. Many will be economically disadvantaged, and a significant proportion will be vulnerable individuals with multiple and complex needs.

EIF has identified many face-to-face interventions that have been shown to be effective for this group. In broad terms, these effective interventions are likely to be intensive, to take place over a sustained period, and to involve frequent, high-quality contact between practitioners and participants. As such, we cannot simply assume that these interventions will work equally as well when adapted for remote delivery.

Therefore, in designing V&D services for this high-need group, it is important to consider how likely it is that vulnerable children and young people will engage with content delivered remotely, and whether the intervention will be sufficient to change outcomes.

The importance of face-to-face interaction

For many interventions, building a trusted relationship between a practitioner and participant is an essential element of effective delivery. For example, evidence from the field of face-to-face psychotherapy suggests that this relationship – the therapeutic alliance – accounts for more of the variation in therapeutic outcomes than specific therapy components (Lambert & Barley, 2001), and there is substantial evidence to indicate that the quality of this relationship is positively correlated with improving outcomes across a variety of therapeutic approaches and mental health issues (Bickmore et al., 2005; Castonguay et al., 2006; Horvath et al., 2011).

There is also good empirical evidence suggesting that those who feel listened to and treated with respect are more likely to remain in interventions (Mytton et al., 2013; Lindsay et al., 2014). Research with vulnerable families indicates that the more adverse a person's circumstances, the more important it is for them to have a secure and supportive relationship with others, including trusted practitioners (Moore, 2017).

These qualities may be more difficult to achieve when services are working remotely with these individuals. This is why it is important to consider what the evidence says about whether delivery via phone, messaging or videoconference might impact on the relationship between the practitioners and participants in a way that undermines the effectiveness of an intervention and the likelihood of improving outcomes. A fuller description of the therapeutic alliance and the evidence on how it is impacted by remote delivery is provided in chapter 7 GO.

Virtual and digital services

Prior to the Covid-19 outbreak, there were already many interventions for children and families which provided some or all their content remotely. A summary of all the interventions we have identified which offer remote delivery via V&D channels is provided in chapter 5 GO, while chapter 6 sets out what we know about the effectiveness of V&D services and their efficacious components based on our rapid review of existing evidence reviews GO.

V&D delivery offers a range of potential advantages over more traditional delivery mechanisms, including the potential to remove logistical and geographical barriers, extending the reach of an intervention and lowering the unit-cost of delivery. However, they also pose challenges which need to be addressed if interventions are to improve outcomes for children and young people, including whether vulnerable participants can and will engage with digital content, and the risk either that effective programmes cannot be readily adapted to remote delivery or that in rapidly adapting existing programmes to V&D delivery, vital 'active ingredients' that were crucial to driving improved outcomes are lost. A fuller summary of the advantages and challenges associated with V&D delivery is set out in chapter 8 GO, while chapter 9 provides a summary of how the sector is already responding to the pressures created by Covid-19 GO.

This report sits alongside other work from UK What Works Centres. The Education Endowment Foundation has published a review of the evidence on V&D delivery for children's educational outcomes,[1] and What Works Children's Social Care is conducting a rapid review to help inform effective remote delivery of services by social workers.[2]

1 See: https://educationendowmentfoundation.org.uk/covid-19-resources/

2 See: https://whatworks-csc.org.uk/

4. Methodology

In this report, we have opted for a rapid review methodology to address our key questions. A rapid review is a reduced and simplified version of a systematic review, which has the advantage of allowing us to produce this review in a timely manner, to inform the ongoing sector response to the Covid-19 crisis.

While we are satisfied that our work provides a useful and independent overview of the evidence related to the delivery of V&D services to children and young people, the limitations of the methodological approach (including the limited set of bibliographic databases searched) means there is a possibility that we have missed key sources of evidence and interventions. The findings and conclusions should be read with this in mind.

Through this rapid review, we have taken four main approaches to answering our research questions.

1. Searching clearinghouses and evidence toolkits to identify evidence-based interventions

Using a variety of search techniques, we interrogated 33 authoritative clearinghouses to identify programmes relevant to this review.[3] See appendix A for a full list GO. Programmes were included in our analysis if they:

- are entirely or mostly delivered remotely via virtual or digital means
- have the end goal of improving outcomes for children and young people specifically, and
- are delivered to, or delivered for the benefit of, young people between the ages of 0–18 (even if the programme is also designed to be used with older people and adults).

We have drawn out evidenced programmes from the identified list and provided some analysis of what we know about these programmes, and about the relationships between characteristics of programmes and the strength of their evidence – this information is set out in chapter 5 GO. Information about relevant programmes was recorded on five dimensions, and programmes were classified accordingly:

1. Mode of delivery – programmes were classified by the six models of remote delivery described in chapter 1:[4]
   - remote delivery of programmes delivered on a one-to-one basis
   - remote delivery of group-based programmes
   - digital delivery of guided self-help content
   - digital delivery of unguided self-help content
   - digital delivery of interactive content
   - brief text-based messaging interventions.

3 A clearinghouse is a website that describes programmes and their evidence, and often explicitly assesses their evidence in terms of methodological robustness. The EIF Guidebook is one example – see: http://guidebook.EIF.org.uk

4 In instances where an intervention combines different modes of delivery, we have made a judgment about which is the most substantive or dominant element and coded accordingly.

2. Targeting:
   - universal: programmes that are not targeted on the basis of risk
   - targeted selected: programmes targeted at those with an elevated risk of experiencing adverse outcomes
   - targeted indicated: programmes targeted at those for whom adverse outcomes have materialised, where the intervention seeks to prevent further harm.
3. Age of target population:
   - 0–4 years
   - 5–9 years
   - 10–14 years
   - 15+ years.
4. Intended/achieved outcomes:
   - health and obesity
   - education
   - mental health and wellbeing
   - substance misuse
   - crime, violence and antisocial behaviour (including upstream indicators of these outcomes, such as conduct and behaviour problems)
   - risky sexual behaviour and teen pregnancy
   - child maltreatment.
5. Strength of evidence:[5]
   - Robust evidence: programme has evidence from one (or more) robust randomised control trial or quasi-experimental design showing positive effects (equivalent to EIF's level 3 or 4 ratings).[6]
   - Preliminary evidence: programme has evidence from some quantitative evaluation that meets a preliminary standard, but with methodological limitations that limit confidence in the findings (equivalent to EIF's level 2 rating).
   - No or limited evidence: no quantitative evidence is identified, or very limited evidence not meeting the preliminary standard (equivalent to EIF's NL2 rating).
   - No effect: programme has evidence from one (or more) robust randomised control trial or quasi-experimental design showing null or negative effects (equivalent to EIF's NE rating).

2. Searching bibliographic databases to identify reviews investigating the efficacy of virtual and digital interventions

We rapidly searched a small number of bibliographic databases and key journals to identify reviews of studies investigating the effectiveness of certain types of V&D interventions. For more information on these databases, how they were searched, and the inclusion/exclusion criteria for studies, see appendix B GO.

5 EIF has not rated the listed programmes on the strength of their evidence. Instead, we have summarised the ratings made by other organisations, by translating these ratings into one common scale. This provides an indicative sense of the strength of evidence. However, evidence assessment criteria differ from one clearinghouse to another, and so this attempt at translating ratings will be imperfect. These ratings should not be taken to be authoritative in the same way as EIF strength of evidence assessments published via the EIF Guidebook. Where clearinghouses do not offer clear ratings of evidence, we have sought to provide an indicative assessment based on study design alone.

6 For more information on EIF's evidence ratings, see: https://guidebook.eif.org.uk/eif-evidence-standards

We have synthesised these findings qualitatively and the findings are set out in chapter 6. It is worth noting that we have not assessed the underlying quality of the reviews included in this analysis.

3. Survey of programme providers and developers

We developed a short survey intended (a) to gauge sector responses to Covid-19, in terms of how business-as-usual delivery of early intervention programmes and services has changed; (b) to get a sense of the diversity of V&D provision being employed; and (c) to give us a more complete picture of which evidence-based programmes have V&D versions, adaptations or 'offshoots'. This survey was sent out to programme providers known to EIF, as well as more widely via EIF's organisational newsletter. Survey questions and response options are listed in appendix C GO.

4. Conversations with programme developers and practitioners, and in-house expertise

To supplement the learning from the primary research activities outlined above, we also drew on in-house expertise at EIF and conducted a number of informal conversations with programme developers and practitioners. This material features predominantly in chapter 7, concerning the effective components of V&D interventions GO, and in chapter 8, relating to the opportunities, advantages, challenges and risks of delivering interventions digitally GO.

Findings

5. What are the different types of virtual and digital delivery employed across early intervention and prevention services?

Overview

Our review of clearinghouses and lists of evidence-based programmes identified 116 programmes focused on outcomes and cohorts of interest to EIF. There are two important points to note here:

- This part of the review focuses solely on manualised programmes, rather than broader practices designed to improve outcomes for children and young people.
- This analysis is intended to provide a sense of the range of V&D provision, and to highlight as case examples some of the well-evidenced programmes that have been identified. It is not intended to provide an *exhaustive* list of V&D programmes. We know that, in this case, the clearinghouses do not exhaustively describe the available V&D interventions – for example, we have identified only a few programmes focusing on mental health and child behaviour, although the reviews described in chapter 6 suggest that there is a higher number of interventions available in these areas. Therefore, while being assessed by a clearing-house provides some additional reassurance about the evidence base, this list should not be treated as a complete list of available, evidence-based interventions to choose from.

Table 5.1 provides a summary of programmes identified according to the mode of delivery.

TABLE 5.1

Identified V&D programmes, by mode of delivery

Mode of delivery	Number	%
Digital delivery of interactive content	79	68%
Digital delivery of unguided self-help content	18	16%
Brief text-based messaging interventions	6	5%
Remote delivery of group-based programmes	5	4%
Remote delivery of programmes delivered on a one-to-one basis	4	3%
Digital delivery of guided self-help	4	3%
Total	**116**	**100%**

Just over two-thirds of these programmes involve the digital delivery of interactive content, such as games and quizzes. Another 16% of the identified interventions involve the provision of reading material and explanatory videos with limited interactive elements. Because these interventions have no direct practitioner input into the delivery, they achieve large coverage

at relatively low unit-cost. By contrast, there are fewer interventions for children and young people which require more intensive practitioner input, such as counselling services or group-based programmes.

Table 5.2 provides a summary of identified programmes according to outcome domain – whether these were described as intended outcomes or shown in trials to have been achieved. The majority of identified interventions – nearly three-quarters together – are designed to improve education or physical health outcomes. There are far fewer V&D services designed to improve outcomes in the primary areas of interest for this review, such as mental health, substance misuse, or crime and antisocial behaviour. This, at least in part, reflects the fact that there is far more development and evaluation conducted in education and health, and does not suggest that there are necessarily inherent barriers to developing and delivering programmes in these other fields.

TABLE 5.2

Identified V&D programmes, by outcome domain

Outcome domain	Number	%
Education	57	49%
Health and obesity	28	24%
Child maltreatment	8	7%
Crime, violence and antisocial behaviour	8	7%
Substance misuse	5	4%
Mental health and wellbeing	5	4%
Risky sexual behaviour and teen pregnancy	2	2%
Multiple outcomes: Crime, violence and antisocial behaviour + Mental health and wellbeing	1	1%
Multiple outcomes: Crime, violence, antisocial behaviour + Substance misuse	1	1%
Multiple outcomes: Crime, violence and antisocial behaviour + Substance misuse + Risky sexual behaviour and teen pregnancy	1	1%
Total	**116**	**100%**

Educational interventions are typically web- or software-based resources that pupils can follow on their own to supplement their work at school, including educational resources, quizzes and exercises. Within this, there are a few examples of smartphone apps or games. Three interventions were text-message-based, designed to send reminders or prompts to students or parents. A small number of programmes were identified that involve remote one-to-one tutoring from a teacher or practitioner. The Education Endowment Foundation – like EIF, a UK What Works Centre – has conducted a rapid assessment of remote learning interventions delivered digitally.[7]

Physical health and obesity interventions are typically interactive web-based learning materials which provide educational resources on exercise and nutrition, strategies for engaging in healthy lifestyle behaviour, and interactive means of completing self-assessments. There are also examples of games, interventions based on text-message prompts, and one example of a one-to-one counselling intervention.

For the purposes of this report, we exclude programmes focused on education and physical health outcomes, in order to focus on outcome areas of greater interest to EIF and those working in early intervention and early help.

7 See: http://eef.li/school-closures

Table 5.3 provides a summary of identified programmes according to strength of evidence. About half of the V&D programmes identified have some evidence (preliminary or robust) of improving outcomes. Almost a quarter of the interventions have robust evidence of impact – however, most of these were focused on education or health: we only identified five robustly evidenced programmes across the other domains.

TABLE 5.3

Identified V&D programmes, by strength of evidence

Strength of evidence	Number	%
Robust evidence	26	22%
Preliminary evidence	31	27%
No evidence	45	39%
No effect	14	12%
Total	**116**	**100%**

In the following sections, we summarise additional information about the V&D programmes identified in the outcome domains of mental health and wellbeing; substance misuse; crime, violence and antisocial behaviour; risky sexual behaviour and teenage pregnancy; and child maltreatment.

We break down this set of programmes by the age groups they are designed for and strength of evidence. We also describe if and how programmes are targeted. Here, the majority of identified interventions are either universal or targeted indicated; very few of the identified programmes are clearly delivered at the targeted selected level, which we define as interventions offered to young people and/or families on the basis of broad demographic risks, such as low family income or single parenthood.

Interventions focused on mental health and wellbeing

Table 5.4 provides a brief summary of the identified V&D programmes that seek to prevent issues or improve young people's mental health. None are designed for the under-5 age group.

TABLE 5.4

Characteristics of identified V&D programmes focused on mental health and wellbeing (six programmes)

<table>
<tr><td></td><td>Level of need:</td><td colspan="3">Universal</td><td colspan="3">Targeted indicated</td></tr>
<tr><td></td><td>Target age group:</td><td>5–9</td><td>10–14</td><td>15+</td><td>5–9</td><td>10–14</td><td>15+</td></tr>
<tr><td rowspan="3">Delivery modes</td><td rowspan="2">Digital delivery of interactive content</td><td colspan="2" rowspan="2"></td><td rowspan="2">Video game for young people's mental health (ages 15–18)</td><td colspan="2" rowspan="2">Mightier (ages 6–14)</td><td>PTSD Coach Smartphone App (ages 18+)
Overcome Social Anxiety (ages 18+)</td></tr>
<tr><td colspan="3">Apart, Not Broken (ages 8–16)</td></tr>
<tr><td>Remote delivery of group-based programmes</td><td colspan="3">Ripple Effects Whole Spectrum Intervention System (Ripple Effects) (ages 8–17)</td><td></td><td></td><td></td></tr>
</table>

Key to programmes' strength of evidence: **Robust evidence** / **Preliminary evidence** / **No effect** / **No evidence**

Among the six interventions identified through the clearinghouses, there is one with preliminary evidence and one with robust evidence. Both of these interventions are for adolescents and young people, and both are targeted at individuals with existing mental health difficulties.

The one robustly evidenced intervention identified in this space is Overcome Social Anxiety:

- **Overcome Social Anxiety** aims to reduce social anxiety in young people aged 18 or over with existing issues. The programme is delivered online, and involves the young person working through a series of modules involving cognitive behavioural therapy (CBT) exercises. Each module is personalised for the individual on the basis of their responses to a questionnaire completed at the beginning of the programme. At the end of the programme, a PDF is created that describes the exercises and the individual's personalised information. A randomised control trial found that, after completion of the programme, participants had significantly reduced social anxiety.

The intervention with preliminary evidence is PTSD Coach Smartphone App:

- **PTSD Coach Smartphone App** aims to help reduce posttraumatic stress disorder (PTSD) symptoms in young people aged 18 or over. The programme is delivered via a smartphone app, and provides users with psycho-educational information about PTSD, a self-assessment tool which provides feedback on the severity of their symptoms and how that changes, and cognitive behavioural coping tools to address symptoms, such as paced breathing and progressive muscle relaxation. A randomised control trial found that, after completion of the programme, participants had significantly reduced PTSD symptoms and depressive symptoms, and improved psycho-social functioning.

Interventions focused on substance misuse

Table 5.5 provides a brief summary of the identified V&D programmes that target substance misuse. The majority of these are targeted at families and support parents to help prevent substance misuse, and all are provided on a universal basis.

TABLE 5.5

Characteristics of identified V&D programmes focused on substance misuse (seven programmes)

	Level of need:	Universal			
	Target age group:	0–4	5–9	10–14	15+
Delivery modes	Digital delivery of guided self-help content			**Family Matters (ages 12–14)** **Staying Connected (ages 12–14)**	
				Drug Aware (ages 14–18)	
	Digital delivery of interactive content			**Talk About Alcohol (US version)** (ages 10–13)	
				AlcoholEdu for High School (ages 14–15)	
	Digital delivery of unguided self-help content	**Brain Power!** (ages 4–15)			
				Active Parenting of Teens (APT): Families in Action (ages 11–16)	

Key to programmes' strength of evidence: **Robust evidence** / **Preliminary evidence** / **No effect** / **No evidence**

Among the seven interventions identified through the clearinghouses, there is one intervention with preliminary evidence and one with robust evidence. Both of these interventions are for older children and adolescents, and both take a guided self-help approach.

The one robustly evidenced intervention identified in this space is Family Matters:

- **Family Matters** aims to prevent tobacco and alcohol use in young people between 12 and 14 years old. The programme is delivered via four booklets mailed to the family home, accompanied by telephone calls from health educators. The booklets contain lessons and activities for families and covers topics such as parenting styles and conflict resolution and communication. The health educators encourage parents to make use of the booklets and answer questions from parents over the telephone. A randomised control trial found that, after completion of the programme, participants had significantly reduced prevalence of smoking and drinking.

The intervention with preliminary evidence is Staying Connected With Your Teen:

- **Staying Connected With Your Teen** aims to prevent substance abuse and problem behaviour in young people between 12 and 14 years old. When the programme is delivered remotely, families receive a video and a workbook containing information and activities on topics such as 'relating to your teen', identifying and reducing risks, and problem-solving. A family consultant contacts the family once a week by phone to help participants implement the programme in their daily lives. A randomised control trial found that, after completion of the programme, participants had significantly reduced favourable attitudes about substance use. This was maintained at a two-year follow-up. (The programme also identified improvements in outcomes in terms of crime, violence and antisocial behaviour, as described in the following section.)

Interventions focused on crime, violence and antisocial behaviour

Table 5.6 provides a brief summary of the identified V&D programmes that relate directly to crime, violence and antisocial behaviour. Note that we include in this category programmes that are more broadly designed to improve child conduct and behaviour. The majority of these are delivered on a universal basis and involve web-based learning activities.

Among the 11 interventions identified through the clearinghouses, there are five with either preliminary or robust evidence of improving outcomes. These are for a range of age-groups and are generally universal. Three of these programmes are parenting programmes; two are bullying prevention programmes. Generally speaking, they are not specifically focused on crime and violence, and instead focus on upstream indicators, such as poor behaviour.

The one robustly evidenced intervention identified in this space is Triple P Online:

- **Triple P Online** aims to improve children's self-regulation skills and self-confidence, and to reduce behavioural problems and antisocial behaviour. It is delivered to parents with children up to 12 years old, with significant social, emotional or behavioural problems. The programme is delivered via a website which contains eight modules focusing on positive parenting principles, and includes personalised content, interactive exercises, and video-based modelling of parenting skills. Two randomised control trials found that, after completion of the programme, children of participants had significantly improved behaviour.

TABLE 5.6

Characteristics of identified V&D programmes focused on crime, violence and antisocial behaviour (11 programmes)

	Level of need:	Universal				Targeted indicated		
	Target age group:	0–4	5–9	10–14	15+	0–4	5–9	10–14
Delivery modes	Digital delivery of guided self-help content			**Staying Connected with Your Teen (ages 12–14)**				
	Digital delivery of interactive content						**Mightier** (ages 6–14)	
						Triple P Online (early childhood to age 12)		
				Success in Stages Program (ages 10–17) **SMARTTeam: Students Managing Anger and Resolution Together (ages 11–15)**				
			Fear Not! (ages 8–11)					
		Parenting Wisely (ages 3–18)						
	Digital delivery of unguided self-help content	**Raising Adults** (early childhood to age 12)						
			ParentWays for Middle Childhood (ages 5–12)					
				Active Parenting of Teens (APT): Families in Action (ages 11–16)				
	Remote delivery of group-based programmes	**Peace at Home Parenting Solutions** (early childhood to age 18)						

Key to programmes' strength of evidence: **Robust evidence** / **Preliminary evidence** / **No effect** / **No evidence**

The interventions with preliminary evidence are:

- **Staying Connected With Your Teen** aims to prevent substance abuse and problem behaviour in young people between 12 and 14 years old. When the programme is delivered remotely, families receive a video and a workbook containing information and activities on topics such as 'relating to your teen', identifying and reducing risks, and problem-solving. A family consultant contacts the family once a week by phone to help participants implement the programme in their daily lives. A randomised control trial found that, after completion of the programme, a subset of African American teens in the treatment group showed a significant reduction in violent behaviour. (The programme also identified improvements in terms of substance misuse, as described in the previous section.)
- **Parenting Wisely** aims to improve relationships and decrease conflict in young people between the ages of 3 and 18 years old. The programme is delivered via an interactive online programme to parents, with 10 videos depicting challenging scenarios involving children and adolescents. Parents are then prompted to select a solution in each case, with feedback provided on their answers. Several evaluation studies, including some randomised control trials, found that after completion of the programme, children of participants had improved behaviour and reduced violent behaviours.

- **Success in Stages Program** aims to reduce bullying and victimisation in children aged 10 to 17 years old. The programme is primarily delivered via the 'TTM tailored internet-based expert system', provided via a multimedia CD and website, which leads students through a set of assessment questions, followed by feedback on their answers and information conveyed through images and videos. Two randomised control trials found that, after completion of the programme, participants reported significantly reduced bullying and experiencing less victimisation.
- **Fear Not!** aims to reduce bullying and victimisation in children aged 8 to 11 years old. The programme is delivered via a computer application that makes use of virtual roleplay, where children are prompted to provide advice to a victimised character, and are given feedback on their solutions. A quasi-experimental study found that, after completion of the programme, participants experienced a reduction in victimisation.

Interventions focused on risky sexual behaviour and teen pregnancy

Table 5.7 provides a brief summary of the identified V&D programmes that target risky sexual behaviour and teen pregnancy.

TABLE 5.7

Characteristics of identified V&D programmes focused on risky sexual behaviour and teen pregnancy (three programmes)

	Level of need:	Universal	
	Target age group:	10–14	15+
Delivery mode	Digital delivery of unguided self-help content		**Salud y Exito (ages 15+)** **Be YoU, Talented, Informed, Fearless, Uncompromised, and Loved (BUtiful) (ages 15+)**
		Active Parenting of Teens (APT): Families in Action (ages 11–16)	

Key to programmes' strength of evidence: **Robust evidence** / **Preliminary evidence** / **No effect** / **No evidence**

Among the interventions identified through the clearinghouses, there are two interventions with robust strength of evidence. Both of these interventions are for adolescents and do not appear to be targeted.

- **Salud y Exito** aims to delay sexual initiation and prevent pregnancy in adolescents. It is delivered to parents, and delivered via dramatic audio stories that emphasise improved family communication, rule-setting and supervision. A comparison group study found that, after completion of the programme, children of participants reported reduced sexual intercourse.
- **BUtiful** aims to delay sexual initiation and prevent pregnancy in adolescents. It is delivered to young people, and delivered via eight 30-minute internet sessions covering contraception, pregnancy, sexually transmitted infections and relationships. A randomised control trial found that, after completion of the programme, participants reported greater use of reliable contraceptive methods.

Interventions focused on child maltreatment

Table 5.8 provides a brief summary of the identified V&D programmes that target child maltreatment. Generally speaking, these programmes are delivered via unguided self-help content and are provided on a universal basis. Typically, these programmes either aim to educate parents in coping strategies to reduce frustration, in order to reduce the incidence of infant maltreatment, or to guard against neglect by providing information relating to babies' crying, sleeping and feeding habits. Two of the programmes aim to reduce conflict between parents, and to reduce the impact of conflict on parents' ability to meet the needs of their children. This category includes the only targeted selected programmes identified in our domains of interest, and is the only domain with no robustly evidenced programme.

TABLE 5.8

Characteristics of identified V&D programmes focused on child maltreatment (eight programmes)

<table>
<tr><td></td><td>Level of need:</td><td colspan="2">Universal</td><td colspan="2">Targeted selected</td></tr>
<tr><td></td><td>Target age group:</td><td>0–4</td><td>15+</td><td>0–4</td><td>15+</td></tr>
<tr><td rowspan="3">Delivery modes</td><td rowspan="2">Digital delivery of unguided self-help content</td><td>Period of PURPLE Crying (ages 0–1)
Boot Camp for New Dads (ages 0–1)
All Babies Cry (ABC) (ages 0–1)</td><td></td><td colspan="2" rowspan="2">Crossroads of Parenting and Divorce (early childhood to age 16)
Children In Between (early childhood to age 16)</td></tr>
<tr><td colspan="2">FatherWork (early childhood to age 18)</td></tr>
<tr><td>Remote delivery of group-based programmes</td><td colspan="2">Fussy Baby Network: Fussy Baby Blues (ages 0–1)</td><td></td><td></td></tr>
<tr><td>Remote delivery of programmes delivered on a one-to-one basis</td><td colspan="2">Fussy Baby Network: Fussy Baby Warmline (ages 0–1)</td><td></td><td></td></tr>
</table>

Key to programmes' strength of evidence: **Robust evidence** / **Preliminary evidence** / **No effect** / **No evidence**

Among the interventions identified through the clearinghouses, there is one intervention with preliminary strength of evidence:

- **All Babies Cry (ABC)** aims to reduce parental stress, improve parental understanding of child behaviour and introduce strategies to calm their baby, with the ultimate aim of reducing the incidence of infant maltreatment. The programme is delivered primarily via a package that includes a DVD and a booklet containing four modules which constitute a set of educational materials. One quasi-experimental study found that, after completion of the programme, parents reported significantly improved use of strategies to manage stress, and greater knowledge and self-reassurance.

6. To what extent have virtual and digital interventions been shown to be effective?

In this section we summarise the key findings from our rapid review of previous reviews looking at the effectiveness of V&D services for children and young people. This review of reviews aims to capture enough of the available evidence to extract overall findings that are useful and robust. However, findings and conclusions should be read with the caveats set out in chapter 4 in mind, and it is likely that some relevant reviews will not have been included.

Overview

We identified 39 reviews that were considered eligible for this review:[8]

- 21 of these reviews were concerned with **mental health and wellbeing outcomes.**
- Nine were concerned with **substance misuse outcomes.**
- Four were concerned with **risky sexual behaviour and teen pregnancy outcomes.**
- Six were concerned with **problem child behaviour, antisocial behaviour, or crime and violence outcomes.**

We did not identify any reviews focused explicitly on child maltreatment and domestic violence (though the latter was not a primary focus of the review).

As well as the sorts of outcomes investigated, these reviews also vary in terms of (a) the sorts of interventions they focus on; (b) the populations they focus on; and (c) the purpose, type and quality of the studies they synthesise. Overall, however, there are some clear themes across the identified reviews:

- V&D interventions can be effective in improving outcomes for young people. However, their effects – when identified – tend to be relatively small and short-term, although there are exceptions. In terms of achieving larger and more enduring effects, the evidence seems to be stronger for interventions focusing on mental health and wellbeing than for those focusing on substance misuse, risky sexual behaviour and teen pregnancy, or crime, violence and antisocial behaviour.
- Interventions differ in terms of how personalised or interactive they are:
  - Some simply provide a standardised set of resources (that is, unguided self-help content). The evidence identified in this review suggests that interventions are more likely to be effective if they are interactive and provide a more engaging experience – such as by providing activities and quizzes – and if they have some elements of personalisation, including tailoring content to participants and providing feedback.
  - Other interventions are delivered in real time by a practitioner but via V&D mediums, such as phone, videoconferencing or online chatrooms. The evidence identified in this

8 Note that the number of reviews does not sum to 39, as some reviews focused on multiple outcome domains.

review suggests that interventions are more likely to be effective if they incorporate communication with a practitioner.

- V&D interventions are often found to be effective when compared to no treatment or minimal support. However, across the literature, it is less likely to see these interventions tested against interventions that are delivered traditionally, face-to-face. When these comparisons are made, it is rare to find that V&D interventions are superior in terms of outcomes achieved. Typically, V&D interventions are found to be less effective, or equally as effective.
- V&D interventions often face high levels of programme drop-out and attrition. This reduces the likelihood that an intervention will work, and undermines the confidence we can have in the results of evaluations.[9] Overcoming challenges in keeping children and young people engaged in an intervention will be an essential element of successful remote delivery. There is some evidence that this is most likely when there is a degree of personalisation and support from practitioners.
- Evaluations of V&D delivery are of mixed quality. Across all the outcome domains we considered, there are underlying methodological issues which frequently lower the confidence we can have in the findings, including high attrition and the use of lower-quality evaluation designs subject to a higher risk of bias, such as one-group pre/post studies.

Reviews focused on mental health and wellbeing

We identified 21 reviews investigating the effectiveness of V&D interventions designed to improve child and adolescent mental health and wellbeing. The interventions reviewed are largely internet-based. Many involve the user working through a set of online modules consisting of videos, audio, pictures and interactive components such as activities and quizzes, focusing on approaches such as behavioural activation, cognitive behavioural therapy, interpersonal psychotherapy, exposure therapy, and mindfulness. Many involve active therapist support in the form of motivational interviewing or solution-focused brief therapy, delivered via phone, videoconferencing or online chatroom sessions. Also represented are smartphone apps and 'serious games' – interactive computer-based game software – designed to promote learning and behaviour change. A diversity of outcomes were investigated by these reviews, including depressive symptoms, anxiety, stress, hopelessness and self-esteem. A full summary of the reviewed studies is provided in appendix D GO.

In the remainder of this section, we draw out some key findings from our review of reviews on mental health and wellbeing.

V&D interventions have the potential to be effective and can produce large effects that are sustained in the longer-term. The reviews, in general, provide evidence that interventions can have an effect on a variety of mental health outcomes. Details vary from review to review, and depend on the populations and interventions being examined, but reviews often identify moderate to large effects (where these are reported).

- For example, the Abuwalla et al. 2018 review of preventative telemental health interventions finds intervention effect sizes ranging from 0.05 (small) to 0.96 (large) for

9 For more information on the impact of attribution on the robustness of an evaluation, see our guide *Evaluating early intervention: Six common pitfalls and how to avoid them*: https://www.eif.org.uk/resource/evaluating-early-intervention-programmes-six-common-pitfalls-and-how-to-avoid-them

depression and ranging from 0.14 (small) to 0.67 (medium) for anxiety.[10] The Ali et al. 2015 review of online peer support identifies a trial identifying a large effect on anxiety (g = 0.91). The Ebert et al. 2015 review of computer- and internet-based treatments finds moderate effects on average of g = 0.68 and 0.76 on anxiety and depression respectively. Similarly, the Ye et al. 2014 review of internet-based interventions involving cognitive behavioural therapy found an average moderate effect size of d = 0.52 in reducing anxiety (though not depression symptoms).

- Moreover, there is evidence of sustained effects – the Abuwalla et al. 2018 review includes studies showing effects at six months, 7.5 months and 12 months post-intervention. However, many reviews identify that more can be done to rigorously assess long-term outcomes across the range of evaluations in this space (Barnes & Prescott 2018; Ebert et al., 2015).

Effects tend to be more likely and larger in interventions which are personalised and/or interactive. Several reviews suggest that the use of static educational materials (or unguided self-help content) was less successful and that, instead, interventions need to be interactive and involve elements of personalisation to hold the attention of young people (such as game-based challenges and puzzles).

- For example, qualitative analyses explored in the Garrido et al. 2019 review of mobile apps suggests that 'users liked interventions with a game-like feel and relatable, interactive content. Educational materials were perceived as boring…'.

Effects tend to be more likely and larger when the V&D provision of resources and information is supplemented with additional support from practitioners, or where the practitioner communicates with participants in real time.

- For example, the Clarke et al. 2015 review finds evidence from the studies reviewed that participant support (either traditional face-to-face and/or web-based) is an important feature of online interventions in terms of outcomes (and completion). Likewise, Donovan and March (2014) suggest that computerised programmes with higher levels of therapist assistance appear to produce stronger effects (although no direct comparisons were made between interventions with more or less therapist assistance within the studies they reviewed). The Grist et al. 2019 review finds a significant effect of therapist support on trial effect sizes, with minimal contact therapy producing larger effects than predominantly self-help or purely self-administered interventions. The Ye et al. 2014 review finds an overall effect on anxiety but not on depressive symptoms. The authors believe this is attributable to the fact that the anxiety-focused interventions involved more therapist support. The Garrido et al. 2019 review provides further support for this conclusion, finding that only interventions involving regular interactions with a therapist reached a moderate effect size, while those interventions completed in the participant's own time were not found to be effective in the studies they identified.

Effects tend to be more likely and larger when V&D interventions are compared to a lack of services or to brief traditional face-to-face interventions. However, there are examples of V&D interventions producing effects that are similar to those achieved by traditional face-to-face interventions.

10 The size of an effect is often described using the standardised mean difference, which expresses the size of the difference between the treatment and control groups relative to the variation observed in the outcome within the sample. The standardised mean difference is often calculated using a method called Cohen's d (d), or Hedge's g (g). Both are interpreted in broadly the same way, where typically values between 0 and 0.2 are considered **negligible**, values between 0.2 and 0.5 are considered **small**, values between 0.5 and 0.8 are considered **medium**, and values above 0.8 are considered **large**. Note that an effect being described as 'small' does not imply that the effect is not useful or meaningful. Effects must be interpreted in the context of the specific outcomes they investigate and the size of effects found in evaluations of other approaches and programmes.

- As Grist et al. (2019) note, effect sizes vary depending on the sort of control condition the interventions are compared to and the level of therapeutic support. The relatively large effect sizes identified in the Ebert et al. 2015 review, for example, largely come from studies where computer- and internet-based treatments are compared to a no-treatment/ waitlist group. This is also similar in the Abuwalla et al. 2018 review of preventative telemental health interventions and the Ye et al. 2014 review of internet-based, predominantly self-help cognitive behavioural therapy.
- However, there is evidence that although virtual/digital interventions may not outperform traditional face-to-face interventions, they may be equally or similarly effective. Both Ebert et al. (2015) and Grist et al. (2019) note that the effect sizes identified in their study were comparable to those found in recent meta-analyses of face-to-face CBT. The Abuwalla et al. 2018, Vigerland et al. 2016, and Ye et al. 2014 reviews also find some evidence of these interventions producing equivalent effects when compared to face-to-face interventions. The Donovan and March 2014 review comes to a similar conclusion, identifying that when compared to face-to-face therapy, the computer-based programmes included in their review demonstrated equal efficacy.

Based on these observations, it appears that – compared to the other outcome domains covered in this report – there is more evidence that V&D interventions focused on mental health and wellbeing are a viable alternative to traditional face-to-face treatment.

However, it is important to note:

- **There are difficulties with participation and retention**. An emerging theme is that it is often difficult to retain participants in mental health programmes delivered remotely. In the Abuwalla et al. 2018 review, completion of all online modules ranged from 24–85%. In the Ali et al. 2015 review, drop-out ranged from 0–86%. The average programme completion rate in the Grist et al. 2019 review of computerized interventions was 64%. Garrido et al. (2019) note, of mobile apps, that engagement and adherence rates were low. This may also explain part of why personalised and interactive interventions appear to be more effective, as they hold the interest of the user and so promote greater participation.
- **Quality of evidence is mixed, although better than in other outcome domains**. The quality of the underlying evidence reviews for mental health interventions generally seems to be higher than for the other outcome domains reviewed, although there is variation from review to review. For example, the Donovan & March 2014 review of computer-based treatments identifies that the majority of studies had a 'strong' or 'moderate' quality rating (where strong broadly maps onto our 'robust evidence' category, and moderate onto 'preliminary evidence'). The Ebert et al. 2015 review of computer- and inter-based cognitive behavioural treatments also suggests that the overall risk of bias was low for the studies it investigated. On the other hand, the Clarke et al. 2015 review of online health promotion and prevention interventions identifies that the quality of the underlying evidence was moderate to weak. In areas such as online chat, serious gaming interventions and use of social media, it was identified that the number of studies was low and that their methodological robustness was questionable (Dowling & Rickwood, 2013; Fleming et al., 2015; Ridout & Campbell, 2018). Issues relating to small sample sizes and high drop-out rates were often identified.

Reviews focused on substance misuse

We identified nine reviews investigating the effectiveness of V&D interventions designed to reduce substance misuse. The majority of interventions are internet-based and computer-based, however reviews also include text-messaging interventions, apps, and 'serious games' to promote learning and behaviour change. Interventions usually involve communicating

information about the harms of substance misuse. Many involve an element of self-assessment (such as how much the participant is drinking) and feedback; some involve the use of dramatised stories to convey key messages about use of substances. The majority of reviews investigated determinants of substance misuse behaviours, such as normative beliefs towards substance use, and greater self-efficacy. Many also looked into changes in behaviour, in terms of reduced alcohol consumption, and reduced smoking. A full summary of the reviewed studies is provided in appendix D GO.

In the remainder of this section, we draw out some key findings from our review of reviews on substance misuse.

V&D interventions in this space have the potential to be effective. The reviews, in general, provide evidence that interventions can have an effect on the determinants of substance use (knowledge, beliefs, or efficacy to make decisions), as well as evidence of reducing substance use behaviours themselves (predominantly in terms of reducing alcohol consumption or smoking; far fewer studies focus on cannabis, opioids etc).

However, effects tend to be small.

- The Rooke et al. 2010 review of computer-delivered interventions for alcohol and tobacco use identifies an average effect size of d = 0.20; the Tait and Christensen 2010 review of web-based interventions for problematic substance use reports an average effect size of 0.22. Rooke et al. conclude that although these effects are considered small, they translate to an outcome of meaningful impact, and that they are comparable to those found in studies assessing more traditional face-to-face services (such as individual counselling for tobacco use).

Effects tend to be more likely and larger for V&D interventions which are personalised and/or interactive. Several reviews suggest that the use of static educational materials (or unguided self-help content) was less successful, and that instead interventions need to be interactive and involve elements of personalisation to hold the attention of young people (Hutton., 2019; McLellan & Dale., 2013).

- Similarly, O'Rourke (2016) identified elements of personalisation and feedback in the studies that showed positive effects, such as collecting information on the user's drinking frequency and then providing personalised feedback comparing this behaviour to social norms.

Effects tend to be short-term. Identified effects tend to be measured at, or close to, the end of the intervention. Long-term outcomes are not as frequently measured, and when they are, are often of lower methodological quality. This means there is limited evidence that outcomes persist beyond the duration of the intervention.

- Several of the reviews recommend more work around long-term outcomes (Hutton et al., 2019). However, Tait & Christensen (2010) identify four studies included in their review which investigated long-term outcomes with some identifying positive effects, which suggests that it is possible, although not routinely demonstrated, that these sorts of interventions can produce persistent improvements.

Effects tend to be more likely and larger when V&D interventions are compared to a lack of services or to brief traditional face-to-face interventions. While there are many examples of web-based provision being effective compared to control conditions where little support is being received, and potentially being as effective as brief in-person interventions, the evidence is weaker on how V&D provision compares to traditional programmes delivered face-to-face. Generally (although not in all cases), the evidence indicates that V&D interventions are not as effective as face-to-face alternatives (McLellan & Dale, 2013; Smedslund et al., 2019; Tait & Christensen, 2010).

There are difficulties with participation and retention. For example, Hutton (2011) identified that log-in rates varied from 16–82%. This means that when effects are not identified, the

authors explain, it is 'unclear whether they failed to benefit from treatment or failed to log-on to treatment'. This may also explain in part why personalised and interactive interventions appear to be more effective, as they hold the interest of the user and so boost participation.

The underlying studies often have weaknesses. Generally speaking, there are methodological issues with the studies included in reviews that may compromise the trustworthiness of the findings. Studies typically have some risk of bias, often due to high drop-out or the inclusion of less methodological rigorous study designs, such as one-group pre/post studies (O'Rourke et al., 2016; Hutton et al., 2019). Many of the studies included in these reviews measure psychological determinants of substance misuse, rather than substance misuse behaviours themselves (McLellan & Dale, 2013).

Reviews focused on crime, violence and antisocial behaviour

We identified six reviews investigating the effectiveness of V&D interventions designed to reduce crime, violence and antisocial behaviour outcomes. A full summary of the reviewed studies is provided in appendix D GO.

Each review focused on different outcomes, specifically:

- Four systematic reviews investigated the efficacy of technology-assisted self-directed interventions for improving parenting and child behaviour. These include interventions with varying levels of practitioner support (for example, via phone or email), presenting information parents need to manage behavioural problems via non-interactive means such as podcasts and DVDs, and interactive interventions making use of online software. Reviews generally report medium to large effects for V&D interventions on child behaviour (including externalising and internalising behaviour).
- One review focused on bullying prevention (Nocentini et al. 2015). Overall, the study identified a lack of evidence for most interventions in this space, but did highlight a few interventions with evidence of effectiveness, some of which are covered in chapter 5.
- Another review examined five computerised and online interventions designed to tackle sexual violence and intimate partner violence (Tait & Lenton., 2015). The review concludes that the effects of these interventions are small or negligible, although it is worth noting that most interventions were not explicitly designed to reduce sexual violence (focusing instead on reducing alcohol consumption).

In the remainder of this section, we draw out some key findings from our review of reviews on crime, violence and antisocial behaviour.

Only one systematic review was identified investigating the effectiveness of V&D delivery in terms of crime and violence outcomes. This lack of reviews does not imply that V&D delivery is ineffective in reducing crime and violence, but simply that not enough primary studies have been conducted in this space and therefore there is scope for the evidence base to be usefully developed.

Effects are found for outcomes related to crime and violence, such as child behaviour problems and bullying. Moderate effects on externalising and internalising behaviours were identified by the Montgomery et al. 2006 review. The Nieuwboer et al. 2013 review identified close to medium effects on average on child behaviour. The Baumel et al. 2017 review identified effect sizes ranging between small and medium. The Tarver et al. 2014 review identified large effects on average on parent-reported child behaviour. Small effects for a few interventions were identified in the review of bullying interventions.

Effects are larger when the V&D provision of resources and information is supplemented with additional support from practitioners. Although it does not hold in all cases, the general pattern is that self-directed treatment supplemented with added therapist input can yield greater reductions in child behaviour problems than media-based treatment alone (Montgomery et al., 2006). Similarly, the Tarver et al. 2014 review identified that brief therapist input alongside self-directed interventions may be a viable way to improve outcomes: analyses conducted in this review indicate that regular therapist input via telephone or internet improved effects, on average.

Effects tend to be more likely and larger when V&D interventions are compared to a lack of services or to brief traditional face-to-face interventions. However, there are examples of V&D interventions producing effects that are similar to those achieved by traditional face-to-face interventions. In the majority of cases, where the comparison condition is clear, interventions have demonstrated effectiveness relative to no-treatment controls. Some reviews conduct analyses specifically comparing V&D interventions to face-to-face interventions. Generally, these find evidence suggesting that they may be equally as effective. The Baumel et al. 2017 review suggests that the effects identified in V&D interventions broadly resemble the effect sizes for face-to-face parent training reported in other reviews. The Nieuwboer et al. 2013 review also indicates that the outcomes from their analysis of online resources for parents are consistent with effects reported in reviews of traditional forms of parenting training. Similarly, the Tarver et al. 2015 review indicates that there was no significant difference when comparing self-directed interventions with therapist-led interventions with regular face-to-face support in terms of externalising child behaviour., suggesting they may be equally as effective

There are difficulties with participation and retention. Drop-out rates in the studies reviewed are often high. In the Tait and Lenton 2015 review, drop-out rates ranged from 14–55%. In the Montgomery review, attrition ranged from 2–31%. The Baumel et al. 2017 review identified particularly low completion rates in studies of two self-directed programmes. The authors suggest that this might be due to a number of factors, including the delivery of a significant part of the programmes being fundamentally non-interactive and so potentially lacking engaging features.

The underlying studies often have weaknesses. Although some reviews focused exclusively on higher-quality randomised control trial evidence, there are methodological issues with the studies included in reviews that may compromise the reliability of the findings. In the Nocentini 2015 review, many interventions had not yet received robust evaluation, and several had V&D components which had not been evaluated separately from an overall package of activity that included face-to-face components. Risk of bias introduced by drop-out was consistently reported in the Tait and Lenton 2015 review.

Reviews focused on risky sexual behaviour and teen pregnancy

We identified four reviews investigating the effectiveness of V&D interventions designed to reduce risky sexual behaviour and teen pregnancy. The interventions reviewed here were largely internet-based (including social networking sites), and involved providing basic information, role model stories, and videos featuring peers or experts. Text-messaging based services were also examined, along with 'serious games' designed to promote learning and behaviour change. The majority of reviews investigated determinants of sexual health behaviours, such as condom self-efficacy, intention to use condoms, abstinence attitudes, knowledge around STIs and risky sexual behaviour. Some also looked into changes in behaviour, particularly around condom use, sexual initiation or number of sexual partners. A full summary of the reviewed studies is provided in appendix D GO.

In the remainder of this section, we draw out some key findings from our review of reviews on crime, violence and antisocial behaviour.

V&D interventions in this space have the potential to be effective. The reviews, in general, provide evidence that interventions can have an effect on the determinants of risky sexual behaviours (knowledge, beliefs, or efficacy to make decisions), and some – although less – evidence of reducing risky sexual behaviours themselves (predominantly in terms of delaying in sexual initiation and increasing condom use). However:

Effects tend to be small. Although V&D interventions were found to have positive effects on a range of outcomes, effects when identified tend to be small.

- For example, the DeSmet et al. 2014 review found a small effect size of g = 0.24 on determinants of risky sexual behaviour.

Effects tend to be short-term. Identified effects tend to be measured at, or close to, the end of the intervention. Long-term outcomes are not as frequently measured, and when they are, are often of lower methodological quality. This means there is less evidence that these interventions achieve changes in behaviour that extend beyond the duration of the intervention.

- However, Guse et al. (2012) did identify a couple of studies that suggest reduced risk of sexual initiation was maintained (one at 10 weeks post-intervention, and one approximately a year after), which suggests that it is possible – although not routinely demonstrated – that V&D interventions targeting risky sexual behaviour can produce persistent improvements.

Effects tend to be more likely and larger for V&D interventions which are personalised and/or interactive. Wadham et al. 2019 suggests that 'customised messages towards [a] particular audience enhanced engagement, knowledge uptake and self-reported behaviours', as compared to less personalised and less interactive interventions. For example, a personalised approach might collects information on a user's sexual behaviour and then provide them with personalised risk information.

Effects tend to be more likely and larger when V&D interventions are compared to a lack of services or to brief traditional face-to-face interventions. There are consistent examples of V&D provision being effective compared to control conditions where little support is being received. For example, the studies included by the Guse et al. 2012 and McLellan & Dale 2013 reviews typically appear to have a no-treatment or minimal support control condition. However, there is limited evidence that these programmes are more effective than programmes delivered face-to-face. Wadham et al. (2019) note that when an active control group was employed in the reviewed studies, often no difference was detected, suggesting equal effectiveness.

There are difficulties with participation and retention. The reviews highlight that it is often difficult to retain participants in V&D programmes.

- For example, the Guse et al. 2012 review observes attrition rates ranging from 3–57%, and attributes this partly to the difficulty of retaining samples in online studies. The Wadham et al. 2019 review describes an evaluation of an HIV prevention programme where only 64% of participants completed the intervention.

The underlying studies often have weaknesses. Generally speaking, there are methodological issues with the studies included in these reviews that may compromise the reliability of the findings. Studies typically have some risk of bias, often due to high drop-out or the inclusion of less methodological rigorous study designs, such as one-group pre/post studies (DeSmet et al., 2014; Wadham et al., 2019). It is also worth noting that many of the studies included in these reviews measure determinants of sexual health behaviours, rather than sexual health behaviours themselves (DeSmet et al., 2014; Guse et al. 2012; McLellan & Dale 2013; Wadham et al., 2019).

Reviews focused on child maltreatment

As noted at the beginning of this chapter, our review of reviews found none that focused on child maltreatment as an outcome domain.

7. What are the crucial components of effective virtual and digital interventions?

In the previous chapter, we highlighted two consistent themes that emerge from the evidence around effective characteristics of V&D services:

- V&D services appear to be more successful when the provision of resources and information is supplemented with additional support from practitioners or where the practitioner communicates with participants in real time.
- Interventions without contact between practitioner and participant tend to be most effective when they are designed to be engaging. This includes making use of video content, but particularly interactive content and tasks, such as quizzes, interactive roleplays and dramatised stories that the user can influence, games, and tailored or personalised content that is responsive to the preferences and characteristics of the user and provides bespoke feedback.

The focus of this chapter is to dig deeper into the first of these: the importance of practitioner contact. We describe the evidence for 'what good looks like', as drawn from a wider range of sources, including the intervention literature – process evaluations, feasibility trials, systematic reviews and other sources that seek to identify the features which are associated with better outcomes for children – and the practice literature issued by professional bodies and experts in the field.

The importance of the practitioner–participant relationship

Building a trusted relationship between practitioner and participant is an essential element of effective delivery for a wide range of interventions, including one-to-one counselling and therapeutic services delivered remotely, as well as self-guided courses which include some contact with a practitioner by phone or email. It is important to note that, in reviewing the evidence on how remote delivery can affect the therapeutic relationship (or 'therapeutic alliance'), we have identified studies that are focused predominantly on mental health interventions, and thus the findings from this section may not be transferrable to other types of interventions.

Evidence from face-to-face psychotherapy, for example, suggests that the therapeutic alliance accounts for more variability in therapeutic outcomes than specific therapy components (Lambert & Barley, 2001), with one meta-analysis of over 200 studies reporting that the alliance accounted for approximately 8% of the total variance in outcomes (Horvath et al., 2011). In line with this, there is substantial evidence to indicate that the practitioner–participant alliance is positively correlated with change in outcomes across a variety of therapeutic modalities and presenting problems (Bickmore et al., 2005; Castonguay et al., 2006; Horvath et al., 2011).

There is also good empirical evidence suggesting that the therapeutic alliance is critical in determining participant retention and the level of engagement, with those who feel listened to and treated with respect being more likely to remain in interventions compared to those who do not feel valued (Mytton et al., 2013; Lindsay et al., 2014). Research with vulnerable families suggests that the more adverse a person's circumstances and the fewer resources they have, the more important it is for them to have a secure and supportive relationship with others, including trusted practitioners (Moore, 2017). However, these qualities may be more difficult to achieve when services are working remotely with these individuals.

Defining the therapeutic alliance

Although the therapeutic alliance has been conceptualised in different ways, one of the most cited models is based on Edward Bordin's theory of the 'working alliance', which describes three key components that are needed to establish a strong, collaborative and purposeful relationship (Bordin, 1979):

- agreement between the practitioner and participant with regard to therapeutic goals (that is, expected outcomes)
- a plan, agreed between the practitioner and participant, for the tasks required to achieve these goals/outcomes, and
- a practitioner–participant bond.

The affective bond between the two parties can be facilitated through depth of trust, mutual liking, respect and attachment, but it can also be strengthened through specific practitioner and participant characteristics. Some important practitioner characteristics include their level of skill, breadth of experience, personal attributes and demographic characteristics, with evidence suggesting that involving practitioners who resemble participants (in terms, for example, of having comparable backgrounds, language, gender and similar life experiences) can help to improve participant engagement and create a stronger therapeutic bond (Dumka et al., 1997; Petch et al., 2012). Relevant participant characteristics include their motivation and capacity to change, level of active involvement in therapeutic tasks, and personality traits (Bachelor et al., 2007). Other factors that can contribute to the working alliance include the therapeutic approach and method of delivery.

Potential challenges in achieving a therapeutic alliance remotely

The ability of V&D services to achieve a strong therapeutic alliance has been questioned by several researchers and practitioners (MacLeod et al., 2009; Newton et al., 2016; Stallard et al., 2010). Interventions that only involve asynchronous text-based communication, for example, do not provide the face-to-face interaction that some practitioners feel is needed for the interpretation of body language, facial expression and tone of voice. In fact, although we are incredibly sophisticated in our ability to communicate verbally, we also rely on nonverbal cues to socially interact with others.

Healthy newborn infants, for example, already show a clear preference for faces over any other single object (Johnson et al., 1991). In adults, specific areas of the brain are involved in the visual analysis of faces, with the fusiform face area especially responsive to facial stimuli (Allison et al., 1999). However, it is our mirror-neuron system (activated when we perform an action but also when we observe a similar act being performed by someone else) that is thought to form the prerequisites for motor imitation, emotional contagion and empathy (Rizzolatti & Craighero, 2004). More recent evidence from neuro-imaging studies also suggest that when we interact with someone else, just as our behaviours synchronise (by taking turns to speak or modifying our actions in response to the other person), our brains do too, through interbrain neural synchronisations (Dumas et al., 2010).

Whether or not this also occurs when humans interact remotely but can still hear and see each other (as is the case with videoconferencing) has not yet been studied, so far as we are aware. So, although all evidence points towards it being easier to form a therapeutic alliance over videoconference than over email, for example, some practitioners worry that the virtual environment (including the relatively poorer quality of the video and sound) will interfere with the participants' ability to immerse themselves in therapy, affect their perception of the practitioner as sensitive, warm and empathic, and ultimately hinder the development of the therapeutic alliance (Simpson & Reid, 2014; Rees & Stone, 2005).

Perspectives on establishing an alliance remotely

Given these concerns, it is encouraging that there is evidence to suggest that a positive therapeutic alliance can be formed remotely. A systematic review of six studies examining guided internet-based cognitive behavioural therapy (iCBT) for the treatment of anxiety and depression in adults, for example, found that all the reviewed studies demonstrated a high level of therapeutic alliance (Pihlaja et al., 2018). This finding is consistent with other reviews indicating that the practitioner–participant alliance can be developed and maintained in iCBTs and other videoconferencing therapies, with participants' ratings of the alliance reported to be as high, if not higher than those for conventional face-to-face psychotherapies (Sucala et al., 2012; Berger, 2017; Simpson & Reid, 2014). Interestingly, although there is some evidence to suggest that although practitioners' ratings of the therapeutic alliance in the context of videoconferencing therapies are positive, ranging from moderate to very high, their ratings are often lower than those of their clients (Simpson & Reid, 2014).

Research examining the therapeutic alliance in email and chat therapies is much more limited, but there are some small-scale studies suggesting that participants taking part in these interventions also provide alliance ratings at least as positive as what are usually provided in traditional face-to-face therapies (Cook & Doyle, 2002; Reynolds et al., 2006). According to the narrative review published by Berger (2017), a strong therapeutic alliance – comparable in quality to that reported in face-to-face therapies – can be established across a variety of communication methods, mental health problems and frequency of contact between practitioners and participants.

The evidence on the association between therapeutic alliance and outcomes in V&D services, however, is less clear. Although the majority of studies report a positive association between alliance and outcome, this is not always statistically significant (Berger, 2017; Pihlaja et al., 2018), and we know of at least one study in which the measured therapeutic alliance was not associated with the outcomes of any of the 174 depressed and/or anxious individuals taking part (Andersson et al., 2012). Furthermore, research assessing V&D delivery suggests that it may actually be the mutual agreement on therapeutic tasks and goals – as a component of the therapeutic alliance – that predicts outcomes, more than the practitioner–participant bond component (Berger, 2017). Of the studies reviewed by Berger (2017), none reported statistically significant associations between bond and outcome, suggesting that the affective bond between practitioner and participant may be less important in V&D interventions than in those delivered in person.

Practical considerations in building a therapeutic alliance remotely

Although the findings might be encouraging, the extent of research on the therapeutic alliance in V&D services is still limited (Pihlaja et al.,2018; Berger, 2017; Simpson & Reid, 2014; Sucala et al., 2012). The 2018 review by Pihlaja et al., for example, found only six studies looking at the therapeutic alliance in the delivery of iCBTs. Similarly, the Sucala

et al. 2012 review of e-therapies (such as videoconferencing, email and chat-based therapies) for mental health was based on only 11 studies – and many of these had methodological limitations, such as small sample sizes, a restricted sample population (for example, white, female and well-educated) and a lack of suitable control groups. In addition, there is also very little known about the association between therapeutic alliance and treatment adherence in V&D services (Pihlaja et al., 2018).

However, having reviewed the available evidence, we are able to make some suggestions as to how the therapeutic alliance can be developed and maintained in V&D services:

- **Delivering the first session in person.** Clearly, this is difficult to do under the conditions imposed by the Covid-19 crisis. However, individuals who feel less comfortable opening up to a practitioner through videoconference therapy may benefit from an initial in-person meeting. The practitioner can use this first meeting as a way of establishing a comfortable rapport with the participant, enabling them to overcome initial anxieties about the use of videoconferencing as the therapy proceeds (Simpson & Reid, 2014).
- **Increasing contact time.** In line with findings in chapter 6, Pihlaja et al. (2018) found that the frequency and duration of practitioner–participant contact is an important factor that may affect the therapeutic alliance in iCBTs. Although the evidence is not always consistent, it points towards an association between increased contact time and a stronger alliance, possibly due to enhanced emotional support.
- **Adapting practitioners' behaviour and communication style.** Evidence suggests that despite the hesitancy of some practitioners to provide services remotely, even those with limited experience with videoconferencing tend to be able to quickly adapt their behaviour and communication style (Simpson & Reid, 2014). When delivering therapy through V&D mediums, for example, practitioners reportedly make the following changes to their communication style in an attempt to promote a strong therapeutic alliance (Bischoff et al., 2004; Manchandra & McLaren, 1998; Mallen et al., 2005):
  - providing more deliberate and overt non-verbal responses, by purposefully exaggerating tone of voice, gestures and mannerisms during video or telephone calls, and using emoticons or written expressions of emotional and non-verbal reactions during email or chat therapy
  - actively paying more attention to social cues and signs of emotionality, conveyed through facial expression, tone of voice or body language
  - asking more questions than they normally would, to avoid misunderstandings and ensure they have interpreted the participants' experience correctly.

Some studies have also reported that participants, too, change their behaviour in a V&D context, and appear more tolerant when things do not work out as expected (Simpson & Reid, 2014). In a randomised control trial comparing face-to-face, and phone- and video-based psychotherapy, for example, although the authors reported negligible between-group differences in outcomes, they found that participants were actually more engaged in the phone and video therapy than in the face-to-face therapy. The authors propose that the geographical distance between the two parties might have made the participants feel safer and more inclined to open up. Participants exhibited higher levels of imitation, spontaneity, trust and disinhibition, which inadvertently led them to communicate and interact more with the practitioner (Day & Schneider, 2002). Similarly, there is some anecdotal evidence to indicate that participants tend to disclose and express themselves more openly over email than they would in person, sometimes referred to as the 'online disinhibition effect' (Suler, 2004).

Irrespective of the intuitive adaptations that both participants and practitioners make in their V&D interactions, there is a strong desire from practitioners for more bespoke training. According to an online survey of 106 practitioners delivering mental health interventions remotely, training in developing and maintain a strong therapeutic alliance was described as necessary to enhance practitioner confidence and skill (Sucala et al., 2013). Although we identified some practice literature on delivering therapeutic services remotely, this tended to focus on logistical issues, such as software familiarity and the use of headphones, or legal and ethical issues, such as confidentiality or the use of social media.

Providers also suggested to us that, where possible, videoconferencing should be preferred over phone calls, as being able to see each other allows for better participation, supports the relationship and builds trust.

8. What are the advantages, challenges and other issues associated with delivering virtual and digital interventions successfully?

V&D delivery modes provide a range of potential advantages over more traditional modes, but also raises a specific set of challenges, risks and potential barriers. This chapter provides a high-level review of some of the valuable strengths and potential downsides of V&D delivery, in our view. It also includes a summary of issues raised by developers and providers in our survey, which should be read alongside the findings about service changes set out in chapter 9 GO.

Strengths and advantages

- **Logistical advantages:** For therapeutic interventions, neither practitioners nor participants need to travel, removing potential barriers to participation. This is particularly important for individauls with mobility impairments or other health complications.

  For those taking part in therapy, online delivery may remove the stigma involved in visiting a therapist (Vigerland et al., 2016). Therapy is also not limited to office hours. Online delivery may be especially advantageous for young people who are concerned about crossing postcode boundaries due to gang presence.

  On the practitioner side, it may increase the reach of an intervention by ensuring skilled practitioners can reach participants regardless of geographical distance. Moreover, removing travel time potentially increases the number of participants they can reach in any given period of time (Vigerland et al., 2016). There is also some evidence that V&D and self-directed interventions reach difficult to target subgroups and address a 'treatment gap' in traditional delivery, for example, by reaching rural communities or areas where there is a shortage of the necessary professionals (Abuwalla et al., 2017; Ebert et al. 2015; Lundahl et al., 2006).
- **Flexibility over delivery:** Content may be delivered and accessed more flexibly, fitting more conveniently around the participant's day – especially apps and other forms of self-directed training that don't require a practitioner. Theoretically, remote support could be provided 24/7, meaning that if a crisis occurs individuals may be able to access services at crucial times.
- **Anonymity:** By offering a sense of privacy and anonymity, V&D services may provide a helpful alternative for those that are uncomfortable opening up and being honest with a professional in a face-to-face situation.
- **Personal preferences:** Some individuals – particularly those with eating disorders and/or anxiety – may prefer videoconference therapy as opposed to face-to-face therapy, as it

makes them feel less self-conscious and intimidated (Simpson & Reid, 2014). Participants have also described finding videoconference therapy more convenient and confidential, as it provides them with an increased sense of control (Simpson et al., 2005). Other studies reflect this finding, that participants who experience high levels of shame or self-consciousness, who require high levels of control, or who exhibit avoidant coping styles may find that videoconferencing provides the environment they need to develop and maintain a positive therapeutic alliance (Simpson & Reid, 2014).

- **Lower cost, greater scalability and increased reach:** For interventions which rely on one-to-one or group work with a practitioner, digital delivery removes some of the potential costs associated with providing a physical venue. Moreover, for self-directed training courses and apps, the marginal cost of providing services to additional participants is extremely low. This means that, in theory, interventions can be delivered at scale in a very cost-effective way. Participants can often self-refer to online V&D services, which can expand reach.
- **Higher fidelity:** Apps and self-directed training courses don't rely on practitioners for delivery, meaning there is no variation in what participants receive.
- **Familiarity:** Young people especially may be more comfortable with and engaged by digital content – for example, in one review of online substance use interventions, multimedia content had higher levels of engagement than simple text alternatives. Online programmes can employ a combination of methods to provide content to participants, including video, text, graphics and more (Milward et al., 2018).
- **Complementary to traditional face-to-face delivery as part of a 'stepped care' approach:** Given that certain V&D interventions have demonstrated efficacy, providing these in the first instance may be enough to make meaningful changes to the outcomes of certain young people, increase the number of young people who may benefit from intervention, and usefully free up the time of practitioners to be more efficiently spent addressing more complex cases (Montgomery et al., 2006).
- **Providing feedback:** Instant feedback and monitoring information provides an opportunity for more rapid adaptation of content and tailoring to individual needs.

Challenges and potential risks

- **Adaptation:** The pandemic will prompt many providers to shift rapidly to V&D approaches to delivery. The extent to which this will be possible will be highly dependent on the content and delivery model the provider uses. However, our view is that many programmes will face significant challenges to adapt at speed to deliver content remotely, and there are clear risks that even well-evidenced approaches will be less effective.
- **Personal preferences:** While some people are comfortable with or may even prefer V&D delivery modes, others will have a strong preference for traditional face-to-face interaction, and having to navigate an unfamiliar digital service will increase anxiety for some individuals. Discussions with practitioners reveal that, in some cases, participants have been reluctant to commence online treatments, owing to a perception they would be inferior to face-to-face appointments.
- **Appropriateness:** Treatment delivered virtually or digitally is generally less well-suited to individuals with more severe forms of mental illness or those experiencing an immediate crisis (Andersson, 2016). There is also some evidence suggesting that group treatments (such as family therapy) delivered remotely may be particularly challenging for some participants, due to competing demands on their attention (Simpson & Reid, 2014). Patients with PTSD may be particularly affected, given the characteristic hypervigilance associated with the disorder.

- **Tailoring:** Content needs to be appropriate for participants' reading level and cognitive ability. Additionally, new content should be tested with participants' parents to ensure it is appropriate (Vigerland et al., 2016), which is likely to slow down the process of switching to online delivery.
- **Efficacy of delivery:** Many practitioners deliver interventions which rely on building a trusted relationship or therapeutic alliance with individual participants. As described in the previous chapter, the evidence on establishing strong therapeutic alliances remotely is emerging and encouraging, but interventions which use email, chat, phone or videoconferencing to connect a participant with a practitioner will need to consider some of the available methods for fostering a therapeutic alliance in a V&D context.
- **Access:** Nationally, the ONS estimates that the vast majority of households with children have access to the internet – however, there are likely to be challenges around online access in the poorest communities. Available data in England and Wales is not good enough to estimate the extent of this challenge, but disadvantaged households will have fewer internet enabled devices, and data limits may restrict the ability to stream 'rich' content. Several providers who responded to our survey raised internet access as a major barrier to delivery.

  This issue around access to computer equipment and internet has been acknowledged by the UK government, with the Department for Education launching a scheme to allow disadvantaged teenagers in England to borrow laptops to support their school working from home, and to provide 4G routers to support some families to connect to the internet.

  In the context of the Covid-19 context specifically, it is worth noting that this problem may be exascerbated by so many people being at home all day, and internet use increasing across the board. Relatedly, the quality of communications undertaken virtually or digitally can be substantially influenced by environmental factors, such as noise. Background disruption (at either end) means that communication can become strained, although high-quality hardware can help to remove some of this disruption. Technical failures are common across all V&D mediums: difficulties such as connection problems and systems failure can delay delivery and cause stress for both practitioners and participants.
- **Security and privacy:** Participation in V&D services may be affected by the lack of an available, quiet and safe space in which to engage with the intervention, or by concerns about how confidential personal information should be entered online. Along with the ability to send and receive information rapidly, comes the risk of it being misdirected, and simple errors such as misspelt names can result in major data breaches or clinical miscommunications. Major security breaches, such as the 2017 cyberattack on NHS services, put into sharp focus the essential need for widescale investment into cybersecurity and technical support. In our correspondence, providers also raised the concerns of some programme participants that sessions on videoconferencing software may be recorded, and underlined the importance of reassuring participants that nothing is being recorded digitally.
- **Staying safe online:** Unsupervised access to the internet has clear risks, and there is a need for young people to know how to be safe online. This risk is heightened in the current context, where many children and young people will be confined to their homes and relying on the internet for access to schooling and services, resulting in much more time online.
- **Recruitment:** Recruiting participants will be challenging when traditional sources of referrals, such as schools, are closed. Digital tools for screening participants into an intervention may be needed, and further consideration will need to be given to methods, such as sending text reminders, in order to retain individuals in the intervention (for example see Blatch-Jones 2020).

- **Engagement:** Engaging highly vulnerable individuals with complex needs is a challenge for any intervention. While there is some evidence to suggest that participants are actually *more* engaged in videoconferencing therapy than face-to-face therapy (see chapter 7), services which require participants to engage with a considerable amount of self-help material may be challenging for some.

  It is also worth remembering that lots of existing interventions are designed to be delivered in typically convenient settings, such as schools or children's centres, which are currently closed, or rely on particular incentives to participation, such as playing sports, mixing with peers or just having an alternative place to spend time outside the home, which are no longer available or possible.
- **Attrition:** While many people may begin self-directed training or start using an app, it is likely many will drop out over time. Indeed, high drop-out rates from V&D services is a consistent theme in the evidence (as set out in chapter 6). Moreover, it is possible that those who do drop out are more likely to be those facing multiple disadvantages and who are most in need of support.
- **Workforce wellbeing and support:** The opportunity for remote delivery, and especially home working, presents some unique challenges for workplace practices and processes. For example, if staff are all working from home, and technically each is a lone worker, then they may require further training. Staff support should also be considered in more general terms. Although cost-effectiveness is an oft-cited incentive for deliver remotely, it is important not to underestimate how long it can take to provide meaningful support to a participant. Burnout is a common problem among clinical staff in mental health settings, and this could be exacerbated by the imposition of unattainable targets based on any disproportionate calculation of clinical time to be saved from V&D interventions.

Issues facing the sector

Respondents to our survey of programme developers and providers highlighted a range of challenges associated with V&D delivery.

- **Accessing funding to be able to move to a digital or remote platform:** Moving to digital delivery often requires a redesign of content and the way in which it will be delivered so that it remains engaging and understandable. This requires funding to go towards reassessing tools and content, and the time required to make changes to materials and methods.
- **Access to digital platforms for the most vulnerable:** Several respondents expressed concerns about access to the internet at home, and the fact that this, alongside other means of accessing digital platforms, such as mobile data, can be a prohibitive cost for vulnerable families. A related concern applies to practitioners, who require a high level of connectivity and access to the necessary IT equipment to deliver interventions remotely. Digital exclusion was among the most frequently highlighted challenges, while restricted access to devices was raised as a particular concern in cases where households may be experiencing violence or abusive relationships.
- **Adapting existing safeguarding procedures:** Several respondents noted that assessing child and parent wellbeing remotely would be much more difficult for practitioners than it is in a face-to-face situation.
- **Setting boundaries:** Respondents highlighted the need to ensure that practitioners have a clear sense of when they need to be available, and that a move to V&D delivery should not result in a sense of having to be available 24/7.

- **Data security:** There is a need to ensure the safety and suitability of digital platforms, and concerns around compliance with GDPR and data protection, particularly when practitioners are working in the home environment.
- **Adapting practice:** The impact of changing practice on practitioners and programme providers was highlighted as a particular challenge in current circumstances. Respondents detailed how therapists and practitioners are typically having to adjust to new methods and new technology in their own homes, without the support of colleagues.

  The challenge of developing and maintaining practitioner–participant bonds through V&D mediums was raised by many respondents, who felt that interacting with programme participants remotely would impede their ability to develop a meaningful relationship, deliver the programme and administer safeguarding procedures.
- **Access to physical 'safe spaces':** This was raised particularly with regard to the most vulnerable, who may not have the space at home to speak confidentially to practitioners, and in current circumstances, in which access to safe spaces outside the home, such as a therapist's office, has been shut down.
- **Maintaining fidelity to the existing programme:** Respondents raised the challenges of rapidly moving to V&D delivery while ensuring that the programme remains as effective as the original face-to-face version. Given the short timeframe programme developers are working in, some felt it would be difficult to evaluate if digital adaptations had retained the efficacy of the original programme.

9. How has the early intervention sector responded to Covid-19, in terms of moving toward virtual and digital delivery of programmes?

This chapter presents the findings of a survey of programme developers and providers conducted by EIF between the 2–14 April 2020. The survey was sent to all providers currently on the EIF Guidebook and to applicants to the first funding round of the Youth Endowment Fund,[11] and disseminated via our email newsletter and Twitter. While these recruitment methods have been pragmatic rather than systematic, we believe that 88 responses provide a very useful overview of the impact of Covid-19 on current service provision and how the sector is adapting to V&D delivery.

See appendix C for a copy of the survey questions and response options GO.

1. The majority of respondents are heavily reliant on traditional face-to-face delivery methods.

Figure 9.1 shows that the majority of developers and providers (39%) are reliant on face-to-face methods of delivery using little or no digital components. A smaller number (30%) use some V&D components to complement face-to-face delivery, and 28 programmes (32%) reported delivering their interventions predominantly through V&D methods.[12]

FIGURE 9.1

Do you currently offer a remote or digital-based programme?

Yes, intervention is delivered predominantly through remote or digital methods	Yes, intervention delivered face-to-face but with some remote or digital components	No, intervention is delivered predominantly face-to-face
28 (32%)	**26** (30%)	**34** (39%)

Source: EIF survey, April 2020

Although the current distribution of programmes shows that face-to-face delivery is still the standard, this could change after the impact of Covid-19 has washed through. Several programme developers suggested that they may incorporate or retain components of V&D methods currently being used in response to Covid-19 in the future:

11 For more information about the Youth Endowment Fund, for which EIF is one of three operating partners, see: https://youthendowmentfund.org.uk/

12 Percentages are rounded to show whole numbers.

'When the social isolation is over, we plan to go back to home visits and group work, but we will definitely be incorporating more video calls into our support in the future … We have found that emailing information and material to families is also a good use of resources and better for the families to keep.'

2. Most intervention developers and providers are adapting delivery in response to the major disruption caused Covid-19.

Figure 9.2 shows that the vast majority (91%) of respondents are continuing to deliver services. However, 76% of providers are doing so with major adaptations to the way in which they deliver services.

FIGURE 9.2

How has Covid-19 affected the normal way you deliver programmes to children and young people?

Source: EIF survey, April 2020

Eight programmes (9%) reported stopping the delivery of their programmes altogether. Programme developers pausing delivery due to Covid-19 commented on some of the difficulties of adaptation, including one respondent who noted the lack of available funding for developing digital adaptations as the reason their programme had been stopped. Several respondents also commented that programmes had been stopped to allow practitioners and resources to be diverted to services supporting local authorities, or those serving a population with greater needs.

Some paused programmes are also inherently difficult to transition to a V&D model:

'All of our delivery is interactive, using a therapist and an artist combined. Delivering remotely isn't easy, but we may have a solution for a digital version. We hopefully will see this off the ground within the next 7–10 days.'

Programme developers making major adaptations to the delivery of interventions are adopting a variety of V&D approaches ranging from the ad-hoc use of phone calls, WhatsApp and video-conferencing to deliver standard sessions, through to more tailored approaches. Some of these more sophisticated approaches include redesigning content around digital methods of delivery and tailoring it to the challenges posed by Covid-19 for children and families:

'Since school closure our interactions with children and families have shifted to virtual, online support for academic needs and wellbeing, including supporting schools' home learning packages. We have shifted the focus of our programme to include help for parents/carers in supporting their children and in accessing food, basic goods, housing, medical advice and information in different languages. This has included becoming a referral organisation to local food banks. We started delivering this adapted model as soon as schools closed.'

'[We] came up with a virtual intervention programme which is happening on Instagram which other organisations are directing their children too … This programme includes live support with mentor and therapist advice and encouragement.'

The need to train therapists and other practitioners in new V&D practices was also highlighted, as was the need to take into account the impact that changes to delivery will have on service users:

'We are trying to train therapists as quickly as possible to use digital/remote methods of delivery. We are also trying to plan and develop activities that can be shared remotely that are targeted without overwhelming parents, children and therapists! We are phoning as a starting point of providing support and asking parents to find out what would help them. Developing the most appropriate interventions to be delivered remotely is a significant change for our service. Honestly we are at the very first stage of working out What to deliver, How to deliver, and to Who.'

Although figure 9.2 shows that the majority of programmes are continuing to deliver services, some respondents noted that components of their interventions had been stopped or temporarily paused, including group sessions, therapies requiring in-person contact, and parts of the intervention yet to be adapted – meaning the full suite of intervention components was not available. This may suggest that although services are continuing, some interventions are now missing some components, and so may not be as effective as the full, standard delivered service (or a full, like-for-like digital adaptation of the original programme):

'Our contact with parents/carers is now down to texts or phonecalls and emails. We are still supporting all 48 families but it is extremely hard not being able to have face-to-face contact. [Music and play therapy] have both stopped, but practitioners have been in touch with the families.'

'The optional group element of the programme has been suspended. Some [practitioners] have established closed Facebook groups to deliver parent–child interaction content.'

3. The impact of Covid-19 has been felt by all interventions but most acutely by those provided on a universal basis.

Figure 9.3 shows that Covid-19 has had a significant impact on almost all interventions, with the vast majority noting that they are continuing the delivery of programmes but have had to make major changes to the way they do so.

Of the programmes included in figure 9.3,[13] seven reported stopping delivery for the foreseeable future. This group consists of five universal interventions and two targeted selected interventions (targeted at those at an elevated risk of poor outcomes based on demographic factors). No targeted indicated interventions (targeted at those with a pre-identified issue or diagnosed problem) reported stopping delivery.

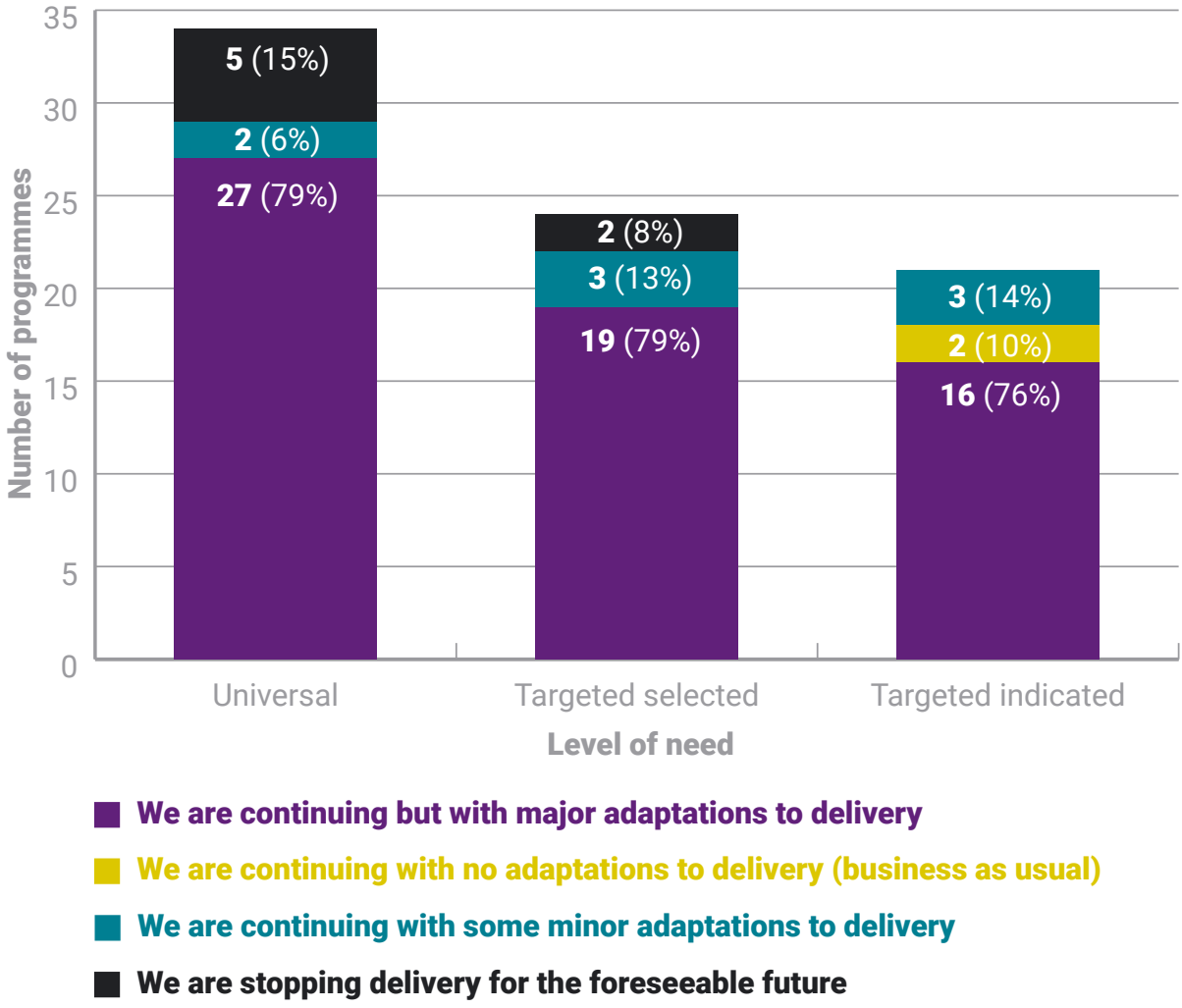
This may suggest that interventions targeting those with greater levels of need are continuing, reflecting the fact that a pause in the provision of these services is likely to have more severe consequences. One programme developer responsible for a targeted indicated intervention noted:

13 Note that data on level of need was missing for nine programmes, including one programme that had stopped delivery, and have been omitted from this chart.

'[We] have been proactive in changing the way we work quickly to ensure vulnerable children and young people can access support during the current crisis. We have put measures into place to protect mental health and wellbeing and to reduce the risk of escalation of need and crisis for vulnerable children and young people, some of whom are engaged with the criminal justice service.'

FIGURE 9.3

The impact of Covid-19 on normal delivery of programmes, by level of need (universal or targeted)



Source: EIF survey, April 2020

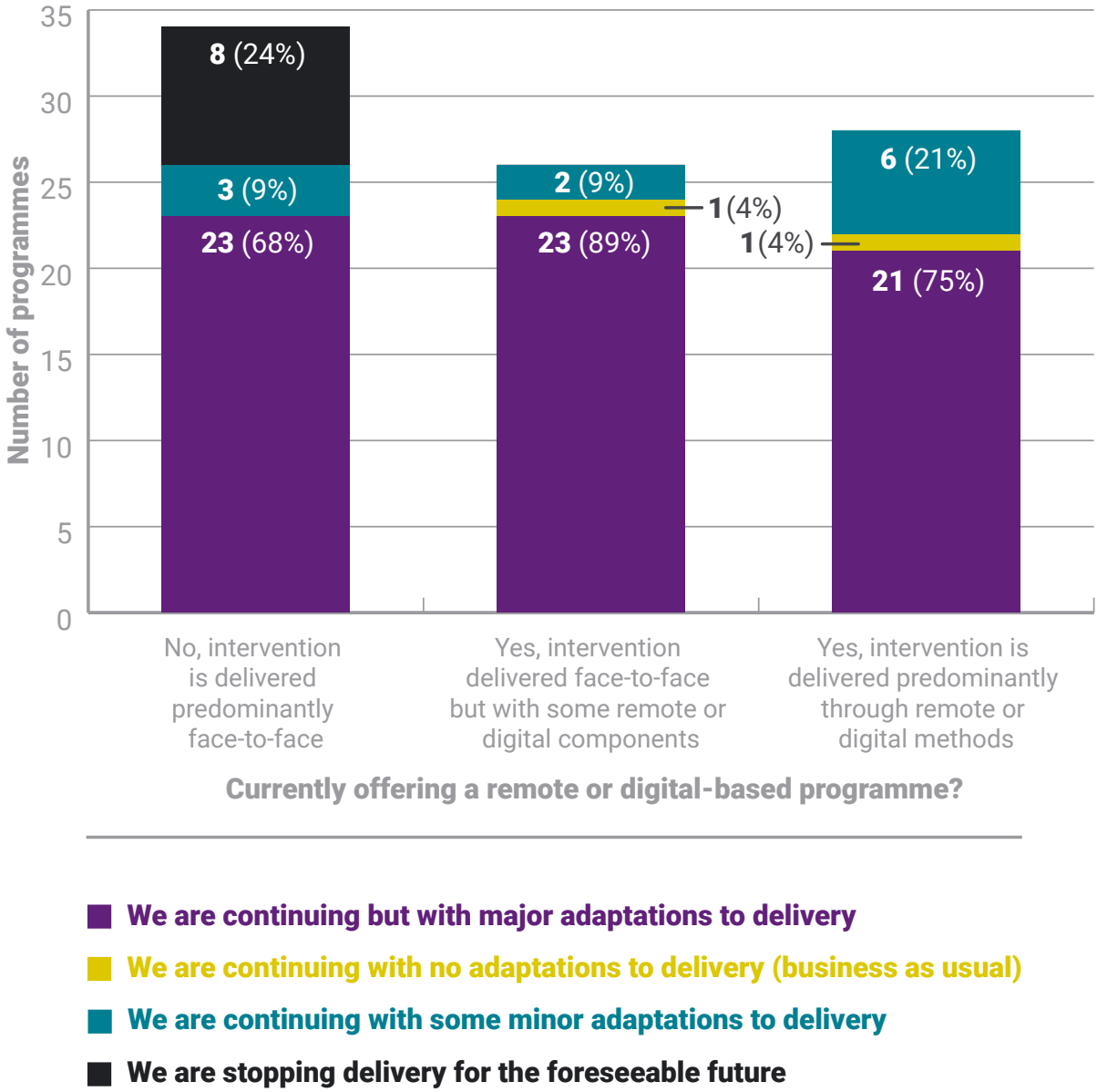
4. Interventions which are stopping delivery are those with no existing V&D components.

Figure 9.4 shows that all eight programmes that have stopped delivery do not currently use V&D approaches. Conversely, 25% of programmes delivered predominantly through digital means reported minor or no adaptations to their delivery.

Programme developers making major adaptations to the delivery of interventions are adopting a variety of V&D approaches. Due to the immediacy of the need to adapt, many have taken to expanding existing digital components of interventions (such as conducting some sessions via V&D methods). For example, one speech therapy programme for deaf children has moved from a model of face-to-face therapy sessions with some telepractice sessions to all sessions being conducted remotely via telepractice.

FIGURE 9.4

The impact of Covid-19 on normal delivery of programmes, by existing use of remote delivery methods



Source: EIF survey, April 2020

Scaling existing digital components to deliver programmes means existing content, training and digital infrastructure can be retained, which requires less time to adapt. Several programme developers running interventions with no existing digital components highlighted the need to both train staff and seek more permanent methods of digital delivery in addition to designing content to move to a digital platform:

> *'We will be working on developing an online curriculum to support the young people we work with. This will involve a two-week 'Programme Design Sprint', where we will work with parents, young people, teachers, schools and our own practitioners and impact team to understand, define and prototype what effective online delivery will look like.'*

Programmes already using a V&D approach to deliver the majority of sessions have made fewer and more minor adaptions to standard practice:

'We have previous experience of delivering our programmes over webex and therefore did not have to make a huge transition. We managed to continue to deliver the seven different programmes we were delivering up and down the country on the same day and time. IT support is available on each session to respond to parents who are having difficulties logging on … Trainers required some training on how to engage well with parents online, eg the importance of giving examples to encourage conversations.'

We have also spoken to one provider with a mixture of both traditional face-to-face programmes and existing online delivery capability about their response to the Covid-19 crisis. They shared that:

- They have experienced increased demand for their online services, both in areas that didn't already make use of it and in those that were already using it.
- They have begun adapting programme content and providing free resources specifically to support families with issues introduced by the Covid-19 crisis.
- For their programmes that are typically delivered face-to-face, they have rapidly begun to develop guidelines to support practitioners in delivering these interventions virtually or digitally.
- They are putting in place measures to deliver remote support and training for their practitioners, such as via webinars.

The impact of Covid-19 on senior commissioners and service leaders

In addition to the survey, EIF has conducted a series of interviews with senior commissioners and service leaders in local authorities and head teachers to understand the immediate impact of Covid-19 on the delivery of services for children and young people, and how their organisations are responding. The findings of this work will be made available in the near future.

10. Conclusions and recommendations

The social isolation introduced in response to the Covid-19 pandemic will be extremely disruptive to children and family services, and it is crucial that we find ways to support vulnerable children and young people during this period. This will require new models of delivery which use V&D approaches.

The sector is rapidly mobilising to deliver interventions remotely in response to the current crisis. While some interventions have had to pause their delivery, the majority – over three-quarters in our survey – are adapting delivery methods, moving content online, and using phone, text messaging or videoconferencing to enable services to continue.

While it is encouraging to see all this responsiveness and adaptation across the sector, we should not lose sight of the fact that many of these services were not originally designed to be delivered remotely. It is important that those involved in adapting services are able to access what is currently known about different V&D delivery methods in different outcome areas, and the evidence about what has and hasn't been shown to be effective.

We undertook this review in order to identify what the evidence can tell us about the effectiveness of such approaches, the challenges and risks associated with V&D service delivery, and how developers and providers have been responding during the early stages of the crisis. We found that:

Although clearinghouses and other online databases list over 100 interventions for children and young people delivered virtually and digitally, the majority of these are focused on education or physical health. We identified far fewer interventions designed to address issues such as mental health, substance misuse, risky sexual behaviour, child maltreatment, and crime and antisocial behaviour (including child behaviour and conduct problems).

The programmes we did identify covered a wide range of delivery models (from one-to-one or group-based services to unguided self-help programmes, games and apps), aimed at various age groups and target cohorts. This diversity means that it is hard to draw general conclusions from this pool of interventions.

However, our review of reviews did identify a good selection of studies examining the effectiveness of V&D interventions for children and young people, across a range of outcome domains and delivery approaches. Generally speaking, these reviews found short-term improvements, and in many cases found that V&D delivery had the potential to be as effective as face-to-face services (although there was little evidence that it was superior to face-to-face delivery). Although many of these reviews raised concerns about the mixed quality of the underlying evaluation evidence, a clear and consistent set of messages did emerge which have implications for current practice.

Our research has found that:

1. **There are some V&D interventions with evidence of improving outcomes that could be made available more widely.**

   Those seeking to put in place new V&D interventions should consider the programmes which already have good evidence. Some well-evidenced programmes are identified in our search of clearinghouses and databases in chapter 5 GO, and these – along with other evidenced-based programmes not described by the clearinghouses – should be considered as an alternative to developing new interventions. More broadly, our review of reviews has found evidence that V&D interventions, across a range of outcome areas, have the potential to be effective, and there is some evidence that they can be as effective as traditional face-to-face services.

2. **The evidence for V&D delivery is strongest for education and health.**

   V&D models of delivery appear to be much more developed and well-tested in relation to education and health outcomes, including mental health and wellbeing. While there are reviews concluding that V&D delivery can make a difference to other important outcomes – such as substance misuse, risky sexual behaviour, or crime, violence and antisocial behaviour – there is less high-quality research available in these areas.

   » **Those developing V&D services aimed at these less well-evidenced outcomes need to consider this. It is important that new interventions in these areas are robustly evaluated.**

3. **Adapt carefully.**

   The majority of interventions shown to be effective for children and young people are not delivered remotely. There is limited research on how to adapt interventions from face-to-face delivery for V&D delivery, and it is not automatically the case that interventions will work as effectively when adapted to be delivered remotely. Rapid adaptation creates risks that the core components which make an intervention effective may be lost.

   » **We shouldn't assume that interventions will work equally well when delivered through virtual methods. Adaptation of existing interventions needs careful thought, and should include a focus on identifying the core components that must be maintained. Providers should also work with experts in digital delivery to ensure content is appropriate and engaging for the target cohort.**

4. **V&D interventions that are tailored to the individual and involve regular contact with a practitioner are more likely to be effective.**

   The frequency and duration of contact is an important factor that may affect the strength of the therapeutic relationship between practitioner and participant, and in turn the effectiveness of the intervention. The evidence on the effectiveness of interventions which are entirely self-guided is far more limited.

   » **Those developing and adapting interventions should, where feasible, include frequent contact between participants and practitioners.**

5. **Virtual and digital delivery interventions often face high levels of drop-out, and these challenges may be exacerbated by the current context.**

   It is often difficult to retain participants, particularly the most vulnerable, in early intervention programmes. Keeping children and young people engaged is likely to be even more difficult without building face-to-face relationships first. Services which require participants to self-motivate or engage independently with self-help material may struggle to achieve impact.

It is also worth remembering that many existing interventions are designed to be delivered in typically convenient settings, such as schools or children's centres, which are currently closed, or rely on particular incentives to participation, such as playing sports, mixing with peers or just having an alternative place to spend time outside the home, which are no longer available or possible.

- **Those developing V&D services need to consider how to develop strong engagement strategies for their interventions. It is also important to develop monitoring systems to identify quickly if interventions are struggling to reach their intended recipients or attrition rates are concerningly high.**

6. **We must evaluate new ways of working in order to develop the evidence on V&D methods.**

   Evaluation is more important now than ever if we are going to be able to establish whether these new delivery methods are achieving desired outcomes. For the reasons set out above, we shouldn't assume that effectiveness will be maintained once services become digital.

   - **Given the limited evidence base – especially on long-term impacts – providers, developers and commissioners should work with the research community to design evaluations that will improve the evidence base on effective approaches to V&D delivery of interventions for children and young people, and which will be of lasting relevance beyond the immediate crisis.**

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Appendix A: Searching clearinghouses and toolkits to identify evidence-based interventions

Clearinghouses were searched for relevant interventions by:

- Eyeballing full lists of programmes for relevant programmes.
- Using a reduced set of search terms ('computer', 'tablet', 'telephone', 'phone', 'smartphone', 'online, 'internet', 'web', 'app', 'software', 'digital').
- Using bespoke search functionality (for example, some clearinghouses allow a user to filter by digital interventions).

List of websites

1. Early Intervention Foundation Guidebook: **https://guidebook.eif.org.uk/**
2. Education Endowment Foundation Projects: **https://educationendowmentfoundation.org.uk/evidence-summaries/teaching-learning-toolkit/**
3. Public Policy Institute for Wales: **https://www.wcpp.org.uk/**
4. What Works Centre for Children's Social Care: **https://whatworks-csc.org.uk/**
5. Centre for Homelessness Impact: **https://www.homelessnessimpact.org/**
6. What Works Centre for Crime Reduction (College of Policing): **https://whatworks.college.police.uk/About/Pages/default.aspx**
7. What Works Centre for Wellbeing: **https://whatworkswellbeing.org/**
8. What Works Scotland: **http://whatworksscotland.ac.uk/**
9. What Works Clearinghouse: **https://ies.ed.gov/ncee/wwc/FWW**
10. Best Evidence Encyclopaedia (BEE): **http://www.bestevidence.org/index.cfm**
11. Blueprints for Healthy Youth Development: **https://www.blueprintsprograms.org/**
12. Social Programs That Work: **https://evidencebasedprograms.org/**
13. Promising Practices Network: **https://www.rand.org/well-being/social-and-behavioral-policy/projects/promising-practices.html**
14. Washington State Institute for Public Policy (WSIPP): **http://www.wsipp.wa.gov/**
15. Office of Adolescent Health: **https://www.hhs.gov/ash/oah/grant-programs/teen-pregnancy-prevention-program-tpp/evidence-based-programs/index.html**
16. Office of Justice Programmes Crime Solutions: **https://www.crimesolutions.gov/**
17. Evidence Based Practices (European Platform for Investing in Children): **https://ec.europa.eu/social/main.jsp?catId=1246&langId=en**

18. Home Visiting Evidence of Effectiveness (U.S. Department of Health & Human Services) HomVEE: **https://homvee.acf.hhs.gov/**
19. Evidence for ESSA (Centre for Research and Reform in Education at John Hopkins): **https://www.evidenceforessa.org/**
20. Evidence Based Teen Pregnancy Programs (U.S. Department of Health and Human Services): **https://tppevidencereview.youth.gov/Default.aspx**
21. Research-Tested Interventions Programs (National Cancer Institute): **https://rtips.cancer.gov/rtips/index.do**
22. Top Tier Evidence (Coalition for Evidence-Based Policy): **http://coalition4evidence.org/** – amalgamated into **https://www.arnoldventures.org/work/**
23. California Evidence-Based Clearinghouse for Child Welfare: **http://www.cebc4cw.org/**
24. PennState Clearinghouse for Military Family Readiness: **https://militaryfamilies.psu.edu/**
25. National Dropout Prevention Center and Network: **http://dropoutprevention.org/**
26. Office of Juvenile Justice and Delinquency Prevention: **https://www.ojjdp.gov/mpg**
27. Youth.gov: **http://www.youthpower.org/what-works**
28. What Works in Re-entry Clearinghouse: **https://whatworks.csgjusticecenter.org/**
29. Prevention Research Synthesis Project Compendium of Evidence-Based Interventions and Best Practices for HIV Prevention: **https://www.cdc.gov/hiv/dhap/prb/prs/**
30. Investing in Children: Dartington Social Research Unit (now known as Dartington Lab): **https://investinginchildren.eu/**
31. Health Evidence (McMaster University): **https://www.healthevidence.org/search.aspx**
32. Best Evidence Synthesis Iteration (Education Counts): **https://www.educationcounts.govt.nz/home**
33. Evidence-Based Practices Project (Suicide Prevention Resource Center): **http://www.sprc.org/**

Appendix B: Search strategy for review of reviews

A small number of bibliographic databases and key journals were rapidly searched to identify reviews of studies investigating the effectiveness of certain types of virtual and digital interventions. Sources include:

- Google Scholar
- Nice
- Campbell Library of Systematic Reviews
- Cochrane Library
- Internet Interventions Journal
- Journal of Medical Internet Research

This set has been supplemented by drawing on literature known to EIF already.

These sources were searched using a combination of handsearching and the bespoke functionality of particular databases.

Variations of the following search strings were used as far as possible. These were arrived at via a combination of (a) opinion of members of EIF evidence team, (b) consulting research already known to EIF, (c) desk-based research, and (d) conducting some initial searches, and then iterating and expanding the methodology when new terms were encountered.

TABLE B.1

Search terms

Outcome terms	Technology terms		Sample terms	Intervention terms	Study terms
'mental health'	online	video	children	intervention	'systematic review'
crime	web	SMS	'young people'	programme	'narrative review'
violence	internet	'e-mentoring'	families	program	'rapid review'
'antisocial behaviour'	app	'e-health'	adolescents	service	'literature review'
'antisocial behavior'	software	'e-interventions'		therapy	review
externalising	digital	'tele-mental'		treatment	
externalizing	telephone	telehealth		promotion	
'substance use'	phone	'tele-health'		'distance learning'	
'substance abuse'	smartphone	'mHealth'		'self-administration'	
alcohol	computer			'self-administered'	
drugs	computerized			training	
'gang membership'	computerised				
'child behaviour'	tablet				
'child behavior'	DVD				

('Mental health' OR crime OR violence OR 'antisocial behavio*' OR externalising OR externalizing OR 'substance use' OR 'substance abuse' OR alcohol OR drugs OR 'gang membership' OR 'child behavio*') AND (online OR web OR internet OR app OR software OR digital OR telephone OR phone OR smartphone OR computer OR computerised OR computerized OR tablet OR DVD OR video OR SMS OR 'e-mentoring' OR 'e-health' OR 'e-interventions' OR 'tele-mental' OR 'telehealth' OR 'tele-health') AND (children OR 'young people' OR families OR adolescents) AND (intervention OR programme OR program OR service OR therapy OR treatment OR promotion OR 'distance learning' OR 'self-administration' OR 'self-administered' OR training) AND ('systematic review' OR 'narrative review' OR 'rapid review' OR 'literature review' OR review)

NB: Most searches were conducted both with and without the 'Outcome terms'.

Reviews were screened according to the following inclusion/exclusion criteria:–

Population

- Reviews of studies investigating outcomes for children and young people (ages 0–18), or parents, teachers and other adults receiving relevant services (see 'intervention' below). Reviews were omitted if the majority of studies they include investigated adult outcomes exclusively, or if this was unclear.
- No restriction on level of risk.
- No restriction on country.

Intervention

- Reviews of studies investigating interventions delivered to recipients completely, or partially, via digital means making use of technology (such as phone, website, app or videoconferencing).
- Interventions should be designed to improve child outcomes.
- Interventions should be early intervention programmes. That is, they must be preventative in nature and not qualify as 'late intervention': acute, statutory, essential services that are required when children and young people experience significant difficulties in life, which might have been prevented. Programmes should qualify as either primary, secondary or tertiary prevention (which includes, for example, reoffending programmes that seek to prevent further adverse outcomes).

Comparison

- No restriction on comparison condition. Interested in comparing virtual/digital services to no treatment, to face-to-face interventions, or to other digital services.

Outcome

- Reviews of studies investigating direct benefits to children and young people including in terms of supporting children's mental health and wellbeing, preventing child maltreatment, preventing crime, violence and antisocial behaviour, preventing substance abuse, and preventing risky sexual behaviour and teen pregnancy.

Study

- Scope of the review of bibliographic databases is restricted to reviews or evidence syntheses of quantitative impact evaluation, to address the research questions related to the efficacy of interventions.
- Studies must be published in the English language.
- Studies must be published since the year 2000.

Appendix C: Survey of programme providers

Question 1

Do you currently offer a remote or 'Virtual and Digital Services' based intervention? (e.g. via telephone, an app, a website, video calling, CD-ROM, etc)

- Yes, intervention is delivered predominantly through digital methods (ie overwhelming majority of sessions or activities are delivered remotely).
- Yes, intervention delivered face-to-face but with some digital components.
- No

Question 2

How has Covid-19 affected the normal way you deliver programmes to children and young people?

- We are continuing but with major adaptations to delivery.
- We are continuing with some minor adaptations to delivery.
- We are continuing with no adaptations to delivery (business as usual).
- We are stopping delivery for the foreseeable future.

Question 3

If you are continuing with adaptations, could you provide a brief description (150 words or less) of the adaptations your organisation has used to deal with the impact of Covid-19?

For example, do you have plans to move to a digital or remote method of delivery or alter content as a result of Covid-19, and if so what is the expected timeline of this move. What in the interim are you doing to continue to provide services while you adjust?

- Free text response

Question 4

If you are continuing with business as usual, or stopping delivery, could you provide a brief description (150 words or less) of the reasons why your organisation is not currently considering any plans to adapt existing content to allow remote or digital delivery?

For example, perhaps your intervention is already delivered remotely, or it cannot feasibly be delivered digitally or remotely, eg sports-based interventions.

- Free text response

Question 5

What in your view are the potential challenges and/or risks associated with organisations rapidly moving into a remote or digital delivery in response to Covid-19? (250 words or less)

- Free text response

Appendix D: Studies identified in our review of reviews

Mental health and wellbeing reviews

Review	Number of studies	Interventions	Populations looked at	Findings
1. Abuwalla et al., 2018	20 RCTs	Preventative telemental health interventions, including a series of online modules, and active therapist support in the form of phone/Skype calls and chatroom chats.	Pre-teens and adolescents.	Studies focused on preventing depression had effect sizes ranging from 0.05 to 0.96, and effect sizes ranging from 0.14 to 0.67 for anxiety. For PTSD, the range was between 0.19 and 0.33. One study focusing on OCD shows non-inferiority of telephone CBT compared to face-to-face CBT.
2. Ahmead & Bower, 2008	14 studies (RCTs and QEDs)	Self-help technology (ie delivery of psychological help through computer, video-based or paper-based formats), in half the studies this was supplemented with either a series of telephone calls, a one-off telephone call, or a newsletter/letter.	Adolescents (defined as between 12–25 years old).	Meta-analysis showed small, non-significant effect size for attitude towards self (ES = -0.14), a medium, non-significant effect size for social cognition (ES = -0.49) and a medium, non-significant effect size for emotional symptoms (ES = -0.47). Authors argue these findings must be considered preliminary, because of the small number of studies, their heterogeneity, and the relatively poor quality of the studies.
3. Ali et al., 2015	6 studies (3 RCTs, 3 one-group pre/post studies)	Online peer support. The majority of studies investigated internet support groups (n = 4), and the remaining studies focused on virtual reality chat sessions (n = 2). In almost all studies (n = 5), the peer-support intervention was moderated by health professionals, researchers or consumers.	Young people between the ages of 15 and 21 years old.	Overall, one of the randomized controlled trials found a significant positive effect, on anxiety (g = -0.91), but not depression. One RCT did not measure mental health outcomes. In the remaining four studies, peer-to-peer support was not found to be effective.
4. Barnes & Prescott, 2018	5 studies (2 RCTs, 1 QED, 2 usability studies)	Gamified anxiety interventions for adolescents, providing clinical frameworks in dynamic, adaptable and personalised virtual environments.	Young people between 10 and 19 years old.	One RCT revealed no differences between treatment and control. The second RCT revealed a steeper decrease in personalised anxiety symptoms for the intervention, but not in total anxiety symptoms. The QED study indicated no effect.
5. Clarke et al., 2015	28 studies (8 evaluating mental health promotion interventions and 20 evaluating prevention interventions) – included RCTs and QEDs	Online mental health promotion and prevention interventions, including stress management interventions delivered via online modules facilitated by a practitioner, relationship education programmes, media campaigns and mental health promotion games.	Youth aged 12–25 years without a diagnosed mental health disorder.	There is some evidence that skills-based interventions presented in a module-based format, and computerised cognitive behavioural therapy, can have a significant impact on a range of mental health outcomes including reduced psychological distress, anxiety and depression symptoms.

6. Donovan & March, 2014	11 studies (8 RCTs, 1 uncontrolled trial, 2 case series)	Computer-based treatment programmes delivered at least in part asynchronously (ie without real-time delivery from practitioners). They often focused on a variety of cognitive behavioural therapy anxiety management strategies, including exposure therapy.	Young people between the ages of 3–18 with elevated levels of anxiety.	Programmes comprising a variety of CBT anxiety management strategies and which included exposure therapy were able to produce reductions in diagnostic status, severity and self-reported anxiety symptoms. In relation to other measures, computer-based programmes were generally found to improve levels of overall functioning and internalising problems, but the results for self-rated depression and other measures were inconsistent.
7. Dowling & Rickwood, 2013	6 studies (2 RCTs and 4 naturalistic comparisons)	Online and counselling and therapy (synchronous interventions with real-time delivery from practitioners). Four of the interventions investigated were single sessions.	Range of age groups, but description of one study investigating outcomes for undergraduates, and two for teenagers.	No significant differences on anxiety/wellbeing between an online chat counselling session or a face-to-face session in two studies. One study found that telephone counselling had been more effective than online chat counselling.
8. Ebert et al., 2015	13 RCTs (796 participants)	Computer- and internet-based cognitive behavioural treatments.	Young people up to the age of 25.	The superiority of cCBT over controls (waitlist/placebo) was evident for interventions targeting anxiety (g = 0.68) and for interventions targeting depression (g = 0.76) as well as for transdiagnostic interventions (g = 0.94).
9. Fleming et al., 2015	9 studies	Serious games (computerised interventions utilising gaming for serious purposes), delivered online and/or via digital technology. In most of these cases, the game is played on a computer and involves a fantasy world in which the user undertakes a virtual journey as they learn real-life skills.	Young people between the ages of 9 and 25.	Most studies reported promising results with some positive impact on depression, although one universal programme had mixed results.
10. Garrido et al., 2019	41 studies (including a meta-analysis of 15 RCTs)	Digital mental health interventions targeting depression or anxiety delivered by computer, on smartphones or online. Interventions typically drew on established therapeutic models such as cognitive behavioural therapy, and including learning modules. Several contained interactive learning activities.	Participants aged 12 to 25.	The average effect of digital mental health interventions on depression in comparison to a no-intervention control was significant and small (d = 0.33). The average effect of these interventions when compared to an active control showed no significant differences.
11. Grist et al., 2019	34 RCTs (3,113 participants)	Technology delivered interventions for depression and anxiety, including computerised and internet cognitive behaviour therapy programmes, computer-delivered attention bias modification programmes, and cognitive bias modification programmes.	Children and adolescents (up to 18 years old).	The review suggests a small effect in favour of technology-delivered interventions compared to waiting list control groups in terms of depression and anxiety outcomes (g = 0.45). Technology-based interventions did not produce statistically significant benefits over face-to-face interventions.
12. Grist et al., 2017	24 studies (describing 15 apps), two were an RCT (the rest being case studies and feasibility studies)	Mobile apps for mental health in children and adolescents. The majority included some form of self-monitoring of symptoms, mood, emotions, behaviour or meals.	Children and adolescents younger than 18.	One RCT found no significant findings on a reduction of depression, anxiety or stress. Another RCT found no significant findings on improving self-esteem or body satisfaction.

13. Perry et al., 2016	1 study	Web-based and mobile suicide prevention interventions. The one intervention identified included traditional components of cognitive behavioural therapy, and was delivered via an adult 'host' character who verbally delivered the therapy, as well as factsheets and MP3s.	Young people aged 12–25 years.	The one study identified found significant reductions in the primary outcome of suicidal ideation, as well as depression and hopelessness.
14. Reyes-Portillo et al., 2014	14 RCTs and 3 open trials	Web-based treatment and prevention programmes for depression, anxiety and suicide prevention. All approaches were cognitive behavioural therapy based. Interventions varied in the extent to which they were self-help or therapist assisted.	Children, adolescents and emerging adults.	Of the 17 studies, 10 reported significant post-intervention reductions in symptoms of depression and/or anxiety, with small to large effect sizes (d = 0.15 to 3.65).
15. Rice et al., 2014	10 RCTs investigating online interventions and depression, and 16 studies of varying design investigating social networking	Online interventions with a broad cognitive behavioural focus.	Young people between 12 and 25 years old (for investigation of online interventions; no age restriction on investigation of social networking).	All but one of the identified online interventions were found to have positive results. Eight of the 16 social networking studies reported positive results for depression-related outcomes. The remaining studies were either mixed or negative.
16. Richardson et al., 2010	10 studies (including RCTs and case series studies)	Computerised cognitive behavioural therapy, including self-directed programmes with minimal therapeutic involvement and group therapy courses delivered via online chatroom.	Children and adolescents (under the age of 18).	All studies reported reductions in clinical symptoms, and improvements in variables such as behaviour, self-esteem and cognitions.
17. Ridout & Campbell, 2018	9 studies (3 quantitative studies, with a one-group pre/post design)	Use of social networking sites to support mental health. Two interventions used purpose-built platforms based on the moderated online social therapy (MOST) model, two used Facebook, and one evaluated a purpose-built mobile app.	Young people up to 25 years old.	The quantitative studies identified significant improvements in mental health knowledge and number of depressive symptoms but no improvement in anxiety or psychosis symptom. However, it is worth noting that none of the trials included made use of a comparison group.
18. Robinson et al., 2019	27 trials – 15 looking into outcomes for children	Psychosocial interventions delivered by 'social robots', typically in health settings – humanoid or nonhumanoid robots that use verbal communication or other social interaction.	Children, adolescents and adults.	Individual studies identified in this review suggested a number of statistically significant impacts, including on anxiety, depression and anger. However, it is worth noting that the sample sizes for included trials are very small.
19. Välimäki et al., 2017	22 RCTs, 15 were meta-analysed (4,979 participants)	Web-based interventions to support adolescents and young people with depression or anxiety. The most common approach used was cognitive behavioural therapy, using interactive games, online chats, mobile phone apps and emails.	Young people between the ages of 10 and 24 years old.	The meta-analysis shows a statistically significant improvement in depression and anxiety, but not for stress.

20. Vigerland et al., 2016	24 studies, largely RCTs (1,882 participants)	Internet-delivered cognitive behaviour therapy. The majority of interventions involved therapist support through written messages or a combination of written messages and phone calls.	Children and adolescents.	Compared to waiting list control, interventions on average produced a moderate effect size across a range of outcomes including anxiety symptoms, depressive symptoms and somatic condition (g = 0.62). Internet-based interventions performed equivalently to traditional face-to-face CBT.
21. Ye et al., 2014	7 RCTs (569 participants)	Internet based self-help interventions for young people with anxiety and/or depression, largely involving elements of cognitive behavioural therapy.	Children, youth and young adults (less than 25 years of age), with anxiety and/or depression.	Compared to waiting list control, interventions were able to significantly reduce anxiety symptom severity (d = -0.52). The effect in reducing depression symptoms was not statistically significant. There was no significant difference between internet-based intervention and face-to-face care (ie equivalent effectiveness) on anxiety and depression. Authors believed disparity between results for anxiety- and depression-focused interventions is explained by degree of therapist involvement.

Substance misuse reviews

Review	Number of studies	Interventions	Populations looked at	Findings
1. Hutton et al., 2019	18 studies	mHealth interventions (mostly text message based, some website provision and apps).	Young people aged 12–26.	mHealth generally reported as effective in reducing alcohol consumption, though weaknesses in studies identified. Ten studies reported some effectiveness, three reported mixed results, and two reported no effectiveness. The remaining studies did not test outcomes.
2. Hutton et al., 2011	5 trials for adolescents (4,542 participants)	Web-based computer sessions, and multicomponent interventions combining websites and emails.	Adults, college students and adolescents. Separate analysis for adolescents.	Authors conclude insufficient evidence. Mixed results, though short-term reductions in smoking reported in three-fifths of trials. In two of these five trials, web-based provision was combined with face-to-face group sessions.
3. McLellan & Dale, 2013	RCTs, cohort studies, and pre/post only studies. 20 studies focused on substance use	Computer and internet approaches that constituted at least 50% of the intervention.	Young people aged 12–25 years.	Mixed evidence for substance misuse interventions, but some promising evidence in terms of improving positive normative beliefs towards drug use, greater self-efficacy, reduced alcohol consumption and reduced alcohol consequences. Most findings were on psychological determinants of behaviour rather than actual behaviour.

4. Oosterveen et al., 2017	45 RCTs (15,243 participants)	eHealth interventions targeted alcohol and smoking, mostly delivered via websites.	Young adults (between the ages of 18 and 35 years).	Compared to minimal intervention control groups, the eHealth interventions typically displayed greater improvements in reducing alcohol consumption and smoking in the short term. Compared to more traditional modes of delivery, such as face-to-face, no differences were identified – suggesting that the eHealth interventions were just as effective.
5. O'Rourke et al., 2016	11 studies – RCTs and cohort studies with comparison groups	Mostly web-based interventions to reduce alcohol consumption, but also with text messaging and mobile phone apps.	Hazardous young drinkers.	Across the reviewed studies web-based and text message-based interventions were found to have positive effects on reduction of alcohol consumption.
6. Rodriguez et al., 2014	8 studies – 2 RCTs, 5 pre/post only studies, one post-measures only	'Serious educational games' targeting substances including tobacco, alcohol and cannabis.	Young people and adolescents.	Some evidence that these interventions may improve knowledge around substance use and its effects. However, less evidence that they increase negative views of drugs and affect actual frequency of drug use, due to less studies investigating these 'harder' outcomes.
7. Rooke et al., 2010	42 RCTs (10,632 participants)	Computer-delivered interventions of alcohol and tobacco.	Adolescents, young adults and adults aged 30+.	On average, there is an effect of these programmes, though the effects found are generally small. Interventions more effective in reducing alcohol use than tobacco use.
8. Smedslund et al., 2017, 2019	53 studies (33,316 participants)	Computerised brief interventions to reduce risky alcohol use. Majority involved some kind of assessment followed by personalised feedback.	Young people between 15 and 25 years old, defined as risky consumers of alcohol.	Across the reviewed studies, there was moderate quality evidence suggesting computerised brief interventions can be effective in reducing alcohol consumption compared to single-dose assessments. Short-term effects better demonstrated than longer-term effects (6 months or longer).
9. Tait & Christensen, 2010	16 RCTs	Fully automated web-based interventions to reduce substance use.	Adolescents and young adults (up to 25 years old).	Alcohol-focused interventions had a small effect overall (d = −0.22), including on outcomes such as lower frequency of heavy or binge drinking, and alcohol-related social consequences. These effects were consistent with similar in-person brief interventions. Interventions were more effective with respect to those who were already drinkers at baseline.

Crime, violence and antisocial behaviour reviews

Review	Number of studies	Interventions	Populations looked at	Findings
1. Baumel et al., 2017	12 RCTs	Technology-assisted parent training programmes. This included self-directed non-interactive interventions (eg, podcasts), interactive interventions (eg, online software; 4 studies) remotely administered digitally assisted parent training programmes combined with professional phone-based coaching, and a smartphone enhancement of standard treatment.	Children and adolescents with disruptive behaviours.	In comparison to no-treatment controls, self-directed programmes yielded significant improvements in child behaviour for children under the age of 9 of between d = 0.47 and 0.80 (medium to large effects). For adolescents, the effect sizes were between d = -0.17 and 0.20 (small effects). One study compared self-directed programmes to standard, therapist-led programmes delivered face-to-face, and no difference in outcomes was identified, suggesting equal effectiveness.
2. Montgomery et al., 2006	11 randomised and quasi-randomised controlled trials (943 participants)	Media-based behavioural treatments for behaviour problems in children – typically written information to convey behavioural skills to parents and use of video modelling of behavioural techniques.	Parent(s) or carer(s) of any young person, adolescent or child with a behavioural problem.	In general, moderate effects on externalising and internalising behaviour problems variable. Significant improvements were made with the addition of up to two hours of therapist time.
3. Nieuwboer et al., 2013	12 studies (10 RCTs, and 2 one-group pre/post studies); 4 of these studies investigated child outcomes	Web-based parenting programmes, typically including training modules and information pages. Some programmes offered email consultation, and peer support in the form of group chat or group forum.	Parents who had children aged between -9 months (pregnancy) and 21 years old.	Web-based programmes yielded significant improvements in child behaviour, and close to medium effects on average (g = 0.42).
4. Nocentini et al., 2015	32 studies (13 interventions)	Anti-bullying/anti-cyberbullying information and communication technologies-mediated interventions: including serious games, virtual environments, online platforms, online activities and online counselling.	Preschool children (2–5 years), school age children (6–11 years), and adolescents–young adulthood (from 12 years).	4 of 13 reviewed interventions showed evidence of effectiveness in reducing bullying and cyberbullying.
5. Tait & Lenton, 2015	4 comparison group studies (17,594 participants)	Online interventions focusing on alcohol, with or without additional elements specifically relating to sexual violence. Most interventions were unguided, with only one group receiving a guided intervention.	Adolescents and college students.	Effect sizes, where they could be calculated, were small (Cohen's d < 0.2) or not significantly different to zero for intimate partner violence outcomes.
6. Tarver et al., 2014	11 RCTs	Self-directed parenting interventions, in multiple formats including manual, internet, videotape and DVD, with varying levels of therapist support.	Children with elevated levels of externalising behaviour.	Self-directed interventions had a large effect on parent report of externalising child behaviour (g = 1.01), although it is worth noting that this effect was not upheld by analyses of observed child behaviour. An analysis comparing self-directed interventions with therapist-led parenting interventions revealed no significant difference on parent-reported measures of externalising child behaviour, suggesting equal effectiveness.

Risky sexual behaviour and teen pregnancy reviews

Review	Number of studies	Interventions	Populations looked at	Findings
1. DeSmet et al., 2014	7 comparison group studies	'Serious digital games' (ie games with dating scenarios and quizzes).	There were no restrictions on age, though the review identified a sample of largely female participants who were between 13 and 42 years old.	Overall, there was not a significant effect on sexual health behaviours, though few studies investigated this. Overall, a significant but small effect on sexual health behaviour determinants (knowledge, skills, attitudes, self-efficacy, behavioural intentions) was identified.
2. Guse et al., 2012	10 studies (6 RCTs, 2 QEDs and 2 one-group pre/post studies)	New digital media (ie internet, text messaging and social networking sites) on sexual health. The majority of reviewed interventions were web-based and provided basic information, role-model stories and videos featuring peers or experts.	Young people aged 13–24 years.	Majority of studies suggested these interventions influenced psychosocial outcomes, such as condom self-efficacy and abstinence attitudes, albeit with small effects. Studies generally failed to find effects on actual behaviours, where measured, though three found reductions in sex initiation.
3. McLellan & Dale, 2013	RCTs, cohort studies, and pre/post only studies. 10 studies focused on sexual health	Computer and internet approaches that constituted at least 50% of the intervention.	Young people aged 12–25 years.	Sexual health interventions, in the majority of studies, found successful in improving outcomes, including increasing knowledge of impact and cost of sexual behaviours, and reducing sexual activity. Most findings were on psychological determinants of behaviour rather than actual behaviour.
4. Wadham et al., 2019	25 studies (11 RCTs, 5 one-group pre/post studies, 3 uncontrolled longitudinal studies, the remaining studies were a mixture of qualitative cohort, observational and mixed methods)	New digital media (ie internet, text messaging and social networking sites) focused on sexual health. The majority of reviewed interventions were web-based and provided basic information, role-model stories and videos featuring peers or experts.	Most participants were young people between 15–24 years old.	Many studies identified improved knowledge relating to HIV, STIs or general sexual health. Evidence on actual behavioural outcomes was mixed, with three interventions reporting non-significant outcomes on condom use, and two other studies suggesting positive impact. The results suggest that programmes that were web-based adaptations of an existing prevention programme, were theory based or had been developed from models of behaviour change appeared to be effective regardless of the digital media mode used.