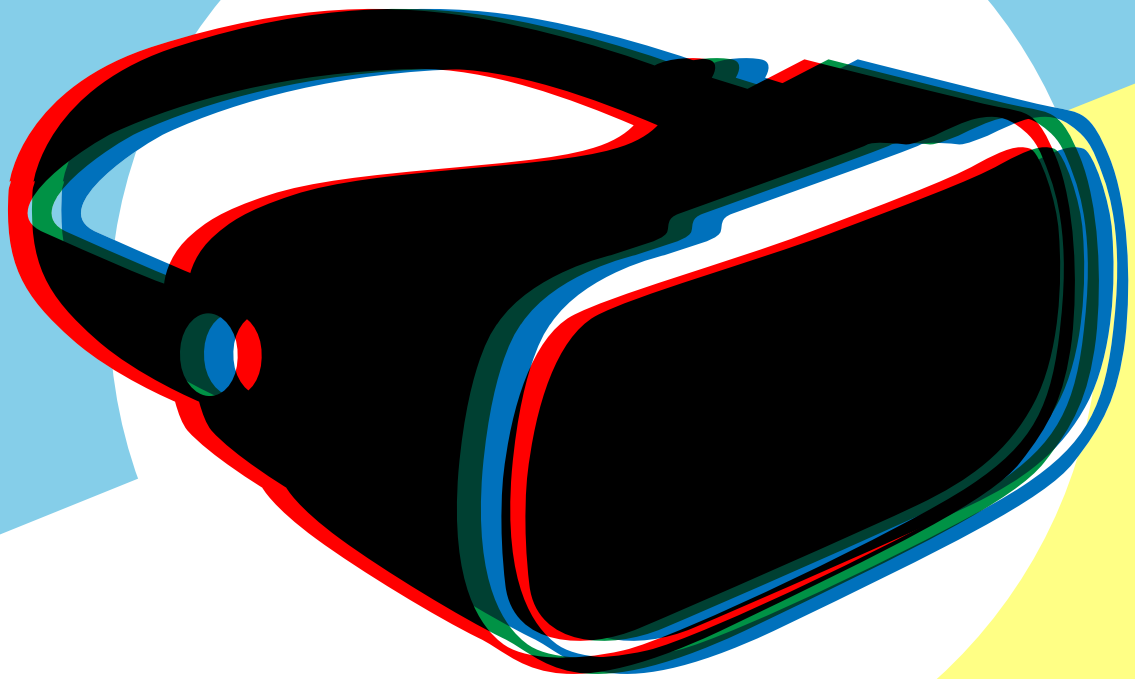
February 2019

Preliminary Evaluation of the VR Pilot Programme

Final report



CORNERSTONE PARTNERSHIP

alma economics

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Executive Summary

Over the past five years, the number of children who are looked after by Local Authorities (LAs) and children who require child protection plans to be kept safe from 'significant harm' has increased. This suggests an increasing number of children who are at risk of trauma across England. Additionally, from March 2016 to March 2018, the number of Harder to Place (HTP) children with a placement order waiting to be placed increased by a third.[1]

While the demand for foster carers and adopters has increased, the number of approved adoptive families has decreased over the last 3 years. The number of approved foster carers is relatively stable, but a shortage of carers for specific cases has been identified, including those willing to care for children and young people with complex needs, challenging behaviour and on the edge of the criminal system (Narey and Owers, 2018). Consequently, the care system seems to suffer from supply and demand imbalances.

In response to the above challenges, the Cornerstone Partnership's Virtual Reality Programme (CVR) seeks to improve the life chances of children in care and children who have experienced attachment-related trauma. CVR uses virtual reality technology to change how professionals (including social workers, child and adolescent mental health workers, teachers, and judges), adopters and fosters carers understand and interact with vulnerable children.

The CVR pilot programme was implemented between March and December 2018, with participants being asked a number of questions on its likely impact both prior to and following the sessions. While our assessment is not based on measured, objective outcomes for children in care, and further work is needed to provide definitive evidence on impact and financial benefits, the preliminary results presented here paint a very promising picture of CVR's potential.

The ultimate goal of the CVR pilot programme is to get children on their best path as soon as possible. This is expected to be achieved through an improved understanding of trauma, children's emotions and potential triggers, which in turn can help lead to improvements in several intermediate outcomes, including decision-making, placement stability, the type of support offered to children and carers, and the recruitment of adopters and foster carers. **The results of this preliminary evaluation are consistent with positive impact being achieved across all the outcomes highlighted above.** More specifically:

Improved understanding of trauma, children's emotions, and potential triggers: Nine out of ten participants believed CVR can help change the perspective of carers and adopters – leading to improvements in recruitment and increasing placement stability, as well as enabling better communication between children and their carers. Furthermore, a majority of social workers felt CVR helped improve their own understanding of trauma and stated that they will do things differently as a result of the training.

Decision-making: Most participants felt that CVR provided them with skills and knowledge that will enable quicker decision-making, while 40% said that it helped them gain insights and develop skills that would lead to better decisions.

[1] HTP children are defined as children who are any of the following: 5 years old or older, of BME ethnic background, disabled, or part of a sibling group (Adoption Leadership Board Statistics, CVAA).

Placement stability: Close to half of all participants believed CVR can help prevent adoption breakdown, while over 90% expected CVR to have a positive impact on their case study.

Support offered to children and carers: Nine out of ten participants said CVR will lead to changes to the type of support they offer to children and their carers.

Recruitment of adopters and foster carers: Six out of ten participants believed CVR will help attract more adopters and foster carers. Critically, over 90% of participants felt that CVR, by providing a window into trauma and children's emotions, can play a key role in attracting the right type of adopters and foster carers.

The above results are in line with the broader academic literature on VR's impact. There is emerging evidence that VR can increase individuals' levels of empathy with homeless people (Herrera et al., 2018) and people living with dementia (Wijma et al., 2017). Moreover, Krokos et al. (2018) showed that people remember information better when presented through virtual reality compared to standard desktop-based learning. Finally, recent research has provided promising findings on the long-term impact of VR.

As CVR is a relatively new approach and the offering is still evolving, arriving at a definitive estimate of likely financial savings for LAs is not possible at this stage. Utilising fairly conservative assumptions, we estimate CVR can help generate savings in the tune of £70,000 - £190,000 on average for each LA solely through improvements in matching speed and improvements in preventing adoption breakdown.

Preliminary impact evaluation of the Cornerstone VR programme

Improved understanding of trauma, children's emotions and potential triggers

- 91% believed CVR can change the perspective of carers and adopters
- 60% of social workers reported an increase in their own understanding of the experiences and feelings of children
- 72% said they will do things differently as a result of the training
- 41% believed CVR will improve how they communicate with carers and adopters

Transformed and accelerated decision-making

- 84% believed CVR will help them make quicker decisions
- 39% believed CVR provided them with improved skills to make decisions

Increased placement stability

- 92% expected a significant impact on their case study
- 44% believed CVR can help prevent placement breakdown

Tailored and suitable support is offered to children and carers

- 90% believed CVR will impact the type of support they offer to children and their families

Improved recruitment of adopters and foster carers

- 60% believed CVR library will help attract more adopters and foster carers
- 93% believed CVR will help attract the right type of foster carers and adopters

Percentages refer to stated opinions of participants in a number of Cornerstone VR pilot sessions. Details on the number of participants and the questions asked can be found in the report.

Process elements

99% felt confident using the Cornerstone VR equipment

- Positive feedback on trainers: knowledgeable, professional and engaging
- 2-day format seen as ideal by many participants

Requested additions:

- A 'group play' feature synchronising playback to improve group sessions
- Summary guide on common issues, e.g. adjusting focus, battery life
- Issue participants with certificate of programme completion
- Expanded library: different scenarios, longer films

Financials

Potential savings generated by a typical LA
£70,000 - £190,000*

- Improved placement stability: £60,000 - £135,000
- Quicker matching: £10,000 - £55,000

*

The available evidence does not allow us to quantify Cornerstone VR's impact directly, and there is also some uncertainty regarding the available cost estimates of different processes. Hence, these figures represent estimated savings under a range of plausible scenarios and should be seen as indicative. Figures are rounded to the nearest £5,000.

Introduction

Children in care and children who have experienced trauma face a range of barriers preventing them from achieving the same well-being, education and behavioural outcomes as their peers (Department for Education, 2018a). The Cornerstone Partnership's Virtual Reality Programme (CVR) is seeking to address some of these barriers by pioneering new technology to change how professionals (including social workers, child and adolescent mental health workers, teachers and judges), adopters and fosters carers think about their relationships with and actions towards vulnerable children.

Aims

The aim of this report is to summarise the findings from the preliminary evaluation of the CVR pilot programme. The evaluation aims to:

- Assess the initial impacts of the programme to inform future evaluation,
- Identify what has worked well and what could be improved.

From March 2018 to December 2018, the focus and implementation of the CVR pilot programme has evolved, in response to stakeholder demand, technological developments and emerging opportunities. We recognise that as the programme is still in early implementation, further work will be required to document the impact over time.

The Virtual Reality Pilot Programme

The CVR pilot programme aims to get children on their best path as soon as possible by using virtual reality technology to increase understanding, improve placement stability, provide tailored support, enhance decision making and improve the recruitment of carers. The programme has two key elements: i) trauma awareness training delivered to professionals using VCR and ii) training delivered to professionals to allow them to administer VR to support adopters and foster carers.

The VR library

The central aspect of the CVR pilot programme is the VR library, a set of 360° films viewed through virtual reality headsets. The films allow the viewer to engage with several scenarios that provide insight into the lives of children who have experienced abuse, neglect and trauma. From a stationary position, viewers can look around and see all aspects of a scene.

For example, *Being Me: Revealing and healing childhood trauma* follows the early development of the child, beginning with the child's experience in the womb as a foetus, sensing the effects of substance abuse and domestic violence via the mother. The viewer then has the opportunity to experience a simulation of abuse, through the eyes of the now infant child. The film progresses into early childhood and the viewer observes the power of intervention from adults in the child's life, such as a social worker, an adoptive parent, and a teacher.

The films have been developed in collaboration with various immersive content creators, including Visyon and INITION. The films currently available in the VR library are listed in Annex 1.

Training sessions

Cornerstone delivers training to a range of providers to facilitate the appropriate use of the VR library. The training delivered is adapted to the goals of each organisation. For example, a Local Authority (LA) may be interested in only using the technology for recruitment, while another may wish to use it to help carers or adopters living with children who have experienced trauma.

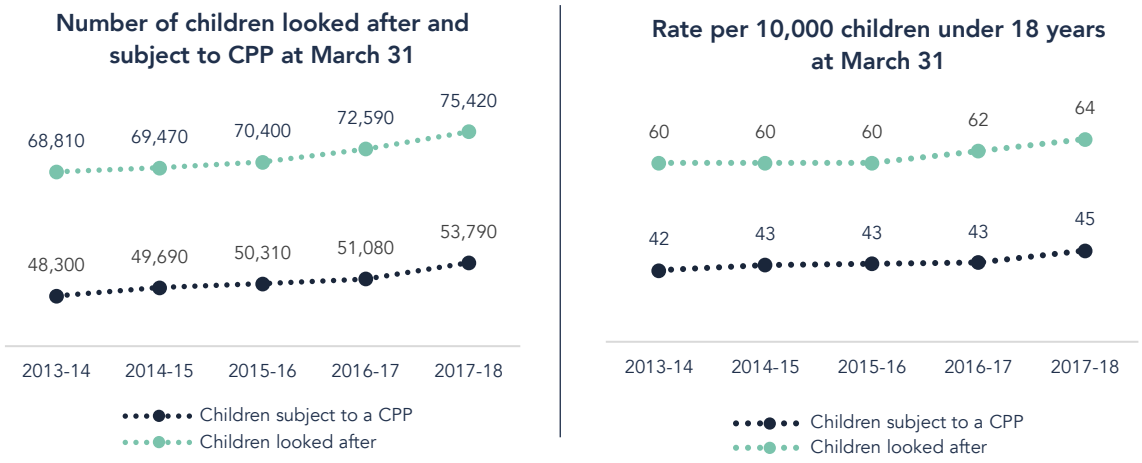
During the evaluation period, there were generally three formats delivered:

1. **Trauma Aware Service (TAS) (core module):** This is a single module course which aims to develop a common understanding and language around trauma and attachment using VR. This course is delivered to professionals working with children, including social workers, educational psychologists, and teachers.
2. **Full Course**: This is a 6-module course which aims to equip participants with the skills and knowledge to use VR kits in their practice. The TAS is included in this plan alongside modules on using VR technology, applying the VR kits in one-to-one and group sessions and using the VR for recruitment. This course is primarily delivered to professionals (e.g. social workers, educational psychologists) working directly with end users (e.g. adopters, foster carers).
3. **Recruitment:** This is a single module course focuses on using VR to recruit adopters and foster carers. This course is primarily delivered to adoption and fostering teams within LAs and Independent Fostering Agencies.

Context

Children at risk of trauma

Over the past five years, the number of children who are looked after by Local Authorities (LA) and children who require child protection plans to be kept safe from 'significant harm' has increased. Even after accounting for population growth, the upward trend persists. This suggests that there is an increasing number of children who are at risk of trauma across England.[2]



Data source: Department for Education – Children looked after statistics, 2017-18

Adoption matching, placement and recruitment

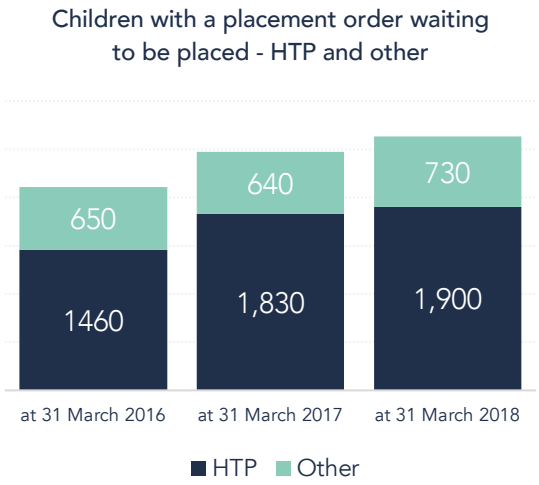
In recent years, there has been growing focus on improving the adoption process through a range of policy responses (e.g. regionalisation of adoption services and improved monitoring of adoption outcomes).

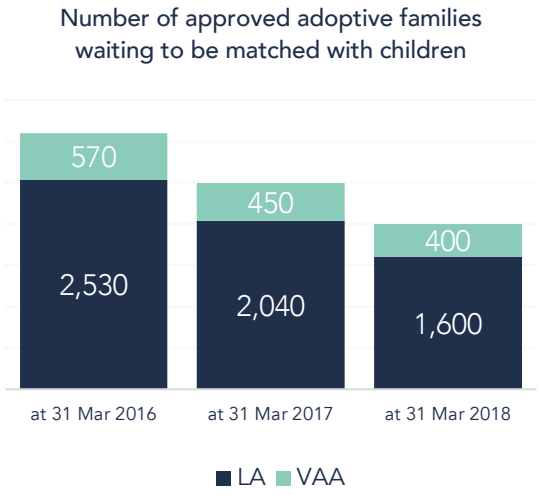
On average between 2014-17, a child approved to be placed for adoption in England waited for 220 days to be matched with a family. The overall process from entering care to moving in with an adoptive family takes on average 520 days over the same time period (Department for Education, 2018b).

While there have been some marginal improvements in recent years to the speed of the adoption process, there are some notable challenges facing the sector, including the increasing numbers of Harder to Place (HTP) children waiting (i.e. children 5 years or over, ethnic minority background (BME), disabled, or part of a sibling group).

From March 2016 to March 2018, the number of Harder to Place (HTP) children with a placement order waiting to be placed increased by a third.

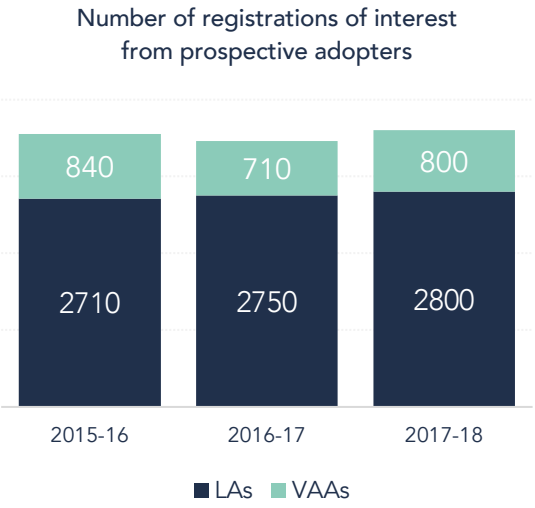
[2] Improved responses to cases of abuse and neglect alongside cuts to support services are thought to be contributing factors to this increase (Local Government Association, 2018).





Data source: Consortium of Voluntary Adoption Agencies (CVAA) - Adoption Leadership Board Statistics

Looking at the recruitment of prospective adoptive families, the number of registrations has remained relatively flat over the past three years, but the number of approved adoptive families has steadily declined. Moreover, there has been a particular drop in the number of families recruited through LAs, with a growing proportion of families being approved through VAAs (20% in 2017-18). This suggests the need for better, more targeted recruitment of adopters by LAs, especially when set against the backdrop of the increasing number of HTP children waiting for a match.



Data source: CVAA - Adoption Leadership Board Statistics

Foster matching, placement and recruitment

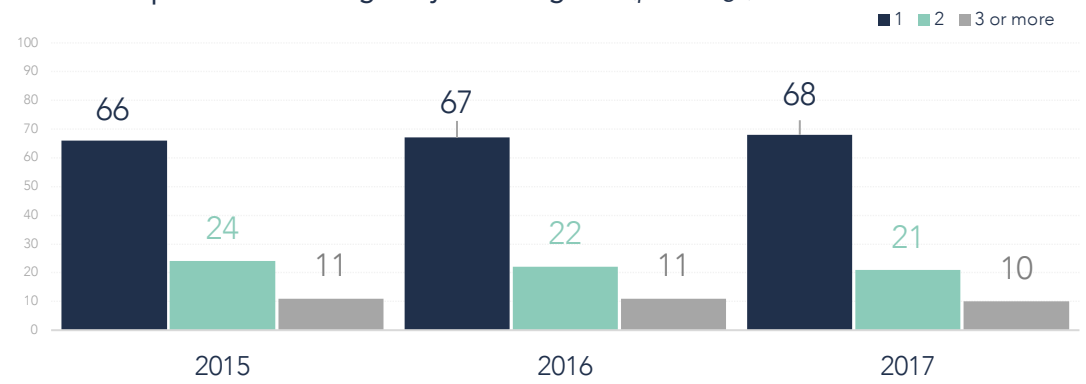
The number of approved carers has been relatively stable over the past 5 years. However, as the Narey and Owers review (2018) noted there is a shortage of carers for specific cases, including those willing to take children and young people with complex needs, challenging behaviour and on the edge of the criminal system. In addition, there are challenges finding carers for children over eight years old. To address these gaps, recruitment of 'multi-skilled specialists' is recommended.

Placement stability and adoption disruption

There is strong evidence that placement stability can affect the outcomes of children and young people in care. Children in stable placements are more likely to achieve better education and employment outcomes (Narey and Owers, 2018). Moreover, placement moves can have a high social cost for carers (e.g. growing fatigue) alongside substantial financial costs (e.g. recruitment and matching, additional support, etc.).

Over the past three years, there has been a slight improvement in the number of children changing placements. However, in 2017 around 10% of children in care had three or more placements and around 31% had two or more placements.

Number of placements during the year in England *(percentage)*



There is limited publicly available information on adoption breakdowns in England. However, research undertaken by Children and Young People Now, based on a Freedom of Information request, indicates that there has been an overall increase in adoption breakdowns since 2012/13. The analysis estimates that across all English LAs, the number of breakdowns of initial placements was approximately 93 breakdowns in 2012/13, 187 in 2015/16 and 150 in 2016/17 (Puffett, 2018). Regarding adoption disruptions (i.e. the breakdowns that occur *after* an adoption order has been finalised), it is estimated that across all English LAs there were 87 breakdowns in 2012/13, rising to 160 in 2015/16 and 132 in 2016/17.[3]

Annex 2 provides further information on trends in foster carers' recruitment, factors correlated with placement stability and protective factors mitigating the impact of placement disruptions.

[3] It is possible that the rates may be higher than reported as frequently LAs stop monitoring adopted children after three years or lose track of families that move out of the LA. In addition, over the same time period, the number of children for whom adoption orders have been granted followed a similar upward trend, suggesting that the variations may be proportional to the population of adopted children

Virtual Reality

How is VR currently being used?

Virtual reality is a rapidly evolving technology with growing applications in fields such as journalism (Sundar et al., 2017), healthcare (Jütten et al., 2017) and education (Ott and Freina, 2015). There is growing interest in how VR can be used to create social impact. For example, HTC Vive has committed $10 million dollars to the 'VR for impact' programme, and Oculus has developed the 'VR for Good' programme.

The key underpinning concept of 360° virtual reality is 'presence', or the feeling as you are in a certain situation. The level of presence felt is often determined by a range of factors, including technology and individual personality.

VR and empathy

With reference to VR as the "ultimate empathy machine", a growing body of literature supports VR's role in promoting empathy and compassion (Anderson, 2015).

Researchers at Stanford University recently published a study comparing the impact of traditional perspective-taking methods against a VR perspective-taking task (Herrera et al., 2018). The research team developed a seven-minute virtual reality experience called 'Becoming Homeless' to compare how this immersive technology affects individuals' level of empathy relative to other media (e.g. reading a narrative or interacting with a two-dimension version of the same scenario). The study, which involved two experiments, showed that participants in both conditions reported feeling empathetic to homeless people. However, a higher number of those who used the VR signed a petition supporting homeless people and developed a more positive and longer-lasting attitude towards the homeless. Approximately 85 per cent of participants in the VR condition signed the petition in comparison to 63 per cent who read the narrative. Of participants who went through the two-dimensional version of the VR experience, 66 per cent signed the petition.

Wijma et al. (2017) recently carried out a study to evaluate the effectiveness of the Through the D'mentia Lens (TDL) programme. The programme aims to reduce the physiological distress of caregivers by using virtual reality movies and an e-course to enhance understanding and empathy of the individuals living with dementia. Thirty-five caregivers completed the pre and post-test element to assess person-centeredness, empathy, perceived pressure from informal care, perceived competence and quality of the relationship. The results showed that caregivers had better ability to empathise with individuals with dementia, had more confidence in their ability and more positive interactions with the person with dementia. In particular, it was noted that there was a greater increase in resilience (i.e. the ability to remain a positive attitude about the care task and person with dementia despite setbacks) from secondary educated caregivers than higher educated. While the study had some limitations (e.g. small sample with selection bias, lack of intervention isolation), it provides some interesting insights into the use of VR technology to increase empathy.

A more detailed study but Jütten et al. (2017) suggests more mixed results. The study explored the impact of a mixed virtual reality dementia simulator called Into D'mentia using an intervention group and a control group. 76% of the participants in the intervention group had changed their approach to caregiving, and 61% stressed that the intervention had increased their

understanding of dementia. Nonetheless, no significant differences were found between the control and intervention groups over time regarding measures of empathy, relationship quality with the care receiver, burden, depression, and anxiety.

VR and long-term impact

Though early studies show that VR can increase empathy and compassion, there is still little literature investigating the long-term impact of VR. However, early studies provide promising evidence about the lasting effect of immersive technology. A meta-analysis conducted by Jensen and Konradsen (2018) supports that Head-Mounted Displays (HMDs) have promising applications for affective skills acquisition (i.e. growth in feelings or emotional areas).

The project carried out at Stanford University (Herrera et al., 2018) – discussed in the section above – provides the strongest evidence for the lasting impact of VR on empathy. The two-month-long study involved a sample of more than 560 participants aged 15-88 from eight ethnic backgrounds – making it the longest and most representative experiment exploring this issue.

A series of other studies have also explored the role of VR in promoting empathy and compassion past the day of treatment. Peck et al. (2013) and Banakou et al. (2016) showed that when light-skinned participants embody a dark-skinned avatar (i.e., a digital representation of the user) and interact in a virtual environment, racial bias is significantly reduced towards dark-skinned individuals.

Bailenson and Park (2014) compared the effects of cutting down a tree in a traditional perspective-taking task, a VR perspective-taking task, and a less immersive, mediated perspective-taking task where participants watched a video of someone cutting down a tree from the first-person perspective. The results of the first experiments showed that immersive virtual environments led participants to reduce the consumption of paper by 20% more than participants who read a narrative of tree cutting. Moreover, the second experiment demonstrated that those who participated in the VR perspective-taking task self-reported greater environmental behaviours. Though the results persisted one week following the VR experience, the same was not true for participants who took part in the other conditions.

Excluding the study carried out by Herrera et al., a key limitation of the above studies is the small sample size (less than 30 participants per condition) as well as that the sample is mostly composed of university students – a fact that doesn't allow for demographic variance and, hence, the generalisation of the findings.

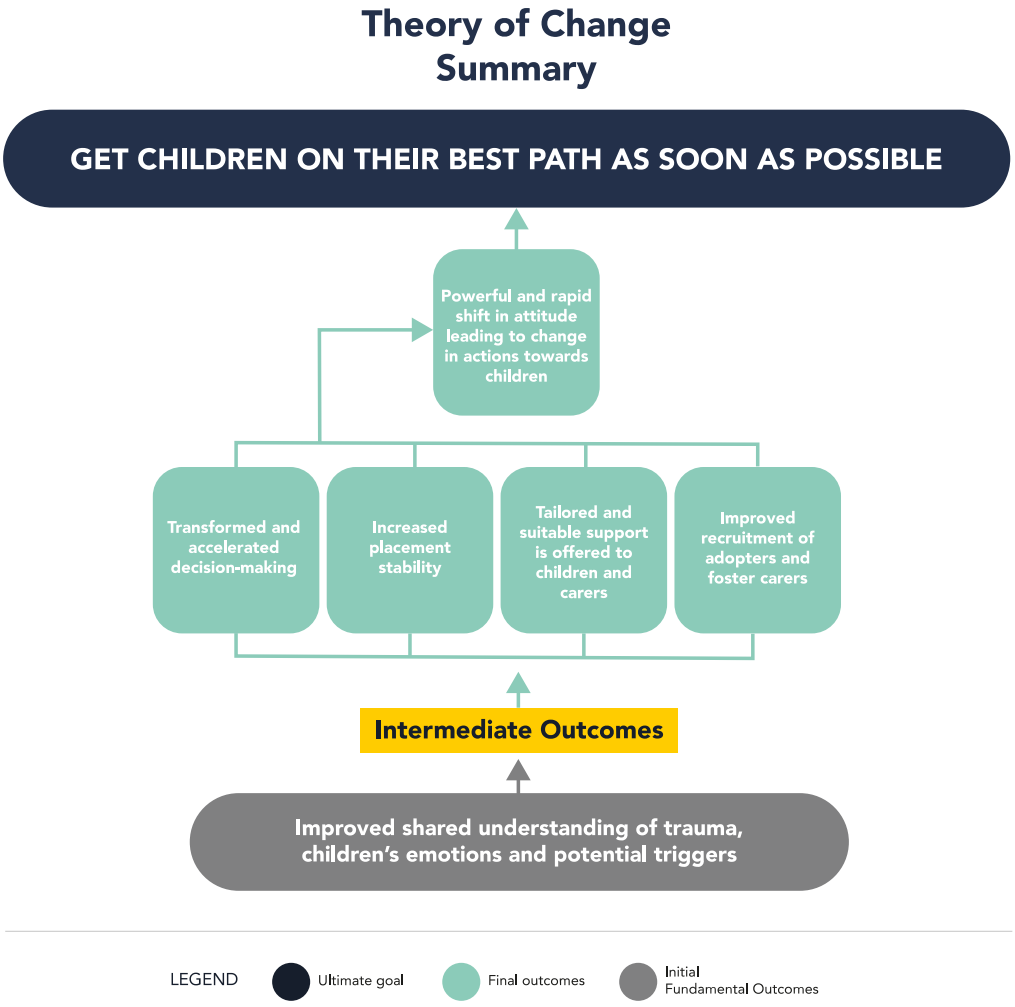
VR and learning

Another advantage of VR technology is improved learning. Initial research suggests that people remember information better when presented through virtual reality compared to standard desktop-based learning (Krokos et al., 2018). In a study comparing the memory recall ability of students who had never used virtual reality, Krokos et al. (2018) found that participants recall after using HMD was 8.8% higher than the desktop. In addition, participants using the HMD made on average fewer errors than the desktop learning. In a post-activity survey, the researchers found that 95% of participants preferred the HMD and stated that the total immersion allowed them to focus on the specific task.

Theory of Change

To assess the impact of the CVR pilot programme, a theory of change was developed in collaboration with the Cornerstone Partnership project team.

The theory of change illustrates how the programme achieves its ultimate goal. It shows the routes through which change occurs and provides a structure for thinking about what factors link to the outcomes and how each outcome can be measured. Below is an abridged theory of change for the VR programme.



The ultimate goal of the VR pilot programme is to get children on their best path as soon as possible. This is expected to be achieved through an improved understanding of trauma, children's emotions and potential triggers. Once this initial outcome is achieved, a number of intermediate and final outcomes are expected to lead to the ultimate goal.

Annex 3 shows the detailed theory of change for social workers, LA staff, fostering ambassadors, adoptive parents and foster carers, showing all the intermediate outcomes and assumptions.

Impact Evaluation

Expected outcomes

Our theory of change suggests the following key outcomes for the VR pilot programme:

- Improved understanding of trauma, children's emotions and potential triggers
- Transformed and accelerated decision-making
- Increased placement stability
- Tailored and suitable support is offered to children and carers
- Improved recruitment of adopters and foster carers

The results of this preliminary evaluation are consistent with positive impact being achieved across all the outcomes highlighted above. More specifically:

Improved understanding of trauma, children's emotions, and potential triggers: Nine out of ten participants believed CVR can help change the perspective of carers and adopters – leading to improvements in recruitment and increasing placement stability, as well as enabling better communication between children and their carers. Furthermore, a majority of social workers felt CVR helped improve their own understanding of trauma and stated that they will be doing things differently as a result of the training.

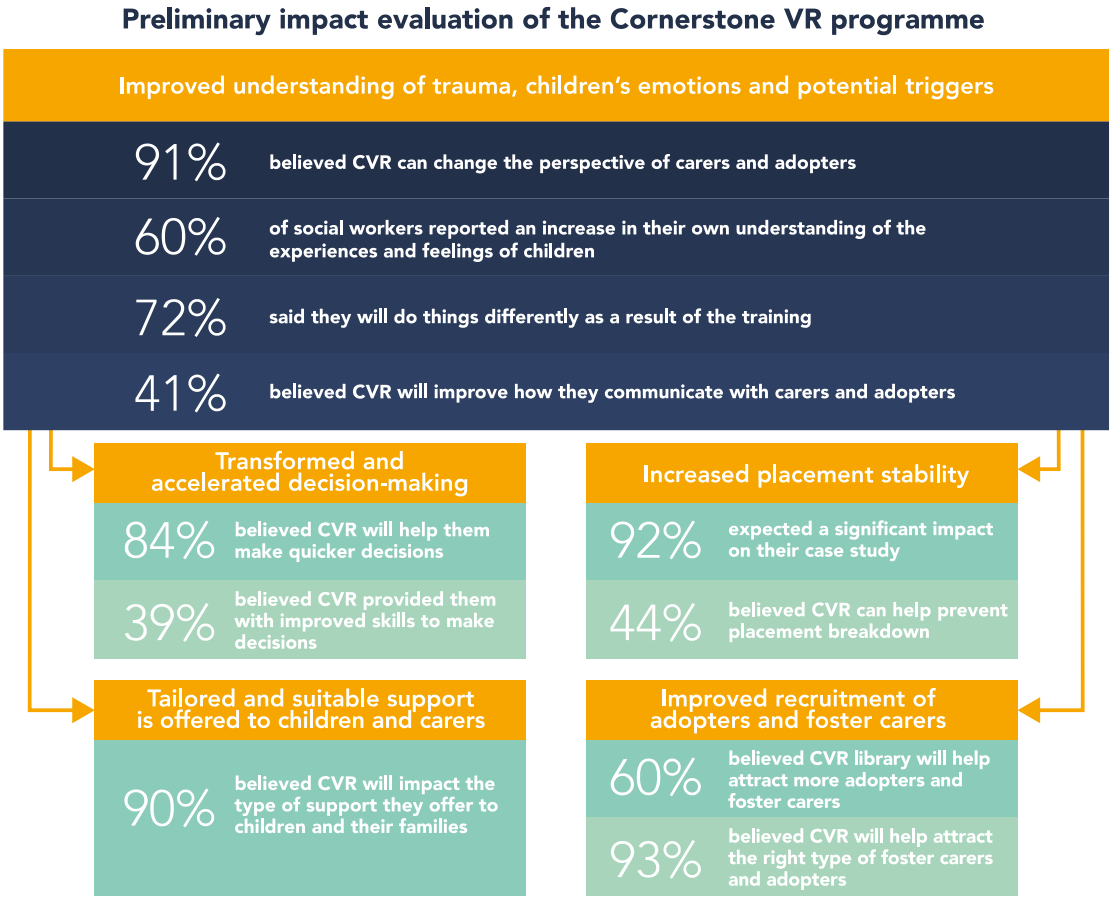
Decision-making: Most participants felt that CVR provided them with skills and knowledge that will enable quicker decision-making, while 40% said that it helped them gain insights and develop skills that would lead to better decisions.

Placement stability: Close to half of all participants believed CVR can help prevent adoption breakdown, while over 90% expected CVR to have a positive impact on their case study.

Support offered to children and carers: Nine out of ten participants said CVR will lead to changes to the type of support they offer to children and their carers.

Recruitment of adopters and foster carers: Six out of ten participants believed CVR will help attract more adopters and foster carers. Critically, over 90% of participants felt that CVR, by providing a window into trauma and children's emotions, can play a key role in attracting the right type of adopters and foster carers.

Overall, while most participants believed the programme will help materially improve several aspects of social work practice, further evidence – including on outcome measures – is required to allow us to directly establish and quantify this impact.



Percentages refer to stated opinions of participants in a number of Cornerstone VR pilot sessions. Details on the number of participants and the questions asked can be found in the report.

Data collection

To assess the impact of the programme and the validity of the above outcomes, we collected data from feedback forms and interviews with key stakeholders. We also reviewed internal documents, which documented informal feedback.

We developed targeted feedback forms to be administered before and after training sessions. The content of the feedback forms varied slightly depending on the focus of the session. It should be noted that due to the evolution of the course content, the feedback forms changed over time and consequently there is variation in sample sizes. Throughout the report, the number of respondents is denoted using 'n'. Feedback was collected from a total of 44 training sessions delivered to 13 different organisations.[4]

To supplement the information gathered in the feedback forms, we collected qualitative information from 3 semi-structured interviews and two focus groups in Southend (one with three education psychologists and one with six social workers).

[4] Coventry City Council, East London Regional Adoption Agency, Hampshire County Council, One Adoption Leeds, One Adoption West Yorkshire, Oxfordshire County Council, Portsmouth City Council, Redbridge Council, Southend- on-Sea Borough Council, Surrey County Council, TACT (The Adolescent and Children's Trust), Waltham Forest Council, West Berkshire.

Improved shared understanding of trauma, children's emotions and potential triggers

Improved understanding of trauma, children's emotions and potential triggers feeds into all other outcomes in the theory of change and is at the heart of the CVR pilot programme.

As discussed in the Virtual Reality section, evidence shows that VR technology can improve learning and understanding. The immersive experience provides a more powerful insight into experiences compared to standard videos. In addition, research shows that people can recall the information much more quickly and accurately if they have used VR technology.

Overall the qualitative and quantitative data collected supports the assumption that the Programme improves understanding of trauma, children's emotions and potential triggers.

> *I have read articles, research and other information on how babies are affected in the womb but seeing it in virtual reality actually makes me understand it better and 'be a part' of their not so pleasant experiences and see how it can affect them. This is something we tend to dismiss.*
> *– **Social worker***

Understanding experiences

Carers and adopters

Approximately 91% of training participants undertaking the TAS session believed that CVR would change the perspective of carers or adopters.[5] Many comments provided noted that the training had the power to encourage empathy, the realistic nature allows for a greater impact, and it would encourage understanding and insight from carers. One social worker noted, the technology could support parents to "understand their child's behaviour, rather than only responding to the behaviour they see."

On a scale of 1 to 10: To what extent do you believe you understand the experiences and feelings of childen in care (N=72)

[5] 44 participants answered the relevant question.

More specifically, looking at a single cohort of LA staff participating in TAS training (14 participants), all respondents believed that CVR had a particularly valuable role in helping carers to engage with their children's emotions and interpret their behaviour (93% strongly agreed, 7% agreed). In addition, all participants agreed (29%) or strongly agreed (71%) that the CVR would improve carers' understanding of the impact of trauma on children.

When the VR videos were embedded into an adopter preparation course, the feedback received was largely positive with many participants noting that while the VR films were "upsetting" and "horrible to watch", they also provided valuable insight into links between early life experiences and "knock-on effects they can create."

> *Personally I found it very hard and upsetting. Made me realise just how vulnerable and dependent a child is and how your actions impact on your child.* – ***Prospective adopter***

Social workers and staff

Examining feedback from participants in TAS sessions, 60% of training participants reported an increased understanding of the experiences and feelings of children in care.[6] The average rating before the training for all participants was seven out of ten and after it was eight out of ten.

Moreover, a sample of participants were asked before and after the session about their understanding of potential triggers of children who have experienced trauma.[7] The average rating increased from 4 to 4.5 (on a scale of 1 to 5), with more than a third of participants reporting an increased understanding after the CVR training.

Enhanced empathy and connection to the child

As discussed in the Virtual Reality section, a growing body literature supports VR's role in promoting empathy, with numerous recent papers proving that VR affects individuals' empathy levels more than any other media or learning methods.

Through improving empathy and understanding, it is expected that better decisions can be made, more stable placements can be created and more suitable support provided (as noted in our theory of change, see Annex 2).

While social workers and LA staff had high empathy levels prior to the training, feedback suggests that empathy increased from an average of 8.2 out of 10 to 9.3 out of 10.[8] Five participants increased their empathy rating by three points.

[6] 72 participants in eight TAS sessions

[7] 55 participants

[8] 30 participants in four TAS sessions

> *For people with no actual experience of trauma, it brings the reality to life and promotes discussions regarding management strategies.*
> ***– Social worker***

The qualitative feedback collected also suggested that increased empathy levels assisted with making adopters and carers feeling an enhanced connection to children. Anecdotal evidence suggests that virtual reality is a particularly effective tool for adopters and carers who did not have a history of trauma –comments included "I never knew it could be like that." Another secondary impact discussed in several interviews was how the CVR affected relationships between partners. For individuals with a history of neglect or trauma, the CVR facilitated discussions with their partners without similar experiences and encouraged greater empathy and understanding not just with children but also between care-givers.

> *Entering this process, we obviously had an idea of the problems/issues that these children can have. However, the "reality" of being in that kind of situation was disturbing and also a little harrowing. It stirred many thoughts and emotion.*
> ***– Prospective adopter***

Improved practice

Alongside improved empathy and understanding, there were reports of the sessions improving practice amongst parents, carers and children. While more evidence is needed in this respect, across all courses 72% of participants said they would do things differently as a result of the training.[9] Of this sample, 33 respondents said they would incorporate the lessons learnt into their day to day practice. Moreover, over two-thirds of TAS participants believed that the session would have a notable impact on how they interact with children who have experienced trauma.[10] Comments highlighted changes such as choice of language and a renewed focus on ensuring that all aspects of adoption and fostering processes are child focused.

Carers and adopters using the CVR also noted that VR films helped them to reflect on their actions and seek ways of changing their approach to behavioural management.

> *…inevitably there are always moments when as a good parent you can get stressed or annoyed, and a little bit of negative behaviour can rub off and impact the child. So there is benefit to understand the child and his/her context, and there is benefit to understand and try to improve yourself.*
> ***– Adopter***

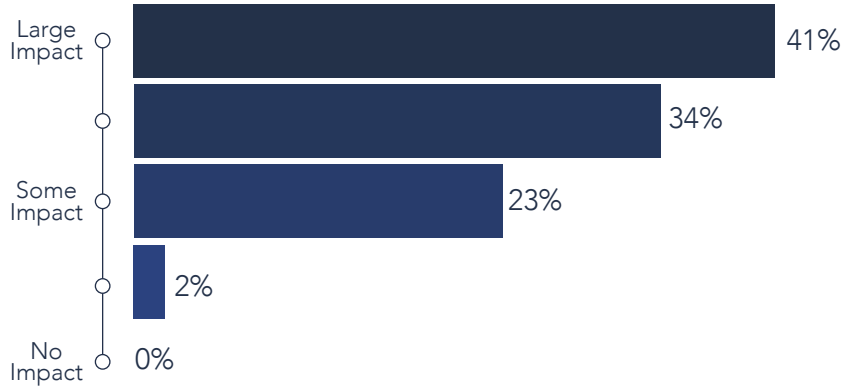
[9] 140 respondents

[10] 100 participants

Communication

98% of participants in various TAS sessions believed that the training would have some impact on how they communicate with carers and adopters, with 41% believing that this impact would be substantial.[11] Common themes included increased confidence in practice and better ability to discuss trauma and attachment issues. In particular, several suggested the links identified between biology, psychology and child development would help in communicating the experiences of children in care.

To what extent do you think today's session will impact on how you communicate with carers/adopters (n=98)



While some training participants suggested the session would change how they would talk to their teams about attachment and trauma, the evidence is mixed. Interviews suggested that there have been limited changes at a team or department level.

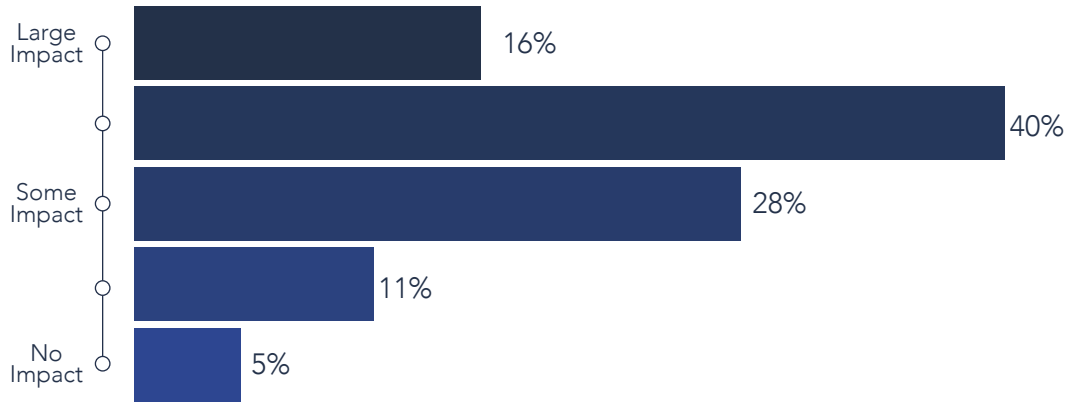
Transformed and accelerated decision-making

The majority of participants believed that the training session would help them to make quicker decisions. For these participants, CVR plays a role in helping to "consider all factors" and reconsider the "paper-based process". [12]

[11] 98 participants

[12] 100 participants

To what extent do you think today's session will impact how quickly you make decisions (n=100)



There is also appeared to be a marginal effect on the quality of decisions made by participants. Prior to the session, participants generally felt they had the insights and skills to make the right decisions for the children they worked with (average of 3.9 out of 5) and post-session there was an improvement (average of 4.3 out of 5). Approximately 39% believed they had increased their insights and skills after the training.[13]

> *The VR is so impactful as it allows us to really experience trauma from a child's perspective and really helps us remember to keep the children at the heart of all interactions, reports and assessments.*
> ***– Attendee at Module 1 training***

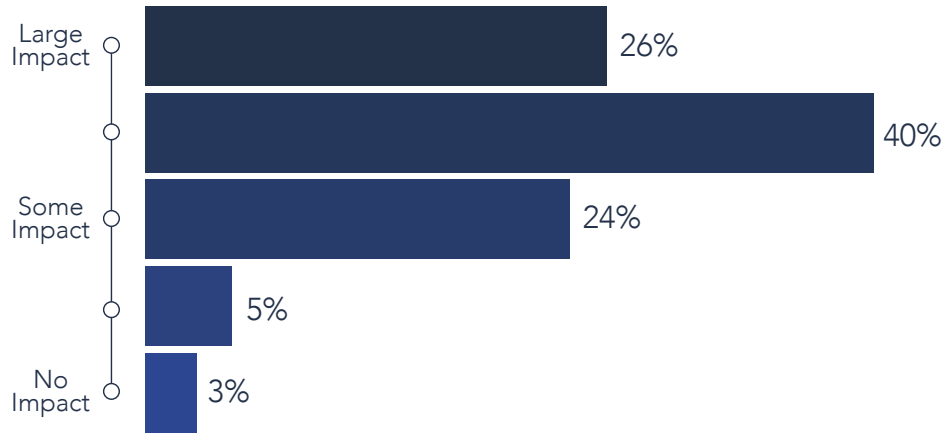
Tailored and suitable support is offered to children and carers

Another key outcome tested through the pilot was the impact on the quality of pre and post placement support provided to children and carers/adopters. Approximately 90% of participants believed the TAS module would have some impact on the type of support their offered to children and their families, with 26% believing it would have a substantial impact.[14] A social worker noted, "[the training] has provided me with a different perspective/emphasis in terms of needs."

[13] 54 respondents

[14] 99 participants

To what extent do you think today's session will impact on the type of support you offer to children & their families (n=99)



Supporting foster carers

A social worker with over ten years' experience has been using the VR kits in group and one-to-one sessions with foster carers.

This social worker's team has embedded the VR films in a 6-week foundation course for foster carers to bring to life important parts of the discussion. The foster carers responded positively to the technology and they felt it was extremely useful to help understand PACE strategies, attachment and trauma. One very experienced foster carer, who has attended many training programmes, said that this was the first training where she stopped and thought about how her behaviour and actions directly affect children in her care. In addition, the visual learning element of the CVR was consistently reported as more engaging and useful than more conventional discussions and presentations.

Similarly, in one-to-one sessions providing post-placement support, there was an overwhelmingly positive response as carers gained an improved ability to connect with children in their care due to a better understanding of their experiences.

The social worker also noted that the CVR experience tended to "sit with people for longer" and often participants found themselves thinking about or discussing the videos in the days after, suggesting a longer-term impact than traditional training approaches.

Anecdotally, social workers have noticed that CVR helps to provide support and training for more varied learning types – for example, audio-visual learners or individuals with learning difficulties, such as dyspraxia. This has helped to support adopters or carers who may not have felt as engaged by conventional material, like workbooks. Moreover, participants of all learning types reported being far more engaged as the complete immersion allowed for greater focus and also provided the capacity for trainers to "bring PACE to life." In some adopter preparation sessions, social workers have used the characters from the films as case studies to help provide a common baseline for participants and reinforce lessons through connecting with a more realistic example.

A social worker commented that the technology, "doesn't change what we do but enhances what we do."

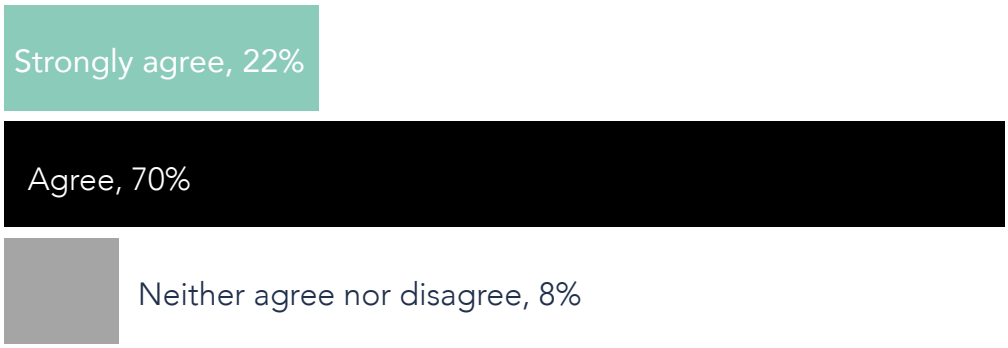
> *The medium of VR is extremely powerful because the user is totally immersed in the situation. Whereas you can attend a seminar or training amongst a group of people or watch a video, it is quite easy and human nature to switch off for brief periods of time… With VR it is a one person total immersion situation which completely focuses the mind on the topic at hand, and it helps you to be removed from yourself contemplating the child, and be projected into the child. –* ***Adopter***

Increased placement stability

A proposed longer-term outcome of the pilot programme is improved placement stability. Training participants were relatively enthusiastic about the role of virtual reality in promoting stable placements, but additional evidence is required to measure the impact in practice.

92% of training participants in one-to-one training sessions believed that the use of CVR would make a significant difference in achieving a positive outcome in their case study. [15]

I expect the use of VR for my case study to make a significant difference in achieving a positive outcome (n=46)



NB: Disagree or Strongly disagree: 0%

However, there was a more mixed response regarding placement stability specifically. Approximately 44% believed CVR would help prevent placement breakdown, 49% were unsure, and 7% believed it would have no impact.

[15] 46 participants

Motivation and resilience

Another aspect worth examining in future analysis is how VR affects the motivation and resilience of carers and social workers, and how this may be connected to placement stability. For example, in research examining the impact of VR on caregivers of individuals living with dementia, it was suggested that alongside an increase in empathy and confidence there was a greater ability to maintain a positive attitude despite setbacks (Wijma et al., 2017). In particular, interviews and comments from social workers and carers support this hypothesis to some extent. While motivation levels were often high to begin with, the emotive nature of the VR films in some cases provided a renewed sense of resolve in their work. It was noted that terms like 'domestic violence' or 'neglect' are used so frequently when social workers read and write reports that the power associated with the words is diminished. By connecting the words with the visualisation provided through the VR, some felt that films helped to refresh their perspective.

> *[The VR films] made me think, 'I'm glad I'm doing this job.'*
> **– *Social worker working with SGOs***

Improved recruitment of adopters and foster carers

As noted in the context section, there are issues recruiting appropriate adopters and foster carers in sufficient numbers. The evaluation examined whether the programme could have an impact on the speed of recruitment, the quality of assessments and the number of carers and adopters recruited.

Quantity

Approximately 60% of participants in recruitment training sessions believed the VR library would help to attract more adopters and foster carers.[16] In particular, the 'novel' and 'exciting' nature of the technology may increase passer-by engagement. For example, at local recruitment events supported by Cornerstone, the time spent at the LA's stand increased by an estimated 130%, and the number of qualified leads also increased by more than 80% (see Recruitment of foster carers box).

Speed

The feedback collected from 56 participants suggests that only a few believed the CVR would increase the speed of recruitment processes.

Quality

It is suggested that the VR technology could improve the quality of adopters and foster carers recruited through improving the assessment process. Over 90% of participants in recruitment training sessions believed that the technology would help attract the right type of foster carers

[16] 41 participants

and adopters.[17] Many of the training participants noted that the use of CVR would help provide a more realistic insight for prospective adopters/carers (12 participants), which in some cases may mean that less resilient applicants may not carry through with the process (five participants).

The other key advantage frequently noted was how VR could contribute to opening discussions during the assessment process on triggers, experiences and attitudes. All training participants in four cohorts of recruitment sessions (n=24) believe that CVR would have some impact on how they assess prospective adopters, with a quarter believing it would have a substantial impact.

Recruitment of foster carers

Cornerstone supported an LA in their recruitment events for foster carers. Over three months, Cornerstone held more than 20 local recruitment events, which, among other activities, featured the VR episode "Window to our World".

According to data provided by Cornerstone, the availability of the film at local recruitment events increased passer-by engagement and time spent at the LA's stand. Before using CVR, people spent an average of two-to-three minutes at the stand. However, after CVR was employed, the time spent at the stand increased by 130%, reaching an average of seven minutes.

The number of qualified leads also increased dramatically. In the three months prior to the use of CVR, the number of qualified leads stood at 16. However, in the three months following the introduction of the CVR, the number of qualified leads reached 30. Moreover, during the same time frame, 100% of the qualified leads at enquiry stage have gone through to Stage 1 Assessment after watching the VR episode.

It was reported that the CVR was an important tool in providing insight into what it actually means to be a foster carer. The response at the recruitment events was highly positive. In particular, a participant reported that he would have never thought that fostering is something he could do prior his exposure to the VR experience.

I think the videos really complement the workshops, one-to-one meetings with the social worker, homework, and books we've read. I also think watching them now as we are nearing the end of stage 2, we can take the information in more and it makes everything a little more realistic. –
Prospective adopter

In a bespoke course on recruitment, eight out of ten attendees suggested that the CVR helped to reveal more or different information than you might expect through a traditional assessment. In practice, social workers used the CVR to test understanding of issues and preparedness. It also provided additional evidence to compile reports and build an evidence base for assessment.

[17] 41 participants

In particular, the social workers interviewed found the in utero films a useful tool to challenge preconceptions about babies being a 'blank slate' and encourage discussions on age preferences. It has been reported in a few cases that couples have moved away from early permanence as an option after using the CVR and started considering adopting older children. [18]

> *There is a multi-use for VR - it can be used during matching and post placement. Helpful to tease out hypotheses I may have about couple relationship/ depth of understanding of issues. –* ***Social worker***

Adopter preparation and assessment

An experienced social worker in a London LA has started using CVR in one to one sessions with prospective adopters with promising results.

The social worker found that the VR scenarios assisted discussions on trauma and age preferences. For example, a couple attending assessment sessions did not know what age group would suit their family. The social worker used CVR to provide an insight into how trauma can affect children of different ages. The session led the couple to decide that early permanence is not necessarily the best option for them and that they are interested in being matched with an older child.

Prospective adopters were reported to have found the CVR useful and impactful as it provided a timeline of how trauma affects children at different ages. The in-utero video was considered to be particularly powerful as adopters often do not realise the impact of pre-birth trauma.

To ensure the effective and impactful embedding of VR in adopter preparation sessions the social worker advised:

- Users to consider the learning style of prospective adopters to ensure that CVR is an appropriate tool.
- Users to plan how the content could be used to generate discussion between the couple (e.g. on experiences of trauma as a child, on behaviour management) and with the social worker (e.g. age preferences, potential support requirements). It is not sufficient to just ask what they thought, there needs to be linkages with existing resources.
- Users to consider how the content may trigger responses in couples who may have experienced trauma or neglect as children and how that may affect their response – feedback from the social worker suggested that the films were so realistic that they often echoed personal experiences.

Overall the social worker felt that the CVR was a welcome additional tool that helped with communication and engagement with prospective adopters.

[18] Early permanence is a scheme that enables a child in care under the age of two to find foster carers who are ready and willing to adopt them later if the courts decide they cannot live with their birth family.

Replicates real life in a way that other media doesn't. It will be so valuable in many settings - it takes the child's experience direct to the adults involved in their lives. – ***LA staff***

Southend-on-Sea – Integrated use of CVR

As early adopters, Southend-on-Sea have been pioneering new and innovative uses of CVR within various settings to promote trauma and attachment awareness across the borough.

Adoption, Fostering and SGOs

The adoption and fostering team in Southend have embedded the VR kits in a range of different ways including training for adopters, senior management, SGOs, social workers and adoption panels. In addition, the CVR has been used to facilitate post-adoption support and family finding. There are proposals to further expand delivery to support programmes working with teenage mothers and to provide training to district judges.

The adoption team noted that when embedded effectively into wider learning activities, the CVR is a powerful tool to help improve understanding of attachment and trauma issues. For individuals who have never experienced trauma, there has been particularly positive feedback on how it brings to life the experiences of children in care – "you can almost smell the environment".

For training provided to staff, the adoption team suggested that it has helped to refocus attention on the perspective of the child, which sometimes can be lost in box ticking exercises. It is hoped that the CVR will help change perceptions on what is considered 'good enough' for children and will promote more thoughtful discussions and decisions on what is best.

Safe to Learn

The educational psychology service has been incorporating the CVR into their Safe to Learn training, which is an eight-week course delivered to staff in schools. The CVR has replaced a film in the original course, which depicted a graphic case of domestic violence. Compared to the film clip, the trainers felt that CVR stayed with the participants longer. Training participants often referred back to the CVR experience in discussions weeks after viewing it.

The trainers felt that CVR helped to 'personalise' the theory discussed, particularly on transactional analysis, and provided a case study to discuss with participants. However, the team noted the importance of using the technology with care to contain the impact and manage any unexpected triggers. Signposting resources and debriefing have been integral to the successful use of the CVR.

Southend's teams were very enthusiastic about the CVR and were proactively seeking ways to expand its use. Many reported a sense of professional satisfaction about pioneering new approaches and watching the development of the pilot in real time.

Cost-Benefit Analysis

This section of the report summarises the potential financial benefit of participating in the VR pilot programme for an 'average' LA. As the programme is still evolving and the preliminary evaluation was undertaken just a few months after the pilot, published data on LAs' outcomes could not provide information on the impact of the programme. Consequently, we have made a number of assumptions to provide an indicative estimate of the potential of the VR programme to generate savings. We estimate that, under a different range of plausible scenarios, the VR programme could generate savings in the tune of £70,000 - £190,000 in real terms.[19]

It is common for the effect of training-based interventions to diminish over time; both factual retention by participants and the emotional impact tend to be lower for several months or years following the intervention. Given the recent emergence of CVR, no data on impact duration is available. For our modelling, we adopted the conservative assumption that the effect of the programme lasts for one year. This may be an underestimate of the real effect of the programme, especially aspects that include usage of the VR technology in social care practice.

More generally, some sector experts have suggested to us that there may be additional costs associated with fostering breakdown which are not captured here. This CBA provides estimates only for costs which the available evidence allowed us to reliably document and quantify, and hence the potential savings identified may represent an underestimate of CVR's potential to create savings for LAs.

Our methodology and results are discussed in more detail below.

Outcomes

As discussed in the previous section, the VR pilot programme can have many different impacts on children, carers, adopters and social workers. Many of these effects cannot be measured but have a significant impact on the experience of children and their outcomes later in life. For the purposes of this section, we focus on two key outcomes that have a clear, measurable financial impact:

[19] We do not look at the costs of the VR pilot programme as the product is still evolving, and different packages of services are becoming available. Our focus on the potential benefits of participating into the VR pilot programme. The estimated savings reported here are rounded to the nearest £5,000.

1. **Improved placement stability:** adoptive and foster care placements are sustained where the placements would otherwise have been disrupted, while better-quality matching leads to more stable new placements.
2. **Quicker matching:** quicker decisions on the future of the child, either for adoption or long-term foster placements, lead to quicker matching and shorter waiting periods for children.

Costs calculations

The cost of foster care[20]

Curtis and Burns (2017) have calculated unit costs for all main health and social care services, including foster care for children costs incurred by Local Authorities. These are:

- Boarding out allowances, administration and the costs of social worker and other support staff who support foster carers: £634 per child per week.
- Other services, including education: £11.60 per resident week for school support.
- No data was found for social care support and overheads.

The analysis uses Section 251 data, a year of 52.18 weeks and it multiplies London LAs with 1.18 to account for relative London costs. Using the information above, we have estimated that the annual cost of foster care in 2019 for a typical LA outside of London is £36,892 per child, while for a typical London LA it is £41,435. The costs include £33,082 (£39,037 for London) for annual fostering costs and £2,204 for annual school costs.[21]

Children's social care costs [22]

When a child is under the care of an LA, the LA pays the costs of foster care plus the costs of children's social care processes. Hannon et al. (2010) have estimated the costs of different processes using official data from DCSF statistics. Their estimates, after uprating to 2019 prices, are listed below:

- Deciding child needs to be looked after and finding a first placement: £858
- Care planning (includes education plans and individual healthcare plans): £161
- Exit from care or accommodation: £353
- Finding a subsequent placement: £274
- Review: £546
- Legal processes: £3,707
- Transition to leaving care services: £1,561

[20] The National Audit Office (2014) has calculated that LAs spend annually on foster care from £15,000 to £57,000, if they provide their own foster care, and from £18,000 to £73,000 if they use foster care from other providers.

[21] The estimates have been calculated using inflation estimates and a school year of 190 days per year. The sources used for inflation estimates are the ONS historical inflation rates and the OBR inflation forecast.

[22] Our estimates are in line with official data estimating the cost of foster care. In particular, as reported in Narey and Owers (2018), the national data collected by DfE suggested that in 2015-16 the cost was £533 per week for LA fostering services and £823 per week for IFA. According to CLA statistics (DfE, 2017), in 2016-17 67% of children were placed with LA carers and 33% with IFA carers. Consequently, the weighted average of the costs above gives an estimate of £32,806 fostering costs per year.

The above costs can be incurred multiple times per year, depending on each child's characteristics and circumstances. For example, Hannon et al. (2010) have estimated that a child who enters care at age three, stays in long-term foster-care for 14 years and leaves care aged 18 with good mental health and good qualifications would cost a total of £40,000 less to an LA compared to a child with many unstable placements (assuming he/she enters care at the age of 11 and leaves care at the age of 16 1/2). This is because the child with many unstable placements would need to use the above processes multiple times and have advanced needs.

In our calculations, we use the most conservative scenario to estimate likely benefits for a Local Authority – i.e. the case where a child has a stable placement. All processes described above are assumed to take place once during the care period of the child, with the exception of the review process. According to the Children's Cases Regulations 2004, a looked-after child is reviewed within four weeks of entering care, then within three months and afterwards every six months.

The cost of the adoption process

The limited publicly available literature on the costs of adoption includes a wide range of estimates from £17,000 to £38,000. The most well-known cost estimate is the inter-agency fee, which is paid to LAs and VAAs to reimburse the cost of adoption. In 2016/17, the interagency fee for one child was £27,000 (Curtis and Burns 2017). However, the fee was uplifted in June 2018 to £31,000 (£34,100 for agencies based In the Greater London area).[23]

Outcome 1 - Improved placement stability

The effect of the VR pilot programme on placement stability is measured by its ability to prevent the breakdown of adoption or foster care placements.

Adoption breakdown

If an adoption placement is disrupted, the child returns to the care of the LA. The two main potential scenarios for the future of the child are:

1. The child returns to care and stays in long-term foster care until becoming an adult.
2. The child stays in foster care for a shorter period and he/she is matched and adopted again.

Assumptions

- We assume that children are adopted at the age of three (according to DfE (2018) the average age of children being adopted is three years and three months) and their placement is disrupted at the age of four.
- Future costs have been discounted by 3.5%.[24]
- Around five per cent of CLA are adopted each year (DfE, 2018). Consequently, we have assumed that the children returning to the care of the LA will be adopted at the rate of five per cent (3.5% in a year, one per cent in three years and 0.5% in five years). Our

[23] http://www.cvaa.org.uk/wp-content/uploads/2018/06/CVAA-Inter-agency-Fee-Levels-and-Guidance-2018-19-final.pdf

[24] Following the HMT Green Book's Social Time Preference Rate (STPR).

assumed probabilities are based on the fact that 3.5% of CLA were adopted at the age of 1-4, while 1% of CLA were adopted at the age of 5-9.

Calculations

For case 1 our calculations included:

- Social care costs for the first year: deciding child needs, care planning, finding a new placement, review and legal processes. The review costs are included every year.
- The cost of foster care from age four to adulthood (14 years), assuming one stable long-term placement.
- The cost of transition to leaving care services.

For case 2 our calculations included:

- Fostering costs and related social care costs for 1, 3 and 5 years and adoption costs.

Foster care placement breakdown

If a foster care placement is disrupted, then the child needs to exit the current accommodation and a new placement needs to be found. Consequently, the relevant costs are listed below:[25]

1. Exit from care or accommodation: £348 per change of placement
2. Finding a subsequent placement: £271 per new placement

CBA Results for Outcome 1

Scenario A	Outside London	London
0.1 adoption breakdown avoided	£40,478	£47,438
30 foster placement breakdowns avoided	£18,580	£18,580
Total - Scenario A	**£59,058**	**£66,018**
Scenario B		
0.2 adoption breakdowns are avoided	£80,957	£94,876
60 foster placement breakdowns avoided	£37,159	£37.159
Total - Scenario B	**£118,116**	**£132,036**

The data available for adoption breakdowns show that there are fewer than one adoption breakdowns in each LA per year. [26] Consequently, we present the scenarios that the use of VR

[25] While these are based on the best available evidence on costs, it is worth noting there have been instances of practitioners and social care experts telling us that these numbers appear low to them based on their knowledge of the sector. A key consideration here is uncertainty on whether the additional costs related to foster care placement breakdowns (e.g. the cost of meeting additional support needs) are caused by the breakdown or are merely symptomatic of other underlying issues. In other words, the extent to which repeated breakdowns are a cause of additional costs rather than merely a symptom of other underlying factors driving costs is not known.

[26] It is estimated that across all English LAs there were 87 adoption breakdowns in 2012/13, rising to 160 in 2015/16 and 132 in 2016/17 (Puffett, 2018).

decreases the probability of an adoption placement breakdown by 10% and 20%. On the other hand, foster care placements are much more common. According to CLA statistics (DfE, 2018), 31% of CLA had 2 or more placements in in 2017/18. Consequently, around 23,380 children had at least 1 placement breakdown and on average there were 154 children with placement breakdowns in each LA. We model our analysis above using two scenarios: (i) 30 placement breakdowns are avoided due to the use of CVR, and (ii) 60 foster placement breakdowns are avoided due to the use of CVR. It should also be noted that the above numbers are presented in real terms, i.e. in 2019 pounds.

Outcome 2 - Quicker matching

This section calculates the benefit of quicker decisions and thus quicker matching. As discussed in the impact evaluation on outcomes, the VR is expected to support quicker decision making. To estimate the related benefits for LAs, we calculate the cost of a child remaining in the care of an LA 1,2 and 3 months longer.

Assumptions:

- Quicker long-term foster care matching does not have accountable effects, as the foster care costs are taking place under both scenarios.[27]
- Social care costs take place under both scenarios.

Consequently, we focus on the foster care costs savings from quicker adoption matching.

CBA results for Outcome 2

1 month quicker	Outside London	London
-10%	£7,544	£8,902
-20%	£15,088	£17,804
2 months quicker		
-10%	£15,088	£17,804
-20%	£30,177	£35,609
3 months quicker		
-10%	£22,633	£26,706
-20%	£45,265	£53,413

The above table shows the financial benefits of quicker adoption matching (1,2 or 3 months periods), under two potential scenarios: 10% of matches are taking place quicker and 20% of matches are taking place quicker. We have used the average number of matches per LA In 2017-18, according to the Adoption and Special Guardianship Leadership Board statistics of 2017-18. Finally, it should be noted that the estimates above are adjusted for inflation (2019 pounds).

[27] In reality, quicker long-term foster care placements can decrease costs and improve children's outcomes, but for simplicity we focus on quicker adoption matching.

Apart from the financial savings from social care and foster care costs, avoiding an adoption breakdown or providing any type of permanence to children in care can result in a wide range of benefits for them. Firstly, these children feel safe and supported, they have a stable future and they will likely have better life outcomes. Consequently, if the VR can improve placement stability and the speed of decisions, then it can also contribute to a smaller number of children in care with advanced needs of support at school, anti-social behaviour and at future risk of homelessness and unemployment. The financial and social benefits from the above consequences of using VR will need further work to be fully established and quantified.

To conclude, if our estimates of the two outcomes are combined, the potential benefits of the VR pilot programme are estimated to be between £66,602 to £163,381 for LAs outside of London, and £74,920 to £185,448 for London councils. Our central estimate, using the conservative scenario of outcome 1 and middle scenario of outcome 2 (10%), gives an indicative estimated benefit of £74,146 for LAs outside London and £83,822 for London councils, in 2019 real terms.

Process evaluation

This section of the report seeks to examine what worked well in the implementation of the sessions and identify aspects that could be improved. It is important to note that, as the VR programme is in pilot phase, several aspects of the session content, technology and delivery are still evolving based on testing and feedback.

Technology

Samsung Gear

Initially, the Pilot Programme used the Samsung Gear headset to deliver the VR films. The videos were shown on a smartphone display that locked into a headset. Initial feedback noted some limitations with the equipment, including:

- Slow loading of the videos and time-consuming set-up
- Occasionally the videos would freeze or malfunction
- Issues with adjusting the volume
- Feeling 'motion sickness' – a known side effect of virtual reality due to the mismatch with what you see and feel
- Some felt the technology was difficult to use – slotting the phone into the headset was a bit challenging

Oculus Go

In July, the Programme began using the Oculus Go headsets. The new headsets have addressed some of the previous issues with the Samsung Gear, as they are easier and quicker to set up (they have an embedded screen and controller), the field of view is larger, and playback is more consistent. While the majority of training participants found the new technology easy to use and felt the pace of the session was appropriate, some participants requested an instruction sheet to describe how to use various features and to troubleshoot potential difficulties.

> *Getting used to using the equipment [was challenging] as this is very new to me but this was explained in a very capable way which enabled me to feel much happier about the technology.* ***– Social worker***

Most of the feedback on the equipment related to practical elements. For example, some users felt the weight of the headset challenging at first. Moreover, there were reported difficulties using the equipment while wearing glasses. That said, attendees noted that certain adjustments could help bring the headset into focus and make the experience more comfortable – for example holding the headset in place rather than relying on the bands.

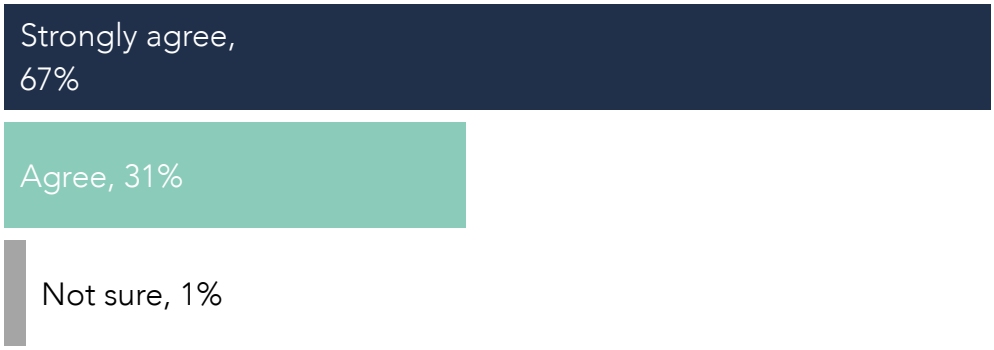
The challenges of delivering sessions to multiple users and coordinating playback was another issue raised. Having to attend to each headset could sometimes slow down sessions. A 'group play' feature which synchronises playback would be welcomed.

It should be noted that for some users the 'motion sickness' feeling remains with the Oculus headsets. However, an interviewee we spoke to still believed the value of the technology outweighed the discomfort.

Virtually everyone who completed the training reported they were confident using the VR equipment and knew where to go if they needed help with the equipment. A suggestion made at a recent community of practice event was to formalise VR learning by adding a short quiz to test knowledge at the end of a session and issuing a certificate of completion to participants.

I feel confident using the Cornerstone VR equipment (n=70)

I know where to go if I need help with the equipment (n=70)



NB: Disagree or Strongly disagree: 0%

Recommendations

- Explore using Group Play to synchronise video playback and improve the speed of delivery
- Ensure that specific advice is provided on how to adjust the focus, particularly for users wearing glasses
- Develop a summary guide with instructions on how to use the equipment and troubleshoot common issues (e.g. adjusting focus, headset, battery life etc.)
- Issue a certificate of completion to training participants

Training sessions

Use of the dandelion/orchid model

In the Trauma Aware Service core module, the course refers to a child development theory which differentiates 'orchid children' and 'dandelion children' (see (Ellis et al., 2005). Orchid children are sensitive to their environment and need to be appropriately nurtured to survive and thrive. In contrast, 'dandelion children' are more resilient and able to survive no matter what circumstances they encounter. While this theory is widely accepted and referenced in numerous studies, some participants felt the terminology was inappropriate to the context. In particular, one participant suggested the incorporation of other attachment theories, such as Crittenden's Dynamic-Maturational Model of Attachment and Adaptation.

Trainers

Feedback on the trainers was extremely positive across all sessions. Participants valued trainers' patience, professional approach, clear guidance and engaging style. In particular, the level of knowledge the trainers brought and the real-world examples used were well-received.

> *I thought the trainer was relaxed, knowledgeable and funny which always helps group process and helps adult learning.* ***– VAA staff member***

Structure of the sessions

In general, participants found the most useful aspects of the training sessions were:

- The opportunity to discuss and learn from the experiences of colleagues, particularly those from different areas (e.g. fostering and adoption)
- The case studies and role-playing to consider individuals & differential susceptibility
- The balance between theory and real-life examples
- Watching the VR clips – in particular, many of the participants commented on the value of the in-utero clips

Some participants felt that additional information prior to the session on the topics to be covered would have been useful.

Session delivery

In response to ongoing feedback, the delivery format of the full course has been changed. Some participants felt it would be more convenient to condense the course into two longer days and remove some repetition in the original format. In December, Cornerstone started delivering a longer 2-day course with roughly similar content to the 3-day course, albeit with less of a focus on recruitment.

Recommendations

- Reflect on whether including additional attachment theories would add value to the TAS session
- Continue to deliver the full course over two days

VR library

Representation of birth parents

Some participants felt that scenarios negatively represented birth parents, and that the training sessions and films could benefit from additional discussion on the impact of intergenerational trauma. Greater empathy for birth parents was particularly important to social workers using the VR with foster carers or special guardians, as children often maintain contact with their birth parents or family members.

> *It would be good to have some VR content which shows some of the experiences Rayleigh's parents may have had before they had a child. This may help with developing empathy towards the parents.*
> ***– LA staff***

VR library content suggestions

Participants found the current VR library very useful and particularly noted the films were crafted in an impactful manner. In terms of current films, two key suggestions were made: i) adding a prompt to indicate the end of a video and ii) changing the schools and home films so that they run as one film rather than three separate films.

Also, some participants felt that the impact of the films would be higher with longer films. For example, a participant commented "*the VR content is quite short, so it is upon reflection after the clip that you realise more thoroughly that there was not ever going to be any real care coming; had the clip been longer then perhaps as the VR user you would really realise that this is really how it is and this is what it feels like to be neglected; it would really sink in that the neglect would be for protracted periods of time, or perhaps all the time.*" However, many participants felt the films to be very emotionally draining, and perhaps longer films would exacerbate this aspect.

There were various suggestions on additional content Cornerstone should consider developing, including:

- A counterfactual scenario showing what would happen in a warm, loving environment
- Exploring additional other scenarios encountered by children and young people, such as mental health, domestic abuse between children and parents and exploitation.
- Representations of intergenerational trauma/the experiences of birth parents
- Exploring differing responses by children showing how abuse and trauma can vary on an individual basis
- Interactions between siblings
- Filming the bullying-related clips from the child's perspective - *"The teachers and adoptive parent video should be from child's POV to show the impact of PACE etc."*

Recommendations

- Explore ways of ensuring that empathy for birth parents is also created through the VR experience
- Adapt the format of the bullying-related clips to one single clip rather than three

Risk management

A key risk of the VR kit is managing the potential emotional impact. While almost all training participants believed they could understand the restrictions and preparation required to deliver a live VR session, a large number did not express full confidence in this respect. This is not surprising given that the ethics of use touches on some complex issues. For example, a social worker mentioned that when using the VR library with a prospective adopter it was revealed that the adopter had a history of childhood neglect and trauma, and the scenes of the mother feeding the toddler chips directly echoed his real-life experience.

I understand the restrictions & user preparation required to use VR in a live session (n=70)

NB: Disagree or Strongly disagree: 0%

I have a good understanding of how the Cornerstone technology could impact users (n=70)

NB: Disagree or Strongly disagree: 0%

> *You cannot predict triggers for parents. Very different for each person. Some parents relate to the content.* ***– Social worker***

The importance of signposting resources, conducting follow-ups and providing advance warning on the content was emphasised in many interviews. It was repeatedly noted that the CVR needed to be used appropriately and with consideration of the support requirements of the participants. However, anecdotally the majority of viewers of the VR videos, including those with neglect and trauma experiences, felt the training was valuable and did not opt out of viewing the clips.

An issue that was raised in the interviews and also in written feedback is whether the VR is appropriate to use in a recruitment setting. There was some concern that without knowledge of the user's history – as you have in an assessment or support setting – it is more challenging to manage triggers and also to provide follow up support. Further guidance on safe usage in recruitment settings may be helpful to address these concerns.

Another aspect that may be worth further consideration is how the CVR may affect social worker resilience. A training participant commented, *"exploring how social workers respond to the video clips needs to be looked into, as they work in these situations every day and are trained to separate the personal from the professional. These activities have the potential of making social workers more emotionally vulnerable."*

Recommendations

- Provide additional information on how CVR can be used safely in recruitment settings

Potential future applications

The potential applications of the VR technology are numerous. Identifying priority expansion areas will require additional market research, but initial opportunity areas have already been highlighted by key stakeholders.

When deciding on expansion areas to pursue, issues worth considering include:

- How can the programme be targeted to achieve the greatest impact (e.g. targeting professions with greater contact with children, key decision-makers)?
- Where are the key training gaps?
- What are the current policy and funding priorities?

Social care

Over the course of the preliminary evaluation, LAs reported using the virtual reality kits beyond the adoption and fostering teams. Some areas which are being explored include:

- Special guardianship orders and kinship carers – similarly to adoption and fostering, CVR could be used as a tool to examine parenting approaches and behaviour management. [28] [29]
- Teen parents – to provide insight into how environmental factors can affect child development.
- Administrative and management staff – providing a more realistic look at the issues encountered by frontline staff.
- Adoption panel members.
- Early help staff and related programmes.

It was also suggested that the VR films could add value if embedded in social worker training programmes as they provide strong empathy and insight for students coming into the workforce who may not have been previously exposed to the issues facing children in care.

Schools

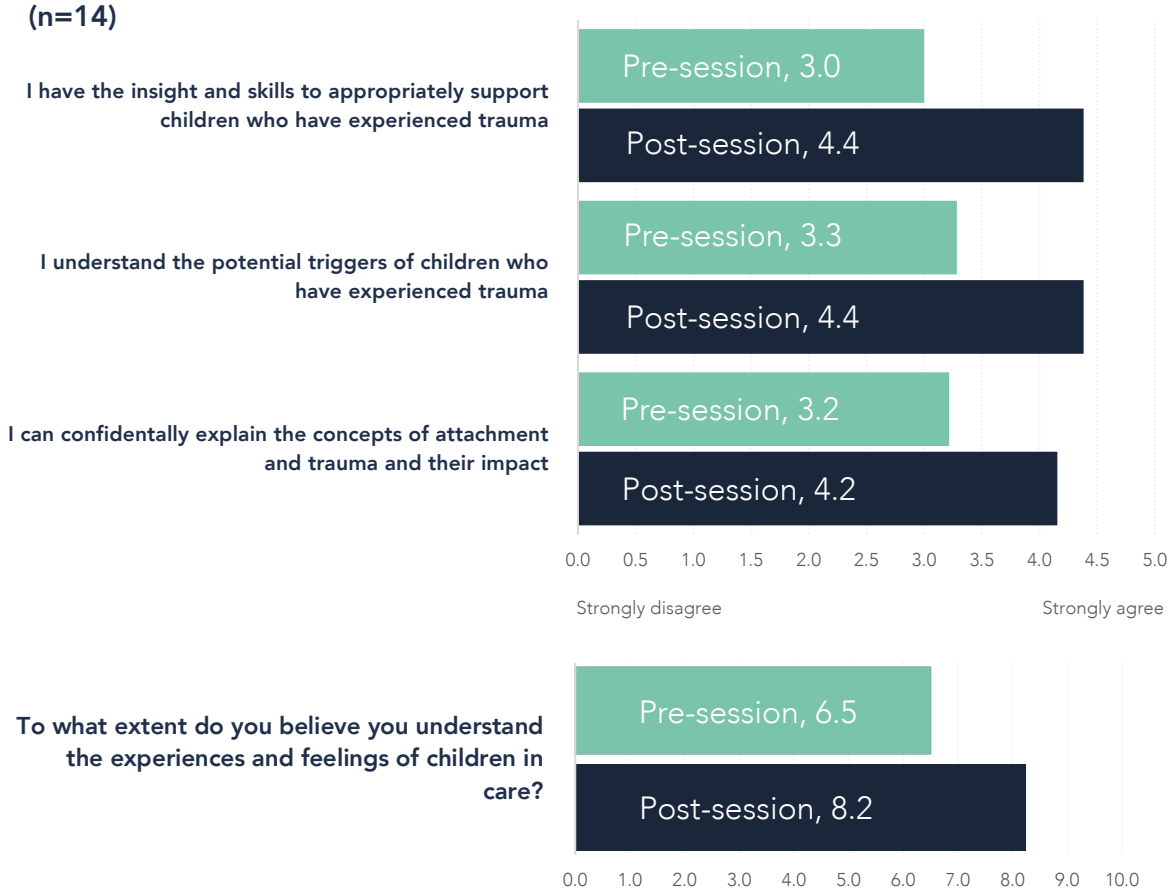
Cornerstone and implementing LAs have already commenced delivering VR sessions to teachers and school staff with positive preliminary results. More specifically, following a training session held by Cornerstone in November 2018 for 14 staff members, there was a substantial increase in the level of understanding of the feelings and actions of children in care and increased awareness of how to support children who have experienced trauma.

> *I can't believe what you made me feel in 10 minutes.* – ***Deputy headteacher***

[28] A special guardianship is an order made by the Family Court that places a child or a young person to live with someone other than their parent(s) on a long-term basis. An SGO secures the relationship between the special guardian(s) and the child or young person and gives the special guardian(s) Parental Responsibility, whilst maintaining links with the child's birth parent(s).

[29] Kinship care refers to the care of children by relatives or close family friends.

Feedback from Trauma Awareness Session delivered to school staff (n=14)



Based on interviews with LA staff, it was noted that there has been demand from schools for this training – several schools approached interviewees to request training or additional sessions. Furthermore, educational psychologists suggested that staff at schools with an over-representation of children in care, such as Pupil Referral Units (PRUs), could particularly benefit. However, more research is needed to understand whether targeting primary schools (where children frequently have more stable contact with teachers) or secondary schools (where higher exclusion rates and behavioural management issues are observed) would have a greater impact. It was noted that – particularly in the context of secondary schools – it is important to clearly identify the links between early childhood experiences and young people's behaviour.

Judges and the wider criminal justice sector

Due to the key role of judges in the adoption process, Cornerstone has already started to explore expanding the training delivery to district judges. In June 2018, a bespoke session on Trauma-Informed Practice was held with 16 district judges, with promising preliminary results. The majority of district judges said they would do things differently as a result of the session, including: i) reflecting more on the child's perspective, as well as their physical and emotional needs, ii) ensuring the efficiency of processes and iii) having improved consideration of the long-term effects of legal decisions.

> *"[I will] ensure things progress as efficiently as possible; put myself in the child's position and sit back and reflect and think how the decision will impact on the child and whether it is really right for them."* – ***District judge***

In addition, there is scope for providing training to other professionals within the criminal justice system, such as youth offending teams, police forces and legal representatives. There is an overrepresentation of children with experience of care in the youth justice system (Prison Reform Trust, 2016). In response, the *National protocol on reducing criminalisation of looked-after children* was released in November 2018. A key aim of the protocol is to "avoid the prosecution of looked-after children and care leavers wherever possible and appropriate… through promoting an understanding of trauma and attachment and their impact on neurodevelopment and behaviour amongst all key professionals" (Department for Education, 2018c).

Therapeutic uses of VR

Cornerstone has already begun considering how VR could be used to provide immersive therapeutic support using social virtual reality, which involves interacting with computer-generated people or 'avatars' which provide coaching or support. This component of the programme is in early development and consequently has not been included in the scope of this evaluation. This field of virtual reality is rapidly developing and recently the National Institute for Health Research (NIHR) was awarded £4 million to enable psychological therapy to be delivered via VR to patients with psychosis (McPin Foundation, 2018).

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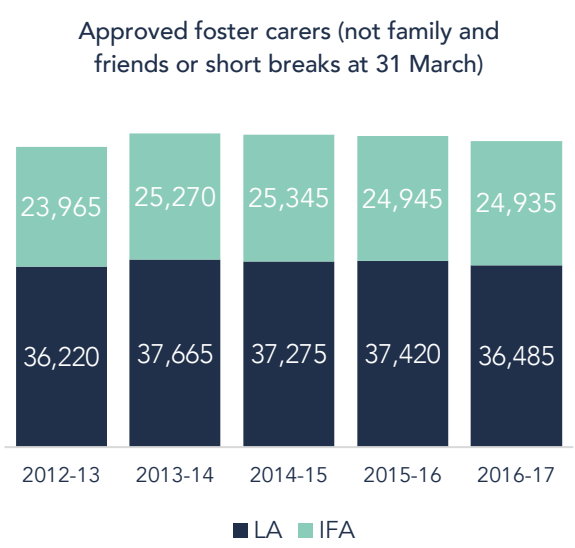
Annex 1 – Library of VR Films

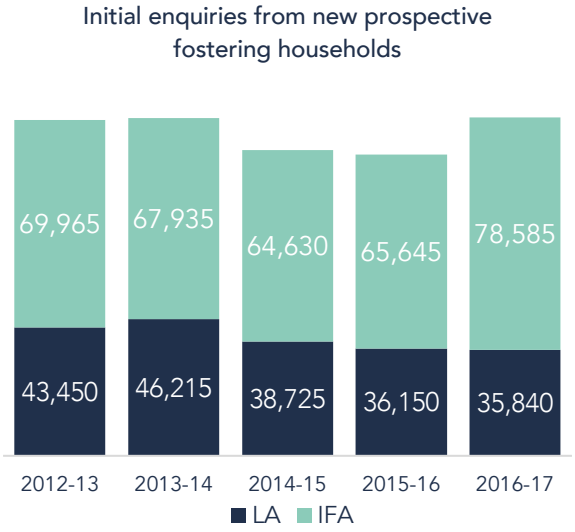
Theme	Episode name	Objective	Film description
Recruitment/ Introduction to Adoption and Fostering	Adopter Recruitment and Preparation	To allow viewers to see the impact their decision to adopt a child can have on the child's life chances.	These films allow the viewer to understand the background of children in care. The film is told from the perspective of the child, and the viewer is transported into the child's world both before being taken into care and then the positive impact of being given a stable home.
	Foster Recruitment and Preparation		
Abuse and child development in utero	Drugs, alcohol and domestic violence – the unborn child's view	To allow viewers to start to understand the impact of in-utero trauma on brain development and examine the long-term impact.	The film is in-utero, and the viewer can sense domestic violence and substance abuse from the perspective of an unborn child.
A look at trauma, abuse and neglect in early years	Abandonment, abuse and neglect	To allow viewers to start to understand the impact of early life trauma, substance abuse and domestic violence on brain development and examine the long-term impact	The first scene is in utero and users can sense domestic violence and substance abuse from the perspective of an unborn child. Viewers are then taken to scenes from the perspective of an 18-month-old child who experiences neglect, abandonment and domestic violence.
Children with early life trauma at school	School triggers – fight scene	This episode illustrates the marked contrast between "conventional" teaching techniques and Playfulness, acceptance, curiosity and empathy (PACE). It highlights therapeutic teaching as an approach to children who have experienced early life trauma.	This piece puts viewers in the shoes of a 7-year-old at school who is struggling with peer relationships and the general environment. The child gets into a fight when she is bullied. The teacher reacts in 3 different styles to clearly show the benefit of PACE.
	Behaviour management approach - Style A		
	Behaviour management approach Style B		
	Playfulness, acceptance, curiosity and empathy (PACE) approach		
Children with early life trauma at home	Behaviour management approach	This episode illustrates the marked contrast between "conventional" parenting techniques and PACE. It highlights the importance and impact of Therapeutic Parenting to build a relationship.	This piece puts viewers in the shoes of a 7-year-old in a foster home/ adoptive family. The child has been sent home from school for fighting. The carer/adopter reacts in 3 different styles to show the benefit of PACE.
	Fix-it/Problem solving approach		
	PACE approach		

Annex 2 – Background Information

Foster matching, placement and recruitment

The number of approved carers (excluding family and friends and short breaks) has been slightly increasing, although there was a minor drop in 2016-17. Similar to adoption, the proportion of carers provided by Independent Fostering Agencies (IFAs) is also increasing. There was a particularly substantial jump in the number of initial enquiries received by IFAs in 2016-17.





Data source: Ofsted - Fostering in England 1 April 2016 to 31 March 2017

Placement stability

Factors that are correlated with placement instability include older age, externalising behaviour, longer total time in care and experience of multiple social workers (Rock et al., 2015). As noted by the Children's Commissioner (2018), only one in four children in care experienced no placement move, no school move and no social worker change within a year. In addition, children who have experienced abuse or who have emotional and behavioural problems are particularly vulnerable to placement breakdowns (Narey and Owers, 2018).

Protective factors that can mitigate the impact of placement instability include placements with more experienced foster carers with strong parenting skills and placements where foster carers provide opportunities for children to develop (Rock et al., 2015). Rock et al. (2015) explored qualitative evidence suggesting that stressful situations can occur when carers are unprepared for children's specific difficulties, and expectations regarding behaviour are not met, potentially leading to placement breakdowns. In addition, it is suggested that foster carers who are under stress are less likely to parent effectively and form positive attachments (Farmer, 2005). Conversely, it is suggested that parents/carers who can empathise with their children can provide more targeted care and have more positive relationships with their children (Manczak et al., 2016).

Annex 3 - Theory of Change