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Adopted children's co-production and use of "trove" (a digitally enhanced memory box) to better understand their care histories through precious objects

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Abstract

This paper presents an innovative project to develop and trial a prototype product called 'trove' to start to address challenges identified regarding current practice of life story work with children who are looked after and adopted. trove is a digitally enhanced memory box that utilises raspberry pi (a small single board computer) and RFID (Radio-frequency identification) technologies to enable children to record their memories and to attach these to their precious objects using an electronic tag: providing a safe 'container' for their mementoes and memories. Located in theories of narrative identity and object attachment and drawing on Brodinsky's (2006) concept of *communicative openness*, we describe the children's' engagements in the design and report the results of a small trial of 10 troves with adopted children in England.

Keywords: *Adoption, Life story work, Object attachment, Narrative identity, Communicative openness*

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Introduction: the child's story

Children in the care system and those adopted often struggle to comprehend the reasons for placement in care and to make sense of experiences in their birth families, which may have been traumatic. Research in England reports that 75% of children who go onto be adopted have been maltreated (Selwyn, Wijedasa, & Meakings, 2015) with associated risks for maladaptive psychological and biological development (Cicchetti & Banny, 2014). Many have gaps in biographical memory and this has been linked to poor mental health outcomes in adolescence (Selwyn et al., 2015). Having a coherent narrative of adverse experiences has been associated with recovery from trauma and PTSD (Adshead, 2012). But trauma in children can result in their being unable to internalise and make sense of their experiences instead trapped in a state of hyper-vigilance with detrimental effects on growth and development (Rose, 2012). For Rose (2012) therapeutic life story work should focus on the child being able to internalize their story '*as the child reaches an understanding which is reframed and acceptable*' (p.29) but this requires the story to be known, shared and recounted.

Theoretically it is claimed that telling and re-telling stories helps the narrator to achieve coherence of the story and this is central to narrative identity (Welbourne, 2012). Narrative identity theorists claim that stories need to be constructed and retold to construct the self (McAdams & McLean, 2013). Narrating the self, however, is something that children need to learn to do over time and have opportunities to practice and parent-child conversations about events and emotional responses to events are seen to be crucial in building children's narrative skills and capabilities (McAdams & Janis, 2004). But these are the relationships that children in the care system and those that are trying to recall pre-adoption stories often lack access to (McAdams & Janis, 2004). Narrative also has temporal elements (Ezzy, 1998) and

serves an important function in enabling children to place life events in a temporal order – crucial to good life story work -not only in the past, but present and future (Bamberg, 2011).

Under the *Adoption and Children Act* (DfE, 2002) and updated in the *Children and Families Act* (DfE, 2014) all children placed for adoption in England and Wales should have a life storybook within 10 days of their adoption order. Opinions on the value and focus for life story work vary greatly in the sector, although a recent study demonstrated that it should enable children to express and manage emotions, allow a safe exploration of a coherent narrative and needs to be child-led, ongoing and related to clinical understandings of the importance of narratives in the context of ongoing recovery from trauma (Hooley, Stokes, & Combes, 2016). Studies focused on user experiences of life storybooks (Willis & Holland, 2009; Neil, 2012; Watson et al 2015a; 2015b) have revealed many challenges and areas of poor practice in the production and use of this intervention which can lead to children with questions unanswered, additional confusion, and a lack of ownership over the story of their life.

Life storybooks are one approach to enabling children to understand their care journey, but so is the ability to have open discussions about this journey. Brodzinsky's work on communicative openness suggests a link between family open communication about adoption and psychological adaptation of children, particularly where there is limited knowledge and room for fantasy and conjecture (Brodzinsky, 2006). His empirical research with adopted children has shown a modest correlation between communication openness and child adaptation and recognising three levels of communicative openness (*intrapersonal, intrafamilial and interfamilial*) he emphasises:

The ability of children to express their feelings about being adopted, and the empathic sensitivity of parents to those feelings, is viewed as a critical process in healthy adoption (Ibid., p.5).

It is in this context that this study focuses on the importance of the child's story and ways in which digital technologies can be co-designed with children to encourage greater communicative openness and narration of their life story. Given the critiques of traditional life storybooks this project has explored children's stories through the medium of their precious objects. The value of objects in memory and children's attachment to objects is explored in the next section.

Background: Material objects and object attachment

There is some empirical evidence to suggest that physical objects are important as memory prompts in enabling adopted and looked after children to narrate the self and develop a sense of identity (Ward, 2011; Watson et al, 2015b). In a study exploring looked after children's experiences of self-continuity, Ward (2011) reveals that children who misplace, lose or have possessions kept from them through their care journey report feelings of ongoing loss and instability beyond loss of family, foster carers and other people in their lives which she claims: '*must chip away at an already fragile sense of identity and reinforce this sense of loss of self*' (p.2517). She asserts that loss of belongings for children in care is, but one component of the transience and instability felt and that:

Efforts should be made to promote greater understanding by carers and professionals of the symbolic value of possessions brought from home or presented as gifts that indicate that a child belongs to a particular family or culture; making arrangements to ensure that these are properly valued and carefully preserved could promote the development of a stronger, more resilient sense of self continuity (Ibid., p.2517).

This appears to be a general human need as across many disciplines of study it is claimed that people of all ages make strong attachments to physical objects and these act as anchors for memories and provide a sense of self (Ahuvia, 2005). Sartre described material objects as symbolic extensions of the self and fundamental to being (Sartre, 1943/1956): '*We think with the objects we love; we love the objects we think with*' (Turkle, 2007p.5). Whilst in anthropological writings, there is a long-reported history of the importance of the emotional attachment enabled between people who exchange gifts: '*Where gifts link things to persons and embed the flow of things in the flow of social relations*' (Appadurai, 1988, p.11).

Object importance is also increasingly considered in gerontology studies (Phenice & Griffore, 2013) and follows the influential work of Casey (1987) who claimed that cherished objects '*act as inducers of reminiscence*' (*Ibid.*, p.110). More recent studies have focused on the material contents of the handbags of women suffering from dementia which have been identified as providing a sense of identity coherence through memory prompts (Buse & Twigg, 2014). Whilst in a psychological study exploring personality with adult women there is also some evidence to support claims that in situations of perceived unreliability of close others, that individual's attachment to cherished objects increases, in what the authors claim to be a form of relationship 'compensation' and that:

When a valued belonging was removed, participants primed with uncertainty about their relationships showed increased separation anxiety and motivation to reunite with the belonging, regardless of the belonging's perceived importance for facilitating relationships (Keefer, Landau, Rothschild & Sullivan, 2012, p.912).

Object importance (or what some term object attachment) is better understood in adult populations and has had little attention in psychological studies of children since Piaget's claims of object permanence in infants (Piaget, 1954). He claimed that infants entering the

fourth stage of object concept are able to discern object permanence (that is its existence even when occluded). Whilst this age limit has since been challenged and psychologists believe this can happen in infants of five-months and younger (Baillargeon, Spelke & Wasserman, 1985) importantly, it is claimed, that it is through touching objects that permanence occurs (Santrock, 2008).

Moreover, Piaget claimed that object permanence was a key method in assessing working memory (*Ibid.*), which it has been demonstrated is affected in children, adolescents and adults who experienced trauma as children. Such individuals, in experimental contexts, perform poorly on tasks designed to assess verbal episodic memory, working memory, attention, and executive function (Irigaray, Pacheco, Grassi-Oliveira, Fonseca, de Carvalho Leite, & Kristensen, 2013). The effects on working memory have also been demonstrated for adults with a history of early life trauma with a strong association between abuse and neglect in childhood and impaired visual memory, executive functioning, and spatial working memory (Gould, Clarke, Heim, Harvey, Majer & Nemeroff, 2012).

Most studies exploring the importance of objects to children have focused on children's developmental mastery of objects (leading on from object permanence and symbolic play as infants and younger children); and the extension of the self into material possessions (for adolescents) particularly in consumer studies (Belk, 1998). Psychological studies that have attempted to understand object attachment in children include those that have identified personal attachments to loved objects in approximately 60% of US children (Gelman & Davidson, 2016). The uniqueness of the actual soft toy, blanket or other loved object has also been demonstrated with 4-5 year olds who found exact replicas of such objects to be unacceptable (Hood & Bloom, 2008). Relative strength of attachment to special objects has

also been demonstrated in a twin study where it was shown that young children who spent longest in non-parental childcare were more likely to become attached to material objects (Fortuna, Baor, Israel, Abadi, & Knafo, 2014) and this clearly has implications for those displaced from birth families. It has been claimed that familiar material possessions can act as transition objects (Winnicott, 1953) for children moving through the care system and there is evidence that such possessions can reduce the trauma for children moving into care or changing placements (Fahlberg, 1994).

There are also a small number of studies that have explored the concept of self-extension with children. One psychological study explored the value and worth afforded to objects by 5-year olds and 9-year olds (Diesendruck & Perez, 2015). They utilise the concept of 'contagion' (also used in consumer studies to understand adult object attachment – see Belk, 1998) to explain the mechanism by which selves are extended onto material objects: *'the belief that the self can have a contagious effect on objects, and vice versa'* (Ibid., p.12) and this focuses on the impact of contact between people and objects. Whilst initially drawn from consumer studies, it is particularly useful in the context of therapeutic work with vulnerable children. Conceptually it is understood as being possible to have forward and backward contagion (rather than solely in the present) which offers an interesting insight into self-extension:

Because it entails that even though the child does not- and will not- have any contact with the object any longer, the child still believes that another person's contact with the object can somehow impinge on their self. It is as if some invisible link between the self and the object still exists, such that contamination at the object-extremity of the extended self can reverberate back to the core (Ibid., p.18).

As such it is as if the object itself becomes a vessel for a part of the person it is linked to. The attachments can be positive or negative and such linking of object and person through 'contagion' can be related to extreme emotional responses.

Whilst there is little agreed definition of the concept of object attachment, and of the psychological processes of child-object attachment, there are indications in the literature of: the value afforded by children to certain loved objects; the importance of 'gifts' and the associated connection made with people who have gifted; the role of objects in transition to create feelings of security; the role of objects in reminiscence and memory and the storying that is possible using objects as memory prompts. Whilst some of this draws across disciplinary literatures and theoretical (as well as empirical studies) it is these premises that the following study is based upon as we sought to design a product for children to address what we, and others, had identified as a gap in provision: a tool for children to be enabled to story their lives through the vehicle of memory-provoking objects.

Research Design

Design of the trial prototype

This paper reports a small trial which tested a prototype designed initially with children as part of a rapid research and design process funded by the Arts and Humanities Research Council (AHRC) under their REACT scheme. Whilst not the specific focus of this paper, the development of the prototype is important to outline briefly so the reader appreciates both the involvement of children in the design process and the prototype which was subsequently trialled. The REACT scheme provided funding for academic/ creative industry partnerships around the theme of children's play and an infrastructure supporting product design and

business development as well as access to a group of children who were recruited to work with teams in their product development. Over a 4-month period (November 2015- February 2016) Watson and Meineck collaborated with a group of 7-12-year-old children (n=12) who became expert co-designers (Vaajakallio, Mattelmäki, & Lee, 2010) in a participatory approach that recognised children as experts on their lives (Tisdall, Davis, & Gallagher, 2008). The children took part in five half day workshops to co-design a digital memory box to keep their precious objects and to narrate the stories of their objects. As the children were not adopted or in care it was also essential to include children and young people with not only design experience, but subject experience (Yip *et al*, 2013) so we also worked with a design group of looked after young people (14-19 year olds n=10) and adopted children and their families (7-15 year olds n=6) to refine the design of the prototype and to identify context specific design challenges. These young people were recruited through contacts with a Local Authority looked after children's team and Coram – a Voluntary Adoption Agency.

The prototype tested: trove

trove is a digitally enhanced memory box which utilises raspberry pi (a small single board computer) encased in a rigid box in which children can keep their precious objects. The outer casing was specifically designed by children to be a precious object in its own right and is intended to be non-gendered and timeless. The shape represents a precious rock or diamond as the children requested and is a light grey in colour with slight glitter effect. The outside is intentionally plain to enable children to customise. Users of trove can upload multiple stories onto a precious object (for example a story onto a teddy bear, see: *film clip to be inserted after review*) and they can be archived under the individual RFID (radio-frequency identification) tag for retrieval whenever the child wants to listen to them. The design was adapted to include headphones rather than an external speaker as children reported the need for their interactions with trove to be private. The interface is intuitive with simple buttons

and voice activated controls recorded by a voice artist and tested with children for acceptability. As the children noted, the voice of trove should be *'neither posh nor too local and certainly not mumsy'* (Leah, young person in care). The voice is a female voice and this was felt to be important particularly amongst the adopted and looked after children who felt a male voice may be *'less reassuring and a bit scary'* (Tim, adopted child).

Trial Sample

Children were recruited for the trial through contacts in one English Local Authority. Watson coordinated with a family therapist in the Local Authority to identify families with children who would be suitable to trial trove. Requirements for recruitment were that the children were stable in their placement and that they had some form of life storybook and would be able to relate to the wider notion of life story work. We also hoped to recruit equal numbers of boys and girls and a good spread of ages of children. The family therapist had already supported the research team in accessing adopted children and parents to test an earlier version of the prototype during the design period. She coordinated contacts with families and set up times for the research team to visit children and parents in their homes.

The trial period was over four weeks across the Christmas period (2016-2017) and the ten children were aged 5-15 years with half the children under ten years old and with equal numbers of boys and girls. All children were of White British heritage. There were six families involved in total as eight of the children were in sibling pairings- the three-year old in family six (Harvey) was not formally part of the trial but is included as his mother (Lisa) refers to him in her quotes. (Table 1 -TO BE ADDED HERE)

Trial design

As a small-scale qualitative study this utilised some intervention design principles (Thiese, 2014) with longitudinal data collection (with parents). This cannot be argued to be a pre-post design in the true sense as we did not include any standardised measures, so the comparisons are purely qualitative and based on parents' reporting of any observable changes in their child as a result of them interacting with trove. The aim of the trial was largely exploratory to understand how adopted children used trove in their everyday lives when they had their own trove freely available at home. Data was required on how often trove was used and how many stories were recorded which could be gathered from the raspberry pi. Lastly, children's responses to using trove were essential to capture and required children's feedback to be gathered. This was important both in a design sense and in appreciating the utility of trove in facilitating beneficial care and adoption conversations with family members.

Ethical considerations

Ethical approval was granted from the School for Policy Studies Research Ethics Committee, University of Bristol. The project lead resubmitted approval twice, as we moved into the trial period and we updated permissions with children in accordance with recognised assent processes (Cocks, 2006). However, recognising the need for adult consent and the precarity of children's verbal assent (Tisdall et al., 2008) we were insistent on getting written approval from parents/ carers and children and we reminded children verbally about their data and what would be used at all stages of the project. This was particularly crucial for the children in the trial as trove easily became a playful intervention and our intentions became easily forgotten by them- so we were conscious of re-introducing these discussions in age-appropriate ways.

An ethical dilemma that we anticipated was that the trove boxes would need to be taken from children after four weeks as they were still working prototypes and we could not provide technical assistance if they broke down. It was essential that children understood this at the outset.

Trial procedure

Initially, at least two members of the research team visited children and their adoptive parents in their home where trove was demonstrated to the child and left for four weeks for them to customise and use as they chose. At the same meeting, semi-structured interviews were conducted with either one or both adoptive parents depending on which parent(s) were available. No written or verbal instructions on the use of trove (beyond how to switch on) were given to either the child or the parent to test the intuitiveness of the interface. We ensured however that the children were competently using the technology before we left, and a support email address was provided for parents to contact us if there were any problems- emotional or technological. Each initial visit took about 2hrs.

The researcher (Lancaster) returned four weeks later to collect the trove and repeated semi-structured interviews (based on an updated version of the schedule used in interview one) with all adoptive parents to note how trove was used, any changes, challenges etc. The researcher also conducted one-to-one design interviews with each child. With the child's express permission, photos were taken of their trove and contents. The stories were taken off trove and loaded onto USBs and were sent back to the children, as well as being archived for analysis with the child's permission. The follow-up visits also took about 2hrs per family. All interviews were audio recorded and professionally transcribed. See Figure 1 for a flow diagram of processes [INSERT HERE].

Data analysis

Each interview transcript was analysed using general inductive thematic coding methods (Braun & Clarke, 2006; Thomas, 2006) using NViVO software to organise initial nodes and themes. Watson inductively coded all of the interviews starting with the first parent interviews and then the second parent interviews and the child interviews, developing a nodal framework based on prevalence of nodes occurring across the complete data set as she analysed each interview and began to see emergent patterns. The numerous nodes were then grouped to overarching themes which are reported below. Data on the overall design of trove has not been reported here as this is reported in a children's design context elsewhere [REF to be added after review].

As per our assurance to the children we have not conducted content analysis on the stories recorded- we just report numbers of stories recorded below.

Findings and Discussion

The number of stories uploaded on trove ranged from one to 55 with an average of 16 per child; but the average was different for boys (average number recorded 13 per child) and girls (average 21 per child). One boy and one girl only recorded one story. It was also clear that for younger children there was quite a bit of parental support provided as parents can be heard guiding these younger children in their use of trove and in what objects to use and what to say in some cases.

Thematic findings from analysis of adopters and children's interviews are reported as per the five headings below: 'Objects and memories', 'Storing and storying objects', 'Improved communication about adoption', 'Temporal uses of trove', and 'Emotional responses'.

Objects and memories

All the parents hoped that trove would enable better discussions with their children about their time in care and the reasons for being adopted. One mum described how she felt trove and a focus on birth objects might forge a stronger relationship with her older son (aged 5), who in contrast to her younger adopted son (aged 3), had started primary school as soon as he was placed with them:

I just don't, still today, don't feel as close to Liam, because I don't see him so much, and I don't feel that I own him as much. Not that I own Harvey, but I own a lot of his history and every minute of that, I've been there, and we've got all these memories that we've built up together. Whereas me and Liam don't really know each other as well. So, I'm hoping, in all honesty, that it can bring us a little bit closer and I had thought to myself, maybe I can go out and buy just one little baby grow and one little baby, new born teddy, for a little baby Liam, and not pretend that they're from [birth parents], but give them to him and say to him, I never met baby Liam and I'll never meet baby Liam, but I love him and look, I've bought him a little something. Maybe we can go out together and get some little socks? (Lisa).

Lisa emphasised the important role of material objects as '*a marker of relationships and emotional connection*' (Turkle, 2007, p.5) and the expressed need to have material reminders of her child's early childhood was striking- not to imagine they were his baby clothes, but to create shared memories. When re-interviewed, Lisa commented on how her children had either seen trove as a bit of a game and something to be proud of in telling their friends about it, or that it had been used as a '*snuggly bedtime thing*' whereby her children would ask to listen to special stories recorded on trove before bedtime such as those recorded on a special

teddy bear on one child's bed. So, it seemed that trove offered a degree of comfort to her and her children.

Storing and Storying Objects

All the children stated that having somewhere to keep their precious objects was important, even if they did not put them there all the time. The physicality of having a *'place'* to store objects was also acknowledged as something you could *'touch and hold'* (Tillie). Turkle (2007) describes the intimacy of evocative objects and Diesendruck and Perez (2015) focus on ideas of contagion (of objects from people) and this was illustrated in the data- for example Andrea noted: *'The unique part of it -of attaching something to an object and being able to pick up that object'*. One father (Robert) suggested reducing trove to *'a smaller jewellery sized box (keeping the special place and small objects safe) but linked to an app for updates and to keep the audio secure'*. One of Robert's sons also noted that trove was: *'an object which stores precious objects, and you can record stories so you can never forget them'* (Aaron). This suggests the storying function of trove, linking it with objects, was particularly important and this emphasises the role of narrative in identity development and maintenance (McAdams and McLean, 2013).

Several parents mentioned the use of trove to also emphasise the specialness of birth objects and memories. Family One had tried to make a *'celebration'* of using trove with their children and their mother commented on how she liked that it needed to be plugged in and organised, as this gave *'a ritualistic feel'* to the use. Mum (Andrea) explained that the plug socket in her youngest child's bedroom (Nikki, aged 6) was too difficult to access so they had decided to plug it in the hallway, but as her daughter was too young to do this herself that it

had become something they did together. Mum's use of the terms 'celebration' and 'ritual' are interesting in the context of psychotherapeutic literature where ritual is defined as a:

A sacred space created for an individual family or group to offer a safe meaningful way of journeying through difficulties, to enable them to transform and integrate experience (Fisher, 2010, p.26)

Some parents hoped that trove would facilitate more discussion about where objects came from. For example, one parent explained that her child had uploaded a story about the toy that was normally on his bed and her hope was that he would listen again with her at comforting times such as bed time (Lisa). This example illustrates how the telling and re-telling of stories contributes to narrative identity which it is claimed (Welbourne, 2012; McAdams and McLean, 2013) are essential processes for children to come to a coherent sense of their past. For another child, trove had been useful as it helped her to '*store memories*' (Sarah) which seemed to be more of a process of putting the memories in a place for safe keeping, rather than a process of telling, listening and rehearsing aspects of self through object memories. Rose (2012) describes traumatised children's bodies as '*memory boxes*' (p.45) which hold violent and traumatic experiences and that this embodiment of those experiences prevents internalization of the story occurring. So, in this context what Sarah said could indicate a transference of the memories from her brain and body to trove as a new memory vessel and perhaps the 'sacred space' (Fisher, 2010, p.26) as suggested by Andrea's use of 'ritual'. Clearly these ideas need to be explored further and are the focus of ongoing work.

Improved communication about adoption

For older children who were aware of birth objects, having trove seemed to re-awaken interest in items not looked at for a while. One mum (Ellie) of an older teenager had

deliberately brought birth objects out of the loft when he was a young child and left them in plain view of her son:

These particular items have always been around- it's a blanket, a baby blanket, a pair of little teddy bear slippers and a rattle and they've always been around and they were my indicator that if things weren't going too good he'd bring them out from underneath the bed or the box they were in ...but they've always been in his bedroom (Ellie).

She explained that whilst these objects may have come out in particularly difficult times in the past, that they would always be put away again without explanation or discussion by her son. She was struck however, by the fact that this time they were not just out in his bedroom but seemed to be carefully placed on his bed and had possibly had stories uploaded, which she felt marked a kind of acceptance of these objects and the memories they contain.

As he also noted:

It's (trove) helped me, it helped me to ask questions about it (adoption) I think. It is also about finding the stories and not just that "this is a thing from there", but why it meant more to me (Luke).

Luke it appeared had used trove to make sense and process his attachment to birth objects in a way that was positive and child-led in a way that reflects practice guidance for life story work (Hooley et al, 2016):

I was putting some of the things in there from when before I was adopted. I was thinking more about how much I wanted to find out more about it [adoption,] which was a bit of a surprise because up until now I'd never really wanted to but I'm not sure if that was trove or something else but it seemed to come at the same time (Luke).

Like many of the children involved, Luke and his adoptive parents had many difficulties, including the inability to explain to Luke that his birth father was in prison for murder. His mum reported that Luke had violent outbursts, disengagement with schooling, had previously taken an overdose and had repeated therapeutic interventions. Whilst Luke did not talk about his father in his interview, his adoptive mother did comment that:

My fear was that Luke would feel he's like his dad. When he was at rock bottom, he would have said "well I am violent because I'm like him" (Ellie).

Not engaging with birth objects previously might be an attempt to dissociate from his violent heritage and could indicate a feeling that they were 'contagious' in some way (Diesendruck & Perez, 2015) – although we do not have the evidence for this claim. Importantly though when asked about how life storybooks could be improved Luke described needing: '*More whys not just like who's who because that just tells me who people are and it doesn't give me any reasons or anything like that*' so it was clear that he was left with unanswered questions about his life story.

Using trove initiated new questions for several of the children, with one boy saying: '*It's helped me to understand how precious my objects are, and no one's got one that's identical*' (Aaron). Nikki, one of the youngest children, recorded questions on trove about where objects came from, as well as questioning her lack of sibling contact. Her mum reported that she had shared her questions with her about these topics but only through the trove headphones when she had uploaded stories to what appeared to be 'trigger' objects:

She's asked where some things have come from and when I've said to her there's a few things that might have come from foster mum or from birth mum, not that she really has anything from birth mum, she did ask who had given her things...but only when we listened to her story. She's not asked any of things to me (Andrea).

Whilst examples of improved communication or 'communicative openness' (Brodzinsky, 2006) about adoption appeared in more parental accounts, examples could be found in children's accounts (as above in Luke's story) and one older girl asked her adopted mum how old her birth mum had been when she became pregnant with her (Sarah). She had shown little or no interest in this topic before but engaging with trove seemed to have initiated a discussion about her birth origins, as her mother suggested they look at her life storybook together to work it out.

Olivia commented to her adopted mother that her sister Cass (birth child) '*was born. But I wasn't born*' and this led to a long discussion with mum about '*not being born from your tummy*' and ways in which she differed from her older sibling, who reportedly told her sister: '*that's what makes you who you are*' (Cass). Mum reported the conversation as something that seemed to be a "side effect" of having trove, in that this exchange was not directly recorded onto trove but seemed instead to be prompted by trove being in the house and the child asking questions about '*making my stories*' (Olivia). Brodzinsky (2006) describes three levels of communicative openness and it is interesting that these examples illustrate all three: the story conveyed and the child's internalisation and meaning making (*intrapersonal*); adoptive parent's abilities to have open and frank discussions within the family about the child's story (*intrafamilial*); with *interfamilial* openness reflecting '*exploration of adoption issues between adoptive and birth family members*' (*Ibid.* p.6) also evident, particularly in her sister's response to her sadness.

One father was keen to emphasise how trove enabled a connection to be made for his adopted son with: '*History, heritage, passing things down*'. The agency trove enabled for his children, as well as the communicative openness facilitated, were particularly welcomed:

It's such a worthwhile project. It's really, really good. We've had really good discussions with the kids and ... that is the benefit of it. It's not just the actual object but it's all the discussions that we have around it, and up to that point you know very much telling them what had happened to them, but with trove there was that shift, we could actually tell them: "You can now take your own story into your own hands", It's not just about what people are telling you, or what's in the book- the life storybook. You can make your own history (Charlie).

This quote focuses attention on the need for the child to have greater agency and control over their story and the way that this is told and understood rather than being presented with an account, as in traditional life storybooks (Rose, 2012).

Temporal uses of trove

For some children, trove was used to record current events and memories (usually because they had little in the way of birth objects as confirmed by parents), whilst others carefully ensured it was about storing birth family memories. One of the oldest in the group commented that he would have used trove more had he had it over the summer when he could have focused on holiday memories and day trips out, as he found it difficult '*to put things in afterwards*' (Luke).

Literature on narrative identity supports the idea that stories of the self can be in the moment and embodied and need to be facilitated across time to be meaningful to individuals (Bamberg, 2011). One of the mothers (Lisa) of young children confirmed that trove would be most valuable for her children when used to record stories in the moment. She thought that a focus on special days and events and encouraging young children to record them straight away would enable the '*specialness*' of the memory to lead the decision as to which objects

to include in trove. Lisa's account of trove reflects what narrative identity theorists say is required of parents to enable children to come to know their story- the telling and re-telling of family memories and stories by parents with their children learning how to engage in the story-making (McAdams & Janis, 2004). She recounted a time when she had used trove with her youngest son (Harvey, 3):

I would say: "now Harvey, this was the rhino that I bought for you before you came to our house and it is very special- it lived on your bed. So me, sort of talking to Harvey and telling him a story for when he's older, I found it more useful that way.

The ongoing nature of 'life as lived' (Bamberg, 2011) was particularly important for children who had few birth objects. One child eloquently said:

I am not sitting on lots of objects that I have from my birth aunt ... so it's not as if I have a massive choice of what I can put in. It would be more stuff that I acquire, and those stories would then go on (Josh).

Other families reported the need to have trove over a longer period regardless of whether children used trove to record past or present stories. They thought that the use of trove should be embedded in the transition process from being in care to being adopted and could be added to over a child's lifetime. The testing period was thought to condense this in an artificial way by three sets of parents who commented on this in the follow-up interviews.

Emotional responses

The lead up to the Christmas period was a particularly difficult time for some children and commented on by several parents, although as one said it was not necessarily bad timing as: 'You might find that they do speak more because there's a lot more emotion that comes out at this time of year' (Karen). But overall it appeared that engaging with trove did not seem to

exacerbate feelings of distress. For children who had extended use of trove over Christmas, their presents also somewhat overshadowed their use of trove. Andrea did comment that her daughter Nikki seemed to experience worse tantrums and that this coincided with the trove trial period. While she was keen to dismiss any causal basis to this, she did report that when having tantrums Nikki had said: *'I don't want to live with you anymore'* and this was not something she had said before. Given that she had been one of the children asking the most questions about adoption, then it is understandable that she may have been experiencing confusion, and, as mum reported, although she seemed to understand she had siblings who did not live with her, she did not seem to yet understand what being adopted actually meant.

One child did completely destroy trove- although he confirmed that he was not particularly upset by trove, rather that: *'I was angry and I wanted to like, I just break things when I am angry'* (Ed). He described trove falling into his line of sight when he was in a rage and that he chose to destroy trove instead of his Playstation. His mother also wondered if the destruction was partly his way of getting his parents: *'In trouble'* (Andrea). Parents were ultimately responsible for trove and his mother believed that when he got angry he was particularly angry at his parents. Interestingly, the interview with Ed captured a general dislike for the simplicity of the trove functions and he was dismissive of the need to capture memories: *'Pretty much all it does is record your voice saying stuff about something, which you'll probably remember for your whole life'* (Ed). Exploring what made him get so angry, he expressed annoyance at the interface:

I was thinking [at the time he destroyed trove] that it's a bit annoying that you have to hold it [button] down. I was thinking that it would be better if you just press it once and it lights up when you're recording it and then you press it again and it unlights when you're not (Ed).

Ed was keen for trove to be able to record using a video camera and screen. He discussed the technical aspects of how this might work but was less keen to engage in any debate about how, and if, people might forget their stories and ways in which trove could support this. He was one of the children receiving therapeutic support and arguably was not yet able to deal with difficult memories. He also reminded us that object attachments are differentially important for children, as is the need to replay life stories and come to an acceptable version. Bamberg (2011) emphasises that narrating enables (and requires) individuals to be able to dissociate the self and adopt a reflective position that views the self: '*As character in past or fictitious time-space, make those past (or imagined) events relevant for the act of telling (a bodily activity in the here-and-now)*' (p.7). Ed's reaction suggests that he was unable to occupy these temporal, spatial and relational positions to story his self in ways that were seen to be worthwhile to him.

Conclusion

Indications from this small trial suggest the use of trove enables beneficial conversations about adoption, birth families and life stories for adopted children and adoptive parents. By supporting their past and future narratives, a deeper sense of identity can be supported and can address concerns of further loss and dislocation that can occur when children lose objects. Having a coherent narrative of adverse experiences is an important factor in recovery from trauma; as is the ability to achieve an internalised and coherent understanding of one's story. The data from the small trial suggests that children's precious objects and the associated stories have an important, though under reported and under theorised role in contributing to this coherent narrative, enabling increased openness in adopted families about care histories and facilitating children's difficult questions in mediated, playful and safe ways. Understanding how children connect with their precious objects has significance for childhood studies and child psychology generally but is particularly important for adopted

children and those who have care experiences. These are the children likely to have fewer possessions, but they also appear to understand the connection to people in their past through their objects -perhaps more than children who do not enter the care system. From a social work practice and parenting perspective children's loved objects could potentially be powerful ways of engaging children in more child-led life story work, which could have great benefits in terms of the establishment of identity and recovery from trauma.

Since completing this trial the project team has successfully secured AHRC follow-on funding and trove continues to be developed with adopted children, children in foster and residential care and with sector professionals and carers. The team are further exploring the potential of trove and object attachments in therapeutic approaches to life story work with traumatised children. It is anticipated that through this funding we will be able to address the known issues with the current trove prototype (security, efficacy, scalability, durability, maintenance) and ensure that the product is designed to be of maximum benefit for children who experience the care system.

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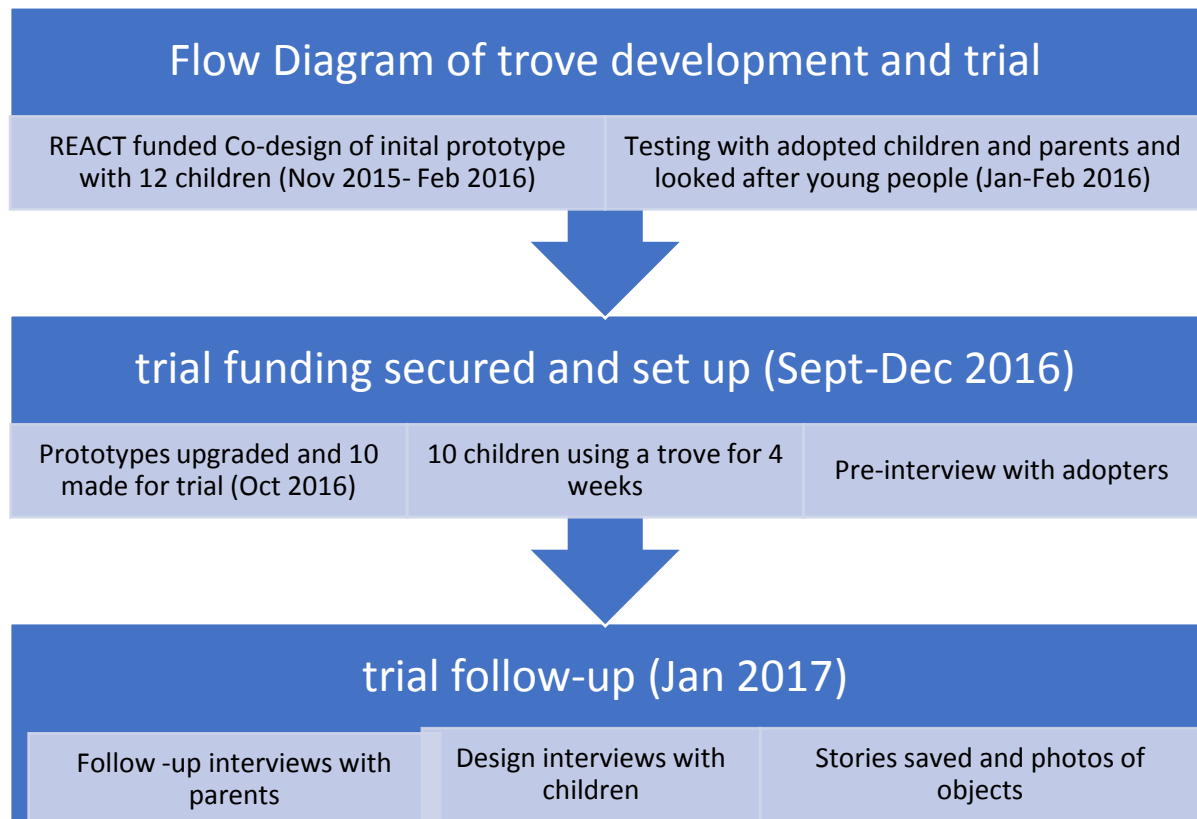


Figure 1: trove development and trial flow diagram

Table 1: Trial participants and parents

Family	Child 1	Child 2	Parent 1	Parent 2
1	Ed (13)	Nikki (6)	Andrea	Tom
2	Luke (15)		Ellie	
3	Cass (9)	Olivia (5)	Karen	
4	Sarah (12)	Tillie (14)	Clare	
5	Aaron (10)	Josh (8)	Charlie	Robert
6	Liam (5)	Harvey (3) (not formally part of the trial)	Lisa	