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METHODOLOGICAL ARTICLE

‘When my mummy and daddy aren't looking at me when I do my maths she helps me’; Children can be taught to create imaginary companions: An exploratory study

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Abstract

Spontaneous imaginary companion (SIC) creation in childhood is a typical imaginative play behaviour associated with advanced sociocognitive skills; however, the direction of causality has not been established. To investigate this experimentally, researchers must determine whether children can create, on request, qualitatively equivalent imaginary companions (ICs) to those created spontaneously. We examined whether children could create ICs, and how these compared to SICs. Nine elementary school children were encouraged to create ICs in a 3-month intervention. Accounts of elicited ICs were compared with an age-matched sample of interviewees with SICs. Seven children maintained ICs for 6 months post intervention. Template analysis of IC interviews found four themes: Realistic Play, Multifaceted IC Mind, Utility of the IC, and Elicited IC Across Time. Analysis suggests elicited and SICs were similar in nature and utility, although intervention ICs tended to have animal rather than human appearances. Findings support the argument that children can be encouraged to create ICs similar to SICs.

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KEYWORDS

imaginary companions, intervention, method, play, template analysis

The spontaneous creation of an imaginary companion (IC) is a typical developmental occurrence in childhood worldwide (Carlson & Taylor, 2005; Gleason, 2005; Gleason & Hohmann, 2006; Moriguchi & Todo, 2017; Wigger, 2017). ICs were first defined as 'an invisible character named and referred to in conversation with other persons or played with directly for a period of time, at least several months, having an air of reality for the child, but no apparent objective basis. This excludes that type of imaginary play in which an object is personified, or in which the child himself assumes the role of some person in his environment' (Svendsen, 1934, p. 988).

One hallmark of childhood IC creation is its spontaneity. Anywhere from 20% to over 50% of children have been found to create ICs (Carlson & Taylor, 2005; Gleason, 2005; Gleason & Hohmann, 2006), but there is no clear indication of which children will do this, when they will be created, how the child will imagine the IC's traits and mind, and when it might disappear (Taylor, 1999). Some variables are indicative of which children may be more likely to create an IC (e.g., age, gender, or birth order); however, there is no decisive way to identify children that will or will not engage in this imagination behaviour (Carlson & Taylor, 2005; Gleason et al., 2000; Moriguchi & Todo, 2017). This is different from other pretend play behaviour, which occurs in all typically developing children universally on a set schedule leading researchers to conclude that it is an evolved behaviour (Lillard, 2017).

Children without ICs (NIC) have been found to differ from their peers who spontaneously create an IC, as IC creation has been found to relate in some studies to various advances in IC children's understanding of the mind (Bouldin et al., 2002; Davis et al., 2011; Davis et al., 2014; Davis et al., 2022; Giménez-Dasi et al., 2016; Roby & Kidd, 2008; Taylor & Carlson, 1997). There have been other studies with findings indicating only certain areas (e.g., perspective taking rather than belief states) are different between groups (Davis et al., 2014). Indeed, pretend play also relates to theory of mind (ToM), however, IC status has been found to explain the unique variance in performance on ToM tasks when looking at high and low fantasy oriented 4-year-olds (Taylor & Carlson, 1997). Furthermore, IC creation was found to have the highest loading behaviour of principal components for high fantasy children (Taylor & Carlson, 1997); hence, IC had higher fantasy orientation scores than NIC children (Sharon & Woolley, 2004). This high fantasy orientation has been put forward as potentially contributing to superior knowledge of others' minds.

It is not just ToM and fantasy orientation where IC and NIC children deviate in their profiles; these groups have been found to differ in narrative ability, private speech (Davis et al., 2013; Trionfi & Reese, 2009), the way that they describe scenes and friends (Davis et al., 2014; Roby & Kidd, 2008), knowledge of their own inner worlds (Davis et al., 2011), and even social skills (Davis et al., 2022; Giménez-Dasi et al., 2016). A potential reason for these various differences is that children conceptualize their ICs as having human minds and personalities of their own (Davis et al., 2014; McInnis et al., 2013; Taylor & Carlson, 1997), thus enabling children to attune themselves to the mind and improve their own metacognitive skills when engaging with the IC. This similarity between real and imaginary friends is seen both in terms of reciprocal social relationships as well as mind-related perceptions such as agency (Gleason & Hohmann, 2006; Moriguchi & Shinohara, 2012).

To date, there is an on-going question of causal direction when investigating this array of sociocognitive advances that children with spontaneously created ICs exhibit over NIC children. The first trajectory of causation assumes that children who begin with superior sociocognitive abilities such as ToM are more likely to create ICs (Taylor & Carlson, 1997). The 'sociocognitive skills first' trajectory is supported by two longitudinal studies pointing out that early mentalizing ability and environment can predict IC creation (Moriguchi et al., 2016; Motoshima et al., 2014). The studies fail to fully explain the relationship between IC status and sociocognitive ability. Furthermore, there could be a transaction between child and environment where early skills and environment may lead to IC creation, while once created, the IC itself improves mentalizing ability (Moriguchi et al., 2016; Motoshima

et al., 2014). To date, there are only longitudinal studies on ToM and its relation to IC rather than other sociocognitive skills.

The 'IC first' trajectory of causation centres on how IC play could focus children more on others' minds by giving them practise at representing and conceptualizing such (Gleason, 2017; Taylor & Carlson, 1997). This argument is based on the ICs improving sociocognitive skills for the children who are spontaneously creating them. Longitudinal research by Lillard and Kavanaugh (2014) supports this direction; however, the IC variables were not their primary focus. There is a third possibility that there is an unknown variable, which is affecting both IC creation and general sociocognitive abilities (Davis et al., 2022).

If the direction of causality in these relationships could be determined (even if determined to be dynamic), it would inform researchers about how different interventions could be made to fit with the child's sociocognitive understanding. IC first, or dynamic trajectories, could inform a new type of play therapy where children could create or play with ICs of their own to improve their skills. The sociocognitive skills first trajectory could identify children that would potentially mentor or give others guidance through play intervention in a Vygotskian style (1978/1931). Play therapy has been found to improve social competence and mental state understanding (Cheng & Ray, 2016; Tessier et al., 2016); however, concentrating on creating an IC could potentially be more helpful than typical play therapy interventions because of the unique links ICs have to sociocognitive skills (Giménez-Dasi et al., 2016; Taylor & Carlson, 1997).

In order to experimentally determine the direction of causality between mental state reasoning and future IC creation, it would be necessary to measure children's ability before and after they create an IC for at least a 3-month period to see change across time. The issue with experimental IC studies is that it is difficult to predict, which children might play with an IC and to follow them longitudinally; researchers are unlikely to find a sample of children who will spontaneously make an IC within the timespan of a study. One possible solution to this issue, which has yet to be investigated, is to determine whether children who have never been reported to play with an IC could be encouraged to create ICs via an imaginary play intervention. This would enable researchers to control the IC's arrival, keeping other variables constant. It would also allow for children's cognitive skills like narrative ability, fantasy predisposition, or social understanding to be measured at various time points before and after creation, however, causal assumptions would only be viable if the ICs that children are encouraged to create have the same properties as spontaneous IC (SIC) creators and if they have the same meaning as SIC and elicited IC (EIC) creators. To date, there is no literature to suggest whether children would even create an IC through an intervention asking them to make their own EIC although other play behaviour (e.g., modelling how toys work) have been found to be bolstered through parent and teacher scaffolding (Morrissey, 2014; Neale & Whitebread, 2019; Trawick-Smith & Dziurgot, 2011). It is currently unknown whether IC play is a behaviour that children can be scaffolded to learn, sustain, and engage with in the longer term.

Because of the lack of previous research on this topic and the preliminary nature of the investigation, it was decided that a qualitative approach using an inductive analysis would be most appropriate. The aim of this exploratory research is to determine whether a sample of children who have not previously spontaneously created an IC are able to make and continue to play with an IC of their own when the activity is endorsed through an intervention.

1. If so, to explore the IC's meaning to the child and what themes and content come up when describing the IC.
2. To examine whether themes relating to EICs and SICs are similar.

1 | METHOD

1.1 | Participants

There were 18 participants in this study. Participants taking part in the IC intervention came from reception and year one classes of about 30 children. There were nine children (one boy) aged between 53 and 75 months

($M = 63.56$, $SD = 7.40$ at T1) whose parents consented to the study reporting their child had no SIC. All children were enrolled in a primary school located in Yorkshire, England. The SIC creators were taken from an existing data set consisting of those with parentally-corroborated IC status and matched as closely as possible on age at the fourth time point (T4) in the study. In this pre-existing data set, there were nine children (four boys) aged between 63 and 79 months ($M = 70.44$, $SD = 5.70$). All matched children were enrolled in primary schools located in County Durham, England.

SIC children from the pre-existing data set were compared to the EIC group at week 12 of the intervention, as the ICs would have existed for over 3 months and endorsed throughout those months. Research usually focuses on children who are currently playing with ICs (e.g., Giménez-Dasi et al., 2016; Gleason & Hohmann, 2006); through participation in the intervention sessions, children reported interacting with the ICs outside of the interventions on a regular basis for a substantial amount of time.

1.2 | Materials and procedure

Information and consent forms were sent to the parents of children in the reception and year one classes. These included the definition *an imaginary friend can be completely invisible, or a toy or doll that your child has given a personality to and has played with for more than 3 months*, and asked parents to indicate whether their child had ever created one.

Children who had never had an IC and whose parents consented to the study were visited in a group of nine in the school library by a female researcher. The group met six times over 9 months. Each session lasted around an hour. The protocol for the intervention can be found in Table 1 and the appendices, along with examples of debrief sheets parents were given after each meeting. This study was approved by the university ethics committee. Due to privacy and ethical restrictions, the data are not publicly available.

1.3 | Describe-a-friend interview (Meins et al., 2006)

As in Meins et al.'s (2006) protocol, children were recorded while the researcher asked if they had a best friend. When a child indicated their best friend by name, they were asked; (1) to describe that friend, (2) what sort of person they were, and (3) what they like about them. After the description each child was asked, 'is there anything else you would like to say about the friend?' Children were all able to name a best friend. If a child indicated that they had two, he/she was asked to choose the best of the two.

1.4 | Imaginary friend interview (based on Hepworth, 2007 and Taylor & Carlson, 1997)

This measure began to be used at T4 after all children had gone through the IC creation phase of the intervention (see Table 1). It was explained to children that, 'Some friends are real like the ones that live on your street or the ones that you play with at school, and some are pretend. Pretend friends are ones [that/who?] are make believe that you pretend are real. Do you understand?' Children were then asked if they had an IC, and if they responded affirmatively, they were asked follow-up questions divided into four sections: (1) descriptions of the IC (e.g., age, gender, appearance); (2) Activities that the child engages in with the IC (e.g., what do you do with the IC, who decides what you do?); (3) conversations and teaching the IC (e.g., what do you talk about with your IC, can your IC teach you things?); and (4) the ICs independence (e.g., does your IC have relatives of their own, and do they ever surprise you?).

TABLE 1 Protocol for interventions

Number of visit	Timeframe	Intervention theme	Measure
T1	Baseline	Children encouraged to create their IC and imbue it with traits. No child was resistant to this suggestion	Describe-a-friend task Meins et al., (2006)
T2	Week 4	Children went around and introduced the IC to the other children in the intervention group. They then drew their IC	
T3	Week 8	Children talked about activities with their IC and conversed with them about anything they chose on a plastic mobile phone.	
T4	Week 12	Updated the group on their IC play and then were able to play with a box of invisible toys with their IC followed by describe-a-friend and IC interview one to one interviews	Describe-a-friend task Meins et al., (2006) followed by IC interview Hepworth, (2007), Taylor & Carlson, (1997)
T5	Week 24	Researcher saw children one to one at this time point	T4, T5, and T6 use the same measures
T6	Week 36	Researcher saw children one to one at this time point	T4, T5, and T6 use the same measures

Note: For a more detailed description of each session see Appendix I.

1.5 | Imaginary friend drawing exercise

Children were asked at T2 to draw the IC that they had been playing with doing something that they do together or plan to in future (see Table 1). The researcher said: 'I'm happy you all shared stories about your new imaginary friends. As we talked about, I can't see your friends, so to show me what they look like, you're going to have a chance to draw your friend.' All children were given a box of 24 crayons and A4 paper. Children had 10–15 min to draw a picture of their IC. Example pictures can be found in Figure 1.

1.6 | Treatment of IC interview as data for template analysis

Interviews from the EIC group were conducted face-to-face, audio-recorded, and transcribed verbatim. The pre-existing data set with the SIC interviews had previously been conducted face-to-face and transcribed as well. For examples of the ICs, see Table 2.

Template analysis was employed to derive meaning from the IC interviews with both data sets. Template analysis is a qualitative strategy used in analysing data thematically. It is a highly adaptable and flexible strategy, not aligned with any one philosophical or theoretical position, and can be adapted to the needs of any particular study (Brooks et al., 2015). The typical process is as follows:

1. The researcher familiarizes themselves with the interviews.
2. They develop an initial coding template, usually based on a subset of the data. This may include some theoretically derived tentative a priori themes. Emergent and a priori themes are organized in hierarchical clusters.
3. The initial template is then applied to further data and modified where needed (e.g., new themes added, themes moved within and between clusters).



FIGURE 1 Example drawing of EICs left to right, top row to bottom row: Zoe the mole, Rosie the horse, ruby the girl, and hat the boy.

4. This is repeated until all the data relevant to the research question can be coded to a theme. A final version of the template is then defined.
5. All data across the full data set are coded to the final template.

For this study, the second author examined the initial template for coherence and clarity as an expert in the method. They did not independently code original data. Original data were coded by the first author and a second coder who was not aware of the IC status of the children. The final template from the present study is shown in Figure 2.

2 | FINDINGS

2.1 | IC creation status

Of the nine children in the IC intervention, all reported an IC at T4, one reported no IC at T5, but then subsequently reported the IC as re-emerging at T6, and one child reported no IC at T6. One child moved out of the district so was

TABLE 2 Examples of elicited and spontaneous ICs from children

ICs name	IC type	Descriptions of elicited and spontaneous ICs
Zoe	EIC	A mole who begin as a mother to 44 babies who grew into toddlers and children throughout the study. When the child finds things hard Zoe helped, and the two joked around and talked about jokes.
Rosie	EIC	A rainbow horse with an ice-cream cone on her head that plays with the child in the park and pushes her on the swing. Throughout the study Rosie would play Ludo with the child and her family because it made it so the family of three could have a fourth to play.
Hat	EIC	A 7-year-old boy who is blue and sleeps under the child's bed in his trundle 'drawer' throughout the study. The two go on adventures in trees.
Ruby	EIC	A dark haired girl with pale skin. The child played with her at the park throughout the study, and surprises the child without telling her she is coming. She goes to a school near the child and meets up after school.
Mr. Nobody	SIC	A smartly dressed ghost who is nice to the child but likes to trick the child's family, and sometimes pops out of the ceiling to surprise the child. Mr. Nobody is sometimes distractible, and enjoys playing in the back garden.
Jack	SIC	A naughty blue haired companion who wears green football gloves and loves to do tricks for people. The two play and tell stories together. When the child tries to punch Jack their hand goes right through Jack's belly.
Sophie	SIC	This IC has brown hair and blue eyes and has a preference of only wearing brown clothes. The IC walks home with their child and they play tig together.
Elizabeth	SIC	A freckled, brown haired IC with a nice voice who started meeting up with the child when the child was 2-years old. The IC likes to imagine the child.

Note: Descriptions are taken from all three IC interviews given at T4, T5, and T6.

Template for IC Creation Study

Theme 1: Realistic Play

1.1: Biological Animacy

1.1.2: Human to Non-human

Theme 2: Multifaceted IC Mind

2.1: Social Attributions

2.2: Valence

Theme 3: Utility of the IC

3.1: Play Functions

3.2: Instrumental and Emotional Help

3.3: Intellectual Engagement

Theme 4: Elicited ICs Across Time

4.1: Continuity of IC Stories

4.2: Development over Time; IC's Lifespan

FIGURE 2 Finalized coding template for template analysis

unable to participate in T6, however, maintained an IC until she had moved. Children will be given their IC's name as a pseudonym throughout the results section. The EIC children's pseudonyms used in this section are: Flower, Zoe, Rosie, Ruby, Vanilla Pea, Chloe, Milly, Hat, and Blossom. SIC children's pseudonyms are; Callum, Mr. Nobody, Ragid, Elizabeth, Sophie, Dad, Jack, Harry, and Wiggly Woo.

2.2 | Template analysis of all IC interviews

The initial coding template included two priori themes with corresponding subthemes: *Multifaceted IC Mind* and *Utility of the IC*, based upon previous literature (e.g., Armah & Landers-Potts, 2021; Davis et al., 2018; Gleason, 2017; Hoff, 2004; McInnis et al., 2013). The literature on the *Multifaceted Mind* theme relates to ICs having minds of their own and this being a major factor in IC creation (Davis, 2020; Harris, 2021), while the *Utility of the IC* theme is also inherent in SIC creation and has been found to be an important factor for both neurotypical and neurodivergent children (Davis et al., 2018; Gleason, 2017). Further themes and subthemes were developed through the iterative process of applying the template to the remaining 10 interviews and using this to identify other conceptual properties that came out of the IC interviews, modifying it where required, and applying again. All 18 interviews were analysed. The final template included four main themes: *Realistic Play*, *Multifaceted IC Mind*, *Utility of the IC*, and *EIC Across Time*. These and their constituent subthemes are described below, with illustrative quotes.

2.3 | Theme 1: Realistic play

Children rarely focus on fantasy themes when describing their ICs, sticking to more realistic plots. Generally, there were no paracosms where ICs lived; rather, they resided on earth alongside humans, though some ICs had fantastical appearances. This theme is in keeping with the theoretical stance that children recruit their real-world knowledge in pretend play to create imaginary yet real possibilities, helping them navigate their everyday reality (Harris, 2021). Flower explained her EIC slept with her taking up space on the bed between a pony doll and another IC: 'I let my pony sleep in the middle so that me, Flower and Lola can fit.' Sophie explained her SIC '... sleeps in the same bed and lives with me,' while Wiggly Woo (SIC) plays with his friend 'in the bath every night.' See Figure 1 for example of IC appearances.

2.3.1 | Subtheme 1.1: Biological animacy

Children's stories about their ICs showed biological animacy in keeping with human biology. They slept, heard things, saw things, and talked about things. Rosie (EIC) described a silly moment with her IC, explaining that 'She was on the toilet because she forgot to close the door because she was so urgent.' While Mr. Nobody (SIC) explained that, 'We talk about normal things people talk about.'

2.3.2 | Subtheme 1.1.2: Human to non-human

The appearances of the ICs in the SIC group tended to be described as humans with human features; however, the EIC group was more likely to describe their ICs as animals with imbued human features (three humans and six animals/fantasy creatures). For example, Zoe (EIC) describes hers as 'a mole. She's got rainbow skin, and a pink nose, and some rainbow ears,' but also Zoe's IC wears skirts and dresses like a human would. In contrast, Jack (SIC) had 'blue hair and wore green football gloves' while Elizabeth (SIC) says hers 'has freckles and brown hair and I like the way she talks.' Even the animals spoke with the children as a human friend would and interacted as a human might interact.

2.4 | Theme 2: Multifaceted IC mind

Most ICs described by the children possessed their own minds. ICs had features of independent thought, for example, children reported that their ICs could imagine and surprise them. The ICs sometimes would oppose the children

or challenge them or their rules, as Rosie (EIC) explains, ‘Sometimes she makes me wash her clothes.’ While Ragid (SIC) ‘doesn’t follow the rules.’ This theme also suggests that ICs could be seen as social beings rather than imaginary entities with no substance. Ruby explains her IC surprising her.

...she goes to my birthday and then she does not tell me and she just goes and she surprises me when I go. (EIC).

2.4.1 | Subtheme 2.1: Social attributions

ICs were clearly seen not only as having their own mind, but also mental states, perceptions, cognition, and relationships. Some researchers have termed this social attribution (Klin, 2000). The ICs had relationships and personality traits. For example, Ragid (SIC) explains that his IC finds things he says funny ‘cause when he says funny words I go like haha and it makes him laugh and he fell in the bath once with his clothes on.’ The ICs also had emotions, intentions, and motivations according to the children’s descriptions. Vanilla Pea (EIC) describes her IC’s preferences: ‘She doesn’t like games but she likes Pokémon. She doesn’t like playing ghost busters. I don’t like ghost busters either that is why we don’t play.’

2.4.2 | Subtheme 2.2: Valence

Children mentioned ICs with both positive and negative valence throughout interviews. This supports McInnis et al.’s (2013) finding that IC-child relationships fall along a continuum in terms of valence. ICs can have positively valenced relationships with children where the child is very much in charge of the relationship, but research has also reported that some children report that their ICs are mean or make them do things (Taylor et al., 2007). An example of the latter is from Chloe,

...sometimes she does not do what she’s told and sometimes she wakes me up at half past two in the morning! She just tells me to go to sleep when it is not even night time! (EIC).

Another can be seen from Mr. Nobody.

... when I ask him to help me he does not always help because he wants to do something else (SIC).

2.5 | Theme 3: Utility of the IC

Every child reported their IC as having a use, and ICs could seemingly have multiple uses at once. Some children used ICs for play. For example, Harry (SIC) reports, ‘We play tennis together outside.’ Others engage more emotionally. Zoe (EIC) describes when her IC comforts her at night, ‘...even though I have another big teddy, she always makes sure I don’t get hurt.’ Intellectual engagement is also a use of the IC. Flower (EIC) and her IC ‘talk and play and read stories together.’ Each use permeated the discussion, as this seemed to be why the child enjoyed speaking about their IC.

2.5.1 | Subtheme 3.1: Play functions

All children reported that their IC played physical games with them (e.g., giving pushes on swings, playing ballerina, and playing board games). Imaginary games were also reported by the children. Milly reports,

We play fetch the balls... I have to try and tig her and when I've tigged her its her time to hide the ball and then I try to get it and she's trying to get me too (EIC).

While Calum explains,

We sometimes pretend that there is a ghost behind the curtain. We go into a tunnel and we see a ghost and we run out (SIC).

These are typical reports for children, and one of the reasons why researchers believe that one of the main functions of an IC is to relieve a child's loneliness (Nagera, 1969; Taylor, 1999).

2.5.2 | Subtheme 3.2: Instrumental and emotional help

Emotional helping was another theme that was found throughout the IC interviews, evident when the child had an emotional issue and the IC was able to help the child deal with it. (e.g., helping a child not be sad or afraid of the dark, or talking with the IC when something is bothering the child). Dad (SIC) explains, 'we talk if something bothers me.' Blossom also describes how her EIC does not talk about what is up with her, '... but we talk if something is bothering me.' While Zoe (EIC) describes instrumental help, 'She always helps me when I can't do stuff... When I find stuff hard she always helps me.'

2.5.3 | Subtheme 3.3: Intellectual engagement

Intellectual engagement was reported by children, covering such things as jokes, playing tricks with the IC, reading together, or teaching each other about things. This theme is also congruent with past research on IC functions, where ICs interact with the child to fulfil a child's desire or need (Gleason, 2017). Rosie shows how intellectual engagement works with her IC.

She's taught me how to do phonics, and she teaches me how to learn that. So when my mummy and daddy aren't looking at me when I do my maths she helps me with some. (EIC).

Mr. Nobody engages intellectually, but in contrast to Rosie's academic engagement, Mr. Nobody engages by manipulating others' epistemic states, tricking members of the family.

Because he is very nice ghost and always tricks my mum and dad and sister saying he is here because they cannot see him but I can. (SIC).

2.6 | Theme 4: Elicited ICs across time

The IC interviews in the elicited group were given at T4, T5, and T6. This was so that if the children kept their ICs, the development could be seen and investigated longitudinally. Thus, the EICs were examined alone in the final theme, as there were no longitudinal results for the SIC data set. Because each of the nine children were given the same format of the IC interview three separate times (with the exception of one child moving away at T6), this resulted in 26 separate IC interviews.

Themes of development and change across time, like the ICs growing up, as well as story stability, emerged while analysing the interviews. The lives of these made-up characters became rich, and there was continuity to the stories

TABLE 3 Comparisons of the elicited and spontaneous groups of imaginary companions

Theme/subtheme	Elicited group N	Spontaneous group N	Reported total N
1. Realistic play: play couched in reality reported	9	9	18
1.1. Animacy: having animacy reported	6	7	13
1.1.2. Human to non-human: human form reported	3	7	10
2. Multifaceted mind: human-like mind reported	9	9	18
2.1. Social attributions: social attributions reported	9	8	17
2.2. Valence: positive or negative valence reported	8	7	15
3. Utility of the IC: function for IC reported	9	9	18
3.1. Play functions: play function reported	9	9	18
3.2. Instrumental/emotional help: instrumental/emotional help reported	3	2	5
3.3. Intellectual engagement: report of intellectual engagement	4	3	7
4. Elicited ICs across time: IC was reported at more than one timepoint	8	-	8
4.1. Consistency of IC stories: stories or narratives matched over time	4	-	4
4.2. Development over time: ICs aged or grew up over timepoints	4	-	4

Note: Counts only refer to whether a child engaged in this theme or not, rather than the number of times that the theme was engaged with. Some themes overlapped, so counts for one response could cover two themes. Themes one to three consist of 18 all 18 children. The fourth theme consisted of only the 9 EIC children. One child moved away, thus only eight children are counted in this theme.

and the ICs' minds. Vanilla Pea spoke about how she always had set times to meet up with her IC and this storyline was touched upon in T5, 'We meet up about ten past nine. Her parents decide when we meet up,' as well as T6, 'I should meet her at nine, hang on, no, eleven.' These findings are relatively novel, because there have not been many longitudinal studies that look at ICs creation and development (Wigger, 2019).

2.6.1 | Subtheme 4.1: Continuity of IC stories

Once created, narrative around ICs in this study stayed the same generally in terms of names and their story lines. If an IC played a certain role in a child's life, it tended not to change. At T4, Rosie was used to, 'play Ludo together it's a game and you need four people,' and later on at T5, she still reported, 'We play Ludo because then my mum and dad can also play.' Children who reported stories about ICs, generally described similar stories throughout the interviews. For example, part of Hat's story was where he slept. Hat explained that his IC slept in his trundle bed at T4, 'He sleeps under my bed.' He becomes exasperated 3 months later at T5, explaining, 'He still sleeps in the drawer under my bed,' and then 3 months after that at T6, he explains again, 'He sleeps under my bed because I've got the drawer under my bed.'

2.6.2 | Subtheme 4.2: Development over time; IC's lifespan

Some children had storylines incorporating the specific IC's development. They grow and change or their children grow up over the 6 months of IC interviews, whilst retaining the continuity of identity noted above. Zoe's IC had

children that grew very quickly. At T4, she reported about her IC, 'And her babies are the same. and they wear skirts and dresses.' Three months later, at T5, the babies had grown, 'Zoe has 44 toddlers. very pretty girls!' and yet again 3 months after that at T6, 'They were one now they are five and she is 18. She is brown with a pink nose and she wears pretty dresses.' There were no reports of an IC dying, but this would not be expected as the children had only created the IC 9 months prior by T6.

For an overview of the counts for children reporting all themes, see Table 3.

3 | DISCUSSION

This exploratory study set out to determine whether interventions endorsing ICs could elicit their creation in young children who had never engaged in this imaginative behaviour. This was not only verified, but once created, IC play endured for an extended period of time. These ICs were realistic, imbued with their own mental states and social lives that persisted, and stable personalities, as exemplified in the main themes on the final template. Furthermore, similar themes generally ran through both the EIC and SIC interviews, however, EICs were more likely to be animal-like in appearance than human-like.

As the first attempt to elicit ICs in an intervention, this study was successful. This result is in line with research on child-caregiver interaction with imagination games and in line with theory of adult scaffolding of imagination (Gleason, 2005; Vygotsky, 1967; Weisberg et al., 2013). Gleason (2005) reported that parents of children with ICs were more knowledgeable about their imagination games, concluding that their increased imaginative interaction might create an imagination intervention of sorts. Furthermore, the intervention itself, whether it be from a parent or a researcher, could be viewed as scaffolding the child to master a play behaviour that they might not employ when alone (Weisberg et al., 2013).

Adult scaffolding of play behaviours could be one explanation for the enduring realistic characteristics seen in the EIC group, as once the children were scaffolded on how to engage in this type of imaginative play, the behaviour ran the predictable course reported in SIC literature, where children reported on the EIC similarly to their SIC peers (Taylor, 1999; Wigger, 2019). Perhaps, the IC intervention was then able to direct children enough to harness their natural inclination to create another imaginary being (Goldstien, 2017), which then the child would likely build to look like any other SIC. Like those reported in the SIC literature (Carlson & Taylor, 2005), each EIC was different. Future studies may want to examine whether EICs with more detailed stories came from children with higher fantasy predisposition scores.

The template analysis brought out themes often seen in SIC creators' conceptualizations of ICs throughout the body of research (Armah & Landers-Potts, 2021; Davis, 2020; Gleason & Hohmann, 2006; Hoff, 2004; McInnis et al., 2013; Moriguchi & Shinohara, 2012). The first theme, Realistic Play, showed that both SIC and EIC groups may have been imaginary, but they were nested in the child's reality. This theme supports Harris (2021), who explains that most ICs are based on ordinary people.

Having a human mind is the second overarching theme. As found previously (Davis, 2020; Harris, 2021), both groups of children created ICs with minds of their own, sometimes with completely separate thoughts, feelings, and ideas from the creator, sometimes with the creator largely directing the IC's thoughts. This links to research done by McInnis et al. (2013) on IC valence, as well as Moriguchi and Shinohara's (2012) research showing that IC children assign biological properties to an invisible person but not a stone. Children made social attributions toward the ICs congruent with findings that neurotypical and autistic children both used social attributions to describe their ICs (Davis et al., 2018).

The third theme of the IC has utility for the child, has been seen before in IC research (Davis, 2020; Gleason, 2017; Hoff, 2004). All children used their IC for particular purposes. The majority of children reported playing with their IC as one of its uses. Some reported more emotional helping scenarios, while others were used intellectually. The specific utility of the IC seems to vary from child to child, as the child creates the IC tailored to

their own needs, and the child creator may have a few uses for their IC (Davis, 2020). Future larger-scale research could help determine whether the pattern of uses differs between SICs and EICs.

Finally, EICs were looked at over time to determine whether they endured. Research supports that IC creation follows a predictable path where a child creates their IC, the IC is played with over a period of time, and then eventually disappears or is no longer mentioned (Taylor, 1999). The EICs in this group seemed to be still a part of the children's play behaviour post intervention in the T4, T5, and T6 interviews for all but one child. Future research could follow children to determine when endorsed ICs lives end.

Although the themes between the two groups of ICs did not seem to differ, the form did drastically. All but two children in the intervention chose animal-like ICs, most likely because of the intervention protocol itself. During the first intervention, children were instructed that they could pick an animal or a human as their IC. As each child decided, they were asked to describe the IC that they were making to the group, and most chose the animal option. Children most likely influenced each other. Although EIC forms were animals, they had human minds. In the future, research protocols should bear in mind this possibility, as animal minds might be conceptualized differently than human minds. Although this difference in animal form did not seem to suggest any other way that EICs might function differently, further research would need to be done to explain this finding.

There were a number of limitations in this study that need to be considered. The main limitation was the small number of children and interventions with only nine children recruited, and four interventions over the 12-week period. This was appropriate for an initial exploratory study, enabling us to examine the nature and function of ICs in detail through the interview approach. However, to allow generalizability, future research would benefit from recruiting more children and involving them in a greater number of intervention sessions (Bierman & Motamedi, 2015). Larger studies, in terms of participant numbers and scale of interventions, would allow more systematic comparisons of EICs and SICs, and enable the identification of general trends in this phenomenon; for instance, how IC characteristics relate to personality type or verbal ability levels.

Another limitation is that EIC children could have reported having an IC at 12-weeks simply because they had just finished their final IC intervention and the same researcher was asking them whether they had an IC. This could prime children to answer that they had an IC, however, this seems unlikely as reports matched at both 24- and 36-weeks when the same questions were asked. In future, it may help to ensure children do not associate one researcher with ICs and to use different researchers to run the intervention and interview the children. Also, having parents corroborate the IC play would be a way to be more certain that children are not impacted by demand characteristics.

Play interventions have been utilized in various therapeutic and educational settings in past studies, indicating that pretend play interventions could be beneficial to autistic children (Golan et al., 2010; Kang et al., 2016), those who have anxiety and phobias (Drewes & Schaefer, 2018), and typically developing children as well (Goldstien, 2017). Play therapy has been found to help children work out problems in a safe environment, foster attachment, and process feelings (Gil, 2015). Our demonstration that children can create EICs suggests a potential offshoot of play therapy could be created, IC play therapy. Assuming an IC first or dynamic direction of causality, this could help children process emotions as well as foster sociocognitive abilities. If the direction of causality is social skills first, IC interventions could still be beneficial in solidifying the knowledge that they already have, in line with Vygotskian theory. For example, an EIC intervention could help children who struggle with conflict in friend relationships to explore how to resolve issues.

There has been recent research on adults deliberately creating tulpas, imagined entities that are seemingly autonomous, to relieve loneliness (Davies, 2022; Veissière, 2016). Perhaps future research could take this a step further and determine whether EICs for adults would be beneficial.

Future studies would be well placed to examine whether there are differences in gains in terms of social skills for children in typical play interventions in comparison to IC interventions. It would also be important to use control groups and a group of SICs, in future interventions to be able to discover whether there were differences between these groups, as it might be that the mere fact that the EIC is elicited makes EICs and SICs different.

This exploratory study supports the notion that children are able to create ICs that seem comparable to those spontaneously created via an intervention, opening up an avenue for further research into IC creation. With more research on IC interventions, researchers would no longer be confined to more correlational studies and would be able to focus on causal models, which in turn could open the field of IC research in a way that it has never been able to be examined as well as potentially opening up a new type of therapeutic play intervention.

AUTHOR CONTRIBUTIONS

Paige Davis: Conceptualization; data curation; formal analysis; funding acquisition; investigation; methodology; project administration. **Nigel King:** Formal analysis; methodology. **Elizabeth Meins:** Conceptualization; data curation. **Charles Fernyhough:** Conceptualization; data curation.

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CONFLICT OF INTEREST

There are no financial interests or benefits arising directly from this research.

PEER REVIEW

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DATA AVAILABILITY STATEMENT

This study was approved by the university ethics committee. Due to privacy and ethical restriction, the data are not publicly available, but on request from the corresponding author.

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APPENDIX I: PROTOCOL/STUDY SCRIPTS

Sessions are based on the four different sections of the IC interview (Hepworth, 2007; Taylor & Carlson, 1997). Session T1 was held after parents identified their child as not having an IC. Sessions T2, 3, and 4 were held every four weeks. Parents received a description of each intervention and encouragement to elaborate on the imaginary play in a note sent home with the child after each session. To find an example of the parent notes see Appendix II. For a full script for each session please contact the corresponding author.

Session #1(T1): Create and describe the imaginary companion

Before the first session the researcher had a short 2–3 min one to one conversation with the children asking them to describe their best friends (Meins et al., 2006). This was intended to steer children toward thinking about friends. Initially it was also to measure mental state descriptions of friends, but there were not enough participants to measure this variable.

Next, the researcher saw the children in a group. The group was asked to sit in a circle and the session began with the researcher leading the children into talking about creating an IC using well-known television and pop culture examples (e.g., *Charlie and Lola*, Bing Bong from Disney's *Inside Out*). Children were encouraged to then create their own and given time to think about what their friend might look like or how they might behave. There was a group discussion on what types of IC each child might want to make (animal, human, alien). After this each child went around the circle and talked about their IC. No child was resistant to creating the IC, although some children changed their ICs as they heard other children's ideas. There had been a contingency plan that if children do not want to create an invisible IC, this would be noted and all children in the group would also have the option to create a personal and describe one of their dolls or toys (a personified object). At the close of the group children were encouraged to play with their friend once a day, or a few times a week until the researcher returned. They were told that the next time they see the researcher their new ICs will meet other ICs in a group, and both the children and the ICs will be getting a surprise. A personalized debrief was sent home with the name of the new IC and information on the intervention.

Intervention #2(T2): Draw the imaginary companion and talk about activities

Children began in a circle and were asked about whether the researcher or their peers could see their IC as an indicator question to ensure the ICs were typical. Then the group engaged in a discussion where they introduced their newly created IC to the rest of the IC children, and spoke about what they had been doing with their IC, if they had been playing with them. The children were given boxes of crayons and paper and asked to draw the ICs at tables. They were given 15 min in total to draw. There was variability in when children finished, so if they finished they were told to draw whatever else they wanted on a different piece of paper. When all children had finished drawing their ICs, the researcher gave children the chance to show their IC to the other children, and explain their drawing. Caregiver notes were sent home.

Intervention #3(T3): Conversations with the imaginary companion

The group began in a circle where the researcher asked if they or their peers could see the IC they had created. Children were each given a play mobile phone resembling an iPhone to stimulate the play and asked to have a conversation about any topic they choose with their IC. The researcher brought prompts (e.g., what happened at school today? What sport do you like? Who is your best friend?) for the children in case they were stuck for what to talk about with their IC. They were told that they could go anywhere in the room to have their calls. Children played alone on the phones for 8 min talking with their IC. The children reported back and discussed the conversations that they had with the IC. These descriptions of the conversations were recorded and transcribed later. Children were given the drawing of the IC which they had made in intervention T2 to take home and show their caregiver with the note explaining what happened during the T3 intervention.

Intervention #4(T4): Independence

Children began in a circle and were individually asked if their peers or the researcher could see their IC. After this, the researcher talked about different things that the children could imagine with their IC, such as whether their IC had relatives of their own, and whether they could teach the IC things, or the IC could teach them things. They also talked about whether the IC could surprise them. Children were introduced to boxes of imaginary objects to play with their friends. Some children played with their ICs after being told they could play, others decided that they wanted to talk on the phone again, and others got the imaginary balls out of the boxes to play catch. The researcher joined in as much as possible. Children were encouraged to continue to play with their IC and the final carer note was sent home.

After the intervention, all children were visited in a quiet area of the school and given the IC questionnaire (Hepworth, 2007; Taylor & Carlson, 1997), as well as asked about their real friends using the describe-a-friend interview (Meins et al., 2006).

APPENDIX II

Hello Parents and Caregivers,

_____ has just completed his/her fourth imagination session. We talked about whether or not their imaginary companion, _____ has family of their own, whether your child could teach the friend skills that they know, if the friend could surprise them, and generally talked about things that they can continue doing with their friend as this is our last session. We also talked about real friends in this session. We encourage you to continue to play with this imaginary friend even though we will not have any further sessions. You can expect that your child will get a visit to talk with me in about 3-months and at the beginning of next school year. Thank you for your participation in this part of our project. I look forward to talking with your child in the future.