



Durham E-Theses

Does Having an Imaginary Companion Relate to Children's Understanding of Self and Others?

DAVIS, PAIGE,ELIZABETH

How to cite:

DAVIS, PAIGE,ELIZABETH (2011) *Does Having an Imaginary Companion Relate to Children's Understanding of Self and Others?*, Durham theses, Durham University. Available at Durham E-Theses Online: <http://etheses.dur.ac.uk/806/>

Use policy

The full-text may be used and/or reproduced, and given to third parties in any format or medium, without prior permission or charge, for personal research or study, educational, or not-for-profit purposes provided that:

- a full bibliographic reference is made to the original source
- a [link](#) is made to the metadata record in Durham E-Theses
- the full-text is not changed in any way

The full-text must not be sold in any format or medium without the formal permission of the copyright holders.

Please consult the [full Durham E-Theses policy](#) for further details.

Academic Support Office, Durham University, University Office, Old Elvet, Durham DH1 3HP
e-mail: e-theses.admin@dur.ac.uk Tel: +44 0191 334 6107
<http://etheses.dur.ac.uk>

**Does Having an Imaginary Companion Relate to
Children's Understanding of Self and Others?**

Paige E. Davis

Submitted for Degree of Doctor of Philosophy

**Durham University
Department of Psychology
2011**

Declaration

I declare that all of the material presented herein is original work, of which no part has been reproduced elsewhere and which is solely the work of the author of this thesis. The data in Studies 2 and 3 were collected as part of a larger longitudinal study funded by the Economic and Social Research Council, with Dr. Elizabeth Meins as the Principal Investigator. Although the author was not responsible for collecting the data reported in Studies 2 and 3, she was solely responsible for transcribing, coding and analysing all of the IC interviews and friend descriptions (Study 2), and transcribed, coded, and analysed the private speech data used in Study 3.

Copyright

The copyright of this thesis belongs to the author, Paige E. Davis. No quotation from it should be published in any format, including electronic and the internet without the author's prior written consent. All information derived from this thesis should be acknowledged appropriately.

Acknowledgements

I would like to thank all of the schools that participated in my studies, especially the children and parents who were all so enthusiastic. Also the heads of the schools who after hours of recruiting phone calls were so kind to take time out of their busy days and open their schools to me for this research. The Tees Valley Baby Study and Bronia Arnott who is a wealth of information, both with my PhD and with life in general.

The Durham University psychology department and all of the friendly faces that I see in the hallways, especially Liz Meins who has provided me with the intricate balance consisting of enough guidance that I know where I am headed, but enough freedom to carry this work out autonomously. Chas Fernyhough, who was also a great supervisor and always on the other end of my emails to give advice. Bob Kentridge who made sure I was on track. The other PhD students and IT techs who commiserated with me every step of the way, especially; Lisa, David, Jane, Anastasia, Elaine, and Richard.

Lisa and David who stood by me through everything and gave me a place to stay when I was broke and in need. The Warbrick family who gave me not only a home, but a shoulder to cry on, a bed to bounce on, and a place where I really felt like I belonged. Julia, you and your family set the bar high. I can only hope to be able to make a family as loving and amazing as yours.

My family and friends in America and abroad who put up with my emails and calls at weird and horrendous hours. Especially; Mom, Dad, Noah and, Rob. Also, Catherine, Vidya, and Fiona who may be the coolest travel companions, roommates, and surfer chicks ever. Finally, the crew in Egypt and San Diego who made the last steps possible, Vahik at Windansea cafe, and MK you are the best!

This thesis is dedicated to my brother:

Noah, you literally and figuratively gave me the wings
to complete this. I would not have
been able to do it without you.

Abstract

Imaginary companions (ICs) have been discussed in psychological literature for centuries. Over the last decade, researchers have begun investigating how having an IC relates to children's development, but they have focused on a narrow range of social-cognitive abilities. This thesis expands upon previous studies, investigating whether having an IC relates to children's understanding of self and others.

The first study focused on whether IC status related to children's ability to cite themselves versus an adult as the best judge of their interior self-knowledge (e.g., whether they were hungry, ill, angry, etc.) in a sample of 82 4- to 7-year-olds. Findings indicated that children with ICs tended to designate less knowledge about their inner states to adults compared with children with no imaginary companion (NIC), with a non-significant trend for IC-group children also to designate more knowledge about their own inner states to themselves. The results of Study 1 showed that performance on the self-knowledge task was unrelated to children's theory of mind (ToM) abilities, and that IC status did not relate to children's ToM performance.

Study 2 addressed the relation between IC status and the extent to which children invoked internal states when describing their best friend in a sample of 144 5-year-olds. Findings confirmed that children with ICs are more likely to spontaneously use more mental states when describing a friend than their NIC peers. This relation was independent of verbal ability, gender, ToM understanding, and overall verbosity. Study 2 found no relation between IC status and either previous or concurrent ToM performance.

Study 3 investigated the IC-related differences in the use of self-directed or private speech during free play in the same sample of 5-year-olds who had participated in Study 2. Findings indicated that children with ICs produced more overall private speech

than did NIC children. Specifically, IC-group children produced more covert, partially-internalised private speech (unintelligible muttering, whispering, verbal lip movements) compared with their NIC counterparts, although there was no difference between the IC and NIC groups with respect to the content of their private speech. Findings are discussed with reference to how engaging with an IC provides the child with an enriched social environment that helps to hone their skills of distinguishing between the mental orientations of themselves and others, and also with reference to the social origins of private speech.

Table of Contents

Chapter 1 Imaginary Companions and Their Role in Socio-cognitive Development	1
1.1 Background.....	1
1.2 Prevalence.....	3
1.3 Variables Relating to the Creation of Imaginary Companions.....	6
1.4 The Developmental Significance of Imaginary Companions.....	10
1.5 Fantasy and Reality.....	15
1.6 Depth of Imaginary Companion and Other Functions.....	18
1.7 Theory of Mind and its Links to Imaginary Companion Status	20
1.8 Themes of the Thesis	26
Chapter 2 Imaginary Companions and Self-knowledge.....	29
2.1 Introduction.....	29
2.2 Method	40
2.2.1 Participants.....	40
2.2.2 Procedure and Materials	41
2.3 Results.....	49
2.3.1 Descriptive Statistics and preliminary analysis	49
2.3.2 Attribution of Knowledge to Self versus Adult	51
2.3.3 The Relation Between Imaginary Companion Status and Children’s Self-Knowledge	52
2.3.4 The Relation Between Imaginary Companion Depth and Children’s Self-Knowledge	55
2.3.5 The Relations Between Theory of Mind and Self-knowledge.....	56
2.3.6 The Relations Between Imaginary Companion Status and Depth and Theory of Mind.....	58
2.4 Discussion.....	58
Chapter 3.....	69
3.1 Introduction.....	69

3.2	Method	73
3.2.1	Participants.....	73
3.2.2	Procedure and Materials	74
3.3	Results.....	77
3.3.1	Descriptive Statistics and Preliminary Analysis	77
3.3.2	Predictors of Children’s Mentalistic Descriptions of Their Best Friend	79
3.4	Discussion.....	83
Chapter 4.....		89
4.1	Introduction.....	89
4.2	Methods.....	98
4.2.1	Participants.....	98
4.2.2	Procedure and Materials	98
4.3	Results.....	104
4.3.1	Descriptive Statistics and Preliminary Analyses	104
4.3.2	Imaginary Companion Status and Private Speech	106
Lip	107	
	Movement/Unintelligible.....	107
	BPVS Standardised Score at 50 Months.....	107
	Maternal Education.....	107
4.4	Discussion.....	108
Chapter 5.....		116
Imaginary Companions: Conclusions, Discussions, and Future Directions		116
5.1	A Synopsis of the Three Studies Reported in this Thesis.....	116
5.2	Integration Across Empirical Studies	120
5.3	Issues of Causation	121
5.4	Future Research	134
5.5	Limitations	137
5.6	Conclusions.....	141

References.....	143
Appendices.....	175
Appendix 1 Self-Knowledge Interview (Mitchell et al., 2006)	175
Appendix 2 Theory of Mind Battery (Wellman & Liu, 2004; Hughes et al., 2000) ..	177
Appendix 3 Imaginary Companion Interview	182
Appendix 4 Parental consent and Imaginary Companion Questionnaire	184
Appendix 5 A Brief Account of all Children’s Imaginary Companions and Personified 187	
Imaginary Companions and Personified Objects Presented in This Thesis	187
Study 1: Self-knowledge.....	187
Study 2: Friend Description	188
Study 3: Private Speech	191

List of Tables

Table 2-1 Depth of Imaginary Companion Examples	48
Table 2-2 Means and Standard Deviations for Preliminary Variables	50
Table 2-3 Means, Standard Deviations, and t-test Scores for Child-Adult Knowledge Paired t-tests.....	52
Table 2-4 Means and Standard Deviations for Self-Knowledge Task: Adult Condition ..	54
Table 2-5 Means and Standard Deviations for Self-Knowledge Task: Child Condition .	55
Table 2-6 Bivariate (Pearson's r) and Partial Correlations for Child's Performance on Theory of Mind Tasks and Self-knowledge Scores Relating to Child Knowledge	57
Table 2-7 Bivariate (Pearson's r) and Partial Correlations for Child's Performance on Theory of Mind Tasks and Self-knowledge Scores Relating to Adult Knowledge.....	58
Table 3-1 Mean Theory of Mind, Friend Description, Receptive Verbal Ability, and Maternal Education Scores as a Function of Imaginary Companion Status.....	79
Table 3-2 Summary of Hierarchical Regression for Predictors of Children's Mentalistic Descriptions of Friends (N=140)	80
3-3 Summary of Binary Logistic Regression Analysis for Children's use of Mentalistic Friend Descriptions Dichotomously (N=140)	82
Table 4-1 Means, Standard Deviations, and Ranges for All Variables	105
Table 4-2 Means and Standard Deviations for Private Speech Categories as a Function of Imaginary Companion Status and Gender	107

Chapter 1

Imaginary Companions and Their Role in Socio-cognitive Development

1.1 Background

When Sonia began preschool, she met Lucy. Her mother was excited to have her new friend over to play. According to Sonia, Lucy had light skin and crazy curly hair, and a brother named Martin. The thing that Sonia had neglected to elaborate on was that her friend Lucy was invisible. Lucy was an imaginary friend of Sonia's creation.

Imagination is a function that is prevalent in typically developing human beings. Imaginative play begins in a child's life around 18- to 24-months and has been reported in younger children as well (Friedman & Leslie, 2007). Pretending seems to be more widespread in humans, as it is rarely seen in non-human primates (Gómez, 2008), and on the rare occasions when it is observed in non-humans, the play is at a developmentally slower pace and involves scaffolding (Lyn, Greenfield, & Savage-Rumbaugh, 2006). Vygotsky (1931/1997a) asserted that "the difference between animal and man is lack of imagination" (p. 224). It is clear that imagination is an integral part of typical human development. One of the earliest outward manifestations of a child's imagination is the ability to pretend.

Pretend play has been argued to facilitate children's development by creating a safe environment to assimilate or represent reality while simultaneously serving as a strategy to make sense of the world (Harris, 2000). The ability to explore through play

gives the child an outlet for investigating different scenarios while maintaining the authority to manipulate the outcome of the imagined situations (Bouldin, 2006). Sonia's story, and those of other children with an imaginary companion (IC), are good demonstrations of the way children use imagination and pretend play as an exploratory outlet. At an early age, children are already engaging with pretend play to provide themselves with a stage of their own creation where anything can happen as they perform a scene, simultaneously taking on the role of the actor, director, and audience.

An IC is described by Svendsen (1934) 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 the type of imaginary play where an object is personified or which the child takes on the role of a character” (p. 988). Studies on ICs are sparse in comparison to other facets of imagination and pretend play. Although research interest in ICs has increased over the last decade, there are still many unanswered questions (Taylor, Carlson, Maring, Gerow, & Charley, 2004) resulting in little information being known about what kinds of children create ICs, where they fit into a child's developmental trajectory, and when and why they disappear (Taylor, 1999). The overall significance and function of the IC in children's development remain poorly understood (Gupta & Desai 2006). In short, ICs remain an important, yet under-researched manifestation of the developing child's active imagination.

1.2 Prevalence

ICs are often represented in popular culture. Throughout the years these entities have been depicted in books (Mark Twain's *The Mysterious Stranger* features a boy with a friend named Satan who is invisible), movies (the Oscar winning 1950s hit *Harvey* starring James Stewart as a mild-mannered man with an IC in the form of a six-foot rabbit), television programmes (the American children's programme *Sesame Street* starred Big Bird's imaginary friend Snuffleupagus), and even comic strips (*Calvin and Hobbes* tells the story of Calvin, an imaginative boy who plays with his stuffed tiger Hobbes who is very much alive to the boy). The four ICs above are all examples of how vastly different these entities can be both when represented in popular culture and when created by real children. ICs are as different and unique as the children who create them.

Estimates of the incidence of children having an IC at some point during childhood have ranged from 10% (Bouldin & Pratt, 1999) to 65% (Taylor et al., 2004). Generally, prevalence rates rest around 20–50% in children (Carlson & Taylor, 2005; Gleason, 2005; Gleason & Hohmann, 2006; Pearson, Rouse, Doswell, Ainsworth, Dawson, Simms, Edwards, & Faulconbridge, 2001).

Two main issues arise when interpreting IC prevalence rates: (a) the suggestibility of the child being interviewed, and (b) the inclusion criteria used by the researcher. With regard to suggestibility, the fact that the IC is a private phenomenon which occurs inside the child creator and cannot be physically seen becomes problematic to researchers because, to know whether a child has created an IC, an experimenter must inquire about it directly. In the first IC studies, researchers often asked children if they had an IC or not, and used the children's yes or no answers as the basis for assigning IC status,

disregarding the suggestibility of the child or their desire to please the interviewer (Hurlock & Burstein, 1932; Pearson, Burrow, Fitzgerald, Green, Lee, & Wise, 2001; Pearson et al., 2001). More current research is beginning to take into account how children's personality and disposition may affect their tendency to report an IC (Fernyhough, Bland, Meins, & Coltheart, 2007; Gleason, 2004a; Hepworth, 2007). It has been theorised that children who are more suggestible could be more likely to report an IC during interview without actually meeting the criterion for being an IC creator, due to the child's desire to answer the researcher's questions "correctly". However, to date no research has been done to test this theory. Of course, this type of researcher effect is a phenomenon which has to be addressed and taken into account in any interview setting involving children (Breakwell, Hammond, & Fife-Schaw, 2000).

In an attempt to rule out researcher effects and children's suggestibility, a corroborated parental questionnaire has been constructed enabling researchers to back up child report with parental confirmation of the IC's existence. A parent is, in effect, an expert on their child, so it should follow that they would know most about their child's fantasy lives. Evidence for the corroborated questionnaire measure can be seen in Gleason's (2004a) study on parents as IC reporters. The findings in this study showed that parents of children with ICs were found to corroborate their children's reports of involvement in fantasy play more accurately than parents of children with no imaginary companion (NIC). In short, this study suggests that parents of IC children should provide reliable testimony about their children's fantasy play behaviour and their IC.

The second issue influencing discrepant findings in IC prevalence rating is the inclusion criteria that investigators use in order to identify a child's IC status. Svendsen's

(1934) definition of an IC excludes imaginary play where, “an object is personified or where a child takes on the role of a character” (p. 988). However, ‘personified objects’ and character role-play involve distinct imaginative capacities. When a child impersonates a character (e.g., pretending to be Superman) it is qualitatively different from the creation of an IC. The child is simply acting as if they were a character whose attributes are already familiar to them. On the other hand, personified object (PO) play incorporates play that is much closer to IC play in terms of imaginative predisposition. A PO is classified by Carlson and Taylor (2005) as any “doll or stuffed animal who is treated as though they have a stable personality” (p. 95). Children endow these objects with human qualities and build fantasy around the PO. In this respect, the IC and PO embody two forms of imaginative play which do not differ in regard to use of imagination (Taylor, 1999).

As ICs have gained popularity in research domains, experimenters have used different justifications in order to examine POs separately from ICs (Bouldin, 2006; Gleason & Hohmann, 2006; Gleason, Sebanc, & Hartup, 2000), or to treat these entities as equivalent (Carlson & Taylor, 2005; Fernyhough et al., 2007; Taylor et al., 2004). Gleason (2004b) argues that ICs may perform a different social function than POs, observing that children’s social relationships with POs are vertical in nature, resulting in a hierarchical relationship where the child is the competent partner. Gleason further asserts that this type of hierarchical relationship may generalise to the children’s interactions with peers, “meaning that their concepts of friendship may also not be as structurally egalitarian” (p. 208) as those children with ICs who may create more

horizontal relationships. For these reasons Gleason suggests that it is important to treat ICs and POs as separate categories.

However, more recent research into the form and function of the IC counters this argument. According to some researchers, ICs can function in both horizontal and vertical relationships with the child depending on how long the child has played with the IC as well as how “real” the IC is to the child (Hoff, 2005; Taylor, Carlson, & Shawber, 2007). Taylor (1999) asserts that the IC is entwined with the stuffed animal, arguing that POs are provided by parents who respond to children’s interest in fantasy characters, or stories. The parent therefore creates a physical outlet for the fantasy to be acted out, whereas it would have been acted out in the absence of the PO as well. The arguments are both valid as there is no doubt that the IC and the PO are different entities; however, because the PO has a stable personality and identity to the child, the PO can also act as a type of IC indicating that a child is using their imagination in a similar way to the use that ensues when playing with an IC. It is important for research to standardise clearly what phenomena are being defined as constituting an IC, and to report their inclusion criteria for deciding a child’s (or any participant’s) IC status.

1.3 Variables Relating to the Creation of Imaginary Companions

Although it has been established that between 20 and 50% of a given child population create an IC (Gleason & Hohmann, 2006; Gleason, 2005; Carlson & Taylor, 2005), certain factors make their creation more likely. Age is a key variable to examine within the population of IC reporters. Knowing the age range at which IC creation is at its peak is important because there is much benefit in getting an accurate account of the

phenomenon while it is occurring. By interviewing children while they are interacting with their IC on a day to day basis, the experimenter receives the most precise and vivid descriptions of what the IC reporter is experiencing. A retrospective account of an IC may not be as rich a source of information as an account of an IC being experienced in the present. Children are also likely to forget that they had ICs as time goes on and therefore deny their existence at later ages.

Children aged 3- to 6-years are most likely to create ICs (Singer & Singer, 1990), however they have been reported in older pre-teens and adolescents (Seiffge-Krenke, 2001; Seiffge-Krenke, 1997), and even adults (Gupta & Desai, 2006). Some researchers argue that adult fiction authors create characters that are akin to ICs because even though the author's behaviour differs in the fact that he/she does not physically play with the character, once created, characters in novels have personalities and minds of their own (Taylor, Hodges, & Kohanyi, 2003). However, research on ICs in older children and adults is at an early stage, and the vast majority of studies have been conducted on young children who are at the prime age to create these beings.

Gender is another variable that is known to relate to children's IC status. Girls are more likely to create ICs than boys (Pearson et al., 2001; Carlson & Taylor, 2005; Gleason & Hohmann, 2006). Even early on in IC research, Vostrovsky (1894) observed that "boys seem much less susceptible to these fancies than girls" (p. 394), concluding that the discrepancy was because boys had a more active lifestyle than did girls. Boone, Canetti, Bachar, De-Nour, and Shaley (1999) examined sex differences in children who create ICs and discovered that 17.6% more girls than boys reported ICs. Carlson and Taylor (2005) looked more broadly at sex differences in fantasy play, and suggested that

predisposition to fantasy does not differ between the sexes but, rather, the way it is expressed changes as a function of the child's sex in the pre-school years. Carlson and Taylor also suggested that parents respond in more positive ways to girls' ICs than to boys' ICs, concluding that it may be more acceptable for girls to have and report ICs. Moreover, it may be more acceptable for a boy to impersonate a character (say Batman) who is tough and may embody a more typically masculine disposition. In support of this suggestion, Harter and Chao (1992) found gender differences in the type of IC that children created, reporting that boys were more likely to create super-competent ICs possessing physical prowess, whereas girls created ICs whom they could nurture and care for. Thus it seems that gender differences are seen not only in the tendency to have an IC, but also in the type of IC created.

Birth order is a third variable which is associated with IC creation. First-born children are more likely to create ICs than their siblings (Bouldin & Pratt, 1999; Manosevitz, Prentice, Wilson, 1973). Bouldin and Pratt (1999) suggest that this may reveal that one function of the IC could be to ameliorate loneliness. First-born children are often left to play on their own without a social outlet, and may create an IC in order to compensate for the lack of social opportunities available with peers. Hoff (2004) pointed out that there are multiple functions that an IC can fulfil for a child. The first-born child may initially utilise the IC as a tool to fight loneliness, however as other children are added to a burgeoning family, the IC could either become obsolete, or continue serving other functions (these will be elaborated on further in Section 1.6).

By taking into account age, gender, and birth order, experimenters can get a better idea of what children to focus on when they are investigating ICs; but what other

variables are predictive of children possessing ICs? Researchers have related the differences between children who do and do not have ICs to individual differences in fantasy disposition (Bouldin, 2006; Bouldin & Pratt, 2001; Gleason, Jarudi, & Cheek, 2003; Hoff, 2005). Children who have ICs are more likely to score higher on fantasy measures (Gleason et al., 2003; Singer & Singer, 1990; Taylor, Cartwright, & Carlson, 1993). For example, Taylor et al. (1993) found that children possessing ICs were significantly more engaged in pretence than NIC children, while they were also more willing to participate in fantasy play with the IC. However, the willingness to engage may have been the nature of the friend being inherently imagined, rather than the actual child's disposition. IC children are also able to create more vivid mental images, while interacting at a higher level of pretence and spontaneous play than NIC youngsters (Bouldin, 2006), and children with high fantasy orientation are more likely to revert to magical explanations more often than non-fantasy-oriented individuals (Woolley, Boerger, & Markman, 2004).

Other evidence for IC children's predisposition toward play comes in the form of self-initiated play. Manosevitz et al. (1973) reported that 97% of children with ICs were described as children whose play was self-initiated, compared with 86% of NIC children. However, when viewing the creation of an IC within a developmental framework, one could argue that the child who creates an IC is also providing themselves with more opportunities to engage in pretend play, making the direction of cause and effect between the creation and ICs and greater active engagement in fantasy play difficult to establish. As Vygotsky (1931/1993) stated, "The very idea of practical application of play would be impossible if the development of personality were a passive unfolding of innate primary

abilities” (p. 161). IC play is an example of how the child is actively using imagination in creating a tool on the road toward the development of both the personality and higher cognitive functions. This trajectory is not a passive act where the child sits back and watches, but rather on the IC stage the child is entertaining, viewing, learning, and growing all through their own fantasy.

1.4 The Developmental Significance of Imaginary Companions

Even after much investigation into the prevalence of ICs and the variables which influence IC status, few solid predictions can be made about the children who will be more likely to create these entities, and the psychological differences between IC and NIC children. To determine a more accurate future picture of IC creation and how a child’s IC influences their development, it is important to look back at past studies to see how IC research has evolved, as well as to address the question of what variables may predispose certain children to create ICs (Gupta & Desai, 2006; Shapiro, Prince, Ireland & Stein, 2006; Taylor, 1999).

Researchers like Vostrovsky (1894), Hurlock and Burstein (1932), and Svendsen (1934) investigated children with ICs in a scientific manner for the first time. Early research tended to assume that ICs were indicative of abnormal development (Gleason, 2004b; Seiffge-Krenke, 1997). Describing a small girl playing with her IC, Vostrovsky (1894) wrote, “We fear...the shadow people. We fear she may dream too long” (p. 393). In addition to the fear that children may be destined to live forever in the fantasy world that they create, Vostrovsky also predicted that there was an association between nervous temperament in children and the existence of an IC.

A cohort of past studies has focused on ICs in children who are already exhibiting abnormal behaviour. Some of the most recent studies examining atypically developing children have related ICs to dissociative personality disorders (McLewin & Muller, 2006), while others have reported case studies of children and adults with ICs who are emotionally disturbed; examples include, a socially withdrawn girl with behavioural problems, who states that her imaginary friend, Richard, wants to get her in trouble at school, as well as an older adult who has developed schizophrenia after his IC persisted into adulthood (Gupta & Desai, 2006; Shapiro et al., 2006). Each study has acknowledged that the majority of children with ICs develop typically. Importantly, this research has highlighted how children and even adults suffering pathology are usually confused about whether the IC is real or imaginary.

Although the general consensus is that ICs are not an accurate indicator of pathology (Bonne et. al, 1999; Gupta & Dessai, 2006; Pearson et al, 2001; Singer & Singer, 1990), some findings suggest that the possession of an IC is associated with certain types of pathology. Bouldin and Pratt (2002) assert that anxiety levels in children with ICs are significantly higher than in NIC children. However, the anxiety scores of the IC group children were still within the normal range, and these findings should thus not be taken to suggest that ICs are related to clinically significant levels of anxiety. Bouldin and Pratt reported that children who create ICs are similar to NIC children in terms of temperament and the frequency with which they experience specific fears. Healthy adolescents who report ICs have been shown to exhibit immature modes of tension-relief and higher levels of psychological distress than adolescents without fantasy friends (Bonne et al., 1999). However, this was a retrospective study, so it is possible that some

adolescents did have an IC but forgot in later years, and social desirability effects may have come into play since self-report questionnaires were used to assess psychological distress and coping strategies. Contrary to the studies above, Seiffge-Krenke (2001) reported that adolescents who have ICs utilise more active coping styles. These teenagers also used their IC not as a substitute for friends, but as an entirely different entity in itself.

Others have argued that ICs can be a potential indicator of future pathology, specifically, dissociative identity disorder (DID) (McLewin & Muller, 2006). In a retrospective study, McLewin and Muller found that children who eventually develop DID, a personality disorder characterised by the presence of two or more distinct personalities which recurrently take control of the person's behaviour (DSM-IV-TR, 2000), are more likely to create ICs in childhood than those in the general population. The authors argue that this may be because IC play is inherently dissociative in the way that it is a disruption to normal consciousness, identity, and perception. Although there is a potential connection between ICs and DID, it is important to note that most children with ICs do not develop DID, and there are many other developmental factors that predispose children to DID. For example, DID is more common in children who have experienced maltreatment. Researchers have found that pathologies such as DID are related to the existence of ICs only if (a) the IC persists and is relied upon into adulthood, (b) the child does not recognise that the IC is an imaginary being, or (c) the child possesses a large number of ICs (McLewin, & Muller, 2006; Shapiro et al., 2006). Furthermore, some therapists believe that ICs can be a positive therapy tool for a patient with DID, helping them to communicate and support the growth of the psychotherapeutic process (Sawa, Oae, Abiru, Ogawa, & Takahashi, 2004).

Questions have been raised as to whether ICs are a hallucination-like experience possibly occupying a position on a developmental continuum of hallucination-like experiences from childhood to adulthood (Davis, 2006; Fernyhough et al., 2007; Pearson et al., 2001a). In non-clinical populations, children with ICs have been more likely to report hearing words in an ambiguous auditory stimulus (thought to increase susceptibility to auditory hallucination-like experiences) as well as scoring higher on a hallucination scale (Pearson et al., 2001a). Pearson and colleagues (2001a) were the first to investigate the link between IC status and susceptibility to hallucination-like experiences. Pearson et al. incorporated the Launay-Slade Hallucination Scale (LSHS), in conjunction with children's creation of an IC as a measure of high susceptibility to hallucination. They looked at 210 children aged between 9- to 11-years placing them in low and high susceptibility groups. They also incorporated an ambiguous voice stimulus, (a professional recording of a human voice spliced into 1-s sound bites, and randomly mixed and then played backwards) playing it for the children and asking them to write down any words that were heard on the tape. Children who reported ICs and were high scorers on the hallucination scale were more likely to report hearing words on the jumbled speech task.

The Pearson et al. (2001a) study suffers from a number of methodological shortcomings. The first methodological issue was that parental report was not incorporated into the IC report measure. This could have influenced the IC status variable, because many children are known to make up ICs on the spot (Taylor, 1999), or forget that they had an IC. The second issue was the participating children's age. Children are more likely to create ICs between the ages of 3 and 6, whereas Pearson and

colleagues examined children who ranged between the ages of 9 and 11. The third issue was that children were played the ambiguous voice stimuli as a group. This may have influenced child response because of peer pressure to hear words. These shortcomings were addressed in studies by Fernyhough et al. (2007) and Davis (2006). Both studies found that young children with parentally corroborated ICs were significantly more likely than children with NIC to hear words in the ambiguous voice stimuli when tested individually. These studies support the notion that children with ICs have a general susceptibility to imaginary verbal experiences.

The finding that imaginary verbal experiences are more likely to be experienced by children with ICs has been explained by commonalities in the cognitive processes involved in interacting with an IC and hearing words in ambiguous voice-like stimuli. It may be true that ICs are a form of hallucination; however, these imaginary verbal experiences are unlike hallucinations that are indicative of pathology, because they do not engender feelings of anxiety or distress associated with other types of hallucination. Furthermore, Fernyhough et al. (2007) suggest that these studies bring to light the impact of development on the continuum of hallucinatory experiences, warning that, “Claims for continuity in the clinical significance of imaginary verbal experiences between childhood and adulthood should be treated with caution. That is, a healthy feature of childhood may only have pathological significance if it persists into adulthood” (p. 1100).

1.5 Fantasy and Reality

At present, experimenters recognise that ICs should not be conceptualised as a phenomenon that only exists in atypical populations. In fact, children who create ICs are most likely to be typically developing children. So, the question of being able to distinguish fantasy from reality has arisen in IC and fantasy research (Woolley, 2003). Experimenters have investigated how children ascertain the reality status of novel entities by using strategies incorporating contextual cues as well as verbal cues (Woolley & Ma, 2009; Woolley & Van Reet, 2006), revealing that children have the ability to evaluate whether something is fantastic or real in a critical way, using context and new information about novel entities in order to make inferences and draw conclusions about these entities (Woolley & Van Reet, 2006). Children acquire the ability to distinguish fantasy from reality in the preschool years (e.g., Golomb & Galasso, 1995); and often they can even take this distinction further and make a fantasy-fantasy distinction exhibiting knowledge that different imaginary characters may not know each other because they are from different make believe worlds (Skolnick, & Bloom, 2006). However, when it comes to everyday fantasy, they are given mixed signals that are enriched by social culture. For example, belief in Santa Claus, the Tooth Fairy, and the Easter Bunny is widespread in the western world. The views that these individuals exist are perpetuated and reinforced by television, literature, and parents. Arguably with all of the cultural support, it may be hard for a child to ascertain whether these entities are in fact legitimate beings.

Woolley et al. (2004) found that children do not passively accept everything that they are told about fantastical beings. Both age and fantasy orientation relate to children's

conception of imaginary beings' existence and possession of human attributes. Sharon and Woolley (2004) also found that children with high fantasy orientation (one measure of fantasy orientation included the presence of an IC) were more accurate in recognising and reporting reality attributes, ability, or property differences regardless of whether they knew for certain that the entity was imaginary or real. Sharon and Woolley concluded that children who are more fantasy-oriented accrued more knowledge about imagination that in turn gives them an upper hand at distinguishing imaginary versus real beings. Despite the ability to correctly categorise the reality status of certain entities, when asked to choose – real, imaginary, or not sure – both high and low fantasy-oriented children used the “not sure” choice extensively, acknowledging their uncertainty about the reality status. So although children who were highly fantasy-oriented were more accurate at categorisation, these children were also able to acknowledge their uncertainty, which arguably could prove just as useful a tool.

More recent studies have brought to light some issues in the wording of fantasy-reality distinction questioning style. Bunce and Harris (2008) found that children's everyday uses of the words *real*, *really*, and *pretend* do reflect both the notion of authenticity and existence. However, both 2- to 3-year-olds and 4- to 7-year-olds used these words to consider authenticity and rarely used them to discuss existence. These results imply that, “children may be biased towards interpreting *real* in relation to the notion of authenticity” (p. 453). This bias could mean that fantasy-reality study results like those of Sharon and Woolley (2004), and Woolley and colleagues (2004) could be misleading, because researchers' wording intends to focus on the question of existence

and not authenticity. This could be especially true for children with ICs who constantly have to reinforce the notion of the authenticity of their friend.

After much investigation on children's ability to distinguish fantasy from reality, it is clear that typically developing children are, for the most part, able to critically evaluate the fantasy status of novel entities. IC children may even be more adept at this skill than NIC children because of their immersion in fantasy play. There are still questions as to how children with ICs conceptualise their own ICs' fantasy status. Typically developing IC children are aware of the fact that ICs are imaginary, and they differentiate between social provisions for friendship with their IC and those of real friends or parents (Gleason, 2002). Gleason (2002) argues that this is because pretend play elaborates on real experiences, so even though a child may become emotionally invested in their ICs, they would still be able to recognise that their relationship with their IC is distinct in comparison to a relationship with a parent or friend. Taylor (1999) discusses IC children's understanding of the fantasy-reality distinction, explaining that although the majority of children tested in her studies claimed that their IC was visible to others, this did not seem to be a result of confusion about the reality of the IC; rather, the child was engaging in and controlling the content of their own pretence. Their behaviour therefore did not suggest confusion about the reality status of their IC. Furthermore, children studied by Taylor and by Davis (2006) were known to make statements while being interviewed trying to "keep the record straight" by telling the experimenter that the IC was just pretend. For example, one of the children in Davis' (2006) study made sure to inform the researcher that she was aware that her IC, a huge bird who wore a cheerleading outfit, was imaginary even though it was real to her.

Children with ICs thus do not seem to have any trouble distinguishing fantasy from reality, and as Gopnik (2009a) notes, the problem may lie not in the child's confusion between fantasy and reality, but in adults' inability to understand the child's viewpoint. Children, in Gopnik's opinion, are creating counterfactuals and hypotheticals. They do not confuse these with actuals. Children with ICs may not only possess the ability to distinguish fantasy from reality, but they also may be more fluid in their understanding of fantasy and reality, which may in turn facilitate certain aspects of development.

1.6 Depth of Imaginary Companion and Other Functions

It is clear that the IC can fulfil multiple functions that are helpful to the child in their social and mental life (Harter & Chao, 1992; Hoff, 2004; Hoff, 2005). These functions come with a wide range of benefits for the child. A good example of one of the benefits is the child's use of their IC as a coping mechanism for alleviating loneliness, as evidenced by first-born and single children being more likely to create ICs than children with older siblings (Bouldin & Pratt, 1999; Manosevitz, et al., 1973; Taylor, 1999; Trionfi & Reese, 2009). Another common function for an IC is scapegoating. In the study performed by Davis (2006), a child and her mother reported the child's IC, Dessa, to have been responsible for much inappropriate behaviour. On the other side of the spectrum, ICs can also function in the child's development toward autonomy (Hoff, 2004). Hoff (2004) asserts that the IC gives the child an opportunity to feel autonomous by creating make-believe worlds which he or she has control over. Some children will even use ICs as communication devices. For example, when Jean Piaget's daughter was angry with him, she would talk to her IC about the IC's father in order to communicate her feeling of

anger toward her own father (in Bloom, 2004). According to Vygotsky (1934/1978), who looked at play as a tool that changes with a child's growing and maturing needs, a child is able to fulfil certain needs by playing. These needs can range from the conscious pleasure derived from imagining, and the fulfilment of the desire to experience unrealised tendencies (e.g., wanting to take on the role of a mother), to the unconscious delaying of gratification and imagining themselves "out" of a situation. No matter what function the IC serves, their creation seems to depend on what the child has a need for at that time in their life.

Another variable that may influence the potential functions of the IC is the extent to which the IC is perceived by their creator to be autonomous, better known as the IC's depth. Recent research has assessed depth of IC (determining whether the IC has a life separate from its creator or is an extension of the child) and suggested that the depth of an IC (e.g., compliant as opposed to non-compliant) may provide different avenues for growth in many cognitive domains and within the youngster's social world (Taylor, et al., 2007; Hepworth, 2007). ICs' personalities and the degree to which they are independent beings in the child's social world vary considerably across different children (Hoff, 2004). According to Hoff (2004), this variation can be seen as a function of age, individual differences in fantasy or imaginary play, even how long the IC existed in the child's life. Taylor et al. (2007) found that some children report that their ICs have thoughts and ideas of their own. These ICs would be able to teach their creator things as well as disagree with the creator's thoughts, while other ICs are more or less mirror images or extensions of their creator. The independence created by the child could affect how the child conceptualises the way that others think. Children with "deeper" ICs may

perform differently on tasks than those who have ICs that are for the most part compliant or extensions of themselves.

Children are most likely unaware that ICs are enhancing their social and cognitive lives in these various ways. However, because an IC is of the child's creation, no matter what function it is fulfilling or how real it is to the child, the IC is a testament to how a child can influence the many domains within their life without being fully aware of the implications. To look at this paradigm in a Vygotskian (1934/1998) context, ICs are examples of play as a zone of proximal development (ZPD), foreshadowing what cognitive functions and social tools the child will be utilising in later development.

1.7 Theory of Mind and its Links to Imaginary Companion Status

It has been established that children's ICs are a phenomenon involving imagination and pretend play. These entities fulfil different functions and some researchers suggest they enhance children's socio-cognitive development. One of the only socio-cognitive domains which has been concentrated on extensively by researchers examining ICs is theory of mind (ToM). ToM is the ability to see things from another's perspective by being able to infer what the other person is thinking or feeling and recognise that others may have thoughts and feelings that differ from one's own. In other words, having a ToM entails being able to impute mental states to oneself and to others (Premack & Woodruff, 1978). This ability to explain others' behaviour by perspective-taking is an important milestone in the development of mind and social cognition.

Children's ToM understanding goes through drastic changes from the ages of 3- to 5-years (Wellman, Cross, & Watson, 2001; Wellman & Liu, 2004). However, despite

age-related development in ToM understanding, there are also considerable individual differences (Flynn, 2006). Children's understanding of ToM has been shown to be closely related to variables including verbal ability (Astington & Baird, 2005), executive function (Carlson, Mandell, & Williams, 2004; Carlson, Moses, & Claxton, 2004), mental state talk at home (Hughes, Fujisawa, Ensor, Lecce, & Marfleet, 2006; Youngblade & Dunn, 1995), peer acceptance (Slaughter, Dennis, Pritchard, 2002), and pretend play (Taylor & Carlson, 1997). ToM is typically measured using false belief paradigms (Wellman et al., 2001); however, recently researchers have begun to incorporate a battery of tasks arguing that children's developing ToM includes the understanding of multiple concepts (e.g., intentions, emotions, knowledge, and desires), and suggesting the scaling of ToM tasks (Hughes et al., 2000; Wellman & Liu, 2004). By taking into account both the correlates and the concepts that are related to ToM, its assessment has certainly changed since the concept was first examined by Premack and Woodruff (1978).

Of the variables that relate to ToM, pretend play is one that the child has active control over. Both ToM and pretend play are essentially social in nature, and the period of time when children are maximally engaging in play with their ICs coincides directly with ToM development (Taylor, 1999; Wellman & Liu, 2004; Wimmer & Perner, 1983). Rakoczy (2008) asserts that play reflects a collective 'we' intentionality which cannot be reduced to individual intentional attitudes, thus its social origin is solidified. It should follow that ToM and proclivity for pretence (an act which is inherently social in origin) should be related because of their common social origins. Evidence for this link comes from findings that high levels of pretend play, and particularly having an IC, are related

to superior ToM skills (Bouldin, 2006; Garner, Curenton & Taylor, 2005; Mitchell & Neal, 2005; Rakoczy, Tomasello, & Striano, 2006; Schwebel, Rosen, & Singer, 1999, Taylor & Carlson, 1997).

Pretend play is thought to relate to ToM not only because these two abilities are social, but also because both pretend play and ToM are ‘meta-representational’ in nature. The concept of meta-representation requires the child to represent their own or another’s representation of a counterfactual state of affairs (Leslie, 1994). For example, if two children are engaged in pretence, one could pick up a banana and put their ear to the fruit to simulate talking on the phone. If the child were to hand the same banana to their partner afterwards, the savvy partner would be expected to take the banana and have a “chat” of their own, thus recognising the counterfactual representation of the banana as a telephone. Both in pretending themselves that the banana is a telephone, and observing a partner playing, children are engaging in the act of meta-representation. They are doing so by possessing insight into the mental state of “pretending.” According to Leslie (1994), this representation is a primitive form of the adult version of pretence conceptualised by children as, “someone is pretending of the banana that [it is a telephone]” (p. 212). ToM’s meta-representational link with pretend play can be clearly seen when observing false belief paradigms where children must recognise another’s representational false belief.

Other cognitive behavioural theories that do not incorporate the meta-representational view have been proposed to explain the mechanisms that underlie the capacity for pretend play. These theories incorporate concepts that would influence ToM; however, the meta-representational account provides a broad account of play where other

accounts fail to explain certain types of pretence (Friedman & Leslie, 2007; Rakoczy, 2008; Rakoczy et al., 2006). For example, pretending has been explained by Nichols and Stich (2000) as a mentalistic concept where a child engages in pretence as a cognitive process. Nichols and Stich assert that play scenarios are represented in “possible worlds,” so to continue with the banana/phone scenario, in a possible world, the banana would act as a telephone. Children decouple the scenario “pretend” (P) where the banana is a telephone, so that they do not actually believe that the scenario P is true; instead the scenario is placed in their “possible worlds” box. Subsequently, they behave in a way that would be appropriate if the scenario were true, or they behave-as-if it were true (Nichols & Stich, 2000). However, this cognitive theory fails to account for instances when a child may misinterpret non-pretend behaviours to be pretence (Rakoczy, 2008).

There are still other accounts of the underlying mechanisms creating the capacity for pretend play; however, the meta-representational and possible-worlds paradigms continue to stand at the head of research done on pretend play (Harris, 2000; Rakoczy, 2008). A child’s creation of an IC would take this type of meta-representational play a step further. Being able to practise meta-representation in the absence of a partner entails the child becoming familiar with representing their own play representations as well as their imagined playmate’s representations. Engaging with this playmate as if they have a mind of their own should be even more taxing on the representational imagination.

Taylor and Carlson (1997) were the first to investigate the relation between ICs, pretend play, and ToM. In their study, ToM was assessed using appearance-reality, false belief, and representational change tasks. Experimenters not only used IC interviews to assess children’s imaginative ability, but also incorporated fantasy orientation interviews

and behavioural measures, such as giving the child a choice of a reality-oriented or fantasy-oriented toy. Taylor and Carlson reported that high fantasy groups achieved higher scores on ToM tasks than did low fantasy groups. These authors concluded that ICs are an effective means of improving ToM because having an IC provides the child with greater opportunities to practise representing others' internal states. This is thought to occur because children with ICs have created an environment where they can practise imagining what others are potentially thinking. Repetition is important to this theory because it has also been shown that children improve upon ToM tasks with practice (Flavell, Flavell, & Green, 1983; Flynn, 2006). However, it seems that the practice needed regarding children's pretend play must entail the correct form of play, especially for those children who impersonate others, because Taylor and Carlson found that children who impersonate things that are non-human objects (e.g., machines) did not excel like children impersonating those who have minds (e.g., humans). Therefore, the children who engage in pretend play with an IC when they do not have another playmate will allow themselves more opportunity to imagine others' perspectives and representations, and thus hone the skills required for passing ToM tasks.

Gleason (2002) further considered the higher order cognitive functions that are enhanced with a child's possession of an IC, asserting that IC children are more aware of their own thoughts moment to moment and are therefore more attuned to acknowledge others' perspectives, thus predisposing them to better ToM performance. In addition to being aware of their thoughts, IC children are also thought to create more vivid mental images compared with NIC children (Bouldin, 2006). Their vivid imaginations enable them to better place, or imagine themselves from different people's points of view, and

the time spent engaged in fantasy gives them first hand knowledge of the imagination itself and its limits (Sharon & Woolley, 2004). Further evidence for IC children's superior ToM abilities is provided by the research on joint pretend play and its ability to consistently predict higher scores on appearance-reality tasks (Schwebel et al., 1999). Schwebel et al. (1999) argued that not only does engagement in pretence aid developing ToM, but it also may help to expedite this process. Hence, children with ICs may not only have better ToM, but also acquire this understanding faster than NIC children.

When investigating cognitive function, it is often important to examine children who lack these capabilities in order to gain insight into the specific trajectories that development can follow. For example, children with Autistic Spectrum Disorder (ASD) share a triad of impairments in social interaction, communication, and imagination. Children with ASD have marked deficits in exhibiting imagination or pretend play (Wing & Gould, 1979). In conjunction with the deficits in imagination, Baron-Cohen, Leslie, and Frith (1985) discovered that 75% of children with autism fail to infer others' false beliefs. This is an ability that is easily within the reach of typically developing 4-year-olds as well as children with Down's syndrome of equivalent mental age. This inability to pass ToM tests of both changed location and misleading appearance typically continues into ASD individuals' teenage and adult life, and at mental ages well beyond 4 years (Peterson & Siegal, 2000).

Since ToM and pretend play are closely connected by meta-representation, imagination, and the ability to engage in social thought, it should prove harder for a child with ASD to ascertain that others may have different thoughts and feelings to their own. Where one deficit is seen in atypical development, the other will show up as well. These

deficits of imagination paired with the inability to pass ToM tasks in populations with ASD have been proven to be robust (Baron-Cohen et al., 1985; Repacholi & Slaughter, 2003; Wing & Gould, 1979), and support the notion that early imagination and pretence may facilitate children's understanding of other minds. As mentioned above, there are many other variables associated with ToM. Little is known about the process that drives the developmental shift toward better ToM understanding, but this process does occur at a time when the child can no longer rely upon reality as an accurate indicator of why behaviour occurs (Flynn, 2006). The ability to look at imagination, and specifically ICs, and be able to partial out some of the other variables in reference to ToM, may highlight the importance of the imagination to a child's developing higher order cognitive functioning.

1.8 Themes of the Thesis

The phenomenon of ICs has been discussed in the psychological literature for centuries, but the potential impact that the rich fantasy life accompanying ICs may have on subsequent development has been investigated only with reference to a narrow range of cognitive abilities. However, as the preceding sections of this chapter show, having an IC may influence core aspects of the child's understanding of both self and other. The main hypothesis to be tested is whether having an IC conveys benefits to the child in terms of greater understanding of self and other. Specifically, the aim of this thesis is to investigate whether having an IC relates to the way in which children represent themselves and others, their tendency spontaneously to use internal-state knowledge to describe others and explain their behaviour, and the extent to which they rely on self versus other to regulate their behaviour. In meeting this aim, this thesis will go beyond

previous research on ICs that has focused almost exclusively on pretend play and theory of mind.

The first empirical study investigated whether having an IC relates to children having greater awareness of or confidence in themselves as being a better judge than a parent or teacher about aspects of self that cannot be directly observed (e.g., whether you are having fun or feel ill). As discussed above, Hoff (2004) argued that ICs aid children's development of autonomy, and Gleason (2002) maintained that ICs enable children to become more aware of their own thoughts. However, no study has yet empirically tested these claims. Study 1 therefore sought to establish whether children with ICs were more likely than their NIC peers to assert that they were the best authority on aspects of themselves that could not be overtly observed.

The second empirical study addressed the competence–performance gap in ToM that has been a focus of recent research (e.g., Keysar, Lin, & Barr, 2003; Meins, Fernyhough, Johnson, & Lidstone, 2006). Taylor and Carlson (1997) argued that children with ICs may out-perform their NIC peers on ToM tasks because having an IC provides children with greater practice in representing others' internal states. If this is the case, one would predict that children with an IC will be more likely spontaneously to invoke internal states to describe other people and to explain their behaviour. To test this hypothesis, Study 2 investigated the relation between IC status and the extent to which children invoked internal states when describing their best friend.

The final empirical study further investigated the relation between IC status and self by considering whether children with ICs use more sophisticated self-directed speech compared with NIC children. Clearly, having an IC involves children talking to

themselves as they converse with the IC or voice the IC's thoughts, intentions, desires, and so on. Such self-directed talk is termed private speech (Flavell, 1966), and plays an important role in Vygotsky's theory, being the mechanism via which social speech is internalised to form inner speech or verbal thought. Study 3 tested the hypothesis that the private speech of IC children will be more internalised than that of NIC children due to the fact that having an IC is likely to involve the child engaging more frequently in self-directed speech and imagined conversations with the IC.

Chapter 2

Imaginary Companions and Self-knowledge

2.1 Introduction

Although the ability to recognize oneself is acquired relatively early in development, with the vast majority of 2-year-olds passing Amsterdam's (1972) 'rouge test', self-knowledge judgment has a prolonged developmental course. As the self concept develops, children begin to exhibit self-conscious emotions, and can imagine themselves as the object of another person's emotional attitude (Repacholi & Meltzoff, 2005). This understanding results in children's ability to take a third person perspective on the self (Moore, 2007). Despite these early advances in understanding of self, children experience problems when making judgments about who knows best about their personal characteristics and feelings well into middle childhood.

Schoeneman (1981) argued that there are two types of self-knowledge – interior and exterior. Interior self-knowledge is knowledge that an external observer may not be able to ascertain about an individual unless they are told (e.g., if a person has a headache, or is hungry). Meanwhile, exterior self-knowledge is knowledge about a person which an external observer may glean without being told (e.g., how high someone can jump, whether someone excels in school).

Typically, adults assume that they know best about interior self-knowledge. This seems intuitive because they are, of course, the owner and interpreter of those states, so it should follow that they are a more accurate judge than an outsider. Children, on the other

hand, do not recognise that they are the principal authority on their interior self-knowledge. The developmental shift from viewing an adult as knowing more about them to seeing themselves as the authority on their knowledge was previously thought to occur surprisingly late in development. Rosenberg (1979) interviewed children aged 8- to 19-years about their locus of interior self-knowledge, asking them “Who do you feel really understands you best? I mean, who knows best what you really feel and think deep down inside?” (p. 245)? He found that in both interior and exterior self-knowledge younger children tended to regard others (such as parents or teachers) as knowing more about them, suggesting that younger children believe the old adage, “mother knows best”, when engaging in tasks of self-knowledge. This trend in citing adults as the epistemic authority decreases with age and is eventually replaced by an increasing reliance on friends, siblings, and the self (Bar-Tal, Raviv, Raviv, & Brosh, 1991; Raviv, Bar-Tal, Raviv, & Houminer, 1990a; Raviv, Bar-Tal, Raviv, & Peleg, 1990b).

In order to explore children’s developing self-knowledge in greater detail, Burton and Mitchell (2003) investigated whether children aged 5- to 10-years are able to distinguish between interior and exterior self-knowledge. Children were asked to judge “who knows best” about interior aspects of self-knowledge (e.g., whether you are hungry or tired) and exterior aspects of self-knowledge (e.g., how fast you can run). Children made a forced choice between themselves and an adult (either their parent or their teacher) for each self-knowledge question, and they were also asked to make the same judgements about the knowledge of a peer versus the peer’s teacher. Thus, children were given pictures of themselves, their teacher, the experimenter, a boy (Tommy) about the same age as the child, a girl (Beth) about the same age as the child, Tommy’s teacher,

and Beth's teacher. The concrete nature of this task was employed so that it would relieve demands on the child's memory. The children were asked 28 forced choice questions asking "who knows best?" In 24 of these questions, the appropriate answer would be to say that the subject knows best (self, or Tommy/ Beth), whereas it would be acceptable to cite the teacher knowing best in the remaining 4 questions about school. Each question was posed to the child, once with themselves as the subject and once with another child (Tommy or Beth). Burton and Mitchell found that the children in the two younger groups (5-year-olds and 7-year-olds) often made errors in judgement by ascribing more epistemic knowledge about their internal states to an adult than to themselves, whereas the group of 10-year olds were able to judge more accurately who knew best about interior self-knowledge. Interestingly, Burton and Mitchell reported that 4- to 7-year-olds were just as likely to cite an adult as knowing best about interior self-knowledge states regardless of whether the question was posed about themselves or about a peer, suggesting that they believe such states to be transparent to figures in authority.

Burton and Mitchell's (2003) findings show that children appear to make accurate judgements about who is the authority on self-knowledge at much younger ages than Rosenberg (1979) suggested. In order to explore the discrepant findings further, Burton and Mitchell incorporated parents and friends as options for holding epistemic self-knowledge in their second study, as well as adding two more global self-knowledge questions that Rosenberg used. Again, older participants gave more "subject" responses than younger ones, replicating the results from their first study. However, when asked the global self-knowledge question, 10-year-olds often judged adults as knowing best, replicating Rosenberg's results. Together the results from these studies highlight how 10-

year olds' responses to questions about whether they are the best authority on specific aspects of self-knowledge may not concord with their more general opinion on who they feel "really understands them best".

In their third study, Burton and Mitchell (2003) investigated whether children aged 5- to 7-years showed a propensity for discriminating between different types of self-knowledge, being more likely to cite themselves as the authority for judgements about interior self-knowledge than for those regarding exterior self-knowledge. Not only were children aged 5- to 7- years able to cite themselves as the authority for interior self-knowledge, but there was also an age trend from age 5 to 7 showing an increase in sensitivity to types of knowledge, acknowledging that the self has privileged access to certain internal states, whereas a teacher or parent may be a better judge of other self-related phenomena. Although the results of Burton and Mitchell (2003) considerably advance our understanding of children's self-knowledge development, the questioning style used in their studies gave the participant no chance to cite both themselves and the adult as being knowledgeable. More recently, the original questioning style was changed from the forced-choice format to mutually exclusive judgement scales for self and other knowledge, with children being asked "How well does the adult know?" as well as "How well do you know?" This questioning format thus allows for the child to ascribe authority to self versus other in a more fine-grained fashion. Bennett, Downie, and Murray (2007) reported that, over both the original and new question formats, older children were more likely to cite themselves as an authority than were the younger participants. Using the new questioning format, Mitchell, Teucher, Bennett, Ziegler, and Wyton (2009b) found

that children as young as age 5 assigned relatively more interior self-knowledge to themselves than to an adult.

One reason for maintaining that others are good judges of interior self-knowledge may be the “illusion of transparency”, which is the tendency for people (not just children) to overestimate the extent to which others can discern their internal states (Gilovich, Medvec, Savitsky, 1998; Mitchell, Bennett, & Teucher, 2009a). Gilovich et al. (1998) found that participants overestimated others’ ability to detect their deception, disgust, and concern, concluding that “people often mistakenly believe that their internal states ‘leak out’ more than they really do” (p. 332). If the illusion of transparency can explain children’s self-knowledge errors, children should cite all external observers as knowing equally well about their self-knowledge. However, research suggests that this is not the case. Children were found to be more likely to cite an adult rather than a peer as knowing more about their self-knowledge (Burton & Mitchell, 2003; Mitchell et al., 2009b; Rosenberg, 1979), indicating that children believe figures in authority have *more* authority in making judgements about their internal characteristics.

While adults often rely on self observation rather than social feedback to obtain self-knowledge (Schoeneman, 1981), children gain knowledge about the self and others through their parents in the early phases of childhood. As they grow, so does the likelihood that they will attend to their peers and themselves as epistemic knowledge holders (Raviv et al., 1990a; Raviv et al., 1990b). Consequently, recent research has investigated how individual differences in the child’s social environment relate to their ascription of self-knowledge.

Mitchell, Teucher, Kikuno, and Bennett (2010) investigated self-knowledge development in Japanese and British children aged 7, 9, and 11 years to explore the potential impact of culture on children's tendency to ascribe self-knowledge to self versus other. Japanese culture is a collectivist culture in which the focus rests less on the individual and more on contexts and relationships between people (Nisbett, 2003). In a collectivist culture, the emphasis is on interdependence among individuals and the importance of interlocking responsibilities within those groups of people (Markus & Kitayama, 1991), whereas the British culture is individualistic, placing emphasis on autonomy, privacy, and the attainment of one's personal goals (Hofstede, 1980). This contrast between group-oriented reliance seen in collectivist culture and self-reliance as seen in individualistic cultures presented researchers with the opportunity to investigate whether Japanese children may have more of a sense of belonging to a "shared mind" than children growing up in an individualistic culture like Britain. Mitchell et al. argued that children in individualist cultures have the unique opportunity to be able to judge the quality of their own emotional experience because of the emphasis on individual experiences. Furthermore, Fivush and Wang (2005) examined differences in the way that mothers converse with their children in individualistic and collectivist cultures, finding that mothers in the individualistic culture of the USA converse with their children in a way that recognises the child's independent emotional experience, as well as the fact that they have privileged access to these inner states. Mothers in collectivist cultures were found to converse differently with their children. Mothers in collectivist cultures spoke as if their children did not have privileged access to their own emotions, indicating that the

mothers assumed as much authority on their children's internal states as the children themselves.

Mitchell et al. (2010) reported that Japanese children assigned more interior self-knowledge to their parents in comparison to children in the UK. This is thought to be because Japanese culture places more importance on context rather than the individual, creating a developmental pathway that does not emphasise the honing of self-knowledge skills. The most notable difference was seen in the youngest group of 7 year olds; however, the developmental trend for children to designate decreasing amounts of knowledge to a significant adult as they get older was still observed in the Japanese children, suggesting that this shift is universal but occurs at somewhat different ages depending on the child's cultural context.

Although there is a growing body of research on self-knowledge in children, little is known about its ontogeny, with a tendency to focus on *when* children become accurate judges on their self-knowledge rather than *why* children make characteristic errors in judgement. Recent research has investigated how global aspects of the environment such as culture relate to individual differences in children's self-knowledge, but research has not yet focused on whether specific child-related characteristics are systematically related to self-knowledge. This was the aim of the study reported in this chapter. The first child-related characteristic considered was whether or not the child had an IC. There are several reasons to expect IC status to relate to children's self-knowledge. Typical IC creators are aware that others cannot see their IC (Taylor, 1999). The child who creates an IC must let peers and adults know that the IC is in existence by either telling them, or behaving as if the IC is in the room. Hence, IC children are more likely to be familiar

with the knowledge that one's thoughts and feelings are private and will not "leak out," as Gilovich et al. (1998) proposed. Second, according to Singer and Singer (1990), "ICs engender the opportunity for the child to practice imagery and conversation in the absence of external stimulation" (p. 100). These experiences of IC children may thus make them more adept at self-knowledge because having an IC will help the child to recognise that their knowledge is privileged, thus leading to greater insight into the fact that they themselves will be the authority on interior self-knowledge.

A third reason to predict that children with ICs will have superior self-knowledge comes from the fact that children with ICs are likely to have more opportunities to practise making judgements about knowledge states and therefore may be better able to discern who may know more about what they are thinking or feeling. Gleason, et al.'s (2003) findings that exceptionally fantasy-oriented children (such as those with ICs) scored higher in their ability to monitor their own emotional states is in line with the hypothesised positive association between having an IC and self-knowledge.

Self-knowledge acquisition may not relate only to the child's IC status, but also to the independence or depth of the child's IC. As discussed in Chapter 1, ICs' personalities and the degree to which they are independent beings in the child's social world vary considerably across different children (Hoff, 2004), and Taylor et al. (2007) found that about one third of children who have an IC report that their ICs have thoughts and ideas of their own. Taylor et al. suggested various explanations for why certain children create a non-compliant IC. The first explanation is "emotive," in that a non-compliant IC is reflecting a child's preoccupation with thoughts of disobedience or related aspects of bad behaviour, and that these are just some of the emotive themes that come out in children's

play. The second explanation is that children are experiencing the illusion of independent agency which is when “a fictional character is experienced by the person who created it as having independent thoughts, words, desires, and/or actions” (p. 92). This illusion is much like adult fiction writers who report merely observing their characters instead of feeling completely in control of their own writing (Taylor et al., 2003). Along the same lines as the illusion of independent agency, the third explanation suggests that children who have high levels of *activation* of automatic unconscious thought processes, paired with relatively low inhibition levels may experience difficulty consciously controlling the products of their imagination. Carlson, Taylor, and Maring’s (2004) results support this proposal, in that children with non-compliant ICs as opposed to compliant ICs performed more poorly on inhibitory control measures, even though children with ICs as a whole showed greater inhibitory control than those with NIC.

Having an IC with greater depth will certainly require different behaviours and interactions on the child creator’s part. For example, a child with an IC that is not as competent may not tell their IC about their own thoughts, feelings, and ideas; whereas individual traits and behaviours in the non-compliant IC might differ from the child’s own characteristics, therefore aiding the child in knowing that different individuals will not always know things about their internal mental states. One would therefore predict that depth of IC will relate to children ascribing self-knowledge more accurately. An assessment of IC independence was thus included in Study 1.

The other child-related characteristic that was assessed in Study 1 was children’s ToM. Given that self-knowledge tasks assess the extent to which children can understand the opacity of internal states and other people’s knowledge states, it is surprising that

previous research has not investigated whether understanding of ToM and self-knowledge are related. One alternative is that children's concurrent performance on ToM and self-knowledge tasks will be positively related due to their underlying commonalities in representing internal states. The findings of a study by Mitchell and O'Keefe (2008) investigating self-knowledge in typically developing children and children with Autistic Spectrum Disorder (ASD) are in line with this suggestion. In comparison to the typically developing group, the ASD participants did not exhibit as much of an appreciation of their privileged access to knowledge states. Typically developing participants credited themselves with relatively more self-knowledge compared with a comparison individual, while the ASD group assigned about the same amount of knowledge to themselves as the comparison individual (Mitchell & O'Keefe, 2008). Other recent studies have also examined self-knowledge in ASD individuals. Williams, Lind, and Happé (2009) showed that participants with ASD were unique in finding self test questions harder than other-person questions in a false belief scenario. Given the characteristic deficits in ToM associated with ASD (e.g., Baron-Cohen et al., 1985), the findings of this study, along with others showing that ASD individuals exhibit marked differences in understanding and referring to themselves (Hobson, Chidambi, Lee, & Meyer, 2006; Lombardo, Barnes, Wheelwright, & Baron-Cohen, 2007), are a further indication that self-knowledge and ToM may be related.

However, accurate ascription of self-knowledge involves additional steps in the understanding of internal states than does more basic ToM. In order to pass a ToM task, the child merely has to impute mental states accurately to another person. In contrast, accurate reporting of self-knowledge requires a number of steps involving representing

and comparing internal states. For example, if asked, “Who knows best if you are angry?” the child must understand that (1) an onlooker has their own mind, and hence appreciates the internal state of anger because they have a conception of anger themselves, (2) this knowledge of anger can be used to make judgements about whether outward behavioural cues are consistent with this particular internal state (e.g., yelling, characteristic angry facial expression), and (3) that individuals can sometimes hide their true feelings. If children appreciate internal states at this level of complexity, they will know that they are the only accurate judge of interior self-knowledge. Thus, basic ToM abilities may be necessary but not sufficient for self-knowledge understanding. The study reported in this chapter thus investigated concurrent relations between performance on ToM and self-knowledge tasks.

ToM is known to correlate with children’s verbal ability and verbal precocity has been argued to play a fundamental role in ToM acquisition (Astington & Baird, 2005; Astington & Jenkins, 1999; Flynn, 2006). Furthermore, it has been found that language ability can predict both concurrent and later ToM (Astington & Baird, 2005; Flynn, 2006). In order to control for any relations between ToM and verbal IQ, children were tested on their receptive verbal aptitude using the *British Picture Vocabulary Scale* a standardised measure of receptive verbal IQ. This measure also enabled researchers to control for relations between IC status and verbal ability because IC status may also relate to certain aspects of verbal aptitude (Bouldin, et al., 2002; Roby & Kidd, 2008; Taylor, 1999; Trionfli & Reese, 2009). Other forms of IQ were excluded because many findings do not indicate that IQ relates to IC status or play in any way (Manosevitz, et al., 1973; Taylor, 1999; Tizard, Philips, & Plewis, 1976). A good example of verbal IQ as a

variable relating to IC status is seen in a study by Mauro (1991). Children with ICs in Mauro's study were able to gain better scores on the verbal section of the WISC-R intelligence measure, but no differences were seen in scores on the block design subtest of spatial abilities. For these reasons other IQ measures were not included.

In summary, the aim of Study 1 was to investigate how children's self-knowledge related to IC status and ToM performance. We expected to replicate Burton and Mitchell's (2003) finding that young children in general ascribed more interior self-knowledge to themselves versus an adult, but hypothesised that (a) children with an IC would be more likely than their NIC peers to recognise that they are the best authority on their interior self-knowledge, and (b) depth of IC would be positively associated with ascribing authority to self for interior self-knowledge. Relations between performance on ToM and self-knowledge tasks were also explored, although no directional hypotheses were made. Finally, we expected to replicate previous findings for positive associations between IC status, depth, and ToM performance. The results of this study should show whether children's IC status is statistically related to the development of their cognition in terms of their self understanding; or if there is in fact no correlation between self-knowledge (which is a facet of self understanding) and IC status. Results should also give researchers an idea of how children with and without ICs represent themselves as well as others.

2.2 Method

2.2.1 *Participants*

Participants were 82 children (45 boys and 37 girls) aged from 52–94 months (mean age 70 months). The children were drawn from five schools, a *Rainbows* group

affiliated with a school, and one after-school group in the North-East of England. Children originated from a variety of socioeconomic backgrounds. Five of the schools had 5% or less of the total children attending participating in the free school lunch programme; 62% of the students in one school participated in the free school lunch programme, and the after-school programme was for children of lower income families. Children's ethnicity was predominately White; one child was Black, and two were Asian. Eighty children had English as their first language, 2 were equally proficient in English and another language. One child was excluded from the analysis because of speech and language difficulties. A second child was excluded because of time constraints. Participants were treated in accordance with the British Psychological Society's ethical code of conduct. Parental informed consent was obtained for all participants, and children were free to withdraw at any time. No child refused to participate.

2.2.2 Procedure and Materials

Participants were tested individually in a quiet space away from other children. The testing session lasted between 25 and 35 minutes. The sessions were presented to each child in an invariant order so that the researcher would be blind to which children had ICs throughout administering as many test measures as possible. The British Picture Vocabulary Scale was presented last as to avoid possible effects of boredom, as children often become bored with this measure. Each session began with the self-knowledge inventory (Mitchell et al., 2009b), and ToM battery (Hughes et al., 2001; Wellman & Liu, 2004), after which the child participated in the IC interview (Hepworth, 2007; Taylor & Carlson, 1997). Finally, children completed the British Picture Vocabulary Scale (Dunn, Dunn, Whetton, & Burley, 1997) to measure their receptive verbal ability.

Self-Knowledge Inventory

An adaptation of Mitchell, et al.'s (2009b) self-knowledge inventory was used in order to assess the extent to which children recognise that they are the authority on their own self-knowledge. Mitchell, et al. used a ten count system where a child was asked to place markers in a Perspex tube to represent the amount of knowledge that the child wished to assign an individual, whereas the present study employed a three box system for this representation. This three box system was used because after piloting with the ten count system, the younger children were more fixated on the ten count marker task than the questions they were asked about self-knowledge. The child was directed to write their name, their parents' name (children typically chose the mother), and their teacher's name on an index card representing those people. All of the children were capable of writing their names, their parent's names, and the teacher's title and surname initial. The child was then shown three different sized boxes representing how much someone knows. The children were told: "The big one means the person knows a lot, the medium one means they know a little, and the small one means they don't know anything. Your job is to decide how much the person knows and to put that person's card in the box that you think matches".

The child was then asked to show the researcher what they would do if they wanted to show that (a) they know a lot, (b) mum knows some, (c) teacher doesn't know, and finally (d) if mum and they both know a lot. These practice questions were to ensure that the child understood the meaning of the cards as well as the boxes and furthermore that two people's cards could occupy the same box. No child failed to understand the directions. After practising, the child was asked 6 questions about how much they know

about a particular feeling or event in contrast to how much their elders know (these questions were about being ill, having fun, dreaming, thinking, hunger, anger). In three of the questions, the child compared his/her own knowledge with that of the designated parent; in the remainder, the child compared own knowledge with that of their teacher. For the parent questions the child was asked about being ill, dreaming, and hunger. The procedure was the same for all six items, and is illustrated using the being ill question in the parent first condition.

For each question, the child was asked:

- (a) Sometimes people feel ill. Do you feel ill sometimes?
- (b) What happens to you when you are ill? What does it feel like?
- (c) What about your mum, when you are ill does she notice about it? When you are ill, how well does your mum know about you being ill? (Child showed this by placing mother card in desired box)
- (d) How about you? How well do you know about your feeling of being ill?
(Child showed this by placing their card in desired box)

The questions were counterbalanced to ensure that children were not biased by the order of questioning about adult/child, and scores were calculated on a scale of 1–3. If the child placed the index card in the smallest box representing no knowledge, the score would be 1 for that question. If they ascribed some knowledge by placing the card in the mid-sized box the score would be 2, and placing the card in the large box representing the most knowledge would result in a score of 3. These scores were recorded and compiled resulting in single adult and child scores for each question as well as a composite score

representing overall knowledge ascribed to self versus other. More detailed descriptions of the knowledge questions themselves can be found in Appendix 1.

ToM Battery

ToM was measured using a battery based on Hughes et al. (2000) and Wellman and Liu (2004). The battery consisted of 6 tasks used in the field extensively and which are proven to be a robust indicator of ToM ability (Hughes et al., 2001; Wellman & Liu, 2004). The tasks consist of scenarios where the child is given information which is not initially apparent to either the subject or the protagonist. In order to pass the tasks the child must displace what they know and adopt the protagonist's perspective. Reality/Memory controls were in place to ensure that the child is not only paying attention to the story, but that they have not forgotten the original information presented by the experimenter. For a child to pass the task, the reality/memory control questions must be answered correctly, as well as the target ToM question.

The tasks selected were based on Wellman and Liu (2004). These tasks were:

(a) *Diverse Beliefs* (Wellman & Liu, 2004): the child is told that the protagonist, Sara wants to find his/her cat, who may be hiding in the bushes or in the garage. The child is then asked where he/she thinks the cat is hiding. The experimenter then tells the child that the protagonist thinks the cat is in the other location (i.e., the one the child did not mention). The child is asked where the protagonist will look for the cat.

(b) *Knowledge Access* (Wellman & Liu, 2004): the child is asked to predict what is in a box. The true contents are then revealed before the box is closed again. The child is asked whether a protagonist, Ellie, new to the scene knows what is in the box. As a reality/memory check question the child was asked, "did Ellie see inside the box?"

(c) *Contents False Belief-Other* (Wellman & Liu, 2004): the child is shown a box of Pringles crisps and asked what he/she thinks the box contains. Its true contents (a plastic pig) are revealed. The child is then asked what a protagonist, Jack, new to the scene thinks is in the box. As a reality/memory check question the child was asked if Jack has seen inside the box.

(d) *Contents False Belief-Self* (Hughes et al., 2001): the child is shown a tube of Smarties and asked what he/she thinks the tube contains. Its true contents (a pencil) are revealed. The child is then asked what he/she thought was in the Smarties tube before he/she saw inside. As a reality/memory check question the child was asked what is really inside the tube.

(e) *Explicit False Belief* (Wellman & Liu, 2004): the child is told that the protagonist, Simon want to find his/her gloves which might be in one of two locations. The child is then told that the gloves are really in the backpack, but that the protagonist thinks that the gloves are in the wardrobe. The child was asked where Simon will look for the gloves.

(f) *Unexpected Transfer Task* (Wimmer & Perner, 1983): the protagonist, Andy puts an apple into a bag before leaving the scene to play. In his/her absence, another character moves the apple to a different location. The protagonist returns and the child is asked where he/she will look for the apple. As a reality/memory check question the child was asked, "Where is the apple really," and then, "Where did Andy put the apple first of all?"

The order in which the stories were presented was randomised. For each task that is passed the child receives 1 point, resulting in total possible scores ranging from 0-6

points. Full details on the protocol for administering the ToM battery are given in Appendix 2.

Imaginary Companion Interview

In order to assess the existence of an IC or PO, the imaginary companion interview developed by Taylor and Carlson (1997) and adapted by Hepworth (2007) was employed. Children were asked by the researcher about their pretend friends. The researcher began, “Now I am going to ask you some questions about friends. Some friends are real, like the kids who live on your street, the ones you play with. And some friends are pretend friends. Pretend friends are ones that are make-believe that you pretend are real. Do you understand?” When the child indicated understanding the researcher went on to ask if the child had a pretend friend or remembered ever having one. Parents had completed a questionnaire similar to the child IC interview in order to provide parental corroboration of the IC. This procedure has been used successfully to identify those children who have ICs (Gleason, 2004a; Taylor, 1999). Only children whose reports of ICs or POs were corroborated by parental report were designated as having an IC or PO.

If the child indicated the existence of an IC or PO by responding affirmatively to the question, they were asked the following:

- (a) Its name
- (b) Whether it is a toy or completely pretend
- (c) Its gender, age, and physical appearance
- (d) What the child likes and dislikes about the friend
- (e) Where the friend lives and sleeps

(f) The extent to which the IC shows independent thoughts, emotions, and/or behaviour

Children's answers to these further questions were used to assess the depth of the IC, using Hepworth's (2007) procedure that was based upon Taylor et al.'s (2007) definition of independent agency in the IC. Taylor et al.'s study defined IC independence as: "When an IC is experienced by a child who created it as having independent thought, words, desires, and/or actions (i.e. having a mind and will of its own)" (p. 92). The full interview can be found in Appendix 3.

Each interview was transcribed, with children's answers to the final question (extent to which IC shows independent thoughts, emotions and behaviour) awarded 1 point for each independent characteristic mentioned. Each child obtained a frequency score for depth of IC. Examples of independent behaviours used to index IC depth are shown in Table 2.1.

Depth of IC was coded by a researcher blind to IC status and all other measures, with a randomly selected 30% of sessions being coded by a second blind researcher. Based on coding individual children's reports of their ICs independent thoughts, emotions and behaviour, Inter-rater agreement was $\kappa = 1.0$.

Table 2-1 Depth of Imaginary Companion Examples

Type of IC	Examples of Independence from Various ICs and Pos
IC	<p>The IC is disliked because he is naughty.</p> <p>The child does not like the trousers that the IC always wears.</p> <p>The IC doesn't follow the rules.</p> <p>The IC smashed up a flower bed and the child had to fix it.</p> <p>The IC bosses the child around and sometimes chases the child. When the child tries to fight back, he decides that he can't because his hand goes through the IC's stomach.</p> <p>The IC does not like it when they play boys' games.</p> <p>The IC has his own friends and relatives.</p> <p>The child will bump into the IC when they haven't organised to play together.</p> <p>The IC makes the child jump with surprise because it pops out of the ceiling when the child doesn't expect it.</p>
PO	<p>The PO shows the child where to go when they are playing.</p> <p>The PO will try to boss the child around and argues with the child about Pringles crisps (which the PO likes).</p> <p>The PO is the decision maker when it comes to when he and the child meet up.</p> <p>The PO has its own friends who it plays with when the child is not around.</p>

Receptive Verbal Ability

Children's receptive verbal ability was assessed using the British Picture Vocabulary Scale (BPVS; Dunn et al., 1997) to control for any relations between verbal ability, children's self-knowledge, and ToM performance. Receptive verbal ability was assessed rather than IQ due to the fact that the interior self-knowledge task and IC

interview are dependent on the child's verbal processing abilities, and given well-established associations between children's verbal ability and ToM performance (e.g., Astington & Baird, 2005; Astington & Jenkins, 1999).

2.3 Results

2.3.1 *Descriptive Statistics and preliminary analysis*

Data were first analysed by dividing the children into IC, PO, and NIC groups. There were 65 children with NIC, while 10 had created ICs, and 5 had POs. Because there were only 5 children in the PO group, IC and PO children were pooled to increase power and help meet statistical assumptions of power and minimums (Field, 2005). Relations between children's IC status and gender were investigated using a 2 (IC status) \times 2 (child gender) chi square test. Of the 15 children in the IC group, 8 were boys; of the 65 children in the NIC group, 36 were boys. There was no association between IC status and gender, $\chi^2(1) = 0.02, p = .886, n.s., w = 0.02$. Neither was gender related to children's scores on any of the self-knowledge questions, $t_s < 1.35, p < .801, n.s., d_s < 0.31$. Gender is thus not considered further in the analyses reported below.

Table 2.2 shows the mean scores for children's age in months and BPVS performance. Box plots showed no significant outliers.

Table 2-2 Means and Standard Deviations for Preliminary Variables

		Means
Age in Months	NIC	69.51 (9.58)
	IC	70.27 (7.19)
BPVS	NIC	98.68 (9.26)
	IC	103.80 (9.01)

Standard deviations are given in parentheses

Independent samples *t* tests show that there was no difference between the IC and NIC groups with respect to age $t(79) = 0.29, p = .771, d = .09$, but children in the IC group obtained marginally higher receptive verbal ability scores than did those in the NIC group, $t(79) = 1.94, p = .052, d = .56$.

Of the 15 children in the IC group, mean score for depth of IC was 3.93, *SD* 3.04, range 0–10. Depth scores were normally distributed, $D(15) = 0.9, p = .390$ n.s.. Boys' mean depth score was 5.13, *SD* 3.64, and girls' mean was 2.57, *SD* 1.40, $t(13) = 1.74, p = .099, d = 1.02$, suggesting that boys' ICs showed greater depth than did those of girls. IC depth was not related to BPVS scores, $r(13) = -.12, p = .682$ n.s.

Scores for all adult and child self-knowledge questions and for ToM were non-normally distributed. The *F* test is robust against violations of normality as long as there are at least 20 degrees of freedom (Tabachnick & Fidell, 2007). Non-parametric analyses yielded the same pattern of findings as did parametric tests; parametric analyses are therefore reported below.

2.3.2 *Attribution of Knowledge to Self versus Adult*

Table 2.3 shows the mean scores for amount of knowledge attributed to self versus adult for the six questions for the group as a whole. It also shows the group differences in means. Differences between the self and adult scores for each question were investigated using paired t tests, with alpha adjusted to .008 (.05/6) for multiple tests. As shown in Table 2.3, children attributed more knowledge to self than to adult for five out of six questions, with no difference in self versus other scores for the question relating to feeling ill.

Table 2-3 Means, Standard Deviations, and t-test Scores for Child-Adult Knowledge Paired t-tests

	Knowledge Attribution Means	Paired Differences Means	t (sig.)
Pair 1: Ill			
Q.1 Child score-	2.25 (0.76)	-0.23 (1.18)	-1.70 (<.05)
Q.1 Adult score	2.48 (0.75)		
Pair 2: Fun			
Q.2 Child score-	2.75 (0.49)	0.53 (0.11)	4.73 (<.001)
Q.2 Adult score	2.23 (0.80)		
Pair 3: Dream			
Q.3 Child score-	2.46 (0.73)	0.65 (1.20)	4.84 (<.001)
Q.3 Adult score	1.81 (0.86)		
Pair 4: Think			
Q.4 Child score-	2.46 (0.69)	0.41 (1.25)	2.95 (<.001)
Q.4 Adult score	1.81 (0.86)		
Pair 5: Hungry			
Q.5 Child score-	2.81 (0.42)	0.61 (0.92)	5.95 (<.001)
Q.5 Adult score	2.20 (0.80)		
Pair 6: Angry			
Q.6 Child score-	2.55 (0.75)	0.66 (1.17)	5.07 (<.001)
Q.6 Adult score	1.89 (0.86)		

2.3.3 *The Relation Between Imaginary Companion Status and Children's Self-Knowledge*

Table 2.4 shows the mean scores for the self-knowledge task in the adult knowledge condition as a function of children's IC status. Relations between children's imaginary companion status and performance on the self-knowledge task were explored using MANCOVA. In the first MANCOVA, scores for the six questions relating to amount of knowledge ascribed to the adult were the dependent variables, with dichotomous IC status as a fixed factor, and chronological age and BPVS scores added as covariates. The structure of the second MANCOVA was identical, but the scores for the

six questions relating to amount of knowledge ascribed to self were the dependent variables.

For performance on the question relating to the reported amount of knowledge for the adult, there was a main effect of IC status, $F(6, 71) = 2.63, p < .025, \eta^2 = .18$. Post-hoc *t* tests indicated that children with ICs attributed less knowledge to adults on the ‘ill’ compared to NIC children, $t(76) = 11.38, p < .001, d = .86$, and ‘dream’, $t(76) = 5.66, p < .025, d = .60$, question. Children with ICs thus attributed less knowledge to adults than did the NIC children specifically regarding their feelings relating to being ill and dreaming than did their NIC peers.

Table 2-4 Means and Standard Deviations for Self-Knowledge Task: Adult Condition

		Means
Q.1: Ill Adult	NIC	2.60 (0.66)
	IC	1.94 (0.85)
Q.2: Fun Adult	NIC	2.24 (0.78)
	IC	2.25 (0.86)
Q.3: Dream Adult	NIC	1.92 (0.86)
	IC	1.44 (0.73)
Q.4: Think Adult	NIC	2.11 (0.92)
	IC	2.00 (0.89)
Q.5: Hungry Adult	NIC	2.20 (0.80)
	IC	2.25 (0.78)
Q.6: Angry Adult	NIC	1.90 (0.88)
	IC	1.94 (0.85)

Table 2.5 shows the mean scores for the self-knowledge task in the child knowledge condition as a function of children's IC status. For performance on the questions relating to the reported amount of knowledge for the child, the main effect of IC status approached significance, $F(6, 71) = 2.01, p = .075, n.s., \eta^2 = .15$, with children in the IC group ascribing more knowledge to themselves across all questions compared with their NIC group peers. We have adopted the convention that anything between .05 and .10 to be described as a non-significant trend. Post-hoc analyses indicated that children with ICs attributed more knowledge to themselves on the 'fun' question, $t(76) = 5.80, p < .025, d = 1.14$. There was also a non-significant trend for IC children to attribute

more knowledge to themselves on the ‘hungry’ question, $t(76) = 3.52, p = .064, d = 1.00$, with a large effect (Cohen, 1988) for this relation. It should be noted that children in the IC group were at ceiling on both of these questions, all attributing a maximum score of 3 to themselves.

Table 2-5 Means and Standard Deviations for Self-Knowledge Task: Child Condition

		Means
Q.1: Ill Child	NIC	2.20 (0.77)
	IC	2.50 (0.73)
Q.2: Fun Child	NIC	2.68 (0.56)
	IC	3.00 (0.00)
Q.3: Dream Child	NIC	2.54 (0.69)
	IC	2.38 (0.81)
Q.4: Think Child	NIC	2.45 (0.71)
	IC	2.69 (0.48)
Q.5: Hungry Child	NIC	2.75 (0.50)
	IC	3.00 (0.00)
Q.6: Angry Child	NIC	2.52 (0.77)
	IC	2.56 (0.73)

Standard deviations are given in parentheses

2.3.4 The Relation Between Imaginary Companion Depth and Children’s Self-Knowledge

Given that there were only 15 children in the IC group, the analyses investigating relations between IC depth and children’s self-knowledge ascription are necessarily exploratory. To increase power, only correlations between IC depth and overall scores

across the six questions for amount of knowledge ascribed to self versus adult were explored. Overall scores for self and adult knowledge ascription were normally distributed, thus parametric correlations were used.

There was a non-significant trend for positive correlation between depth of IC and amount of knowledge ascribed to self, $r(13) = .47, p = .079$, n.s., but the negative correlation between IC depth and knowledge ascribed to adult was not significant, $r(13) = -.40, p = .138$ n.s. These correlations were virtually unchanged when age and BPVS scores were partialled out: for the relation between IC depth and self-knowledge score, $r(11) = .48, p = .094$, n.s., for the relation between IC depth and adult-knowledge score, $r(11) = -.38, p = .199$, n.s.. The effect sizes for the relation between IC depth and ascription of knowledge to self approached large effects (Cohen, 1988). There was thus some evidence that greater depth in the IC created was positively associated with children ascribing more knowledge to themselves across the range of interior self-knowledge questions.

2.3.5 The Relations Between Theory of Mind and Self-knowledge

Table 2.6 shows the bivariate and partial (controlling for child age and BPVS scores) correlations between children's ToM performance and the children's scores for attribution of knowledge to themselves on the different questions from the self-knowledge task. Alpha was adjusted to .008 (.05/6) for multiple comparisons. As shown in Table 2.6, attribution of knowledge to self on the 'angry' question was positively correlated with children's ToM score, but this relation was no longer significant when age and BPVS scores were partialled out.

Table 2-6 Bivariate (Pearson's r) and Partial Correlations for Child's Performance on Theory of Mind Tasks and Self-knowledge Scores Relating to Child Knowledge

Question and Child Self-knowledge Score	Theory of Mind Composite Score
Q.1: Ill	0.11 (0.14)
Q.2: Fun	0.08 (0.10)
Q.3: Dream	-0.03 (0.03)
Q.4: Think	0.13 (0.12)
Q.5: Hungry	0.23 (0.19)
Q.6: Angry	0.31*(0.23)

* $p < .01$. Partial correlations are in parentheses

Table 2.7 shows the correlations between children's ToM performance and the children's scores for adult attribution of knowledge on the different questions from the self-knowledge task. Once again, alpha was adjusted to .008 for multiple comparisons. As shown in Table 2.7, there were no associations between ascription of knowledge to adult and children's ToM scores.

Table 2-7 Bivariate (Pearson's r) and Partial Correlations for Child's Performance on Theory of Mind Tasks and Self-knowledge Scores Relating to Adult Knowledge

Question and Adult Self-knowledge Score	Theory of Mind Composite Score
Q.1: Ill	0.16 (0.13)
Q.2: Fun	-0.08 (-0.08)
Q.3: Dream	-0.24 (-0.22)
Q.4: Think	-0.06 (-0.08)
Q.5: Hungry	-0.08 (-0.12)
Q.6: Angry	-0.17 (-0.17)

Partial correlations in parentheses

2.3.6 *The Relations Between Imaginary Companion Status and Depth and Theory of Mind*

The mean ToM score for the IC group was 4.93, SD 1.03, compared with a mean of 4.45, SD 1.53 for the NIC group. The relation between IC status and ToM was investigated using ANCOVA, with IC status entered as a fixed variable and age and BPVS score added as covariates. IC status was not related to ToM performance, $F(1, 76) = 0.44, p = .509$, n.s., IC depth and ToM score were unrelated, $r(13) = .16$, n.s.

2.4 Discussion

The aim of Study 1 was to investigate individual differences in children's ascription of interior self-knowledge to an adult versus self, exploring the potential contributions made by children's creation of an IC and their ToM abilities. Given Burton and Mitchell's (2003) findings, it was expected that children would ascribe more interior knowledge to self than to an adult, but we predicted that IC status would also relate to

children's knowledge ascriptions. Burton and Mitchell's findings were replicated, and as hypothesised, children in the IC group were more likely than their peers in the NIC group to assign less interior self-knowledge to an adult, with a non-significant trend for IC group children also to assign more self-knowledge to themselves. With regard to specific types of interior knowledge, children with ICs attributed less knowledge to adults than did those in the NIC group about whether they felt ill or had been dreaming, and assigned more knowledge to themselves compared with their NIC peers on judgements about whether they were having fun or were hungry.

Preliminary results on depth of IC in the 15 children who had parentally-corroborated ICs also suggested that depth may relate to children's judgements about interior self-knowledge. The results pointed to children with deeper ICs, ascribing more knowledge to themselves across the six questions relating to a range of interior self-knowledge, although findings failed to reach significance. Despite the lack of significant findings, the effect size for these results were medium to large, indicating that a lack of power is likely to have prevented the differences achieving statistical significance. Thus, IC creation, both in terms of having an IC of any sort and possibly with respect to how fully the IC was characterised as an independent being, seemed to relate to children having a more adult-like opinion on who is the best judge of interior aspects of the self.

In contrast to the positive associations between the IC-related variables and children's self-knowledge judgements, the tendency to attribute interior self-knowledge to an adult or self was unrelated to children's concurrent performance on a battery of ToM tasks. Study 1 also failed to replicate Taylor and Carlson's (1997) findings of positive associations between children's creation of an IC and their ToM. Rather, they are

in line with Fernyhough et al.'s (2007) null findings on relations between IC status and ToM. However, neither of the two studies reported in Fernyhough et al. (2007) assessed mentalising abilities in terms of children's performance on standard tasks involving false belief. Study 1 is thus the first non-replication using a standard battery of tests to assess ToM performance. Finally, IC-group children were found to have marginally higher BPVS scores than their NIC counterparts, although the group differences reported above controlled for BPVS scores. Past studies have found no relation between IC status and receptive verbal ability on a standardised measure (Davis, 2006; Fernyhough et al., 2007; Manosevitz et al., 1977; Taylor & Carlson, 1997; Trionfi & Reese, 2009).

This discussion will address possible reasons why we failed to find a relation between IC status and children's basic ToM understanding. The most obvious explanation lies in methodological differences between Taylor and Carlson's (1997) study and Study 1. Taylor and Carlson (1997) assessed children's ToM performance using a battery consisting of trials of three tasks: (a) appearance–reality, (b) contents false belief, and (c) informational access, which is a measure where the child is shown a picture which is later covered so that only small parts of it can be seen. The child is then introduced to a puppet that can only see the covered pictures and is asked, “Do you think that the puppet knows there is a ____ in the picture?” In contrast, Study 1 did not include appearance–reality or informational access tasks, and instead employed a battery of six ToM tasks (one diverse beliefs task, one knowledge access task, two contents false belief tasks, one explicit false belief task, and one unexpected transfer task) that were given in randomised order to each child. These ToM tasks were chosen because past studies have

shown that these tasks are the best indicators of developing ToM (Hughes et al., 2000; Wellman & Liu, 2004).

Compared with the classic unexpected transfer and contents false belief tasks, informational access tasks, and in particular the appearance–reality paradigm, focus on aspects of ToM that are much more clearly linked to fantasy versus reality and understanding the world from different people’s perspectives. One would therefore predict that the former ToM assessments will be more strongly related to children’s IC status compared with the latter type of ToM measure. Unfortunately, Taylor and Carlson (1997) did not report relations between IC status and performance on the individual ToM measures, but the fact that different ToM measures were used in their study compared to the present study is a plausible explanation for the discrepant findings. Future research on the IC–ToM link should incorporate a variety of appearance–reality, informational access, false belief, and representational change paradigms.

Furthermore, tasks incorporating counterfactual reasoning or reasoning about events that are ‘counter to reality’ (Guajardo & Turley-Ames, 2004) could also be added to a battery of ToM tasks. Counterfactual reasoning has been argued to involve similar processes to ToM (Perner, 2000). For example, Perner (2000) asserts that both ToM and counterfactual reasoning tasks require children to reference real world points (locations, events) that are counter to reality. IC children may excel in counterfactual reasoning tasks because they are adept at creating what Gopnik (2009) would term a “counterfactual being.” She views children’s play as a form of counterfactual thinking, or “imagining the way things might be different” (p. 27), and children’s IC play as, “the ways that *people* might be and ways they might act” (pp. 44-55). If Taylor and Carlson’s (1997) group of

IC children were able to excel in appearance-reality tasks which are ToM tasks more closely related to fantasy and viewing the world as it might be different, IC children may therefore also excel in counterfactual reasoning tasks because the type of pretence they have created involves consideration of a counterfactual state of affairs. It would be interesting to examine what specific aspects of children's understanding of mind are related to IC status. Adding counterfactual reasoning tasks may help researchers to pinpoint what specific parts of ToM may be influenced by high fantasy orientation.

However, there are alternative explanations for our failure to replicate the previously observed IC-related differences in children's ToM performance. Throughout the wide body of previous literature on pretence and ToM, there are many accounts that maintain that play facilitates the development of children's ToM abilities. Researchers argue that the ability to pretend is cognitively similar to the ability to recognise false belief (e.g., Leslie, 1987) and the difference between appearance and reality (Flavell, Flavell, & Green, 1987). These authors posit that distinguishing between mental representations (e.g., Maxi believing that the chocolate is in cupboard A) and the real world (e.g., the chocolate really being in cupboard B) is no different from distinguishing between what a peer is pretending to do (e.g., fly through the air) and what that peer is actually doing (e.g., reaching her hands out in front of her and running around). Even as early as Vygotsky (1967), the potential role of fantasy play in facilitating representational capacities was acknowledged, highlighting how fantasy play teaches children "to sever thought...from object" (p. 12) thus providing a means for developing abstract thought. Furthermore, when Perner, Ruffman, and Leekam (1994) found that children's ToM was positively influenced by the number of siblings, one of their hypotheses as to why this

occurred focused on siblings' availability as play partners, and the increased co-operational play that children engage in with older peers. These views on the metarepresentational nature of fantasy play continue to provide a rich account as to why greater fantasy-orientation in play is positively associated with performance on ToM tasks (Freidman & Leslie, 2007; Rakoczy, 2008; Rakoczy et al., 2006). Taylor and Carlson's (1997) findings that ToM was in fact negatively related to children's impersonation play involving pretending that they are machines (i.e. have no mind) also provide support for this metarepresentational view of play.

In contrast to the view that fantasy play is a precursor of ToM ability, others maintain that pretend play consists less of the child honing their understanding of mental states and is more about grasping the behaviour of pretence (Lillard, 1993a; Nichols & Stich, 2000). Lillard (1993a) argued that children simply think of pretending as acting in a certain way, understanding pretence as action and failing to understand its mental component. An example of this understanding of action can be seen in a study performed by Lillard (1993b) where children were shown a toy troll 'Moe' hopping like a rabbit. They were told that Moe comes from the land of trolls and does not know how rabbits hop although he is hopping around like a rabbit. Children were then asked three questions: (1) "Is he hopping like a rabbit?" (2) "Does he know that rabbits hop like that?" (3) "Would you say he is pretending to be a rabbit, or he is *not* pretending to be a rabbit?" Although children correctly answered yes to the first question and no to the second, over 60% of 4-year-olds claimed on at least three of the four trials that Moe was pretending to be a rabbit. Lillard interprets these results as children understanding pretence as action only, rather than recognising its mental representational dimension.

According to Lillard, although children's sociodramatic play may appear to entail representing others' mental representations, in reality it may only involve acting out scripted routines and understanding pretence as action. Other behaviourally-driven researchers believe that play is not motivated from a "pretend desire" but rather from a real desire to act in a way that fits the description of what they have constructed to pretend. Pretend play is not the ability of the child to interpret another's mental state of "pretend"; rather, it is the ability to respond to others who are acting-as-if they are something else (Nichols & Stich, 2000).

In short, some argue that pretend play and fantasy orientation afford the child the opportunity to increase their proficiency in the understanding of mental states (making pretence a potential precursor to ToM), while others believe that pretend play has been given a special status that it does not deserve, and it is merely an understanding of action and not a conceptualisation of mental activity. The null findings on the relation between IC status and ToM performance in Study 1 thus add support to the latter view.

Another interpretation that still allows for a metarepresentational view of play is that having an IC relates not to children's basic ToM competence, but to their tendency to *use* their ToM abilities. Fodor (1992) theorises about the reasons for older children's ability to pass ToM tests, stating that, "A child's ToM, as such, undergoes no alteration; what changes is only his ability to exploit what he knows to make behavioural predictions" (p. 248). Thus, IC status might impact on the ability to use one's mentalising abilities rather than on these abilities per se.

The first prediction of Study 1 was that children's IC status would relate to their conceptualisation of who the authority is on their self-knowledge. Specifically, we

predicted that children with ICs would be more likely to understand that they are the authority on their self-knowledge. The finding that IC creation is positively associated with understanding of interior self-knowledge supports the proposal that having an IC provides children with more opportunity for self-examination and self-insight because of their time spent judging how much the IC knows about themselves and how to react to their IC. There are several accounts of IC children practising this type of judgement by comparing themselves with their IC. In the study performed by Davis (2006), one girl stated that her IC shared her dislike for Korean food, while another child was reported as blaming her misdeeds on her IC, claiming that the IC didn't know that what he was doing was bad while she had that knowledge.

Other studies have reported ICs helping children gain insight into their own negative traits by teaching their IC how to be an ideal friend (Hoff, 2004). Having an invisible friend that others cannot see should also enable the child to establish the extent to which behavioural cues are accurate indicators of internal states. The child must behave in a way that lets others understand the existence and characteristics of a being that is essentially known only to the creator. These results are in line with Gleason et al.'s (2003) study that people with ICs in childhood showed significantly higher scores on the monitoring of others' and their own emotions. They also concord with Hoff's (2004) work on the numerous functions of ICs, and Gopnik's (2009) theory that children with ICs are creating counterfactual people who aid in children's conception of how people *might* act toward them in certain situations.

It has already been established that children are able to make distinctions between interior self-knowledge and exterior self-knowledge from around 6 years of age (Burton

& Mitchell, 2003), but the children in Study 1 seemed to have more insight when it came to specific kinds of interior self-knowledge. Even though there were group differences between the IC and NIC group when analysing self-knowledge across all six questions, specific self-knowledge questions contributed to the main effects of IC status. Children with ICs attributed to themselves significantly more knowledge than NIC children about whether they felt ill or had been dreaming, while attributing less knowledge to adults when the kind of self-knowledge was about whether they were having fun or feeling hungry. Thus, the specific items on which the IC and NIC groups differed suggest that IC-group children believe themselves to be the authority on aspects of self that are undeniably interior (dreaming), and those which adults may feel they can accurately judge (feeling ill or hungry, having fun). The observed heterogeneity across the individual self-knowledge questions is in line with the results of a recent study by Teucher, Mitchell, and Reamer (2009). These researchers found that children 5-13-years of age excelled at certain self-knowledge types, and found others harder to master. For example, children did not seem to understand the think question until they were 9-years-old. This trend was seen across cultures in both English and Cree children. Teucher et al. (2009) argue that this effect of type of self-knowledge question is an indicator that self-knowledge may not be a single domain, but rather can be conceptualised as an umbrella concept composed of many smaller domains.

One issue worthy of further discussion is that, despite differences between the IC and NIC groups in their attribution of various aspects of interior self-knowledge, no group differences were found on attributions relating to perhaps the most obvious type of interior self-knowledge: thinking. There are a number of potential explanations for the

lack of observed group differences in self-knowledge attributions about thinking. First, thinking is the only aspect of interior self-knowledge in Study 1 that is not accompanied by obvious outward manifestations. As proposed in the Introduction to Study 1, having to convey to others the IC's presence and state is likely to help children with ICs gain insight into the outward manifestations of inner states, but not necessarily aid in the development of introspection on thought, as there are typically not outward manifestations when one is thinking. Whereas being ill, hungry, angry, having fun, and dreaming may all be accompanied by various physical indicators (e.g., coughing, stomach growl, fists clenching, laughing, and sleeping).

A second reason why IC status did not relate to children's self-knowledge about "thinking" could be that distinguishing between *states* and *traits* rests on different developmental trajectories. This suggestion is in line with Mitchell et al. (2007) who postulated that *states* (which are typically ephemeral and different from constant processes like thinking, because of their fleeting nature) are more salient for the child, while *traits* are stable and presumably more difficult to detect through introspection. Furthermore, according to Mitchell et al., children may be more likely to be told about their traits than their states, which in turn would give the impression that others know more about this type of self-knowledge than the child. It could be that both children with and without ICs have not reached a stage in their development when they are able to ponder on the thinking mind to this extent. For example, Flavell, Flavell, and Green (2001) found that 5-year-old children were seldom able to explain sudden changes in emotion with no apparent external cause by appealing to the occurrence of a thought.

According to Flavell et al. (2001), this was a result of young children's inability to link thoughts with the feelings that they produce and to understand the stream of conscious. In summary, Study 1 provided evidence that ICs may help young children gain insight into the qualities of their internal existence and how they have privileged access to their own interior experiences, and highlighted how richly ICs can be described and characterised by their creators. It seems that having an IC does relate positively to children's understanding of certain aspects of interior self-knowledge. The aim of the study reported in Chapter 3 was to investigate whether IC status relates to how children represent their real-world friends, investigating IC-related differences in children's spontaneous descriptions of their best friend.

Chapter 3

The Relation Between Imaginary Companion Status and Children's Mentalistic Descriptions of their Best Friends

3.1 Introduction

The results of Study 1 suggest that having an IC may facilitate children's understanding that they have privileged knowledge about their internal states. It has been argued throughout this thesis that IC status relates to this understanding because having an IC provides the child with more opportunities for contrasting own versus others' cognitions and emotions. This argument is based on the assumption that children represent their IC's internal states (Taylor & Carlson, 1997; Taylor et al., 2007). If IC status does entail the child focusing more on the IC's internal states, then one would predict that children with ICs will show a similar focus on cognitions and emotions in describing their real friends. Investigating this possibility was the main aim of Study 2.

Previous studies have examined children's interactions with their real friends in reference to variables like peer acceptance (Gleason, 2004b), concepts of real and imaginary friendships (Gleason & Hohmann, 2006; Seiffge-Krenke, 2001), and stability of descriptions between IC and real friendships (Taylor et al., 1993). However, studies have not investigated whether IC status relates to children's descriptions of their interactions with real friends, or their descriptions of friends' internal states. This is

surprising, considering that a child's interaction with their IC should increase the amount of practice that a child receives in representing others' internal states, therefore increasing the likelihood that children will invoke mental states when describing friends. Gleason (2002) used a social contrast interview to explore how having an IC related to children's concepts of different types of relationship (e.g., with a parent versus a friend). Gleason found that children with ICs may have more practice conceptualising friends and distinguishing between different types of social relationship based on differences in social provision or, "the way that relationships are specialised according to the nature of interaction they provide" (p. 979). For example, parents were seen by all children as sources of instrumental help, however IC children were able to differentiate siblings and friends as sources of conflict and nurturance whereas NIC children nominated parents for every social provision.

Friendship is a central aspect of life not just in childhood, but into the adolescent years (Berndt, 2004; Dunn, Cutting, & Fisher, 2002). When asking an adolescent to describe a friend, it is easy to envisage what they would cite as important characteristics. For example, one would expect an adolescent or adult to cite shared values and ideas as important traits that define a friendship, both concepts that are abstract and psychologically oriented. There is a developmental shift from concrete to abstract self-description which has been observed between childhood and adolescence (Montemayor & Eisen, 1977). Montemayor and Eisen (1977) reported that adolescents are more likely to refer to the self using abstract, psychological, and interpersonal characteristics compared with younger children. If this change occurs in self-description, it should follow that it will occur in children's descriptions of others. This chapter asks, what

characteristics do younger children use to represent their friends, and how does their social and mental state understanding shape these descriptions?

In contrast to the considerable literature investigating children's internal-state understanding in the context of ToM tasks, there is little research on children's tendency to use their knowledge of cognitions and feelings in more everyday settings. Brown, Donelan-McCall, and Dunn (1996) investigated how 4-year-olds' references to mental states varied as a function of the social partner with whom they were interacting. Brown et al. (1996) reported that the highest frequency of conversational turns involving mental state references occurred in interaction between the child and a friend (13.4 turns), with such references being noticeably less common in the child's conversations with a sibling (5.1 turns) or the mother (2.8 turns). Children's narratives to describe the events in a wordless picture book have also been used to index their spontaneous use of internal-state language (Charman & Shmueli-Goetz, 1998; Tager-Flusberg & Sullivan, 1995). Interestingly, both of these studies found that children's use of internal-state language during picture-book narration was unrelated to their performance on standard ToM tasks.

Meins et al. (2006) investigated individual differences in 7- to 9-year olds' internal-state language in the context of their descriptions of a best friend. Specifically, Meins et al. were interested in the extent to which children would describe a best friend with reference to mentalistic characteristics (e.g., references to the friend's mental life, intellect, or emotions). Considerable variation was found in children's mentalistic descriptions of friends, with some children failing to mention any mental characteristics. Meins et al. reported that children's mentalistic descriptions of their best friend were highly positively correlated with their use of internal-state language while narrating a

wordless picture book, suggesting stability in children's tendency to invoke internal states either when describing a friend or explaining and interpreting the events in a book. In contrast, internal-state language use on neither task related to children's performance on an age-appropriate ToM task (Happé, 1994), replicating and extending previous null findings (Charman & Shmueli-Goetz, 1998; Tager-Flusberg & Sullivan, 1995). Meins et al. thus argued that *having* a ToM was different from *using* one's knowledge of internal states to inform how one represents and interprets other people and their behaviour.

Study 2 addressed whether having an IC related to children's tendency to describe a best friend with reference to mentalistic characteristics. It was predicted that children with an IC would be more likely to invoke thoughts, desires, beliefs, and emotions in describing a friend because of the greater opportunities in representing and considering internal states afforded to them by engaging with their IC.

Study 2 also investigated a further potential determinant of children's mentalistic descriptions of a best friend: their *previous* ToM performance. As discussed above, previous research on relations between children's spontaneous use of internal-state language and their performance on standard ToM tasks has only considered concurrent relations, reporting null findings (Charman & Shmueli-Goetz, 1998; Meins et al., 2006; Tager-Flusberg & Sullivan, 1995). However, none of these studies focused on previous ToM and how it may potentially impact later use of mental state commentary. It may be that any relation between ToM performance and spontaneous use of internal-state language is predictive rather than concurrent. For example, a child who at time 1 shows good understanding of false belief and how internal states govern behaviour may be more likely to begin to focus on such internal states during everyday interactions with friends

earlier than children with less advanced understanding of mind. Thus, this initial focus could result in these children being more likely to describe their best friend with reference to mentalistic characteristics at time 2. For these reasons it was hypothesised that *previous* but not concurrent ToM will be positively associated with children's mentalistic descriptions of their best friends.

In summary, Study 2 investigated how children's mentalistic descriptions of a best friend related to IC status and to their earlier and concurrent performance on a battery of ToM tasks. While Study 1 focused on how children with ICs represent the self in reference to others, Study 2 focused on how having an IC relates to children's representations of others' mental lives. It was hypothesised that mentalistic descriptions of friends would be (a) positively associated with having an IC; (b) positively associated with earlier ToM performance, and (c) unrelated to concurrent performance on ToM tasks.

3.2 Method

3.2.1 Participants

Participants were a socially diverse sample of 140 mother-child dyads (73 girls) from the Tees Valley area of North-East England. Children were aged between 50 and 53 months (mean age 51.5 months) at Time 1 and 59 and 64 months (mean age 61.3 months) at Time 2. Parents signed letters of informed consent at each testing phase. Participating dyads were part of an ongoing longitudinal study funded by the Economic and Social Research Council with Dr Elizabeth Meins as Principal Investigator. The author worked in a voluntary capacity as a casual research assistant on this grant during her Master's year at Durham, and has continued to be involved in the project. Although the author was

not responsible for collecting the data reported in Study 2, she was solely responsible for transcribing, coding and analysing all of the IC interviews and friend descriptions.

3.2.2 Procedure and Materials

At 50 months, a female experimenter administered the ToM battery as part of a longer testing session in the developmental laboratories at the University. At 61 months, children were tested individually by a female experimenter in a quiet area in their school. The session began with the ToM battery, followed by the ‘describe a friend’ task, and then the IC interview.

Theory of Mind Performance

A battery of ToM tasks was administered to each child at 50 and 61 months. Details on the battery can be found in section 2.2.2, and full details on the protocol for administering the ToM battery are given in Appendix 2.

Descriptions of Best Friend

Children’s descriptions of their best friend were assessed using the protocol described by Meins et al. (2006). The experimenter first asked the child if he/she had a best friend. No child reported that he/she did not have a best friend. After the child named their best friend, he/she was asked, *Can you describe [friend’s name] for me?* When the child finished the description the experimenter asked, *Is there anything else you would like to tell me about [friend’s name]?*

Children were audio-taped while describing their best friend, and the recordings were later used to transcribe the descriptions verbatim. The transcripts were then coded to establish the extent to which children described their best friend with reference to mentalistic characteristics. The descriptions were divided into discrete descriptions that

could be single words, phrases, or sentences. Each description was placed into one of Meins et al.'s (2006) exclusive and exhaustive categories:

1. *Mentalistic*: references to the friend's desires, emotions, cognitions, and the friend's responses to the child's own internal states (e.g., 'He's kind when I hurt myself').
2. *Behavioural*: references to activities or interactions that could be interpreted on a purely behavioural level (e.g., 'She rides a bicycle', 'He plays with me').
3. *Physical*: references to physical characteristics, age, or position in the family (e.g., 'He has light brown hair', 'She's got a sister called Kate').
4. *General*: any comment that did not fit into the categories above (e.g., 'He's got a big garage'). Describing the friend as 'nice' was included in the general category if no other information was provided to qualify how to characterise being 'nice'.

Inter-rater reliability

A randomly selected 30% of the transcripts was coded by a second researcher, and inter-rater reliability was $\kappa = .75$.

Imaginary Companion Interview

In order to assess the existence of an IC or PO, the imaginary companion interview developed by Taylor and Carlson (1997) was used. Children were asked by the researcher about their pretend friends. The researcher began, "*Now I am going to ask you some questions about friends. Some friends are real, like the kids who live on your street, the ones you play with. And some friends are pretend friends. Pretend friends are ones that are make-believe that you pretend are real. Do you understand?*" When the child indicated understanding the researcher went on to ask if the child had a pretend friend or remembered ever having one.

If the child indicated the existence of an IC or PO by responding affirmatively to the question, they were asked the following:

- (a) Its name
- (b) Whether it is a toy or completely pretend
- (c) Its gender, age, and physical appearance
- (d) What the child likes and dislikes about the friend
- (e) Where the friend lives and sleeps

The children's mothers separately completed a parental questionnaire on whether or not their child had an IC or PO, giving a description of the IC or PO as for the child interview if they indicated the existence of an IC or PO. Children were only credited with having an IC or PO if its existence was corroborated by the mothers. Of the children who participated in Study 2, 20 were reported to have an IC, and 11 to have a PO. To increase statistical power, ICs and POs were combined into a single group (termed IC group).

Maternal Education

Mothers completed a questionnaire indicating their highest educational qualification. Maternal education level was measured on a scale from 1–7: 1, No examinations; 2, CSEs; 3, GCSEs or O-Levels; 4, A-Levels; 5, Further qualification, not to degree level (e.g., nursing); 6, undergraduate degree; and 7, postgraduate qualifications.

Receptive Verbal Ability

Children's receptive verbal ability was assessed at 51 months using the BPVS (Dunn et al., 1997) to control for any relations between verbal ability and children's narrative descriptions of their best friend, and ToM performance.

3.3 Results

3.3.1 *Descriptive Statistics and Preliminary Analysis*

There were 20 children who possessed ICs and were backed up by parental report and 11 children with POs. The children in the IC and PO categories were pooled in order to increase statistical power. On average, children produced 4.81 ($SD = 2.47$) descriptions of their best friend, with a range of 1–14 descriptions. With respect to the number of mentalistic descriptions, the mean score was 1.04 ($SD = 1.53$), with scores ranging between 0 and 7. However, 75 of the 140 children (54.3%) did not include a mentalistic description of their best friend, with a further 46 children (32.8%) using 1 or 2 mentalistic descriptions. Although regression analysis does not require the dependent variable to be normally distributed, the high number of zero scores is potentially problematic in interpreting the results of regression investigating predictors of children's total number of mentalistic descriptions. Thus, as well as treating mentalistic descriptions as a continuous variable (frequency score), a dichotomous category was created, with children divided into two groups: mentalistic present versus mentalistic absent.

Children's ToM scores at 51 and 61 months were positively correlated, $r(133) = 0.52, p < .001$. BPVS scores were positively correlated with ToM at both 51 months, $r(132) = 0.38, p < .001$, and 61 months, $r(128) = 0.40, p < .001$.

Table 3.1 shows the mean ToM scores at 51 and 61 months as a function of IC status. IC status was unrelated to ToM performance at 51 months, $t(135) = 0.33$, $p = .744$, n.s., $d = 0.07$, and to ToM performance at 61 months, $t(134) = 0.40$, $p = .691$, n.s., $d = 0.08$. Table 3.1 also shows maternal educational level as a function of children's IC status. Children in the IC group had more highly educated mothers compared with those in the NIC group, $t(138) = 3.00$, $p < .005$, $d = 0.61$.

The total number of friend descriptions for the IC and NIC groups are also shown in Table 3.1. Children with an IC produced more overall descriptions of their best friends compared to their NIC counterparts, $t(138) = 2.79$, $p < .01$, $d = 0.53$.

Table 3-1 Mean Theory of Mind, Friend Description, Receptive Verbal Ability, and Maternal Education Scores as a Function of Imaginary Companion Status

		Mean score
ToM at 50 months	NIC	3.05 (1.79)
	IC	3.17 (1.70)
ToM at 61 months	NIC	4.07 (1.64)
	IC	4.21 (1.73)
Total number of friend descriptions	NIC	4.50 (2.26)
	IC	5.87 (2.87)
Total number of mentalistic friend descriptions	NIC	0.87 (1.32)
	IC	1.61 (2.03)
BPVS receptive verbal ability	NIC	103.66 (11.34)
	IC	102.17 (17.51)
Maternal Education	NIC	4.54 (1.27)
	IC	5.32 (1.30)

3.3.2 Predictors of Children's Mentalistic Descriptions of Their Best Friend

Table 3.1 shows the mean scores for friend descriptions as a function of IC status. Predictors of the total number of mentalistic characteristics children used to describe their best friend were investigated using hierarchical linear regression. At the first step, child gender, maternal educational level, and BPVS scores were entered. At the second step, IC status and ToM scores at 51 and 61 months were entered. At the final step, total number of non-mentalistic friend descriptions was entered to establish whether any observed relations were independent of children's general verbosity. Table 3.2 summarises the results of the regression analysis.

Table 3-2 Summary of Hierarchical Regression for Predictors of Children's Mentalistic Descriptions of Friends (N=140)

Predictor	<i>B</i>	<i>SE B</i>	β
Step 1			
Maternal education level	0.69	0.10	-0.11
BPVS	0.01	0.01	0.05
Child gender	-0.37	0.26	-0.13
Step 2			
Maternal education level	-0.09	0.10	-0.84
BPVS	0.01	0.01	0.05
Child gender	-0.47	0.26	-0.16
IC status	0.93	0.33	0.26*
ToM at 51 mo.	0.07	0.09	0.09
ToM at 61 mo.	0.01	0.09	0.01
Step 3			
Maternal education level	-0.10	0.10	-0.09
BPVS	0.01	0.01	0.03
Child gender	-0.42	0.26	-0.14
IC status	0.94	0.32	0.26*
ToM at 51 mo.	0.06	0.09	0.07
ToM at 61 mo	0.01	0.09	0.01
Non-mentalistic friend descriptions	-0.10	0.06	-0.15

$p < .005$

Note. $R^2 = .02$ for step 1; $\Delta R^2 = .07$ for step 2; $\Delta R^2 = .18$ for step 3 ($p < .001$)

As shown in Table 3.2, with all variables entered into the regression equation, the only predictor of children's mentalistic descriptions was IC status. Post-hoc analyses

showed that children with an IC described their best friend using more mentalistic characteristics than did their NIC peers, $t(138) = 2.42, p < .025, d = 0.44$.

Next, predictors of children's dichotomous inclusion of mentalistic descriptions were investigated using binary logistic regression, with child gender, maternal educational level, and BPVS scores entered at the first step, and IC status and ToM scores at 51 and 61 months at the second. Table 3.3 summarises the results of the logistic regression.

3-3 Summary of Binary Logistic Regression Analysis for Children's use of Mentalistic Friend Descriptions Dichotomously (N=140)

Predictor	Wald	SE B	Exp β
Step 1			
Maternal education level	0.62	0.14	1.12
BPVS	0.44	0.01	1.01
Child gender	0.39	0.36	0.80
Step 2			
Maternal education level	0.01	0.15	1.01
BPVS	0.00	0.02	1.00
Child gender	1.76	0.39	0.60
IC status	4.47*	0.49	2.83
ToM at 51 mo.	5.03*	0.13	1.33
ToM at 61 mo.	0.00	0.14	1.00
Step 3			
Maternal education level	0.02	0.02	1.00
BPVS	0.01	0.15	1.01
Child gender	1.44	0.39	0.62
IC status	4.65*	0.50	2.93
ToM at 51 mo.	4.67*	0.13	1.32
ToM at 61 mo	0.01	0.14	1.01
Non-mentalistic friend descriptions	1.40	0.09	0.66

$p < .05$

Note. Nagelkerke $R^2 = .02$ for step 1; Nagelkerke $R^2 = .13$ for step 2 ($p < .025$); Nagelkerke $R^2 = .01$ for step 3.

As shown in Table 3.3, with all variables entered into the regression equation, IC status and children's ToM scores at 51 months independently predicted their

dichotomous use of mentalistic description of their best friend. Post-hoc tests showed that, of the 31 children in the IC group, 19 included at least one mentalistic description, compared with 46 of the 109 children in the NIC group, $\chi^2(1) = 3.54, p = .05, w = 0.16$. There was a non-significant trend for children who included at least one mentalistic description to obtain higher 51-month ToM scores ($M = 3.37, SD = 1.75$) than their peers who failed to include a mentalistic description ($M = 2.81, SD = 1.76$), $t(135) = 1.88, p = .062, n.s., d = 0.32$.

3.4 Discussion

The results of Study 2 show that children with ICs are more likely than their NIC peers to describe their best friend with reference to mentalistic characteristics, suggesting that children with ICs are not only more likely to employ mental state terms when describing a friend, but also are more likely to use a greater number of mental state references than their NIC peers. This relation between IC status and mentalistic descriptions was independent of children's verbal ability, gender, ToM understanding, and overall verbosity, and their mothers' educational level. These findings are in line with the notion that having an IC entails that the child focuses on the IC's cognitions and emotions, but these findings are unique in showing that this focus on internal states appears to generalise to how children represent their real friends.

The second aim of Study 2 was to investigate whether children's ToM performance predicts a child's tendency to describe their best friend with reference to mentalistic characteristics. Although ToM performance was not related to children's frequency scores for mentalistic descriptions, ToM at 51 months independently predicted children's dichotomous inclusion of mentalistic characteristics when describing their best

friend 10 months later. In contrast, concurrent ToM performance was unrelated to children's mentalistic descriptions of their best friend, replicating the findings of Meins et al. (2006).

Finally, Study 2 found no relation between IC status and children's previous or concurrent ToM performance, replicating the null findings of Study 1, Fernyhough et al. (2007), and Hepworth (2006). Given the relatively large sample, the null findings of Study 2 are noteworthy; they also uniquely demonstrate that children's *earlier* ToM abilities, as well as their concurrent ToM performance, were unrelated to IC status. Further discussion of the potential reasons for the observed lack of consistency in findings regarding the relation between IC status and ToM can be found in Section 2.5.

The first prediction presented in Study 2 was that children's inclusion of mental state descriptions of their friends would be positively associated with having an IC. The positive association was predicted because children with ICs should be providing themselves with more opportunities to contrast their own as well as others' cognitions and emotions by interacting with their IC. The regression analyses confirmed that IC status predicted unique variance in children's tendency to describe their best friend with reference to mental qualities and characteristics. These results are in line with Gopnik's (2009) claim that ICs can be one way that children learn about others' minds and behaviour, and Gleason's (2002) statement that children with ICs may be more sensitive to relationship dynamics and concepts of relationships. In fact, Gleason and Hohmann (2006) found that children with ICs do not tend to draw a sharp distinction between real and pretend friendships, which supports Study 2's claim that having an IC will enable children to practise thinking about the inner lives of people in general. Broadly, the

findings of Study 2 also support the view that imagination and pretend play are associated with child mental-state talk (Hughes & Dunn, 1997; Hughes et al. 2006). Having an IC is an indicator of high imaginative capacity, and the fact that children with ICs were more likely than their NIC peers to use internal-state attributes when describing a friend points to imagination as one potential facilitator of this ability.

There are numerous examples in Study 2 of this type of concentration on a friend's inner lives and traits from both IC and NIC children. One child who had an IC was able to provide the experimenter not only with her real friend's internal attribute, but was also able to provide a well thought out example. She stated, "Ellie's really funny. When we were going swimming she sat down and she had a towel on and she went around and I said what are you doing and she said, 'I forgot I was pretending to be batman today'." While a child with NIC described her friend as kind, citing that every time she fell down her friend would help her up and hug her. Finally, a third child explained that her friend was nice because she shared her toys and lipstick.

Partial support was obtained for the prediction that mentalistic descriptions would be associated with children's earlier ToM abilities but would not relate to concurrent performance on ToM tasks. ToM performance at 51 months was found to predict unique variance in children's tendency to include at least one mentalistic description, but ToM at 51 months did not predict the number of mentalistic descriptions used. Study 2's finding that children's spontaneous use of mental state terms to describe their best friend did not relate to their current ToM ability concurs with studies on children's ToM performance and internal-state language in non-interactive contexts (Charman & Shmueli-Goetz, 1998; Tager-Flusberg & Sullivan, 1995). The findings

reported here also replicate those of Meins et al. (2006), who reported null relations between mentalistic descriptions of friends and ToM performance in children aged 7 to 9 years.

The results of Study 2 support the notion that the “tendency to focus on internal states taps into different underlying capacities to those that determine ToM performance” (Meins et al., 2006, p. 193), but also have the potential to refine our understanding of the relation between children’s basic ToM performance and their tendency to use this understanding when representing people and their behaviour. It was proposed that the initial focus on mental states would result in children being more likely to focus on people’s mental qualities as important determinants of their behaviour. Advanced understanding of mind at an age when children are only just beginning to acquire a representational ToM (i.e., 51 months) may result in children naturally tending to focus on people’s mental qualities. Thus, it may be *precocity* in children’s ToM understanding that determines the extent to which children represent and describe people with reference to their mental characteristics. In support of this suggestion, Ruffman et al. (2002) reported that it was only children’s early use of internal-state talk (at mean age 3) that predicted their later emotion understanding: later internal state talk (at age 3 ½) had no such facilitatory effect.

The results of Study 2 lead to the question, “why might having an IC relate to children’s ability to exploit their knowledge of internal states?” One reason may lie in the facility to deal with unseen traits that having an IC requires. Because children with ICs are familiar with friends that are unseen and that must be described to their peers or parents, this could steer the focus of descriptions toward more salient unseen

characteristics. For example, many of the children in Study 1 were able to describe things that they liked about their IC as well as things that they did not like. One child liked her IC because she could talk to it about everything and so this gave her an outlet for emotional expression, while another child did not like his IC because he was naughty and smashed up a flower bed. This ability spontaneously to focus on inner traits and to describe the IC in terms of their unseen characteristics may be one of the results of possessing an IC. If this is the case, one might predict that children with POs will be more likely than those with ICs to focus on describing their POs in terms of inner traits because others are able to see what the PO looks like, so the child does not have to explain their outer appearance. This tendency to focus on the PO's internal states may then generalise to describing real friends in terms of their mentalistic characteristics. Future research should investigate this possibility by recruiting sufficiently large samples of children with POs and ICs, and establishing whether they differ in the extent to which they spontaneously describe both their imaginary and real-life friends with reference to their internal states.

The second reason that IC children could be more adept at spontaneously focusing on friend's internal states in their descriptions could lie in their superior communication and narrative abilities (Bouldin, et al., 2002; Roby & Kidd, 2008; Trionfi & Reese, 2009). Although (contrary to Study 1's finding that there was a marginal relationship between IC status and BPVS score) IC children's receptive vocabulary does not differ from NIC children's, IC-group children appear better able to utilise their language skills to provide richer narrative accounts (Trionfi & Reese, 2009) and to convey crucial information to the listener in a referential communication paradigm (Roby & Kidd, 2008). Providing

information on the best friend's mentalistic characteristics may thus be a function of the IC-group children's general tendency to provide richer descriptions rather than a tendency to favour mentalistic qualities per se. The fact that the results of Study 2 showed that children with ICs provided more *overall* descriptions of their best friends than did their NIC-group peers is in line with this suggestion. However, the relation between IC status and mentalistic descriptions of best friends still held once the number of non-mentalistic descriptions had been controlled for.

It would thus be interesting for future research to investigate whether IC status related to children's specific use of mentalistic language in other contexts (e.g., book narration), and to explore whether children who are more likely to describe friends in terms of their mentalistic characteristics show superior communication skills in the referential paradigm used by Roby and Kidd (2008). Such studies would help tease apart the potential effects of IC-status versus superior narrative and communication skills on children's mentalistic descriptions of friends.

Chapter 4

Imaginary Companions: Private Speech: Were you Talking to Me?

4.1 Introduction

Toward the end of the second year of life, children go through a developmental process which enables them to socialise in a completely new way. Vygotsky (1931/1978) described this time as follows:

“The most significant moment in the course of intellectual development, which gives birth to the purely human forms of practical and abstract intelligence, occurs when speech and practical activity, two previously completely independent lines of development, converge” (p. 24).

Vygotsky is referring to children’s ability use language as a psychological tool, an ability that is unique to humans and important in enabling the child to participate in social and cultural activities (Vygotsky, 1931/1978).

With the development of speech, children also begin to generate spontaneous utterances which are overtly vocalised and sometimes partially covert (e.g., inaudible muttering or whispers), but appear to have no communicative purpose. This type of speech was first observed and analysed by Piaget (1926) in two 6-year-olds in a classroom setting. Piaget called these utterances *egocentric speech*, and theorised that this type of speech was further evidence of preoperational children’s inability to take the

perspective of another. Egocentric speech was conceptualised by Piaget as manifesting undirected or “autistic” thought, and thus playing no essential role in child development, being merely speech for the child’s sake, which is incomprehensible to others and closer to a verbal dream than a conscious activity. Furthermore he commented on the way that, in this type of speech, the mind is “allowed to float about at the mercy of free association until two propositions are brought together which originally had nothing in common” (Piaget, 1926/1959, p.158). In a simplistic sense, Piaget conceptualised egocentric speech as preparation for social language. With development, a child would replace egocentric speech with fully mature and effective social speech. Piaget comments: “An adult thinks socially even when he is alone, the child under 7 thinks egocentrically, even in the society of others” (Piaget, 1926/1959, p.40).

Vygotsky took issue with Piaget’s position, asserting that there was in fact a developmental purpose for this type of self-directed speech (Vygotsky, 1931/1997b). In Vygotsky’s view, thought, language, and behaviour are inextricably related. Vygotsky distinguished between *elementary mental functions* (cognitive processes, such as non-mediated memory and non-voluntary attention, that humans share with other species) and *higher mental functions* (cognitive processes exclusive to humans, such as mediated memory). Unlike elementary mental functions, higher mental functions are semiotically mediated, primarily by language. Vygotsky saw egocentric speech as originating from the social world (rather than the child’s mind) and becoming internalised to form symbolic *inner speech* or verbal thought. Consequently, Vygotsky maintained that egocentric speech was the mediational mechanism via which higher mental functions developed in early childhood, and was the way station between social speech and one’s own symbolic,

condensed inner speech. Thus, like Piaget, Vygotsky argued that the incidence of egocentric speech will peak in the preoperational years and disappear by middle childhood. However, while Piaget attributed its disappearance to the child overcoming their egocentrism and replacing this immature form of speech with social conversation, Vygotsky (1931/1986) proposed that egocentric speech did not disappear, but instead was internalised to form inner speech.

Although Vygotsky disagreed with Piaget on the developmental role of self-directed speech, he maintained Piaget's term *egocentric speech*. It was not until 1966 that Flavell coined the term psychologists now use to describe this form of child self-talk: *private speech*. Modern research on private speech has found strong support for the curvilinear inverted-U shaped developmental trajectory (e.g., Berk & Garvin, 1984; Winsler & Naglieri, 2003), and for Vygotsky's contention that private speech is internalised to form inner speech (Diaz & Berk, 1992; Montero, 2006). Indeed, the degree of internalisation of private speech has been formalised into a three-level coding scheme (Diaz & Berk, 1992), going from task-irrelevant speech through overt task-relevant, self-guiding comments to more covert whispering and lip movements. Moreover, there is good evidence that private speech is used universally to regulate behaviour, regardless of the child's socio-cultural context (Al-Namlah et al., 2006; Berk & Garvin, 1984; Diaz, Neal, & Vachio, 1991), with evidence that developmental disorders such as ADHD merely delay the internalisation of private speech rather than prevent children from using such speech to regulate their behaviour (Berk & Landau, 1993, Berk & Potts, 1991; Winsler, Manfra, & Diaz, 2007). However, research has highlighted how private speech continues to be used as an aid to behavioural regulation

into adolescence (e.g., Kronk, 1994) and adulthood (e.g., Duncan & Cheyne, 2002; John-Steiner, 1992; Sánchez & de la Mata, 2006). Adults self-report the use of private speech for different functions, but use private speech in ways similar to children when engaging in cognitively challenging tasks (Duncan & Cheyne, 1999; Sánchez & de la Mata, 2006).

Despite evidence for the universality of private speech, there are individual differences in its use which have been linked to various social-environmental factors. Given that Vygotsky highlighted the social origin of private speech, a richer social environment would be expected to relate to more advanced private speech. Higher incidence of advanced private speech use in children has been found to be associated with (a) authoritative parenting style (Behrend & Rosengren, 1992; Winsler, Feder, Way, & Manfra, 2006), (b) higher socioeconomic status (Berk & Garvin, 1984), and (c) higher education level of the participant (Sánchez & de la Mata, 2006). Conversely, delays in private speech development have been reported in children whose early social experiences have been restricted. For example, children being brought up in low-income Appalachian families, a culture where adult-child verbal communication is restricted, show delays in private speech (Berk & Garvin, 1984), as do children from low-income families with a history of abuse (Diaz et al., 1991). There is also evidence of poverty of private and inner speech in individuals with autism (Hurlburt, Happé, & Frith, 1994), a disorder associated with characteristic impairments in social interaction and language.

These findings all clearly support Vygotsky's argument for the social origin of private speech, but individual differences in private speech development have only been investigated with reference to developmental disorder or broad-based social and environmental factors, with more fine-grained differences between children being largely

ignored. The main aim of the study reported in this chapter was to investigate how enrichment of the child's social environment in the form of having an IC related to the sophistication and content of children's private speech. If Vygotsky's argument that private speech develops out of social speech is correct, having an IC would be expected to be positively associated with private speech due to the fact that children with ICs will engage in social interaction with their IC over and above interaction with caregivers and peers.

There are a number of additional reasons for proposing that ICs will relate to children's private speech. First, ICs and private speech have both been associated with children's ToM performance. As discussed in Chapter 1, in comparison with their NIC peers, there is evidence that children with ICs perform better on ToM tasks (Taylor et al., 1997, although see Fernyhough et al., 2007, for non-replication). As noted by Astington and Baird (2005), researchers have for many years discussed the implications of children's conversational engagement for their ToM development. The empirical work of Dunn, Brown, Slomkowski, Tesla, and Youngblade (1991), and the theoretical perspective of Harris (1996, 1999), highlight conversational pragmatics as the driving force for children developing an awareness of people's different epistemic states. In contrast, de Villiers and de Villiers (2000) argued that conversational language facilitates ToM understanding because both complex syntax and ToM require a grasp of complementation.

Given these historical links between conversational language and ToM, it is surprising that only one empirical study has investigated links between children's own tendency spontaneously to talk in the form of private speech and its relation with ToM

performance. Fernyhough and Meins (2009) examined the fluid and dynamic link between these two variables in a study involving three age groups of children. High levels of overt self-regulatory private speech in young children will equate to more advanced private speech development, whereas the same high levels in older children will indicate less advanced private speech development given that private speech becomes internalised over the course of development. Fernyhough and Meins found the relation between private speech and ToM to change as a function of the child's age. Self-regulatory private speech was positively associated with ToM performance in 3- to 4-year-olds, but there was no association between these variables in 4- to 5-year-olds, and a negative association in 5- to 6-year-olds. These results suggest that precocious development of private speech relates to superior understanding of mind.

A developed ToM alone is not enough to explain why private speech should be qualitatively different in an exceptionally imaginative child. Linguistic practice in the form of dialogic narrative between the child and the IC should also impact on private speech differently in a child who engages in communication during fantasy play. Studies analysing language skills in IC children have shown them to have more mature language (although they do not excel in basic vocabulary) (Trionfi & Reese, 2009), enhanced socio-cognitive (Bouldin, et al., 2002), and referential communication (Roby & Kidd, 2008) skills. Trionfi and Reese (2009) reported that IC and NIC children did not differ in their receptive (Peabody Picture Vocabulary Test-IIIB; Dunn et al., 1997) or expressive (Expressive Vocabulary Test; Williams, 1997) vocabularies (although these results are inconsistent with Study 1's finding that there was a marginal relationship between receptive vocabulary and children's IC status), but IC children produced richer narrative

accounts than their NIC peers both when telling a story and when narrating a personally-experienced past event. In particular, IC children were more likely to use dialogue in their stories, and more likely to use temporal-locative-causal markers in their past event narratives compared with children in the NIC group. Similarly, Bouldin et al. (2002) found that children with ICs used more compound sentences, relative clauses, and adverbial clauses in their narratives.

Roby and Kidd (2008) investigated relations between IC status and children's language use using an experimental referential communication paradigm (Camaioni, Ercolani, & Lloyd, 1995), which assessed the child's ability both to convey and to process linguistic information. The stimuli in each trial consisted of pictures of the same object varying on two or more dimensions, for example pictures of the same clown with a red or green collar, and wearing each of two different hats. In the speaker condition, the child was required to describe a particular picture identified by a red border in order for the experimenter (who was behind a barrier) to select the correct picture. In the listening condition, children had to select the picture when they were given either an ambiguous or unambiguous description. Roby and Kidd found no IC-related differences in children's performance on the listening condition, but IC children were better able than their NIC peers to identify a specific referent (e.g., the green collar) and to avoid describing redundant features in the speaker condition.

Taken together, these findings suggest that IC children may have a better understanding of the informational requirements of conversation. If private speech develops from social speech, the increased sophistication and conversational competence

of IC children's social speech thus provide further grounds for hypothesising that the private speech of children with ICs will differ from that of their NIC counterparts.

How might these differences in private speech use best be characterised? It may be that the presence of an IC and the greater opportunities for dialogic self-talk that an IC affords will facilitate the internalisation of private speech. One would thus hypothesise that children with ICs will engage in more sophisticated forms of private speech, indicating greater internalisation than their NIC peers. In addition, IC status may relate to the content and structure of the child's private speech. For example, engaging in dialogue with and about their ICs may improve children's narrative abilities or relate to a tendency to include more fantasy-related talk in their private speech. These alternatives raise the issue of the context in which private speech is observed.

Private speech has typically been elicited and examined in two main contexts. First, it is common for experimenters to use cognitive tasks to elicit private speech in the classroom or developmental laboratory. For example, Fernyhough and Fradley (2005) reported that 89% of the children in their sample used private speech while engaged in solving problems on the Tower of London (an executive planning task that can be varied in difficulty), and found that children were most likely to use private speech while completing moderately difficult tasks. Observing private speech during challenging cognitive tasks is ideal for investigating children's use of task-related private speech, and the extent to which such speech relates to task success.

Private speech can also be observed in more naturalistic play settings. In a study performed by Winsler et al. (2006), parents reported more private speech occurring in

children's fantasy play than during problem-solving activities. Kraft and Berk (1998) suggest that while play may not be as strictly goal-directed as cognitive tasks, it may be more fluid in its ability to produce private speech, because in effect, the goal is determined by the child and can be changed according to what the child wants the outcome to entail. Private speech may differ in play situations, not just according to what goals children set for themselves, but also with the presence or absence of a toy, which can provide a physical outlet for the imagination of the child (Olszewski & Fuson, 1982). For this reason, the content as well as the function of private speech may differ when the child moves between problem-solving and play contexts. Private speech during play is well suited to investigations into the content and fantasy-orientation of spontaneously occurring speech. Consequently, we chose to observe private speech during free play in order to explore how children's IC status related both to the content of their private speech and its level of internalisation. Focusing on private speech in a play context enabled us to investigate whether the tendency for IC children to include dialogue and more complicated linguistic utterances observed in narrative tasks (Bouldin et al., 2002; Trionfi & Reese, 2009) was also evident in their spontaneous private speech.

In summary, the aim of the study reported in this chapter was to investigate how a child's creation of an IC related to their private speech in terms of (a) production, (b) degree of internalisation or structure, and (c) content. It was hypothesised that having an IC would be associated with verbosity, greater internalisation of private speech, more sophisticated narrative structure, and more fantasy content. Study 3 will continue to address the issue of how children's IC status may impact upon the development of their cognitions as well as the development of self and other knowledge through children's self

talk. Conclusions will be drawn about how children with and without ICs may represent themselves and others.

4.2 Methods

4.2.1 *Participants*

Participants were 148 children (74 girls) aged between 59 and 64 months (mean age 61.3 months), the majority of whom had participated in Study 2. The additional children in Study 3 were those who had not completed the friend description task used in Study 2. As in Study 2, the author was not responsible for data collection given that the testing sessions were part of an ESRC-funded project, but transcribed, coded, and analysed the private speech data used in Study 3.

4.2.2 *Procedure and Materials*

Children's private speech was assessed from a free play session at the University's developmental laboratories. The private speech assessment formed part of a 2-hour testing session involving the child and mother. The IC interview was conducted in a separate testing session in a quiet area in the child's school as described in Study 2 (see p. 65).

Children's Private Speech Production

To assess children's production and content of private speech, children were observed while involved in free play. Past studies have utilised naturalistic observation of play aimed at elicitation of private speech, and found that this method works well in observing children's production of private speech (Kraft & Berk, 1998; Olszewski, 1987; Olszewski & Fuson, 1982; Winsler, Carlton, & Barry, 2000).

The private speech assessment immediately followed on from an imaginative narrative co-construction task which involved both the mother and child. In this task, the mother was provided with a basic script that focused on the opening of an ice-cream shop, and the dyad's task was to engage in joint pretence, elaborating on the basic script. A range of toys and props were provided to facilitate the joint pretence:

- (a) Plastic ice cream in different colours and in different clear plastic containers
- (b) Ice cream scoop, cups, spoons, napkins, and a mix of metal and plastic containers that would have sprinkles and sauces inside
- (c) Wooden shop front with flavours written on the front
- (d) A till which made sound effects and had paper money and plastic coins inside
- (e) A stuffed teddy and a dog
- (f) A table and chairs

Other toys available to the children included:

- (g) A builder's tool set with a hard hat
- (h) A set of Lego blocks

The joint pretence task varied in length, and ended when the mother and child indicated that they were finished. The experimenter then gave the mother a booklet of questionnaires to complete, and directed her to sit on a chair in the corner of the testing room. The experimenter then told the child that they could continue playing with the toys so that their mother could complete the questionnaires. If the child was reluctant to continue playing, the experimenter would encourage them by asking if she could be a customer at the shop, and asked if she could have an ice-cream. When the child agreed, the experimenter sat in the corner near the mother and had minimal interaction with the

child. The session ended when the mother finished filling out the questionnaire. Because mothers varied in the length of time it took them to complete the questionnaire, the time taken to observe each child (the observation time) varied. Children were filmed throughout the session by two remote-control cameras mounted on opposite walls of the testing room. The cameras provided a clear view of the child's face throughout the session. The average observation time was 306 seconds, with times ranging from 120 to 840 seconds.

Children's speech during the session was first divided into discrete utterances. An utterance was defined as a unit of speech containing no temporal or semantic discontinuities. A temporal discontinuity was defined as a pause of at least 2 seconds, while a semantic discontinuity was defined as a change in content regardless of whether it was preceded by a pause. Each utterance was first coded as social or private using criteria outlined by Winsler, Fernyhough, McClaren, and Way (2004) in the *Private Speech Coding Manual*. This manual is used extensively in the field and works as a living manual in which new and up to date research on private speech coding can be included with proper scientific justification.

Social utterances: These are utterances which are addressed to a social partner (the mother or experimenter) as indicated by the following markers:

Eye Contact - Child shows sustained eye contact with mother or experimenter during exchange.

Behavioural - Child's behaviour involves the experimenter or mother through gaze direction or physical contact, or if mother or experimenter's behaviour involves the child within two seconds of the utterance.

Content markers - The child's utterance had the same topic as the mother's or experimenter's preceding utterance, or if the child addressed the mother or experimenter by using their name in a question.

Temporal Contiguity - the utterance occurred less than 2 seconds after any other social utterance.

Private utterances: These were any utterances that did not meet any of the above criteria for social utterances. Children's private speech utterances were transcribed verbatim, and each child was given a score for the total frequency of private speech utterances.

Each private speech utterance was then further coded using a scheme that can be found in the *Private Speech Coding Manual* using criteria previously described by Winsler, De Leon, Wallace, Carlton, & Willson-Quayle (2003), adapted from Diaz, Winsler, Atencio, & Harbers (1992) and Winsler (1998). This scheme is a standard measure used in private speech coding and has shown high inter-rater reliability (Winsler, et al., 2003). This scheme defines 11 mutually exclusive and exhaustive categories. The categories are:

1) *Exclamations* - Typically one word expressions of affect or expletives (e.g., 'Oh!' 'Oops!' 'Ha!' 'Woah!').

2) *Non-words* - Sound effects, wordplay, humming (e.g., 'Hmmm,' 'Vroom,' explosion noises).

3) *Descriptions of the Self* - Statements about the child's state or behaviour (e.g., 'I'm looking for blue,' 'I found a fish,' 'I'm hungry,' 'I want the strawberry,' 'Silly me,' 'I like this!').

- 4) *Descriptions of the Environment/Task* - Statements about the child's surroundings or the task (e.g., 'They're the same colour,' 'A blue one,' 'It's hot in here,' 'It's all done,' counting items).
- 5) *Evaluative or Motivational Statements* - Statements about the child's ability, performance, or motivation; self-reinforcement or deprecation; evaluation of the task (e.g., 'I did it,' 'I'm good at this,' 'Good,' 'This is easy').
- 6) *Plans/Hypothetical Reasoning* - Planning or future-oriented statements; if-then constructions (e.g., 'I need a purple one,' 'I'll do this first,' 'If I put this here').
- 7) *Commands to the Self* - Explicit instructions to the self with imperative verb constructions (e.g., 'Pick them up,' 'Don't put that one,' 'Get one more').
- 8) *Questions/Answers* - Questions addressed to the self or clear answers to one's own questions (e.g., 'Which one should I put next?' 'This one,' 'Where's the blue?' 'Is that right?').
- 9) *Transitional Statements* - reflective utterances which had to do with ending one activity and starting another (e.g., 'So,' 'Then,' 'Next,' 'OK,' 'There').
- 10) *Fantasy Related/Dialogue* - Any statements with a fantasy theme (e.g. 'Yum, Yum,' 'I'm going to be rich, this is going to be great!' 'Teddy wants an ice cream,' 'We're opening the shop'); any dialogue in which the child addressed the stuffed animals or other toys or spoke on behalf of the animals or toys (e.g., 'What do you want teddy?', 'I'd like strawberry please') or spoke in a different voice.
- 11) *Private Speech on its way to Internalisation* - Whispering, lip movements, and unintelligible speech. This category was not coded for content given that it was impossible to discern what children were saying.

Children received a frequency score for the number of private speech utterances falling into each of the 11 categories.

Private speech content was coded by a researcher blind to IC status and all other measures, with a randomly selected 20% of sessions being coded by a second blind researcher. Inter-rater agreement was $\kappa = 0.92$.

Theory of Mind Performance

A battery of ToM tasks was administered to each child at 50 and 61 months. Details on the battery can be found in section 2.2.2, and full details on the protocol for administering the ToM battery are given in Appendix 2.

Imaginary Companion Interview

The IC interview was described in detail in Study 2 (see pp. 65, 67-68). The interview was run at 61 months in the children's school. There were an additional 4 children who participated in Study 3 who had a parentally-corroborated IC, making a total of 35 children in the IC group.

Maternal Education

Mothers completed a questionnaire indicating their highest educational qualification. Maternal education level was measured on a scale from 1–7: 1, No examinations; 2, CSEs; 3, GCSEs or O-Levels; 4, A-Levels; 5, Further qualification, not to degree level (e.g., nursing); 6, undergraduate degree; and 7, postgraduate qualifications.

Receptive Verbal Ability

Children's receptive verbal ability was assessed at 51 months using the BPVS (Dunn et al., 1997) to control for any relations between verbal ability and children's private speech.

4.3 Results

4.3.1 Descriptive Statistics and Preliminary Analyses

Of the 148 children, in total 35 stated that they had an IC that was corroborated by their parent; 13 in the IC group were POs; 18 children (16 of whom were in the NIC group) failed to use any private speech during the observation. Table 4.1 shows the means scores for all variables.

Table 4-1 Means, Standard Deviations, and Ranges for All Variables

	Range	Means
Total Private Speech Utterances	86	11.48 (13.72)
Exclamations	10	0.77 (1.43)
Non-Words	37	1.99 (3.99)
Descriptions of the Self	6	0.58 (1.20)
Descriptions of the Environment/Task	12	1.48 (2.37)
Evaluative/Motivational Statements	6	0.41 (1.02)
Plans/Hypothetical reasoning	16	0.76 (1.78)
Commands to the Self	8	0.54 (1.26)
Questions/Answers	4	0.33 (0.72)
Transitional Statements	5	0.43 (0.94)
Fantasy Related	44	2.32 (5.00)
Lip Movements or Unintelligible	24	1.81 (3.46)
BPVS Standardised Score at 50 months	43-166	103.64 (14.71)
Maternal Education	1-7	4.73 (1.31)

Standard deviations are given in parentheses
All private speech ranges minimums are 0

As shown in Table 4.1, several of the sub-types of private speech occurred at low frequencies. Consequently, sub-types assessing similar aspects of private speech were amalgamated as follows: (a) *Exclamations* and *Non-words* were summed; (b) *Descriptions of self*, *Evaluative/motivational statements*, *Plans/hypothetical reasoning*, *Commands to self*, and *Questions/answers* were summed to form a Self-related private speech category; and (c) *Descriptions of the environment/task* and *Transitional*

statements were summed to form an Other-related private speech category. Data for all private speech categories were non-normally distributed.

Spearman's rho correlations showed that scores for overall amount of private speech and all private speech categories were unrelated to (a) children's BPVS scores, $\rho_s < .12, p > .560$, n.s., and (b) mothers' educational level, $\rho_s < .12, p > .326$, n.s.. Parametric analyses were used below since the *F* test is robust against violations of normality as long as there are at least 20 degrees of freedom (Tabachnick & Fidel, 2007).

IC status was unrelated to children's BPVS scores (see Table 4.2 for the relevant mean scores), $t(125) = 0.62, p = .534$, n.s., $d = 0.04$, replicating Trionfi and Reese's (2009) findings.

4.3.2 Imaginary Companion Status and Private Speech

Table 4.2 shows the mean scores for the private speech categories as a function of IC status and gender.

Table 4-2 Means and Standard Deviations for Private Speech Categories as a Function of Imaginary Companion Status and Gender

	IC Overall	IC Girls	IC Boys	NIC Overall	NIC Girls	NIC Boys
Overall Private Speech	18.29 (20.09)	14.78 (16.34)	22.00 (23.35)	9.37 (10.28)	9.46 (10.81)	9.28 (9.83)
Non-Words	3.86 (6.87)	1.39 (1.58)	6.47 (9.15)	2.42 (3.41)	2.52 (3.84)	2.32 (2.97)
Self Private Speech	3.88 (4.36)	3.83 (4.00)	3.94 (4.84)	2.22 (3.85)	2.11 (4.23)	2.33 (3.48)
Other Private Speech	2.14 (3.54)	2.00 (3.16)	2.29 (4.00)	1.83 (2.68)	1.82 (2.34)	1.84 (2.99)
Fantasy Related	3.71 (8.46)	2.06 (5.83)	5.47 (10.47)	1.89 (3.20)	1.84 (3.28)	1.95 (3.15)
Lip Movement/Unintelligible	4.57 (5.76)	5.22 (6.52)	3.88 (4.92)	0.96 (1.60)	1.09 (1.78)	0.82 (1.40)
BPVS Standardised Score at 50 Months	104.06 (17.06)	98.83 (19.86)	110.33 (10.45)	103.50 (14.00)	104.10 (16.03)	102.95 (11.89)
Maternal Education	5.48 (1.18)	5.44 (1.46)	5.54 (0.78)	4.51 (5.48)	4.37 (1.22)	4.67 (1.32)

Standard deviations are shown in parentheses

First, the relation between IC status and children's overall amount of private speech was investigated using a 2(IC, NIC) \times 2(male, female) one-way ANCOVA, with observation time, maternal educational level, and BPVS scores entered as covariates. There was a main effect of IC status, $F(1, 119) = 4.76, p < .05, \eta^2 = .040$, but no effect of gender, $F(1, 119) = 0.41, p = .522, n.s., \eta^2 = .003$, and no IC status \times gender interaction, $F(1, 119) = 0.21, p = .648, n.s., \eta^2 = .002$. In support of our first hypothesis, a post-hoc

one-way ANCOVA (controlling for observation time) showed that children in the IC group engaged in more private speech than did their counterparts in the NIC group, $F(1, 144) = 8.66, p < .005$.

The relation between IC status and the sub-types of children's private speech was investigated using a $2(\text{IC, NIC}) \times 2(\text{male, female})$ MANCOVA, with the five private speech categories (non-words/exclamations, self-related, other-related, fantasy-oriented, unintelligible) as the dependent variables and observation time, maternal educational level, and BPVS scores entered as covariates. There was a main effect of IC status, $F(1, 115) = 5.18, p < .001$, a marginally significant trend for a main effect of gender, $F(1, 115) = 2.12, p = .068$, and no IC status \times gender interaction, $F(1, 115) = 1.88, p = .103$, n.s.. Looking at the separate categories of private speech, main effects of IC status, $F(1, 119) = 23.78, p < .001, \eta^2 = .144$, and gender, $F(1, 119) = 5.09, p < .05, \eta^2 = .031$ were seen specifically for the covert private speech category.

Post hoc one-way ANCOVAs (controlling for observation time) further explored these group differences in covert private speech. Children in the IC group were found to engage in more covert private speech than their NIC-group counterparts, $F(1, 144) = 36.36, p < .001, \eta^2 = .252$, but girls ($M=2.09, SD=3.94$) and boys ($M=1.53, SD=2.92$) did not differ in their use of covert private speech $F(1, 144) = 1.01, p = .316$, n.s., $\eta^2 = .007$.

4.4 Discussion

The aim of the study reported in this chapter was to assess the extent to which private speech production, internalisation, and content related to children's IC status. As

hypothesised, compared with NIC-group children, those who had an IC engaged in more overall private speech, and in more covert private speech (indicative of greater internalisation). However, IC status was not found to relate to the extent to which children engaged in fantasy-oriented private speech. The observed relations between IC status and private speech were independent of gender, maternal education, and children's receptive verbal abilities.

The main prediction of Study 3 was that IC status would relate to differences in private speech in three areas: production, structure and internalisation, and content. Children's overall production of private speech was indeed related to their IC status, with IC-group children engaging in more private speech than their NIC peers during free play. There was a large effect (Cohen, 1988) for the relation between IC status and children's engagement in covert private speech, which suggests that the difference between the IC and NIC groups with respect to overall private speech production is likely to have been driven by the specific group differences on this particular category of private speech.

These results provide support for Vygotsky's (1931/1986) claim that private speech evolves out of social speech, because presumably children with ICs have provided themselves with more opportunity to engage in social exchanges. The fact that the main effect of IC status was seen specifically for covert private speech – the most internalised form – suggests that having an IC is associated with accelerated development of private speech. As children mature, private speech becomes increasingly covert and is eventually internalised completely to form inner speech. The results of Study 3 show that children with ICs were more advanced in the process of internalisation of private speech compared with their NIC-group peers. It could be argued that the observed group

differences in private speech may be accounted for by the fact that IC children are likely to be more comfortable with speaking to their IC, and therefore have become more adept at speaking out loud during play periods. However, there were no IC-related differences in fantasy content, so this argument does not seem plausible.

The findings of Study 3 replicate and extend existing research on relations between children's IC status and their use of language. In line with previous studies, but at odds with Study 1's findings (Roby & Kidd, 2008; Trionfi & Reese, 2009), no differences between the IC and NIC groups were found in children's general verbal ability as assessed on the BPVS. Instead, a relation was found between IC status and children's use of language. Roby and Kidd reported that IC-group children communicated critical information more effectively than their NIC-group counterparts during a referential communication task, and Trionfi and Reese found that having an IC related positively to narrative complexity in children's accounts of personally experienced events. The results of Study 3 showed that having an IC is associated with children using more advanced forms of private speech to regulate their behaviour during free play.

The findings presented in this chapter also extend previous research on private speech and creativity. Although Study 3 is the first to explore relations between children's IC status and their private speech, Daugherty and colleagues (Daugherty, White, & Manning, 1994; White & Daugherty, 2009) investigated how 3- to 6-year-olds' creativity related to their private speech. Creativity was assessed using the Torrance Creativity Test (Torrance, 1981) which measures children's creative thinking across a range of verbal and non-verbal tasks, yielding scores for fluency, originality, and

imagination. Private speech was assessed during a separate spatial problem-solving task. Daugherty et al. (1994) and White and Daugherty (2009) reported that children's scores for all three measures of creativity were positively associated with the two most sophisticated forms of private speech: "coping/reinforcing" private speech (comments that praised, encouraged, or reinforced behaviour relevant to completing the task) and "solving" private speech (comments to indicate that a particular behaviour or strategy was successful). Conversely, private speech that did not serve to facilitate task performance was negatively related with all three measures of creativity. Given that children with ICs are more highly imaginative than their NIC counterparts, the findings of Study 3 and those of Daugherty and colleagues highlight a positive association between imaginative creativity and the level of sophistication of private speech (both in the context of completing cognitively challenging tasks and during free play).

In contrast to the positive association found between having an IC and the level of internalisation of private speech, the results of Study 3 provide no support for the hypothesis that IC status will relate to the fantasy content of children's private speech. In the Introduction to this chapter, we considered whether potential relations between IC status and children's private speech would be best characterised in terms of the content of their private speech, or the degree to which they had internalised their private speech. The results reported in this chapter strongly suggest that IC status is related to the internalisation of private speech rather than the topics that children choose to talk about.

A possible explanation for the null findings when looking at the fantasy content of children's private speech lies in the fact that it was impossible to code the covert private speech comments for content, given that these covert comments consisted of verbal lip

movements and unintelligible whispering and muttering. Because IC-group children produced more covert private speech than their NIC counterparts, less is known about precisely what the children in the IC group were talking about. Consequently, it is not possible on the basis of the results of Study 3 to make firm conclusions about how IC status relates to the fantasy content of children's private speech. Future research could address this issue by attempting to make high-quality recordings of children's covert private speech. For example, children could wear personal microphones during the play session so that whispering and muttering could be recorded more clearly.

Throughout this study it has been argued that having an IC provides children with an enriched social environment. With regard to relations with private speech, having an IC was proposed to give the child more numerous opportunities for engaging in social dialogue which, in line with Vygotsky's theory, should facilitate the development of private speech. However, it could be that private speech is the driving force behind children's creation of an IC. This opposing directional hypothesis provides an alternative way to explain the findings of Study 3.

Children who are precocious in their private speech development may create an IC as an outlet for this self-directed speech. For example, overt private speech has a dialogic structure (e.g., Berk & Garvin, 1984; Kohlberg et al., 1968), with children using self-answered questions and talking on behalf of toys. In addition, private speech and the ability to engage in internal dialogue have been linked to certain aspects of creativity (Ferryhough, 2009; White & Daugherty, 2009). Indeed, Vygotsky (1931/1987) stated, "the development of a child's imagination, like the development of other higher mental functions, is linked in an essential way with the child's speech" (p. 346). Furthermore, the

fact that early private speech is dialogic in nature means that it involves simultaneous accommodation of multiple perspectives on reality (Fernyhough, 2008, 2009). This interplay of perspectives could result in a child creating an IC as an outlet for a certain perspective or “inner voice.” The possibility that some children create an IC to personify the other half of this dialogue thus seems reasonable.

Evidence that children with ICs are more prone to verbal hallucination-like experiences (Fernyhough et al., 2007; Pearson et al., 2001) is consistent with this proposal. As discussed in Chapter 1, when played voice-like ambiguous stimuli, children with ICs were found to be more likely than their NIC counterparts to report hearing specific words. It has been proposed that individual differences in the way in which private speech is internalised might account for why auditory verbal hallucinations are experienced in some individuals beyond childhood (Fernyhough, 2004). Fernyhough (2004) proposed two possible models attempting to explain auditory verbal hallucination using Vygotsky’s (1931/1997b) theory that inner speech is abbreviated as well as semantically transformed while being internalised via private speech. The first of these models is the *disruption to internalisation* model, where the normal internalisation process of private to inner speech is disturbed, resulting in inner speech that is not completely abbreviated and therefore retains many features of external social dialogue. The second is termed the *re-expansion* model. In this case, inner speech is fully internalised, but becomes temporarily re-expanded into dialogue that retains the give-and-take structure of external dialogue. Both of these models account and allow for continuity in the experience of auditory verbal hallucinations between pathological and normal populations, although this article clearly favours the *re-expansion* model. This

theory could account for how certain children create their IC to account for their “inner voice,” and do in fact “hear” their ICs. Furthermore, on this premise, Fernhough and colleagues (2007) argue that experiencing auditory verbal hallucination-like experiences is part of being a typically developing child, and such hallucinations only become a potential sign of pathology if they continue into adolescence and adulthood.

On the basis of this account, a child may create an IC in response to this voice-hearing that is part of the typical process of internalising private speech, rather than the interaction with the IC facilitating private speech development or internalisation (Pearson et al., 2001). The fact that IC status was related specifically to the most sophisticated partially-internalised forms of private speech in Study 3 is in line with this argument. Thus, the children who engage in the most creative and imaginative ways with their developing inner speech will be those who create an IC, and precocity in private speech development may thus play a causal role in IC creation. It is of interest to add that one of the children in the thesis stated that their IC lived in their mouth. This could be indicative of the child understanding that their voice and the voice of the IC is one and the same. Future research could explore this possibility by detailed study of the longitudinal development of both private speech and ICs in early childhood. Exploring how the depth of IC relates to children’s private speech development will also be important in helping establish how these factors relate to one another. For example, one could investigate whether the “voices” of POs differ from those of ICs. Devising an interview where the child could explain how their IC speaks, and having the child engage in conversation with their IC would be helpful in addressing these issues.

There are other possible research questions that Study 3 brings to light. For example it would be of interest to know what types of private speech may steer a child toward IC creation. A second research question that may be of interest to future researchers is whether it is only private speech that is elicited in a free play situation, or if engagement in private speech in other contexts (e.g., during cognitive planning tasks) similarly relates to children's IC status. Olszewski and Fuson (1982) investigated private speech in play settings, examining the different private speech that certain toys evoked, and White and Daugherty (2009) examined creativity and its links to self-regulatory private speech. However, no studies to date have examined private speech in reference to the creation of the IC. In-depth microgenetic studies observing how IC creation and children's private speech in different contexts evolve over time may aid in answering these questions of how the context of private speech interacts with the IC creator.

Chapter 5

Imaginary Companions: Conclusions, Discussions, and Future Directions

5.1 A Synopsis of the Three Studies Reported in this Thesis

This thesis presented three studies that investigated how having an IC related to children's performance in four different socio-cognitive domains: interior self-knowledge, mentalistic representations of friends, private speech, and ToM. The first study examined whether children's IC status related to their tendency to ascribe interior self-knowledge to themselves versus an adult authority figure, and to their performance on a battery of ToM tasks. Study 1 also investigated whether children's interior self-knowledge was related to their basic ToM understanding. Although Study 1 replicated Burton and Mitchell's (2003) finding that children in general are more likely to attribute more interior self-knowledge to self than to an adult, the results of Study 1 showed that children with ICs were less likely than their NIC peers to attribute interior self-knowledge to an adult, with a trend for IC-group children also to attribute more interior self-knowledge to themselves. Specifically, compared with their NIC counterparts, children with ICs were less likely to attribute knowledge to adults in relation to whether they felt ill or were dreaming, and were more likely to attribute knowledge to self about whether they were having fun or hungry. The performance of children in the IC group was at ceiling on these items, with all children attributing the maximum score to

themselves for knowledge about whether they were hungry or having fun. Exploratory analyses on the sub-group of children with an IC showed a non-significant trend for depth of IC characterisation to be positively associated with children's tendency to ascribe interior self-knowledge to themselves.

In contrast, children's performance on the ToM battery was found to be unrelated to that on the self-knowledge task and to children's IC status. The null findings on the relation between ToM and self-knowledge suggest that basic ToM competence may be necessary but not sufficient for grasping the complex understanding of how one has privileged access to one's own internal states. The fact that IC status was unrelated to children's ToM performance in Study 1 is in line with the null findings of Fernyhough et al. (2007), but at odds with Taylor and Carlson (1997) who reported that children with ICs performed better on ToM tasks than did their NIC peers.

Although Taylor and Carlson's (1997) findings that children's IC status relates positively to their ToM performance were not replicated by any of the studies throughout this thesis, IC-group children in Study 1, but not Study 2, or 3, scored marginally higher ($p = .05$) on the standardised receptive verbal ability measure compared with their NIC counterparts. This finding is concordant with Taylor and Carlson's findings that children in their high fantasy group obtained significantly higher scores on their receptive vocabulary measure than the low fantasy group. However, Taylor and Carlson statistically controlled for the children's verbal ability to ensure that the difference in ToM between their two fantasy groups was not related to differences in verbal intelligence or age rather than fantasy. Furthermore, Taylor and Carlson's fantasy group status was not only dependent upon a child's IC status, but also other fantasy measures.

In other studies, receptive verbal ability has not been found to relate to IC status (e.g., Davis, 2006; Fernyhough et al., 2007; Manosevitz et al., 1977; Trionfi & Reese, 2009). A more detailed discussion of this inconsistency can be found in section 5.2.

Study 2 examined whether having an IC related to children's tendency spontaneously to describe their best friend with reference to mentalistic (rather than physical, behavioural, or general) characteristics. This study also included measures of children's ToM performance at two time points (earlier to and concurrent with the friend descriptions) to investigate whether mentalistic descriptions related to children's ToM performance, and to revisit the question of the relation between IC status and ToM in a larger sample of children. Children with ICs were more likely than their NIC peers to describe their best friend with reference to mentalistic characteristics both when mentalistic descriptions were assessed in terms of overall frequency scores, and in terms of dichotomous inclusion of at least one mentalistic characteristic. The relation between IC status and mentalistic friend descriptions was independent of children's receptive verbal ability, gender, verbosity, and ToM performance, and of their mothers' educational attainment. Describing a best friend in mentalistic terms was not related to children's concurrent ToM performance (replicating the findings of Meins et al., 2006), although the regression analysis showed that previous ToM at 51 months predicted unique variance in children's dichotomous inclusion of at least one mental-state description. Like the first study of this thesis, Study 2 failed to find an association between IC status and children's ToM performance, again showing a non-replication of the Taylor and Carlson (1997) finding.

Study 3's findings revealed an association between IC status and children's engagement in private speech during free play. Controlling for gender, receptive verbal ability, and maternal education, children in the IC group produced more overall private speech during the task than did those in the NIC group. The results are in line with Vygotsky's (1931/ 1986) notion that private speech originates from social speech. Further analyses using sub-categories of private speech suggested that IC status was related specifically to children's engagement in covert, partially-internalised private speech, with this type of private speech being markedly more common in IC-group children compared with their NIC counterparts. These results add support to studies suggesting that having an IC is positively associated with language maturity (Bouldin et al., 2002; Roby & Kidd, 2008). Unlike Study 1, Study 3 replicated previous findings that IC status was not related to children's receptive verbal ability as assessed on a standardised measure (Davis, 2006; Fernyhough et al., 2007; Manosevitz et al., 1977; Taylor & Carlson, 1997; Trionfi & Reese, 2009).

All three studies found no relation between child gender and IC status. Past studies have found differences between gender and IC status (Pearson et al., 2001; Carlson & Taylor, 2005; Harter & Chao, 1992). The lack of significant results pertaining to child gender found in this thesis could be in line with Harter and Chao's (1992) claim that the type of IC created may have more to do with gender differences in the type of IC created. These researchers reported that boys were more likely to create super-competent ICs possessing physical prowess, whereas girls created ICs whom they could nurture and care for. Although no statistical evidence for this is shown in this thesis, when looking at independence scores for ICs (Study 1), only boys possessed highly independent ICs.

Furthermore, the low numbers of children possessing ICs could have also hindered the possibility of being able to see a significant difference if there was in fact a difference in gender.

This chapter will address the potential implications of the studies' findings; first looking at the results across all three studies, and moving on to a discussion of causality, followed by the limitations of the three studies that need to be taken into account. Finally, future research possibilities will be expanded upon and conclusions will be drawn.

5.2 Integration Across Empirical Studies

For years researchers have been trying to understand children's development and the behaviour that accompanies this development of the self and others as they begin to view the world as a place filled with separate individuals with minds of their own who have different psychological orientations toward both objects and situations in the world (Gopnik, 2009; Moore, 2007). How one comes to an understanding of themselves and others remains an integral question when examining children at any stage in their development of socialisation.

It is interesting to look at these three IC studies in one thesis, because these studies focus on areas of self-other awareness that have not yet been investigated in reference to a child's IC status. Taken together, the results of the three studies reported in this thesis begin to draw out a picture of the interrelations between children's fantasy lives and their representations of self and others. Although the three studies all seem to point in the same direction, inconsistencies were found when investigating the between group differences in receptive verbal ability. Study 1 found that IC children scored marginally higher on receptive verbal abilities than their NIC counterparts, while studies 2, and 3 showed no

relationship. These inconsistencies could be the result of the differences in experimental design. For example, Study 1 was a 1 time data collection at the child's school, whereas the data from Study 2, and 3 come from a larger longitudinal study. The children in Study 1 were tested by an experimenter that they were not familiar with, while in Study 2 and 3 children were familiar with the experimenters and the lab where they were tested.

Furthermore, the inconsistencies may have been a result of power. Only 80 children participated in Study 1, while around 140 children were tested in Study 2 and 3. Further research into the relationship between receptive verbal abilities and children's IC status may help in answering the questions as to why these inconsistencies were found.

As a result of these studies, we are able to say that IC status relates to three different facets of social cognition, extending previous research that has only investigated IC status with reference to a narrow range of cognitive abilities (e.g., ToM). The studies reported here also explored the potential mechanisms via which children's social interactions might impact on their understanding of self and others, highlighting internalisation of private speech as a candidate for explaining why certain children may invent an IC, and how a rich imaginative life might lead to greater understanding of one's own and others' internal states.

5.3 Issues of Causation

The three studies reported in this thesis show that IC status relates to children's (a) interior self-knowledge, (b) mentalistic descriptions of best friends, and (c) level of internalisation of private speech. This section will set out three possible causal models in order to explore different developmental pathways that might account for the observed

findings. The first model is based on the argument that the child's creation of an IC has a causal impact on the three domains of social cognition studied and therefore is the main driver of cognitive change. The second model is based on the assumption that the child's internalisation of private speech plays a causal role in the child's creation of an IC and is thus the primary driver of social-cognitive change in the domains studied here. The third model assumes that the parent's interactional style acts as an underlying 'third-factor' relating to the likelihood of the creation of an IC and the child's development across the domains of interior self-knowledge, mentalistic descriptions, and private speech.

Model 1: Engagement with ICs as a driver of (social-)cognitive change

The first model, in which children's engagement with their ICs has a positive causal influence on their social-cognitive development, is the model assumed in the majority of studies on children's ICs (e.g., Roby & Kidd, 2008; Taylor & Carlson, 1997; Trionfi & Reese, 2009). Thus far, it has been argued that having an IC gives children practice in thinking about the world from another person's perspective, and that this helps these children to appreciate their privileged access to their own internal states, and spontaneously to invoke cognitions and emotions when describing other people. A second possibility is that the IC acts as a child's personal ZPD, foreshadowing those cognitive functions and social tools which the child will utilise in later development.

Some examples of the effect that practice in the form of an IC has on a child's understanding of minds can be found in ToM and mental state talk research. It has been argued that children's interaction with their siblings affects their ToM performance and that this practice in the form of sibling interaction may be the cause of this improvement (Perner, Ruffman, & Leekam, 1994). However, this literature on sibling interaction has

become very complex. When the original data set was re-analysed it was found that only older sibling interaction was positively associated with ToM performance (Ruffman, Perner, Naito, Parkin, & Clements, 1998), suggesting that the type of interaction between siblings is important to this development. This research paired with recent research which has also established that birth order can correlate with ToM ability, shows that the more siblings are able to interact, the better they become at understanding others' minds (Farhadian, Abdullah, Mansor, Redzuan, Kumar, & Gazanizad, 2010). Family mental state talk and children's exposure to feeling state conversations also contribute to children's later understanding of minds (Dunn et al., 1991).

The above research is significant with regard to this thesis because it grounds the suggestion that children with ICs have the opportunity to engage in social practice above and beyond that of their peers since they do not need another person with whom to interact. The fact that the IC continually enables the child to interact not only in a physical sense (e.g., speaking with the IC, pulling up chairs for the IC) but also mentally (e.g., thinking about what the IC might want to do, or how the IC would feel) provides the child with more developed abilities to introspect as well as to hone their ability to think about others' minds in the absence of an external stimulus. Evidence for such a social-cognitive practice effect through fantasy play can be found in Taylor and Carlson's (1997) study showing an association between ToM and IC status. Taylor and Carlson found that children in their high fantasy group who impersonated characters without minds (machines) in their play (48% of their sample) had a tendency to score lower than children who impersonated living beings with minds. This was especially true for their

younger sample of 4-year-olds, thus showing that the practice derived (from impersonation) must be in the correct form.

Alternatively, it could be that the creation of an IC relates to the understanding of self and other, not because of the practice effects that the IC provides, but because the IC enables a child to create their own ZPD. Vygotsky (1934/1998) defined the ZPD as the distance between the child's actual developmental level determined by independent problem solving ability and their potential developmental level as determined through collaborative problem solving with an adult or more capable peer. One way of making sense of the role of ICs in this case is in terms of the child creating their own 'assistant' to aid in reaching goals that are slightly beyond their ability to reach alone. Many children in the three studies in this thesis reported that their IC was able to teach them things. Paradoxically, even though the child is truly alone, they will arguably be more likely to perform better on certain tasks because of the ZPD provided by interaction with the IC. If this view is correct, then children with ICs that are deeper and more competent would be expected to aid children more than ICs that are simply extensions of the child. This is because the child would have more opportunity for in-depth interactions and help with an IC that is more competent.

Some children report non-compliant ICs, although most ICs are compliant, and those that are non-compliant do not act contrary to the child's desires in all situations (Taylor et al., 2007). Nonetheless, these ICs could still act as a ZPD even though they may not aid children directly by teaching them things. Non-compliant ICs are known to be more independent (Taylor et al., 2007). It is possible, then, that such independence could lead to children's improved ability to understand everyday social conflict, as well

as aiding their ability to engage in negotiation. The non-compliant IC may not help the child directly with tasks, but, when engaging in argument, a non-compliant IC could aid the child in social situations where the child is negotiating between themselves, the IC, and a friend. This practice of negotiation with the IC could also simultaneously facilitate how these children contrast others' opinions and arguments.

According to Vygotsky (1934/1978), when a child pretends to do something, they are already actively participating in their own development by beginning to sever the meaning of an object from a real object. For example, Vygotsky writes about a child wanting to ride a horse but not being able to, and so picking up a stick and pretending to ride a horse. In this sense a child's action according to rules begins to be determined by ideas rather than the true object. Furthermore, in the absence of others' thoughts, words, and opinions, a child with an IC creates thoughts, words, and opinions based upon previously known information about others' minds and the internal life that emanates from their minds. This view concords with the present pattern of findings that children's IC status correlated positively with self- and-other knowledge.

A related explanation for this pattern is that social-cognitive change is driven by children's more general fantasy orientation. Fantasy predisposition is known to vary among children (Taylor, 1999), and children with ICs tend to initiate as well as participate in pretence significantly more than their NIC peers (Taylor et al., 1993). IC children have also been shown to have greater fantasy orientation (Bouldin & Pratt, 1999; Sharon & Woolley, 2004; Taylor & Carlson, 1997). It seems plausible then that a child's ability and willingness to engage in pretence is what drives them to create an IC. Children may create these ICs because they have the desire to engage in fantasy play when their

peers are not present to partner them in this play. This theory is in line with Vygotsky's (1934/1978) claim that children's play mimics desire that cannot be realised and aids in symbolic understanding. Hence, if children with high fantasy orientation desire a friend, they are able to create a symbol for a friend and use their imagination to attain that goal. This would also account for why some children who are highly fantasy oriented (or are not first-born children) still do not create ICs, simply because they do not have a need or desire great enough to create the IC. For example, Harris (2000) argued that the 'desire-satisfaction' view, with ICs being created to meet unfulfilled desires and emotional needs, does not hold water. In support of this argument, Harris highlighted (a) the lack of any strong relation between creating an IC and a dearth of real friends, and (b) the fact that some children create highly undesirable, frightening ICs such as imaginary monsters.

It has been shown that children with high fantasy orientation show an advantage in ToM performance and mental state talk (Mitchell & Neal, 2005; Rakoczy et al., 2006; Schwebel et al., 1999), but these differences may not be independent of IC status. For example, Taylor and Carlson (1997) found no differences in ToM between their high and low fantasy groups, but did find that IC creation explained the unique variance in ToM even when age and verbal ability were controlled for. Thus, although high fantasy orientation could be the mechanism accounting for IC creation as well as better understanding of the self and others, this explanation is not well supported by the available evidence.

In considering Model 1, a potential anomaly worthy of further discussion is the fact that IC status was found to relate to children's tendency to ascribe *less* knowledge about their own internal states to an adult (Study 1) and yet to focus *more* on internal

states when describing a best friend (Study 2). Establishing the mechanism that might account for these complex interconnections between how the child represents the internal states of self versus other leads to Model 2, which is based on the assumption that the development of children's private speech causally determines their creation of an IC.

Model 2: Internalisation of private speech as a driver of (social-)cognitive change

As discussed in section 5.3 above, children who are precocious in their private speech development may create an IC as an outlet for this self-directed speech. In related research, Fernyhough and Russell (1997) investigated whether private speech facilitated 5-year-olds' ability to distinguish their own 'voice' (i.e., one's individual way of reflecting on the world) from those of others. In this study, private speech was assessed in a play session, after which the experimenter played a game with the children and recorded each child's voice. A week later, the child participated in an individual testing session in which they were played recordings of themselves and other children, with the voices being presented in isolation (to assess recognition of basic auditory features) or with contextual cues (to assess recognition of 'voice'). Fernyhough and Russell reported that private speech was unrelated to children's ability to identify the recording of themselves on the basis of basic auditory features, but private speech was positively associated with children's ability to distinguish their own 'voice' from those of others. The authors argued that their results pointed to private speech playing a role in children's developing awareness that they are separate mental agents leading distinct existences to others both internally and externally.

Fernyhough and Russell's (1997) study also supports the idea that private speech, specifically partially internalised forms and inner speech (which is hypothesised to derive

from private speech), aids the individual in identifying aspects of the self such as attitudes, values, opinions, and beliefs. Morin (1993) described how this self–other understanding may arise because we take others’ perspectives into account in response to the imagined speech of others, thereby gaining an objective view of ourselves as well as others. Morin cited a child (David) engaging in private speech toward a group of imaginary people as an example of this type of perspective-taking. Morin explained that David’s responses to his own questions about the actions he was performing highlighted a process of acquisition of information that was initially triggered by the presence of others, but that came to take place as a self-dialogue. David answered the questions posed by the imaginary group about his behaviour, resulting in his ability to observe a possible objective version of himself and to acquire self-information, because in the private speech exchange he asked and answered a series of questions concentrating on both how other persons could interpret his behaviour and how he interpreted this behaviour. The ability to contrast these perspectives may provide the child with a better self-other awareness because of the practice of contrasting possible objective and subjective viewpoints.

This view that the development and internalisation of private speech should be accompanied by an increase in self- versus other- awareness is in line with the results of the three studies reported in this thesis, given that IC status was related to performance on the interior self-knowledge and friend description tasks and to the level of internalisation of children’s private speech. In line with Model 2, this explanation suggests that engagement with an IC may be an outcome rather than a cause of private speech development.

Model 3: Parenting styles as contributing variables to the outcomes of IC creation and cognitive change

Individual differences in parenting practices could underpin the observed relations among IC status, social-cognitive skills, and private speech. Parents who value pretence are more likely to elaborate on their children's pretend themes. Parents have also been reported to facilitate longer episodes of fantasy play, while parents who do not see pretence as valuable to their children's development tend to de-emphasise this aspect of their children's play behaviour, redirecting the children toward different activities (Carlson, Taylor, & Levin, 1998; Haight & Miller, 1993; Haight, Parke, & Black, 1997). Furthermore, Carlson, Taylor, and Levin (1998) examined Mennonite teachers interviewing them about their attitudes of pretend play and their adherence to traditional Mennonite values, finding that teachers' attitudes toward fantasy play correlated with the type of play that was displayed by the children in their class when playing in the school playground. Farver and Lee-Shin (2000) examined play behaviour in children observing the fantasy demonstrated by Korean children born in America while at school. These researchers compared these observations with parents' self reports on their own beliefs about play as well as their assimilation into American culture. These researchers found that children of mothers who were more assimilated into American culture were not only more accepting and encouraging of their children's creativity and play behaviour, but also that their children engaged in more play than the children of Korean mothers who were less assimilated and less accepting of fantasy play.

However, there are some findings in Gleason's (2005) investigation of parenting and its correlation with children's IC status which are contrary to the proposal that

parenting style has an effect on play behaviour. Gleason devised a composite measure of parental attitude toward pretend play (incorporating both parental involvement and views about the significance of play in development) and found no relationship between how parents viewed imaginary play and whether their child had created an IC. Thus, parents of children with and without ICs saw their play similarly. Despite Gleason's findings, the majority of studies show a positive relation between parental attitude and their children's play frequency (Haight & Miller, 1993). This relation suggests that IC creation could be underpinned by parental attitude.

While parental attitude may influence the frequency and themes of their children's play, parents' treatment of their child as an independent being with thoughts and feelings of their own, so-called mind-mindedness, has been shown to correlate with children's later ToM development (Meins et al., 2002). Mothers who are mind-minded are thought to provide their children with richer opportunities to learn about others' inner states by appropriately commenting on and referring to their children's inner states. Meins et al. (2002) found that mothers' mind-mindedness as observed in a free play context at 6 months independently predicted their children's overall ToM performance on a battery of ToM tasks at 45 and 48 months. Other assessments of maternal mind-mindedness have also been found to relate positively to children's subsequent ToM performance. Meins and Fernyhough (1999) found a positive relation between mothers' tendency to attribute meaning to their 20-month-olds' non-word utterances and their later ToM performance. Meins, Fernyhough, Russell, and Clark-Carter (1998) reported that children performed better on ToM tasks if their mothers had previously tended to focus on their mental and emotional characteristics when given an open-ended invitation to describe their child.

Taumoepeau and Ruffman (2006) found that a mother's use of desire-state language while describing a picture when their child was 15-months-old was predictive of both child mental state language as well as performance on an emotion situation task 9 months later. These studies suggest that maternal mental state talk may not only facilitate child language but also their social understanding (Meins & Fernyhough, 1999; Meins et al., 2002; Taumoepeau & Ruffman, 2006).

Finally, higher incidence and greater sophistication of private speech have been shown to correlate with authoritative parenting style (Behrend & Rosengren, 1992; Winsler et al., 2006). The authoritative parenting style encourages children to be independent, but still places limits on behaviour. It is characterised by a child-centred approach to parenting that is sensitive to the child's feelings (Baumrind, 1967). Berk and Spuhl (1995) investigated 4- and 5-year-olds' private speech while being assisted by their mother in a problem solving task using Lego. Findings indicated that a global index of authoritative parenting was a better predictor of private speech and task performance than microanalytic measures of parent scaffolding. Children with authoritative mothers showed more externalised, task-relevant private speech utterances at age 4, and more internalised private speech utterances at age 5. Winsler et al. (2006) also found that parents who were classified as authoritative (as assessed by a parenting practices questionnaire) were more likely to ignore and allow their 3- to 5-year-old children's use of private speech, while Behrend and Rosengren (1992) found a relation between mothers' scaffolding of their children and the amount of private speech that the children used during problem solving tasks. The positive relationship between authoritative parenting style and children's use and internalisation of private speech suggests that

parenting style could underpin children's private speech development (Behrend & Rosengren, 1992; Berk & Spuhl, 1995; Winsler et al., 2006).

It could be that parental attitude and parenting style underpins whether or not a child creates an IC as well as their development of interior self-knowledge, mentalistic description of friends, and private speech. It could follow that more mind-minded parents are also more accepting and encouraging of their children's fantasy and imagination play, conceivably influencing both a child's ToM capacities and their proclivity to create ICs. Furthermore, it seems plausible that mind-minded mothers will be likely to adopt authoritative parenting styles. The studies reported in this thesis did not investigate parenting style, and thus cannot address these possibilities. However, the above suggests that it would be interesting in future studies to examine the relation between parenting style and beliefs in reference to children's IC creation and their development of interior self-knowledge, mentalistic descriptions, and private speech.

Model 1, Model 2 and Model 3: A comparison

Considering the three models of causation presented above, Model 2 is best supported by the results of the three studies in this thesis. Model 2 is not only able to account for IC children's self-knowledge ability in ascribing *less* knowledge about their internal states to an adult (Study 1), while explaining why IC children also focus *more* on internal states when describing their best friends (Study 2), but it also accounts for IC children's more internalised private speech (Study 3). Model 2 has not only been reinforced by the results in this thesis, but it is also supported by past private speech literature (Fernyhough & Russell, 1997; Morin, 1993).

Both Model 1 and 3 are plausible causal models, however different variables would need to be investigated in order to establish their credibility. For example, although Model 1 is the model assumed in the majority of studies on children with ICs (Gleason & Hohman, 2006; Roby & Kidd, 2008; Taylor, 1999; Taylor & Carlson, 1997; Trionfi & Reese, 2009), it cannot explain the results of this thesis as accurately as Model 2 in that IC children tended to understand the opacity of their own minds, while simultaneously focusing on others' minds. Furthermore, if Model 1 was to be most accurate, it would need to explain why no relations were found between IC status and ToM (for more in depth discussion on this issue, see section 2.4). Future research on children's ICs could incorporate ZPD studies (such as the one presented in section 5.4) to provide more evidence for Model 1. If children do in fact use ICs as personal helpers influencing their ZPD, this evidence would suggest that Model 1 is in fact more plausible than Model 2 or 3.

Model 3 is also not as well supported as Model 2. Although Model 3 can account for the results of all three studies alone, it must assume that all parents that value pretence are both mind-minded and authoritative in their parenting style. These issues prevent this third variable model of causation from being the strongest model for causal direction. In future research, parenting style and its correlates could be investigated, in order to further decide if Model 3 is a feasible model for this causal relation.

Although Model 2 presents a strong case for the causal direction of different developmental pathways that might account for the observed findings throughout the thesis, more evidence is needed in order to determine further whether private speech is in fact the driver of a child's creation of an IC as well as their self-other awareness. Future

research on children with ICs would have to be carried out at earlier ages in order to determine whether ICs and private speech in pretend play begin to appear at different times. If IC children's private speech became more developed at an earlier time than NIC children's private speech, this evidence would further support Model 2. The earlier development in private speech would suggest that private speech is a driver of IC creation.

5.4 Future Research

In this section, future research that would aid in establishing which of the three models of causation is most able to explain the results of this thesis will be discussed. One research proposal will be laid out for each model of causation. Model 1's proposal will encompass the question of a child's IC acting as a self-created ZPD, examining how the creation of an IC may have a causal impact upon other domains of cognitive competence. The proposal for Model 2 will examine private speech development and the timing of IC creation, looking at private speech as a driver of IC creation, and thus social-cognitive change. Model 3's proposal will entail studying how parenting styles and attitude interlock, incorporating parental factors to determine whether parental attitude could underpin both IC creation as well as advancements in social-cognition. The information which could be gleaned from the three studies will aid in supporting or refuting the three models of causation. These three proposed studies will be discussed in reference to their specific designs, the interpretations of possible outcomes, and what this means to further IC research.

In order to test Model 1's assumption that IC creation aids children's social-cognitive development, future research could attempt an intervention study aimed at

encouraging NIC children to create an IC. If a child with NIC shows improvement on tasks after the encouraged creation of an IC, this could point to having an IC as the driver of this improvement. The evidence that NIC children could improve on tasks after creating an IC would add to the body of literature that asserts children gain knowledge about the world by comparing and contrasting their perspectives with that of their IC (e.g., Roby & Kidd, 2008; Taylor & Carlson, 1997; Trionfi & Reese, 2009).

It has been reported that if children are socially encouraged at home and at school to believe in a fantasy character, children are likely to accept their existence (Woolley et al., 2004). A recent study also suggests that imaginary characters can affect how children approach a task. Berring (2010) reported that children who believed that an invisible entity was in a room with them were just as likely to refrain from cheating at a game as children who were actually accompanied by a real human being. This study demonstrates that imagining an invisible person into existence can change children's subsequent behaviour.

A potential intervention study could incorporate three groups of children: IC children, NIC children who are not encouraged to create an IC, and NIC children who are encouraged to create an IC (EIC). Teachers and parents would be asked to encourage the EIC children to play with their newly created ICs. This encouragement would begin after a baseline visit from an experimenter, and continue for two months, a length of time comparable for a true IC to be considered as such (Svendsen, 1934). After two months, all of the children could be re-tested on tasks assessing self-knowledge, friend descriptions, or private speech to ascertain whether there are between-group differences in the performance of the EIC and NIC groups of children. If the EIC group children

perform significantly better than their NIC counterparts, this would provide evidence for IC creation having a causal effect on children's social-cognitive development.

Alternatively, future research could focus on establishing whether ICs provide children with a ZPD to scaffold task performance. IC-group children could be asked to perform a challenging task (e.g., constructing a model, or spatial coordination) in collaboration with their IC; NIC-group children could be instructed to imagine that someone else is there to help them with the task and to talk to them and ask them for guidance. This research could be laid out much like the studies performed by Doise, Mugny, and Perret-Clermont (1975). These researchers did not investigate ICs, but did examine changes in children's ability to perform tasks while alone and in social coordination. The findings of Doise et al.'s research showed that a dyad of children of the same ability could successfully perform a task of spatial coordination that they would not be capable of performing, working alone. The extent to which engagement with the imaginary other provides children with task-relevant information or solutions to completing the task could be assessed. It could also be contrasted with results of real partners. Relations between the ability to use the imaginary other to scaffold task performance and children's self-knowledge, mentalistic descriptions of friends, or private speech could then be investigated to explore the possibility that ICs are positively associated with children's social-cognitive development because they provide the child with a ZPD.

In order to test Model 2 and the argument that private speech is the driver of IC creation and thus responsible for IC-related differences in social-cognitive performance, one could conduct a longitudinal study to examine the emergence of ICs in relation to

children's private speech development. Collecting extensive private speech data across a range of naturalistic and laboratory contexts would be particularly interesting. Children could wear a microphone attached to their clothing to ensure that the content of whispering and muttering is audible, and could wear a lightweight headcam to film their activities. If children who are more developed in their private speech are found to be those who subsequently create an IC, this will support Model 2. It will also add to the literature that suggests children's private speech content differs depending on child creativity (Daugherty, White, & Manning, 1994; White & Daugherty, 2009). If children's private speech emergence and internalisation does not precede a child's IC creation, this would support Model 1 rather than Model 2.

Individual differences in parenting practices can explain IC-related differences in children's social-cognitive development (Model 3) could be tested by assessing various aspects of parenting style and attitude and investigating whether the observed effects are maintained when parenting factors are controlled for. Parents could be assessed for parenting style and attitudes towards children's play using standard questionnaires, and for mind-mindedness using a standard interview. If the observed main effects of IC status on children's self-knowledge, mentalistic descriptions of friends, and private speech were independent of parenting factors, then this would suggest that Model 3 is not a good explanatory framework of the results of the studies reported here.

5.5 Limitations

The results of this thesis should be considered in light of certain limitations. The first limitation lay in the fact that only around 19% of the 80 children interviewed in Study 1 had a parentally-corroborated IC, while Studies 2 and 3 (which utilised much of

the same sample of children) found similar patterns. Approximately 20% of children in these two studies had parentally-corroborated ICs. Although the prevalence rates in the two studies are comfortably within the range of 10% (Bouldin & Pratt, 1999) to 65% (Taylor et al., 2004) reported in the literature, the relatively low numbers of children reporting ICs meant that heterogeneity within the IC group could not be explored with reference to the outcome variables, with the participants with invisible ICs and POs pooled to form a single IC group.

Similarly, the analyses in Study 1 investigating how the depth of IC related to children's interior self-knowledge were hampered by a lack of power. As discussed in earlier chapters, previous studies have used different justifications in order to examine POs separately from ICs (Bouldin, 2006; Gleason & Hohmann, 2006; Gleason, et al., 2000), or to treat these entities as equivalent (Carlson & Taylor, 2005; Fernyhough et al., 2007; Taylor et al., 2004). As with all studies on ICs, those reported here assigned children's IC status on the basis of whether or not they reported having had an IC, although children were only included in the IC group if their parents confirmed the existence of the IC. Parental report has been shown to be an accurate indicator of IC status and studies have suggested that parents of IC children should provide a reliable testimony about their children's fantasy play behaviour as well as their IC or PO (Gleason, 2004a). There was perfect agreement between child and parent report of IC status in this thesis concurring with Gleason's (2004a) findings. In conjunction with confirmed parental report, it will be important for future research to concentrate on larger populations of children with ICs. This will increase the power of future studies as well as being able to examine these within group differences observed in IC children.

Another potential limitation derived from IC group heterogeneity, is that there could be considerable variation in the amount of time a child engaged with their IC. Furthermore, children in the IC groups in the three studies reported here were not homogenous in other ways. Some children would have had an IC in the past, whereas other children would still be actively engaged with their IC. Others may have had more than one IC at any one time, or might have had a succession of ICs. This variation could potentially affect the outcome variables because children that engage more often with their IC, or at different times in their development, would receive different amounts of practice in the social-cognitive domains that were investigated. Given the small numbers of children in the IC group, it was impossible to investigate whether these different subgroups of IC status differed in any way in their relations with the aspects of children's social-cognitive development studied in this thesis. The results of the thesis showed the between group differences when investigating IC status, but it would be important to look at IC status in a more fine grained fashion. This more in depth look at when a child has created an IC and how much the child engages with that IC would aid in determining whether there are within group differences.

In order to establish whether the precise type of IC or depth of IC relates to children's understanding of self and others, future research should initially screen children and select them on the basis of type and depth of IC, the number of ICs reported, and the length of time children have actively engaged with their ICs. Longitudinal research would also be valuable in charting how ICs change and develop over time and establishing how such longitudinal changes related to children's previous, concurrent, and future representations of self and other. To further investigate the potential

implications of the variation in the amount of time children were playing with their ICs, it would be beneficial to add a more detailed description of an IC to the parental questionnaire. The questionnaire used in this thesis pertains mostly to IC status, and facts about the IC that might be interesting qualitatively, but it does not elaborate on questions about how long the child has had the friend, or how often the child plays with the friend. Svendsen's (1934) original definition could be added and changed to lay terms. The questionnaire also could include a section that asks the parents to be more specific about their child's IC play. It might be beneficial to ask if the parent ever witnesses how the child acts around the IC, and if the child ever exhibits behaviour that might be indicative of a more independent IC.

Finally, the invariant order in the tests presented in each study could have been a potential limitation as it is known that in any testing situation order effects are possible (Breakwell, Hammond & Fife-Shaw, 2004). However, there are no strong grounds for concluding that performance on any particular task in each of the three studies reported here would obviously affect that on tasks completed subsequently. Typically IC studies have used an invariant order for testing (Taylor & Carlson, 1997; Taylor, 1999). Furthermore, it was important to keep the researcher blind to children's IC status during the ToM and self-knowledge tasks used in Study 1, making it necessary for the ToM and self-knowledge inventory to be presented first. Even though tasks were presented in an invariant order, the self-knowledge questions were counterbalanced for child report and ToM stories were randomised. This was to prevent any effects within each measure.

5.6 Conclusions

The aim of this thesis was to investigate whether having an IC relates to the way in which children represent themselves and others. In the past, research that focused on ICs examined the potential impact that the rich fantasy life accompanying ICs may have on subsequent development, but this was only with reference to a narrow range of cognitive abilities (e.g., ToM). The three studies in this thesis elaborate on the previous literature in order to explore other avenues of social-cognitive development.

In looking at the results of the three studies performed in the thesis, the evidence provided by these studies points to IC status relating to the way in which children understand and represent both themselves and others in three different tasks. This has been seen in IC children's tendency to use internal-state knowledge, by attributing less knowledge to adults than their NIC counterparts as seen in Study 1. It is also evident in their ability to spontaneously draw on others' inner states to describe their friends and explain these friends' behaviour as seen in Study 2, and the extent to which their private speech is more internalised than their NIC peers as seen in Study 3. In contrast, no IC-related differences were observed in children's performance on basic ToM tasks. This non-replication is surprising, but can be explained (section 2.4).

This thesis has contributed to our understanding of how having an IC relates to young children's representations of other people, their awareness of themselves, and their verbal regulation of their own behaviour. It is clear that ICs should no longer be thought of as something that parents should fear. Instead, research is beginning to highlight how ICs may aid their creators in their own development. However, several unanswered questions remain. At present, it is fair to say that although views of how ICs may

influence children's development have changed dramatically compared with early notions that ICs were an indicator of pathology, we are only beginning to understand how this most vivid aspect of children's imaginative life might impact on development.

References

- Al-Namlah, A., Fernyhough, C., & Meins, E. (2006). Sociocultural influences on the development of verbal mediation: Private speech and phonological recording in Saudi Arabian and British samples. *Developmental Psychology, 42*(1), 117-131.
- American Psychiatric Association (2000). *Diagnostic and statistical manual of mental disorders* (4th ed., text revision). Washington, DC: Author.
- Amsterdam, B. K. (1972). Mirror self-image reactions before age two. *Developmental Psychobiology, 5*, 297-305.
- Astington, J. W., & Baird, J. A. (Eds.) (2005). *Why language matters for theory of mind*. New York: Oxford University Press.
- Ashington, J. W., & Jenkins, J. M. (1999). A longitudinal study of the relation between language and theory-of-mind development. *Developmental Psychology, 35*, 1311-1320.
- Baron-Cohen, S., Leslie, A. M., & Frith, U. (1985). Does the autistic child have a “theory of mind”? *Cognition, 21*, 37-46.

- Bar-Tal, D., Raviv, A., Raviv, A., & Brosh, M. (1991). Perception of epistemic authority and attribution for its choice as a function of knowledge area and age. *European Journal of Social Psychology, 21*, 477-492.
- Baumrind, D. (1967). Child care practices anteceding three patterns of preschool behavior. *Genetic Psychology Monographs, 75(1)*, 43-88.
- Behrend, D. A., & Rosengren, K. S. (1992). The relation between private speech and parental interactive style. In R. M. Diaz, & L. E. Berk (Eds.), *Private speech: From social interaction to self-regulation* (pp. 85-100). London: Lawrence Erlbaum Publishers.
- Bennett, M., Downie, A., & Murray, P. (2007). Children's judgements about their own self-knowledge: An investigation of the effect of question form. *European Journal of Developmental Psychology, 4(3)*, 241-250.
- Berk, L. E., & Garvin, R. A. (1984). Development of private speech among low-income Appalachian children. *Developmental Psychology, 20(2)*, 271-286.
- Berk, L. E., & Landau, S. (1993). Private speech of learning disabled and normally achieving children in classroom academic and laboratory contexts. *Child Development, 64(2)*, 556-571.

- Berk, L. E., & Potts, M. K.(1991). Development and functional significance of private speech among attention- deficit hyperactivity disordered and normal boys. *Journal of Abnormal Child Psychology, 19(3), 357-377.*
- Berk, L. E., & Spuhl, S. T.(1995). Maternal interaction, private speech, and task performance in pre-school children. *Early Child hood Research Quarterly, 10,* 145-169.
- Berndt, T. J. (2004). Children’s friendships: Shifts over a half-century in perspectives on their development and their effects. *Merrill-Palmer Quarterly, 50(3), 206-223.*
- Berring, J. (Researcher). (2010, August 30). Is Believing in God Evolutionarily Advantageous [Radio Broadcast]? In R. Seigal & M. Block (Producers), *All things considered.* Washington, D.C.. National Public Radio.
- Bloom, P. (2004). *Descartes baby: How the science of child development explains what makes us human.* New York; Basic Books.
- Bonne, O., Canetti, L., Bachar, E., De-Nour, A. K., & Shaley, A. (1999). Childhood imaginary companionship and mental health in adolescence. *Child Psychiatry and Human Development, 29(4), 277-286*
- Bouldin, P. (2006). An investigation of the fantasy predisposition and fantasy style of

- children with imaginary companions. *The Journal of Genetic Psychology*, 167(1), 17-29.
- Bouldin, P., Bavin, E. L., & Pratt, C. (2002). An investigation of the verbal abilities of children with imaginary companions. *First Language*, 22, 249-264.
- Bouldin, P., & Pratt, C. (1999). Characteristics of preschool and school-age children with imaginary companions. *Journal of Genetic Psychology*, 160(4), 397-410.
- Bouldin, P., & Pratt, C. (2001). The ability of children with imaginary companions to differentiate between fantasy and reality. *British Journal of Developmental Psychology*, 19, 99-114.
- Bouldin, P., & Pratt, C. (2002). A systematic assessment of the specific fears, anxiety level, and temperament of children with imaginary companions. *Australian Journal of Psychology*, 54(2), 79-85.
- Breakwell, G. M., Hammond, S., & Fife-Schaw, C. (Eds.). (2000). *Research methods in psychology* (2nd ed.). London: Sage.
- Brown, J. R., Donelan-McCall, N., & Dunn, J. (1996). Why talk about mental states? The significance of children's conversations with friends, siblings, and mothers. *Child Development*, 67(3), 836-849.

- Bunce, L., & Harris, M. (2008). 'I saw the *real* father Christmas!' Children's everyday uses of the words *real*, *really*, and *pretend*. *The British Journal of Developmental Psychology*, *26*, 445-455.
- Burton, S., & Mitchell, P. (2003). Judging who knows best about yourself: Developmental change in citing the self across middle childhood. *Child Development*, *74*(2), 426-443.
- Camaioni, L., Ercolani, & Lloyd, P. (1995). *Prova di comunicazione referenziale*. Florence: Organizzazioni Speciali.
- Carlson, S. M., Mandell, D. J., & Williams, L. (2004a). Executive function and theory of mind: Stability and prediction from ages 2 to 3. *Developmental Psychology*, *40*(6), 1105-1122.
- Carlson, S. M., Moses, L. J., & Claxton, L. J. (2004). Individual differences in executive functioning and theory of mind: An investigation of inhibitory control and planning ability. *Journal of Experimental Child Psychology*, *87*, 299-319.
- Carlson, S. M., & Taylor, M. (2005). Imaginary companions and impersonated characters: Sex differences in children's fantasy play. *Merrill-Palmer Quarterly Journal of Developmental Psychology*, *51*(1), 93-118.

- Carlson, S. M., Taylor, M., & Levin, G. R. (1998). The influence of culture on pretend play: The case of mennonite children. *Merrill-Palmer Quarterly*, 44, 538-565.
- Carlson, S. M., Taylor, M., & Maring, B.L. (2004). Sustained interactions with imaginary others. IN E. Subbotsky and M. Taylor (co-convenors), *Causation in non-physical domains: Magical thinking and human communication*. International society for the study of behavioural development, Ghent, Belgium.
- Charman, T., & Shmueli-Goetz, Y. (1998). The relationship between theory of mind, language, and narrative discourse: An experimental study. *Current Psychology of Cognition*, 17, 245-271.
- Cohen, J. (1988). *Statistical power analysis for the behavioural sciences* (2nd ed.). Hillsdale, NJ: Erlbaum.
- Daugherty, M., White, C. S., & Manning, B. H. (1994). Relationships among private speech and creativity in young children. *Gifted Child Quarterly*, 38, 21-26.
- Davis, P. (2006). *Imaginary companions and auditory hallucinations in a typical population: A replication study*. Unpublished master's thesis, Durham University, County Durham, England.

- De Villiers, J., & De Villiers, P. (2000). Linguistic determinism and the understanding of false beliefs. In P. Mitchell & K. Riggs (Eds.), *Children's reasoning and the mind* (pp. 189-226). Hove, UK: Psychology Press.
- Diaz, R. M., & Berk, L. E. (Eds.) (1992). *Private speech: From social interaction to self-regulation*. London: Lawrence Erlbaum Publishers.
- Diaz, R. M., Neal, C. J., & Vachio, A. (1991). Maternal teaching in the ZPD: A comparison of low- and high-risk dyads. *Merrill-Palmer Quarterly*, 37, 83-108.
- Diaz, R. M., Winsler, A., Atencio, D., & Harbers, K. (1992). Mediation of self-regulation through the use of private speech. *International Journal of Cognitive Education & Mediated Learning*, 2, 155-167.
- Doise, W., Mugny, G., & Perret-Clermont, A. (1975). Social interaction and the development of cognitive operations. *European Journal of Social Psychology*, 5(3), 367-383.
- Duncan, R. M., & Cheyne, J. A. (1999). Incidence and functions of self-reported private speech in young adults: A self-verbalization questionnaire. *Canadian Journal of Behavioral Science*, 31(2), 133-136.
- Duncan, R. M., & Cheyne, J. A. (2002). Private speech in young adults task difficulty,

- self-regulation, and psychological predication. *Cognitive Development*, 16, 889-906.
- Dunn, J., Brown, J., & Beardsall, L. (1991). Family talk about feeling states and children's later understanding of others' emotions. *Developmental Psychology*, 27(3), 448-455.
- Dunn, J., Brown, J., Slomkowski, C., Tesla, C., & Youngblade, L. M. (1991). Young children's understanding of other people's feelings and beliefs: Individual differences in their antecedents. *Child Development*, 62, 1352-1366.
- Dunn, J., Cutting, A. L., & Fisher, N. (2002). Old friends, new friends: Predictors of children's perspective on their friends at school. *Child Development*, 73(2), 621-635.
- Dunn, L. M., Dunn, L. M., Whetton, C., & Burley, L. (1997). *The British Picture Vocabulary Scale* (2nd Ed.). Windsor, UK: NFER-Nelson.
- Farhadian, M., Abdullah, R., Mansor, M., Redzuan, M., Kumar, V., & Gazanizad, N. (2010). Theory of mind, birth order, and siblings among preschool children. *American Journal of Scientific Research*, 7, 25-35.
- Farver, J. A. M., & Lee-Shin, Y.(2000). Acculturation and Korean-American Children's

social and play behavior. *Social Development*, 9(3), 316-336.

Fernyhough, C. (2004). Alien voices and inner dialogue: Towards a developmental account of auditory verbal hallucinations. *New Ideas in Psychology*, 22, 49-68.

Fernyhough, C. (2008). Getting Vygotskian about theory of mind: Mediation, dialogue, and the development of social understanding. *Developmental Review*, 28, 225-262.

Fernyhough, C. (2009). Dialogic thinking. In A. Winsler, C. Fernyhough, & I. Montero (Eds.), *Private speech, executive functioning, and the development of verbal self-regulation*. Cambridge: Cambridge University Press.

Fernyhough, C., Bland, K. A., & Meins, E., Coltheart, M. (2007). Imaginary companions and young children's responses to ambiguous auditory stimuli: Implications for typical and atypical development. *Journal of child psychology and psychiatry*, 48(11), 1094-1101.

Fernyhough, C., & Fradley, E. (2005). Private speech on an executive task: Relations with task difficulty and task performance. *Cognitive Development*, 20, 103-120.

Fernyhough, C., & Meins, E. (2009). Private speech and theory of mind: Evidence for

- developing interfunctional relations. In A. Winsler, C., Fernyhough, & I. Montero (Eds.). *Private speech, executive functioning, and development of verbal self-regulation* (pp. 95-104). New York, NY: Cambridge University Press.
- Fernyhough, C., & Russell, J. (1997). Distinguishing one's own voice from those of others: A function for private speech? *International Journal of Behavioral Development, 20*(4), 651-665.
- Field, A. (2005). *Discovering Statistics Using SPSS* (2nd ed.). London: Sage.
- Fivush, R. & Wang, Q. (2005). Emotion talk in mother-child conversation of the shared past: The effects of culture, gender and event valence. *Journal of Cognition and Development, 6*, 489-507.
- Flavell, J. H. (1966). Le langage prive. *Bulletin de Psychologie, 19*, 698-701.
- Flavell, J. H., Flavell, E. R., & Green, F. L. (1983). Development of the appearance-reality distinction. *Cognitive Psychology, 15*, 95-120.
- Flavell, J. H., Flavell, E. R., & Green, F. L. (1987). Young children's knowledge about the apparent-real and pretend-real distinctions. *Developmental Psychology, 23*, 816-822.

- Flavell, J. H., Flavell, E. R., & Green, F. L. (2001). Development of children's understanding of connections between thinking and feeling. *Psychological Science, 12*(5), 430-432.
- Flavell, J. H., Green, F. L., & Flavell, E. R. (1993). Children's understanding of the stream of consciousness. *Child Development, 64*, 387-398.
- Flynn, E. (2006). A microgenetic investigation of stability and continuity in theory of mind development. *British Journal of Developmental Psychology, 24*, 631-654.
- Fodor, J. A. (1992). A theory of the child's theory of mind. *Cognition, 44*, 283-296.
- Friedman, O., & Leslie, A. M. (2007). The conceptual underpinnings of pretense: Pretending is not 'behaving-as-if.' *Cognition, 105*, 103-124.
- Garner, P. W., Curenton, S. M., & Taylor, K. (2005). Predictors of mental state understanding in preschoolers of varying socioeconomic backgrounds. *International Journal of Behavioral Development, 29*(4), 271-281.
- Gilovich, T., Medvec, V. H., & Savitsky, K. (1998). The illusion of transparency: Biased assessments of others' ability to read one's emotional states. *Journal of Personality and Social Psychology, 75*(2), 332-346.

- Gleason, T. R. (2002). Social provisions of real and imaginary relationships in early childhood. *Developmental Psychology, 38*(6), 979-992.
- Gleason, T. R. (2004a). Imaginary companions: An evaluation of parents as reporters. *Journal of Infant and Child Development, 13*(3), 199-215.
- Gleason, T. R. (2004b). Imaginary companions and peer acceptance. *International Journal of Behavioural Development, 28*(3), 204-209.
- Gleason, T. R. (2005). Mothers' and fathers' attitudes regarding pretend play in the context of imaginary companions and of child gender. *Merrill-Palmer Quarterly Journal of Developmental Psychology, 51*(4), 412-436.
- Gleason, T. R., & Hohmann, L. M. (2006). Concepts of real and imaginary friendships in early childhood. *Social Development, 15*(1), 128-144.
- Gleason, T. R., Jarudi, R. N., & Cheek, J. M. (2003). Imagination, personality, and imaginary companions. *Social Behavior and Personality, 31*(7), 721-738.
- Gleason, T. R., Sebanc, A. M., & Hartup, W. W. (2000). Imaginary companions of preschool children. *Developmental Psychology, 36*(4), 419-428.
- Golomb, C., & Galasso, L. (1995). Make believe and reality: Explorations of the

- imaginary realm. *Developmental Psychology*, 31(5), 800-810.
- Gómez, J.-C. (2008). The evolution of pretence: From intentional availability to intentional non-existence. *Mind and Language*, 23(5), 586-606.
- Gopnik, A. (2009). *The Philosophical Baby: What children's minds tell us about truth, love & the meaning of life*. London: The Bodley Head.
- Gopnik, A. (2009, May). Final comments and conclusions. IN A. Gopnick (Chair), *The role of testimony and domain knowledge in children's navigation of the reality/fantasy distinction*. Symposium conducted at the Society for Research in Child Development Biennial meeting, Denver, Colorado, USA.
- Guajardo, N.R., & Turley-Ames, K. J. (2004). Preschoolers' generation of different types of counterfactual statements and theory of mind understanding. *Cognitive Development*, 19, 53-80.
- Gupta, A., & Desai, N. G. (2006). Pathological fantasy friend phenomenon. *International Journal of Psychiatry in Clinical Practice*, 10(2), 149-151.
- Haight, W. L., & Miller, P. J. (1993). *Pretending at home*. Albany, NY: SUNY Press.
- Haight, W. L., Parke, R. D., & Black, J. E. (1997). Mothers' and fathers' beliefs about

- and spontaneous participation in their toddlers' pretend play. *Merrill-Palmer Quarterly*, 43, 271-290.
- Happé, F. G. E. (1994). Annotation: Current psychological theories of autism: The "theory of mind" account and rival theories. *Journal of Child Psychology and Psychiatry*, 35, 215-229.
- Harris, P. L. (1999). Acquiring the art of conversation: Children's developing conception of their conversation partner. In M. Bennett (Ed.), *Developmental Psychology: Achievements and Prospects* (pp. 89-105). London: Psychology Press.
- Harris, P. (2000). *The work of the imagination*. Oxford: Blackwell Publishing.
- Harter, S., & Chao, C. (1992). Role of competence in children's creation of imaginary friends. *Merrill-Palmer Quarterly*, 38(3), 350-363.
- Hepworth, C. (2007). *Put yourself in their shoes: Imaginary companions and theory of mind*. Unpublished master's thesis, Durham University, County Durham, England.
- Hobson, P., Chidambi, G., Lee, A., & Meyer, J. (2006). Foundations for self-awareness: An exploration through autism. *Monographs of the Society for Research in Child Development*, 71.

- Hoff, E. V. (2004). A friend lining inside me- The forms and functions of imaginary companions. *Imagination, Cognition and Personality, 24*(2), 151-189.
- Hoff, E. V. (2005). Imaginary companions, creativity, and self-image in middle childhood. *Creativity Research Journal, 17*(2 & 3), 167-180.
- Hofstede, G. (1980). *Culture's Consequences*. Beverly Hills, CA: Sage.
- Hughes, C., Adlam, A., Happé, F., Jackson, J., Taylor, A., & Caspi A. (2001). Good test-retest reliability for standard and advanced false belief tasks across a wide range of abilities. *Journal of Child Psychology and Psychiatry, 41*(4), 483-490.
- Hughes, C., & Dunn, J. (1997). "Pretend you didn't know": Preschoolers' talk about mental states in pretend play. *Cognitive Development, 12*, 477-497.
- Hughes, C., Fujisawa, K. K., Ensor, R., Lecce, S., & Marfleet, R. (2006). Cooperation and conversations about the mind: A study of individual differences in 2-year-olds and their siblings. *British Journal of Developmental Psychology, 24*, 53-72.
- Hurlburt, R., Happé, F., & Frith, U. (1994). Sampling the inner experience of autism: A preliminary report. *Psychological Medicine, 24*, 385-395.

- Hurlock, E. B., & Burstein, M. (1932). The imaginary playmate: A questionnaire study. *The Journal of Genetic Psychology*, *41*, 380-391.
- John-Steiner, V. (1992). Private speech among adults. In R. M. Diaz, & L. E. Berk (Eds.), *Private speech: From social interaction to self-regulation* (pp. 285-296). Hillsdale, NJ: Lawrence Erlbaum Associates, Publishers.
- Keysar, B., Lin, S., Barr, D. J. (2003). Limits on theory of mind use in adults. *Cognition*, *89*, 25-41.
- Kraft, K. C., & Berk, L. E. (1998). Private speech in two preschools: Significance of open-ended activities and make-believe play for verbal self-regulation. *Early Childhood Research Quarterly*, *13*(4), 637-658.
- Kronk, C. M. (1994). Private speech in adolescents. *Adolescence*, *29*, 781-804.
- Leslie, A. M. (1994). Pretending and believing: Issues in the theory of ToMM. *Cognition*, *50*, 211-238.
- Lillard, A. S. (1993a). Pretend play skills and the child's theory of mind. *Child Development*, *64*, 348-371.
- Lillard, A. S. (1993b). Young children's conceptualization of pretense: Action or mental

- representational state? *Child Development*, 64, 372-386.
- Lombardo, M. V., Barnes, J. L., Wheelwright, S. J., & Baron-Cohen, S. (2007). Self referential cognition and empathy in autism. *PLoS ONE*, 2(9), e885.
- Lyn, H., Greenfield, P., & Savage-Rumbaugh, S. (2006). The development of representational play in Chimpanzees and Bonobos: Evolutionary implications, pretense, and the role of interspecies communication. *Cognitive Development*, 21, 199-213.
- Manosevitz, M., Fling, S., & Prentice, N. M. (1977). Imaginary companions in young children: Relationships with intelligence, creativity and waiting ability. *Journal of Child Psychology and Psychiatry*, 18, 73-78.
- Manosevitz, M., Prentice, N. M., & Wilson, F. (1973). Individual and family correlates of imaginary companions in preschool children. *Developmental Psychology*, 8(1), 72-79.
- Markus, H. R., & Kitayama, S. (1994). The cultural construction of self and emotion: Implications for social behaviour. In S. Kitayama & H. R. Markus (Eds.), *Emotion and culture: Empirical studies of mutual influence* (pp. 89-130). Washington, DC: American Psychological Association.

- Mauro, J. (1991). The friend that only I can see: A longitudinal investigation of children's imaginary companions' (Doctoral Dissertation, University of Oregon, Eugene, 1991) *Dissertation Abstracts International*, 52, 4995.
- McLewin, L. A., & Muller, R. T. (2006). Childhood trauma, imaginary companions, and development of pathological dissociation. *Aggression and Violent Behaviour*, 11, 531-545.
- Meins, E., & Fernyhough, C. (2006). *Mind-mindedness coding manual*. Unpublished manuscript. Durham University, Durham, UK.
- Meins, E., Fernyhough, C., Wainwright, R., Clark-Carter, D., Das Gupta, M., Fradley, E., & Tuckey, M. (2002). Pathways to understanding mind: Construct validity and predictive validity of maternal mind-mindedness. *Child Development*, 74(4), 1194-1211.
- Meins, E., Fernyhough, C., Johnson, F., & Lidstone, J. (2006). Mind-mindedness in children: Individual differences in internal-state talk in middle childhood. *British Journal of Developmental Psychology*, 24, 181-196.
- Mitchell, P., Bennett, M., & Teucher, U. (2009a). Do children start out thinking they don't know their own mind? An odyssey in overthrowing the mother of all knowledge. *European Journal of Developmental Psychology*, 7, 67-84.

- Mitchell, P., & O'Keefe, K. (2008). Brief report: Do individuals with autism spectrum disorder think they know their own minds? *Journal of Autism and Developmental Disorders*, 38, 1591-1597.
- Mitchell, P., Teucher, U., Bennett, M., Zeigler, F., & Wyton, R. (2009b). Do children start out thinking they don't know their own minds? *Mind and Language*, 24(3), 328-346
- Mitchell, P., Teucher, U., Kikuno, H., & Bennett, M. (2010). Cultural variations of developing a sense of knowing your own mind: A comparison between British and Japanese children. *International Journal of Behavioural Development*, 34(3), 248-258.
- Mitchell, R. W., & Neal, M. (2005). Children's understanding of their own and others' mental states. Part A. Self-understanding precedes understanding of others in pretence. *British Journal of Developmental Psychology*, 23, 175-200.
- Montemayor, R., & Eisen, M. (1977). The development of self-conceptions from childhood to adolescence. *Developmental Psychology*, 13(4), 314-319.
- Moore, C. (2007). Understanding self and others in the second year. In C. A. Brownell & C. B. Kopp (Eds.), *Socioemotional Development in the Toddler*

Years: Transitions and Transformations. New York: Guilford Press.

Morin, A. (1993). Self-talk and self-awareness: On the nature of the relation. *The Journal of Mind and Behavior*, *14*(3), 223-234.

Nichols, S. & Stich, S. (2000). A cognitive theory of pretense. *Cognition*, *74*, 115-147.

Nisbett, R.E. (2003). *The geography of thought: How asians and westerners think differently...and why*. New York: Free Press.

Olszewski, P. (1987). Individual differences in preschool children's production of verbal fantasy play. *Merrill-Palmer Quarterly*, *33*(1), 69-86.

Olszewski, P., & Fuson, K.C. (1982). Verbally expressed fantasy play of preschoolers as a function of toy structure. *Developmental Psychology*, *18*(1), 57-61.

Pearson, D., Burrow, A., Fitzgerald, C., Green, K., Lee, G., & Wise, N. (2001). Auditory hallucinations in normal child populations. *Personality and Individual Differences*, *31*, 401-407.

Pearson, D., Rouse, H., Doswell, S., Ainsworth, C., Dawson, O., Simms, K., Edwards, L., & Faulconbridge, J. (2001). Prevalence of imaginary companions in a normal child population. *Child Care, Health and Development*, *27*(1), 13-22.

- Perner, J. (2000). About + Belief + counterfactual. In P. Mitchell & K. J. Riggs (Eds.), *Children's reasoning and the mind* (pp. 367-401). Hove, England: Psychology Press.
- Perner, J., Ruffman, T., & Leekam, S. R. (1994). Theory of mind is contagious: You catch it from your sibs. *Child Development*, *65*, 1228-1238.
- Peterson, C. C., & Siegal, M. (2000). Insights into theory of mind from deafness and autism. *Mind and Language*, *15*(1), 123-145.
- Piaget, J. (1959). *The language and thought of the child* (M. Gabain & R. Gabain, Trans.). London: Routledge and Kegan Paul Ltd. (Original work published in 1926)
- Premack, D., & Woodruff, G. (1978). Does the chimpanzee have a theory of mind? *Behavioural and Brain Sciences*, *1*(4), 515-526.
- Rakoczy, H. (2008). Pretence as individual and collective intentionality. *Mind and Language*, *25*(5), 499-517.
- Rakoczy, H., Tomasello, M., & Striano, T. (2006). The role of experience and discourse in children's developing understanding of pretend play actions. *British Journal of*

Developmental Psychology, 24, 305-335.

Raviv, A., Bar-Tal, D., Raviv, A., & Houminer, D. (1990a). Development in children's perceptions of epistemic authorities. *British Journal of Developmental Psychology*, 8, 157-169.

Raviv, A., Bar-Tal, D., Raviv, A., & Peleg, D. (1990b). Perception of epistemic authorities by children and adolescents. *Journal of Youth and Adolescence*, 19 (5), 495-510.

Repacholi, B. M. & Meltzoff, A. N. (2005). Other people's perceptual and emotional states influence infant imitation. Paper presented at the biennial meeting of the Society for Research in Child Development, Atlanta, GA.

Repacholi, B. & V. Slaughter (Eds.) *Individual Differences in Theory of Mind: Implications for Typical and Atypical Development*. Hove: Psychology Press.

Rickel, A. U., & Biasatti, L. L. (1982). Modification of the block child rearing practices report. *Journal of Clinical Psychology*, 38(1), 129-134.

Roby, A. C., & Kidd, E. (2008). The referential communication skills of children with imaginary companions. *Developmental Science*, 11(4), 531-540.

- Rosenberg, M. (1979). *Conceiving the self*. New York: Basic Books.
- Ruffman, T., Perner, J., Naito, M., Parkin, L., & Clements, W. A. (1998). Older (but not younger) siblings facilitate false belief understanding. *Developmental Psychology, 34*(1), 161-174.
- Ruffman, T., Slade, L., & Crowe, E. (2002). The relation between children's and mothers' mental state language and theory of mind understanding. *Child Development, 73*, 734-751.
- Sánchez, E., & de la Mata, M. L. (2006). School experience, memory actions and private speech in adults. In I. Montero (Ed.), *Current research trends in private speech* (pp. 175-195). Madrid: UA Ediciones.
- Sawa, T., Oae, H., Abiru, T., Ogawa, T., & Takahashi, T. (2004). Role of imaginary companion in promoting the psychotherapeutic process. *Psychiatry and Clinical Neurosciences, 58*, 145-151.
- Schoeneman, T. J. (1981). Reports of the sources of self-knowledge. *Journal of Personality, 49*(3), 285-293.
- Schwebel, D. C., Rosen, C. S., & Singer, J. L. (1999). Preschoolers' pretend play and theory of mind: The role of jointly constructed pretence. *British Journal of*

Developmental Psychology, 17, 333-348.

Seiffge-Krenke, I. (1997). Imaginary companions in adolescence: Sign of a deficit or positive development? *Journal of Adolescence*, 20, 137-154.

Seiffge-Krenke, I. (2001). "Dear kitty, you asked me...": Imaginary companions and real friends in adolescence. *Praxis der Kinderpsychologie und kinderpsychiatrie*, 50(1), 1-15.

Shapiro, H. L., Prince, J. B., Ireland, R., & Stein, M. T. (2006). A dominating imaginary companion, cruelty to animals, social withdraw in a 7-year old girl with schizophrenic parents. *Journal of Developmental and Behavioural Pediatrics*, 27(3), 231-236.

Sharon, T., & Woolley, D. (2004). Do monsters dream? Young children's understanding of the fantasy/reality distinction. *British Journal of Developmental Psychology*, 22, 293-310.

Singer, D. G., & Singer, J. L. (1990). *The house of make-believe: Children's play and the developing imagination*. Cambridge: Harvard University Press.

Skolnick, D. & Bloom, P. (2006). What does Batman think about SpongeBob?

- Children's understanding of the fantasy/fantasy distinction. *Cognition* 101, 1, B9-B18.
- Slaughter, V., Dennis, M. J., & Pritchard, M. (2002). Theory of mind and peer acceptance in preschool children. *British Journal of Developmental Psychology*, 20, 545-564.
- Svendsen, M. (1934). Children's imaginary companions. *Archives of Neurology and Psychiatry*, 2, 985-999.
- Tabachnick, B. G., & Fidell, L. S. (2007). *Using Multivariate Statistics*. Boston: Allyn and Bacon.
- Tager-Flusberg, H., & Sullivan, K. (1995). Attributing mental states to story characters: A comparison of narratives produced by autistic and mentally retarded individuals. *Applied Psycholinguistics*, 16, 241-256.
- Taumoepau, M., Ruffman, T. (2006). Mother and infant talk about mental states relates to desire language and emotion understanding. *Child Development*, 77, 465-481.
- Taylor, M. (1999). *Imaginary companions and the children who create them*. Oxford; Oxford University Press.
- Taylor, M., & Carlson, S. (1997). The relation between individual differences in fantasy

- and theory of mind. *Child Development*, 68(3), 436-455.
- Taylor, M., Carlson, S. M., Maring, B. L., Gerow, L., & Charley, C. M. (2004). The characteristics and correlates of fantasy in school-age children: Imaginary companions, impersonation, and social understanding. *Developmental Psychology*, 40(6), 1173-1187.
- Taylor, M., Carlson, S. M., & Shawber, A. B. (2007). Autonomy and control in children's interactions with imaginary companions. In I. Roth (Ed.), *Imaginative Minds*. Oxford: British Academy and Oxford University Press.
- Taylor, M., Cartwright, B., & Carlson, S. M. (1993). A developmental investigation of children's imaginary companions. *Developmental Psychology*, 29, 276-285.
- Taylor, M., Hodges, S. D., & Kohanyi, A. (2003). The characters created by adult novelists and the imaginary companions created by children. *Imagination, Cognition and Personality*, 22, 361-380.
- Teucher, U. C., Mitchell, P., & Reamer J. S. (2009, May). Aboriginal children's reasoning about self-knowledge and what adults can know about children's selves. IN *Children's reasoning about the public and private self in middle childhood*. Symposium conducted at the Society for Research in Child Development Biennial meeting. Denver, Colorado, USA.

- Torrance, E. P. (1981). Predicting the creativity of elementary school children and the teacher who “made a difference.” *Gifted Child Quarterly*, 25, 55-62.
- Trionfi, G. & Reese, E. (2009). A good story: Children with imaginary companions create richer narratives. *Child Development*, 80(4), 1301-1313.
- Vostrovsky, C. (1894). A study of imaginary companions. *Education*, 15, 383-398.
- Vygotsky, L. S. (1967). Play and its role in the mental development of the child. *Soviet Psychology*, 5(3), 6-18.
- Vygotsky, L. S. (1978). *Mind in society: The development of higher psychological processes* (M. Cole, V. John-Steiner, S. Scribner, & E. Souberman, Eds.). Massachusetts: Harvard. (Original work published in 1931).
- Vygotsky, L. S. (1986). *Thought and language* (A. Kozulin, Ed.). Cambridge, MA: The MIT Press. (original work published in 1931).
- Vygotsky, L. S. (1987). *The collected works of L. S. Vygotsky: Volume 1 Problems of general psychology* (R.W. Reiber & A. S. Carton, Eds.) (N. Minick, Trans.). New York: Plenum. (Original work published in 1931)

- Vygotsky, L. S. (1993). *The collected works of L. S. Vygotsky: Volume 2 the fundamentals of defectology* (R.W. Reiber & A. S. Carton, Eds.) (J. E. Knox & C. B. Stevens, Trans.). New York: Plenum. (Original work published in 1931)
- Vygotsky, L. S. (1997a). *The collected works of L. S. Vygotsky Volume. 3 problems of the theory and history of psychology* (R. W. Reiber & J. Wollock, Eds.) (R. Van Der Veer Trans.). New York: Plenum. (Original work published in 1931)
- Vygotsky, L. S. (1997b). *The collected works of L. S. Vygotsky: Volume 4 the history of the development of higher mental functions* (R. W. Reiber Ed.) (M. J. Hall, Trans.). New York: Plenum. (original work published in 1931).
- Vygotsky, L. S. (1998). *The collected works of L. S. Vygotsky Volume 5 child psychology* (R. W. Reiber Ed.) (M. J. Hall Trans.). New York: Plenum. (Original work published in 1931)
- Wellman, H. M., Cross, D., & Watson, J. (2001). Meta-analysis of Theory-of-Mind development: The truth about false belief. *Child Development, 72*(3), 655-684.
- Wellman, H. M., & Liu, D. (2004). Scaling of Theory-of-Mind tasks. *Child Development, 75*(2), 523-541.
- White, C. S., & Daugherty, M. (2009). Creativity and private speech in young children.

In A. Winsler, C. Fernyhough, & I. Montero (Eds.), *Private speech, executive functioning, and the development of verbal self-regulation*. Cambridge: Cambridge University Press.

Williams, D. M., Lind, S. E., & Happé, (2009). Metacognition may be *more* impaired in autism. *Behavioral and Brain Sciences*, 32(2), 163-163.

Williams, T. K. (1997). *Expressive Vocabulary Test (EVT)*. Circle Pines, MN: American Guidance Center.

Wimmer, H., & Perner, J. (1983). Beliefs about beliefs: Representation and constraining function of wrong beliefs in young children's understanding of deception. *Cognition*, 13, 103-128.

Wing, L., & Gould, J. (1979). Severe impairments of social interaction and associated abnormalities in children: Epidemiology and classification. *Journal of Autism and Developmental Disorders*, 9(1), 11-29.

Winsler, A. (1998). Parent-child interaction and private speech in boys with ADHD. *Applied Developmental Science*, 2, 17-39.

Winsler, A., Carlton, M. P., & Barry, M. J. (2000). Age-related changes in preschool children's systematic use of private speech in a natural setting. *Journal of Child*

Language, 27, 665-687.

Winsler, A., De León, J. R., Wallace, B. A., Carlton, M. P., & Willson-Quayle, A. (2003). Private speech in preschool children: Developmental stability and change, across-task consistency, and relations with classroom behaviour. *Journal of Child Language*, 30, 583-608.

Winsler, A., Feder, M., Way, E. L., & Manfra, L. (2006). Maternal beliefs concerning young children's private speech. *Infant and Child Development*, 15, 403-420.

Winsler, A., Fernyhough, C., McClaren, E. M., & Way, E. (2004). *Private speech coding manual*. Unpublished manuscript. George Mason University, Fairfax, VA, USA.

Winsler, A., Manfra, L., & Diaz, R. M. (2007). "Should I let them talk?" Private speech and task performance among preschool children with and without behaviour problems. *Early Childhood research Quarterly*, 22, 215-231.

Winsler, A., & Naglieri, J. (2003). Overt and covert verbal problem-solving strategies: Developmental trends in use, awareness, and relations with task performance in children aged 5-17. *Child Development*, 74(3), 659-678.

Woolley, J. D., Boerger, E. A., & Markman, A. B. (2004). A visit from the candy

- witch: Factors influencing young children's belief in a novel fantastical being. *Developmental Science*, 7(4), 456-468.
- Woolley, J. D., & Ma, L. (2009, May). Children's use of conversational cues to infer reality status. IN A. Gopnick (Chair), *The role of testimony and domain knowledge in children's navigation of the reality/fantasy distinction*. Symposium conducted at the Society for Research in Child Development Biennial meeting, Denver, Colorado, USA.
- Woolley, J. D., & Van Reet, J. (2006). Effects of context on judgements concerning reality status of novel entities. *Child Development*, 77(6), 1778-1793.
- Woolley, J. D. (2003). The fantasy/reality distinction revisited: The case of imaginary companions. *Social Development*, 12(4), 622-625.
- Yates, T. M., Marcelo, A. K., Abalde, N. A., & Sampayan, C. D. (2009, May). Affective expression in preschoolers' play: Causes and consequences. IN *The implications of play for understanding development, deviation, and repair*. Symposium conducted at the Society for Research in Child Development Biennial meeting, Denver, Colorado, USA.
- Youngblade, L. M., & Dunn, J. (1995). Individual differences in young children's pretend play with mother and sibling: Links to relationships and understanding

other people's feelings and beliefs. *Child Development*, 66(5), 1472-1492.

Appendices

Appendix 1 Self-Knowledge Interview (Mitchell et al., 2006)

Condition 1 where child is asked 1st about self-knowledge (In condition 2, child is asked about adult self-knowledge 1st):

1. Illness (child/child's guardian)

- (a) People get ill sometimes. Do you get ill sometimes?
- (b) When you are ill what happens to you? How do you feel?
- (c) When you are ill how well do you know about your illness?
- (d) When you are ill how well does your mother (father) know about it?
- (e) When you are ill how does she (he) know if you are ill?

2. Fun (child/child's teacher)

- (a) People have fun sometimes. Do you have fun sometimes?
- (b) When you are having fun what happens to you? How do you feel?
- (c) When you are having fun how well do you know about your feeling that you are having fun?
- (d) When you are having fun how well does your teacher know about it?
- (e) When you are having fun how does she (he) know you are having fun?

3. Dream (child/child's guardian)

- (a) People sometimes have dreams while they are sleeping. People may have lots of dreams sometimes. Do you know when you are dreaming?
- (b) While you are dreaming what happens to you? How do you feel?
- (c) When you are dreaming how well do you know that you are dreaming?
- (d) When you are dreaming how well does your mother (father) know about it?
- (e) When you are dreaming how does your mother (father) know you are dreaming?

4. Thinking (child/child's teacher)

- (a) People sometimes think about one thing or many things. Some people think about what they want to eat at lunch time. Others think about how many will it be if you add one and to one, or why a rabbit is a rabbit but not a kangaroo. What do you think about sometimes?
- (b) What will it happen when you are thinking? How do you feel when you are thinking?
- (c) Is there ever a time when you are not thinking?
- (d) When you are thinking how well do you know you are thinking?
- (e) When you are thinking how well does your teacher know you are thinking?
- (f) When you are thinking how does your teacher know you are thinking?

5. Hunger (child/child's guardian)

- (a) People sometimes get hungry. Do you get hungry sometimes?
- (b) What happens to you when you get hungry? How do you feel?
- (c) When you are hungry how well do you know when you are hungry?
- (d) When you are hungry how well does your mother (father) know if you are hungry?
- (e) When you are hungry how does she (he) know that you are hungry?

6. Anger (child/child's teacher)

- (a) People sometimes get angry. Do you get angry sometimes?
- (b) What happens to you when you get angry? How do you feel?
- (c) When you are angry how well do you know you are angry?
- (d) When you are angry how well does your teacher know if you are angry?
- (e) When you are angry how does she (he) know that you are angry?

Appendix 2 Theory of Mind Battery (Wellman & Liu, 2004; Hughes et al., 2000)

The order of story presentation were randomised:

1. Diverse Beliefs

Props: Toy figure of a girl (Sarah)

A4 sheet of paper with a garage and some bushes drawn

Introduce child to the protagonist and make him (her) face the picture.

Here's Sarah. Sarah wants to find her cat.

Her cat might be hiding in the bushes (said pointing to the picture),

Or it might be hiding in the garage (said pointing to the picture).

Where do you think the cat is? In the bushes or in the garage?

Child's response:

'Bushes': *Well, that's a good idea, but Sarah thinks her cat is in the garage.*

She thinks her cat is in the garage (said while pointing)

'Garage': *Well, that's a good idea, but Sarah thinks her cat is in the bushes.*

She thinks her cat is in the bushes (said while pointing).

Target question:

So where will Sarah look for her cat? (brief pause)

Child's responds:

(If the child does not respond, ask the following prompt)

Will she look in the bushes or in the garage? (point to each one)

Oh, look and now she's found her cat!

2. Knowledge Access

Props: Toy figure of a girl (Ellie)

Non-descript box containing small toy

Here's a box. What do you think is inside the box?

(Child guesses and researcher opens box and shows child contents)

Let's see...it's really a ball inside! (close the box)

Okay, what is in the box?

Child responds:

Ellie has never seen inside this box. (produce toy figure) Now, here comes Ellie.

Target question:

So, does Ellie know what is inside the box?

Child responds:

Reality/ Memory check question:

Did Ellie see inside this box?

3. Contents False Belief (1)

Props: Toy figure of a boy (Jack)

Pringles (crisp) box containing a toy animal (e.g. Pig)

Child is shown the Pringles box.

Here's a box of crisps. What do you think is inside the box?

Child responds:

Open the Pringles box and show the child the contents.

Let's see...can you tell me what is really inside the box?

(making sure child responds correctly) Close the Pringles box and produce toy.

Jack has never seen inside this box of crisps before. Now, here comes Jack.

So, what does Jack think is inside the box? (brief pause)

Child responds:

(If the child does not respond, ask the following prompt)

Does he think it's crisps or a pig?

Reality question:

Okay, what is really inside the box?

Child responds:

Reality/ Memory check question:

Did Jack see inside this box?

Child responds:

4. Explicit False Belief

Props: Toy figure of a boy (Simon)

A4 sheet of paper with a back-pack and a wardrobe drawn

Introduce child to the protagonist and make him face the picture.

Here's Simon. Simon wants to find his gloves.

His gloves might be in his back-pack (point to the picture),

Or they might be in the wardrobe (point to the picture).

Move the toy figure slightly to the side and say to the child:

Simon's gloves are really in his back-pack (point to the picture),

But Simon thinks his gloves are in the wardrobe (point to the picture).

Target question:

So, where will Simon look for his gloves? (brief pause)

Child responds:

(if child does not respond, ask the following prompt)

Will he look in his back-pack or in the wardrobe?

Reality/ Memory check question:

Where are Simon's gloves really? (brief pause)

Child responds:

(If child does not respond, ask the following prompt while pointing to the pictures)

Are they in his back-pack or in the wardrobe?

5. Contents False Belief (2)

Props: A Mini-eggs tube containing pencils

Child is shown Mini-eggs tube.

Here's a Mini-eggs tube. What do you think is inside the Mini-eggs tube?

Child responds:

Open Mini-eggs tube and show child the contents.

Let's see...can you tell me what is really inside?

(make sure child responds correctly) Close the Mini-eggs tube.

Target question:

Okay, before you saw inside the Mini-eggs tube, what did you think was in the tube?

Child responds:

(If child does not respond, ask the following prompt)

Do you think it was Mini-eggs or pencils?

Reality/ Memory check question:
What is really inside the tube? (Brief pause)

Child responds:

(If child does not respond, ask the following prompt)
Is it Mini-eggs or pencils?

6. Unexpected Transfer

Props: Four illustrated sheets of A4 paper showing story material

Show child the first sheet and point as appropriate.

Now, let's have a look at this story.
This is Andy. Andy has an apple and a bag.
This is Sally. Sally has a box.

Turn page:
Andy puts his apple in this bag to keep it safe and he goes outside to play.

Turn page:
While Andy is outside playing, Sally puts the apple in the box and then she goes outside to play.

Turn page:
Andy comes back because he wants to have a bit of his apple.

Target question:
Where will Andy look for his apple? (brief pause)

Child responds:

(If child does not respond, ask the following prompt)
Will he look in the bag or in the box?

Reality question:
Where is the apple really? (brief pause)

(If child does not respond, ask the following prompt)
Is it in the bag or in the box?

Child responds:

Reality/ Memory check question:

Where did Andy put his apple first of all?

(If child does not respond, ask the following prompt)

Was it in the bag or in the box?

Appendix 3 Imaginary Companion Interview

Researcher says to child:

Now I am going to ask you some questions about friends. Some friends are real like the kids who live on your street, the ones you play with. And some friends are pretend friends. Pretend friends are ones that are make believe that you pretend are real. Do you understand?

(Child should indicate here that they understand, if not the experimenter repeats the beginning definition)

- (1) *Do you have a pretend friend?*
- (2) *Have you ever had a pretend friend? (If child answers no to first question but had a pretend friend previously) (2a) Do you remember _____?*
- (3) *What is (was) your friend's name?*
- (4) *Is (was) your friend a toy like a stuffed animal or a doll, or is (was) it completely pretend?*
- (5) *Is it a boy or girl? (5a) Is it a person, an animal, or something else?*
- (6) *How old is your friend?*
- (7) *What does your friend look like?*
- (8) *What do you like about your friend?*
- (9) *What do you not like about your friend?*
- (10) *Where does your friend live?*
- (11) *Where does your friend sleep?*
- (For previous pretend friends) (11a) *What happened to _____?* (11b) *When did you stop playing with _____?* (11c) *Why did you stop playing with _____?*

Activities section:

- (12) *What do you usually do together? (12a) Do you play together, go on adventures, talk? (12b) What do you play together? (12c) What kind of adventures do you go on?*
- (13) *Who decides what you should play? / Who makes up the mischief, adventure?*
(if child responds that they decide, ask if the friend ever decides what they play)
- (14) *Does he or she always play what you want to play? For Example, when you want to play Pokemon do they ever want to play something else instead?*
- (15) *Does your friend always do what you want him/her to do? Like when you're playing Pokemon do they ever not follow the rules or pretend not do what you wanted them to.*
- (16) *Does your friend ever try to boss you around or make you do things that you do not want to do?*

Conversation section:

- (17) *What do you talk about with...?*
- (18) *You know, friends get along most of the time, but sometimes they don't get along. Do you ever have fights or argue with your friend?*

(19) *Can your friend tell you things you don't know? (19a) Can they teach you things? Like if you're talking about Pokemon can do they ever tell you something about Pokemon that you didn't already know.*

(20) *Do you ever tell ... things that they don't know? (20a) Do you teach them things?*

(21) *Does your friend ever tell you about what (he's) been up to?*

(22) *Do you ever talk to ... if something is bothering you? (22a) What do they say?*

Other Independence questions:

(23) *When do you usually meet up with...?*

(24) *Who decides when you should meet up?*

(25) *Does your pretend friend have his own friends, relatives and playmates?*

(26) *Does your friend ever surprise you with things he or she says or does?*

Appendix 4 Parental consent and Imaginary Companion Questionnaire

Hello my name is Paige Davis and I am a PhD student at the University of Durham. I am beginning a research project on children with and without imaginary friends, and your child's school has decided to take part. If your child participates in the project, he/she will have a 25-35 minute visit with me (Paige Davis) where they will be asked some questions about how much they know about what they are feeling and how other people are feeling. They will also be asked if they have an imaginary friend, and whether they can talk to that friend on a pretend telephone, and finally they will be given a short vocabulary game to play.

Your child **can** participate whether they have an imaginary friend or not because it is important that I get to talk to children with and without imaginary friends. Some parents have questions about imaginary companions and I wanted to reassure you that from all of the research I have done thus far, imaginary friends are very normal for children to have and they can even be a positive sign of development.

To ensure confidentiality your child will be given a number and their information will be stored securely. If you choose to consent for your child to take part, he or she will still be able to refuse to participate or withdraw from the games at any time. If you have any questions feel free to call or e-mail me. I would love to talk!
My e-mail is paige.davis@durham.ac.uk

Thank you again for your support!

Paige Davis
University of Durham
UK

Consent sheet:

Is your child's first language English?

Have you read the project information sheet?

Do you understand the child will be asked questions about how much they know about what they are feeling?

Do you consent to the anonymous and confidential use of your child's results for scientific purposes?

Do you understand that your child is free to withdraw him/herself from the study at any time, and will be immediately withdrawn in the unlikely event of showing any signs of distress?

Do you understand that the study will take place in your child's school during the month of April?

Do you understand that you are to sign and can keep a copy of this consent form?

Do you understand you are allowed to ask questions and discuss the study with Paige?

Have you received enough information about the study?

Have you completed the attached questionnaire on imaginary companions?

I give my consent for my child to take part in this study

Signed _____ Date _____

Child's name (Block Letters) _____

Researcher (Paige Davis) _____

Parental Questionnaire

Does your child have an imaginary friend?

What is the friend's name?

For how long has your child had the friend?

Is the friend male or female?

How old is the friend?

Is this friend a toy or object (please specify) or completely imaginary?

What do you understand the friend to look like?

What does your child like about the friend?

Where does the friend live?

Where does the friend sleep?

Any further comments?

Appendix 5 A Brief Account of all Children's Imaginary Companions and Personified
Imaginary Companions and Personified Objects Presented in This Thesis

Study 1: Self-knowledge

Child # 2- Ragid is an IC that sleeps in a flower pot bed and is mischievous. Sometimes he doesn't follow the rules and smashes his flower pot bed. This means that the child must clean up the mess. The child doesn't like the trousers that Ragid wears, and Ragid sometimes surprises the child by falling into the bath with his clothes on and saying funny words.

Child # 4- Laus and Calum are a pair of four year old ICs. Laus is a girl and Calum a boy. Laus doesn't like boy's games, but Calum does. The three sometimes pretend there is a ghost behind the curtains and run away together. The child must teach Laus and Calum how to play because they don't go to school. The ICs get to choose what is played, because they are the visitors, and Laus is able to do cartwheels when the child can not accomplish this feat. The ICs made up another friend to play with when the child is not around named Emily, but the child has not met Emily.

Child # 11- This PO's name is Sam. Sam is a cuddly toy dog that sleeps with the child. Sam is eight years old and the child usually just meets up with him when he is going to sleep, because he sleeps in bed with the PO.

Child # 18- Jessica is an IC that has blonde hair that reaches her hands and brown eyes. She wears a pink coat and has a green bag which the child likes. The child usually talks about chocolate with Jessica and plays with her in the afternoons. The child's mother decides when they should meet up and the friend sometimes surprises the child.

Child # 21- Monkey is a female PO that the child plays with. Monkey accompanies the child on holiday as well as playing that they are going on holiday. The child can teach things to Monkey that she does not know. Monkey has other playmates that she plays with when the child is not around.

Child # 32- Bill is a tall, skinny, big IC that makes the child laugh. This IC is a kind IC because he never bosses the child around. The child can teach the IC things, but the IC cannot speak, so he cannot teach the child anything. The child takes Bill all over, but does not talk to Bill about things that might be bothering him, because "he's not a real friend, he's imaginary."

Child # 34- Harry is a fun IC with black hair. This child teaches Harry how to read hard words. They take turns deciding what to play when they meet up, and the IC has friends and relatives.

Child # 43- Wiggly-woo is classified as a PO because Wiggly is the child's finger. The child knows songs about Wiggly and plays with his little brother and Wiggly in the

bath tub. They talk about playing hide and seek and sometimes Wiggly brings the child presents.

Child # 44- Jack is a naughty IC with blue hair and green football gloves. Jack lives in the child's mouth and sleeps at home. Jack bosses the child around and sometimes chases the child. When they play, Jack is the owner and the child plays that he is a dog. When the two fight, the child's hand goes through Jack's tummy. Jack knows everything according to the child.

Child # 47- Bun Bun is a 4 year old PO that shows his owner where to go, and likes Pringles crisps. Sometimes Bun Bun won't let his owner get to the Pringles because he likes them so much. He argues about the crisps. Bun Bun plays with toys and things that he likes and the child does not decide what Bun Bun likes. Bun Bun also decides who should meet up and sometimes surprises the child, but the child can't remember any examples.

Child # 50- Sophie is a six year old IC with brown hair and blue eyes that only wears brown clothes. Sophie walks home with the child. Sophie doesn't play what the child wants and says to go get her things. This IC can teach the child things and has friends of her own.

Child # 51- Elizabeth is a four year old IC with freckles and brown hair. Child and IC take turns deciding what to play because they both like things that they both want to play. They speak about imagining things and the IC has relatives of her own.

Child # 57- Mr. Nobody is an IC with the same birthday as his creator. When asked to help this IC doesn't always want to help because he wants to do other things. Mr. Nobody can tell the child things and also teaches the child things as well. They do not bump into each other, so the child nor Mr. Nobody decides who meets whom. Mr. Nobody has 100 brothers and sisters and sometimes makes the child jump with surprise because he pops out of the ceiling when the child doesn't expect him to be around.

Child # 59- This child has created many ICs of all shapes and sizes, but doesn't know their names. The ICs live in his attic and they pretend they fly with the child. IC sometimes doesn't do what the child wants it to do. The child makes most of the decisions on when the ICs meet up with him, but some stay in the attic while he plays with others.

Child # 62- Bailey is a PO that is described as being naughty sometimes. The child has to punish Bailey when he is bad and he doesn't eat his tea. He has friends and relatives, but the child hates talking about his friends, so instead he talks about climbing trees and playing football with Bailey.

Study 2: Friend Description

Child # 12- This IC lives and sleeps in the child's house.

Child # 22- This child's IC has had many different names and forms and has been in existence since the child was in nursery. One of the ICs Amy, bosses the child about.

Child # 33- This IC is a granny named Yellow Granny. Yellow Granny goes places, does things with the child, and lives in a castle. She always goes home before bedtime.

Child # 50- This child has many ICs named after friends from school.

Child # 63-Giraffey is a PO that has a personality like the child's brother. Giraffey is always doing exciting things. Giraffey lives in the child's house in a bed that the child's father made with covers that the child's mother made.

Child # 68-Mo is a mischievous IC that is responsible for some of the naughty things that the child does. He joins in make believe stories. The IC is sometimes told off for being naughty and usually is around when the child is in the bath or on the loo.

Child # 72-Sid and Ghost are a team of PO and IC respectively. The child plays with Sid and talks with Ghost.

Child # 95- Ailiyah sometimes is a little girl and other times is a Mammy IC. The IC does what the child tells her to do.

Child # 101- This IC, Casey, has long blond hair and is the same age as the child.

Child # 105- Kitty is a PO that lives in the child's bedroom and is sometimes rude; while Kitty is rude, the child's IC is never rude and joins in meals and play.

Child # 106- Bear is a teddy that is an old, wise, friend. The child can tell Bear everything and Bear is dependable. If the child is lonely or upset Bear is a good ear.

Child # 107- Haley is an IC with brown hair that the child plays with and blames wrongdoings on.

Child # 124- This child has an imaginary family that consists of a mum, dad, brothers, and sisters. The family goes to lots of different places like Australia and recently the family moved from Bilingham to Australia. They live in their own house, but will move in if their house has a fire.

Child # 144- Sid is a PO that is cream with brown ears and patches. The child cuddles him when tired and uses the toy for comfort.

Child # 146- This child's IC Tim is very naughty and makes the child laugh. Tim lives in the child's room at the child's house.

Child # 148- This child has many POs Teddy/ and dog toys live and sleep in the child's house.

Child # 151- This child's PO is from a television programme. The PO's name is Dora and she is a little girl that seems to be able to do everything.

Child # 155- This child often pretends to play with her real friends when they are not there. She sometimes plays school with these ICs.

Child # 157- Alice is an IC that is a little girl. She is usually seen in an old fashioned dress with long hair. Alice plays with the child and also is blamed for some of her actions. Alice lives different places at different times.

Child # 160- This child has a PO named Abigail who is a young baby doll and a good friend.

Child # 167- Macca is an IC that is an orange and purple person that walks on two feet and that only the child can see. The child says Macca makes him do naughty things and Macca lives at 26 Lemon Road.

Child # 168- Pippin is a small brown and black haired dog. The child bosses this PO about and the dog is naughty sometimes.

Child # 172- Becky is an IC that has a white face and blond gingery hair. Becky shares the same interests as the child.

Child # 176- Ebby is an IC that is the same age as the child and can change to fit the circumstances of the game that is being played. The IC asks many questions and is sometimes blamed for things.

Child # 177- This child has a hamster that rides in a hamster wheel as an IC. The hamster lives in space.

Child # 178- This PO is a baby doll who is squishy and whose birthday often coincides with family members. The doll comes on picnics with the family and also weekends away.

Child # 200- Gingerbread man is an IC that is sometimes nice and other times nasty. The gingerbread man lives at Tesco.

Child # 218-Ragin is a dark skinned IC that is kind. He has a brother named Ragcom and they live in the opera house. They used to live in an empty box that the child's brother decorated in the child's bedroom.

Child # 227- This child has an IC named Fritty who is a bird.

Child # 232- Ben and Blue are teddies that live in the child's bedroom and are cuddly.

Child # 235- Sleepy Bear is a toy white soft polar bear that is always there and sleeps with the child.

Study 3: Private Speech

All children that participated in study 2 also participated in study 3 with the exception of children 107, and 200. The children below only participated in study 3.

Child # 85- Peep Peep is a male IC who is sometimes 3-years-old and can be up to 100-years-old. Peep Peep is always around and is similar to the child's friends. When the child doesn't have an explanation for something he will say, "Peep Peep did it."

Child # 141- Sam is an IC that is 7 years old and plays the same games as the child does when alone.

Child # 189- This child has an IC named Benny and also plays with mice ICs. The mice come from "mouseland."

Child # 204- Harvey is an IC who mirrors the child's real cousin. This IC looks like the cousin, but is naughty so that he gets the blame if things go wrong.

Child # 225- This child has a PO that is a dog. The dog is a tea towel with a lead that the child plays and talks with.

Child # 234- Polo is a polar bear teddy that stays with the child and sleeps with the child.