

**“BUT IT’S JILL!”: THE DEVELOPMENT OF UNDERSTANDING IDENTITY
AND VALUE FUNCTIONS OF PROPER NAMES**

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Research indicates that although children as young as two years of age are able to use proper names to track individuals across change, tracking identity across hypothetical brain transplants and magical transfers of mind is a later developmental achievement. Additionally, the value implications of naming have not been studied. The present research examined children’s ability to use proper names to track individuals in contrast to mind and labels, and their understanding of the value implications of proper names. Study 1a examined identity tracking and irreplaceable value judgments of a named stuffed animal or toy car in contrast to an identical toy bearing a category label or the experimenter’s toy. Study 1b examined four- and seven-year-old children’s ability to track identity across a magical transfer using proper names and mind. Study 2 examined the ability of children and adults to use proper names versus trait labels to track identity across transfers differing in degree of ontological distance (person, dog, stone). Also, effects of label type and category on irreplaceable value judgments were considered. The results indicated that 4-year-olds successfully track the identity of a named toy and this ability continues to develop with age. Four-year-olds presented with a magical transfer scenario were able to track identity but not subjective aspects of identity, across a transfer, using proper names. Whereas 7-year-olds were able to use proper names, mind, and trait label equally well to track subjective identity, 4-year-olds performed better with mind than with either proper name or trait label. The results suggest that with age, children increasingly associate proper names with

subjective identity. In addition, older children were less likely than younger children to respond that an old and worn toy bearing a proper name should be replaced. Children also judged more often that a toy car was replaceable than a stuffed elephant. When presented with magical transfer scenarios, adults judged subjective identity as irreplaceably valuable more often than participants in either of the child groups. However, there was no evidence that proper names, in contrast to mind and trait labels, uniquely influenced judgments of irreplaceable value of subjective identity.

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PREFACE

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1.0 INTRODUCTION

The sister of a friend of mine has a doll named Jill. This doll is missing most of its hair and has an arm that occasionally falls off. My friend asked his sister why she doesn't just get rid of the doll. To that question she responded, "But it's Jill!" My friend's sister does not care that her doll is falling apart and not much to look at. What matters is that it is her doll that she has had for a long time. She and that doll have a history, a relationship. However, the relationship is not just about mere ownership. Her utterance of the doll's name marked its value to her and served as justification for hanging on to it. To her, that doll is irreplaceable; it's Jill. This anecdote raises several questions concerning the connection between naming and identity. What role does the doll's name, Jill, play in the tracking of her identity across changes (like the loss of an arm)? Beyond allowing for the tracking of dolls and people, can proper names serve as vehicles for identity, especially the immaterial identity associated with mind or soul? Additionally, what role does the doll's name play in marking or conferring value to the doll and thus making Jill irreplaceable?

Proper names serve two distinct and important functions, keeping track of individuals and marking or conferring value on individuals. Proper names help establish the individual identities of things that are important to recognize as unique individuals, individuals that are important for us to keep track of. In addition, a proper name allows for tracking of individual identity across time and situations, as well as across changes of varying degrees and in all possible worlds

(Kripke, 1980). Proper names pick out individuals from among the crowds. In the social world it is important to keep track of individual people across changes and names assist in this task. Proper names serve an important purpose in identity when it comes to official records like medical, academic, and legal documentation.

However, not just anything receives a proper name. Proper names tend to be given to types of things and entities that we deem important as individuals, most notably, people. We are motivated to keep track of things and people that we value as irreplaceable on account of their uniqueness, their individuality. Having a proper name is so significant for people that, according to the United Nations Convention on the Rights of the Child established in 1989, the right to a name is considered a fundamental right of a child (Hall, 1999). Thus proper names are seen by adults, and even institutionalized, as a significant component of a human being. In this way, proper names bring attention to the potential value of an entity, what makes it important as an individual and thus irreplaceable, since there is no one else exactly like that individual.

Although the giving of proper names to people is universal and even considered a human right, cultural variation in naming practices does occur with striking consequences in terms of both tracking and value. Cultural practices highlight the value-laden nature of the conferral of proper names. The defining characteristics of proper names lead to important effects of naming or not naming. Knowing someone's name, using someone's name, validates the existence of that person as an important individual who is irreplaceable and enables that valued person to be tracked in the social world. The anthropological literature suggests that naming practices play an important role in the creation or denial of personhood that has consequences for how those on the margins, such as the soon-to-be or newly born, and the recently dead, are thought of and subsequently treated (Layne, 2006; Vom Bruck & Bodenhorn, 2006). As demonstrated in this

research, the practice of conferring a proper name highlights irreplaceable value by bringing attention to the individual personhood of a being and the potential that goes along with that.

The developmental psychology literature suggests that even babies have some understanding of proper names as referring the individuals and this understanding continues to develop during early childhood (Garcia-Ramirez & Shatz, 2011; Hall, 2009). Infants as young as 4.5 months recognize their names in contrast to other words (Jusczyk & Mandel-Emer, 1997). Other research indicates that children understand the individuating function of proper names as early as two years of age and are able to use proper names to track individuals, especially animates and their surrogates, across superficial changes (Gelman & Taylor, 1984; Katz, Baker, & Macnamara, 1974; Liitschwager & Markman, 1993; Sorrentino, 2001).

Although young children may understand that proper names refer to unique individuals, the ability to track those individuals over time and over drastic change is a more complicated task. Individuals change over time. Toys and other artifacts break, are repainted, or parts might be replaced. People and animals grow and age and die. People change hairstyles and clothes. Despite these changes, we tend to consider that these individuals are still the same individuals. When do children understand that a name refers to an individual across these changes? Do children conceptualize some sort of immaterial identity in addition or beyond material identity, that holds together an individual across change? It has been suggested that something like an individual essence may be used as a conceptual tool to connect the varying instances of an individual, similar to the way in which essence connects members of natural kind categories (Gelman, 2003). It is possible that proper names could act as a conceptual vehicle for individual immaterial identity.

Research concerning children's understanding of individual identity across drastic change suggests that young children do not locate identity in the mind or brain and thus are not able to track it across hypothetical brain transplants and magical transfer of mind (Corriveau, Pasquini, & Harris, 2005; Johnson, 1990). In this research, identity is defined in mental terms, as feelings, thoughts, preferences, memories. Despite young children's apparent inability to track this kind of identity over transplants and transformations, children's books and fairytales provide many instances of magical transformations involving identity. Anecdotally, children appear to have some understanding of what is happening in these stories. It remains unclear whether young children, before achieving an understanding of mind as the location of identity, are able to use proper names to track immaterial individual identity across drastic changes in appearance, such as those described in fairytales and used in studies of identity understanding.

In addition, research has not addressed children's understanding of the value implications of naming. Although previous research on children's understanding of authentic objects has indicated that children do recognize the value of objects such as Mr. Rogers' sweater and a silver spoon owned by Queen Elizabeth in contrast to identical objects lacking such a history, this research has not examined the influence of proper names on judgments of value specifically defined in terms of irreplaceability (Hood & Bloom, 2008; Jacobs & Johnson, 2001).

The purpose of the present research is to examine the development of the ability to utilize two functions of proper names: 1) to track individual identity and 2) to recognize the value implications of proper names. First, in terms of tracking, the studies address children's ability to use proper names in contrast to other terms, such as category labels, mind and trait labels, to track identity across changes in position and magical transfers. It is possible that the ability to track immaterial individual identity, using proper names, develops prior to the understanding of

mind and thus, even young children should be able to use names to track identity across drastic transfers of identity. Second, the present research examines the possible way in which proper names might influence children's thinking about the irreplaceable value of individuals, whether proper names contribute to moral intuitions such as a sense of an individual as irreplaceable. It is important to understand the development of these intuitions regarding the consequences of having a proper name since they might underlie notions of personhood that inform moral judgment and action.

1.1 WHAT IS A PROPER NAME AND WHAT ARE ITS FUNCTIONS?

Two important functions of proper names are that they refer to individuals, thus aiding in the tracking of individuals, and that they mark or confer value on an individual. In this way, they differ from other terms that may also refer to individuals, but do not mark or confer value, as well as from other terms that indicate value or an important relationship, but that do not highlight individuality.

Proper names allow for the tracking of individuals and they are able to assist in this function because proper names differ from other lexical terms in that they refer to specific individuals, regardless of context. Proper names differ from common nouns in that rather than referring to a member of a kind, they refer to unique individuals. Even if a definite article picks out a specific individual in a particular context (e.g., "the dog"), that same combination of definite article and category label in another context can be used to pick out a different individual. Kripke (1980) argues that proper names are 'rigid designators' and are called such because they refer to an individual in all possible worlds. For example, the name Barack Obama refers to an individual

who was the infant son of a Kenyan father and anthropologist mother, a boy who attended an Indonesian school, and the president of the United States. But proper names are not just “pegs on which to hang descriptions” (Searle, 1959, p. 172). A proper name is a rigid designator because it also refers to Barack Obama in possible or counterfactual worlds. If Obama had chosen not to run for president, had not spent time in Indonesia as a child, and had chosen instead to become a professional surfer in Hawaii, the name Barack Obama would still refer to the same individual even though aspects of the description of that individual have changed. As J. S. Mill states, proper names ‘attach to objects, not their attributes’ (Mill qtd. in Vom Bruck & Bodenhorn, 2006, p. 5). People, animals, artifacts, and natural inanimate objects tend to undergo change with time. Names allow us to keep track of an individual person whose “biological and social properties [are] undergoing constant flux” (Bourdieu, 2000, p. 300). Thus, proper names are essential to identifying an individual and tracking that individual across real and possible worlds. In sum, proper names are conventionally established rigid designators that refer to individuals across change and in possible worlds (such as counterfactual worlds and the world beyond death).

Proper names also differ from definite descriptions within a context in that they mark or enhance significance (Jeshion, 2009). Jeshion argues that “We give proper names only to certain particulars because, given cognitive limitations, we introduce singular representation-types just for those particulars regarded as having intrinsic or relational value, beyond their value as an instance of a certain kind, and we do so because we wish to signal and underscore that individuality” (373). Although not discounting the view that proper names do play a practical role in helping a community of speakers refer to individuals, Jeshion (2009) points to the unique role of proper names in marking and enhancing the significance of the individual to which the

proper name refers. Jeshion (2009) proposes that the use of a proper name “underscores or enhances the name’s referent’s significance for those who think of that individual through that name” (p. 373). In addition, Jeshion argues that proper names serve as “bearers of significance.” Jeshion posits that it is significance that guides naming in that “An agent can name an individual only if she accords intrinsic or relational significance to that individual” (2009, p. 374). Names are given to valued individuals and, once a name has been given, that name serves as a marker of the significance of that individual. In part, individuals, valued as individuals, are valued because they are irreplaceable. In sum, although definite descriptions can help us keep track of individuals in certain contexts, proper names go beyond a mere tracking function by highlighting and enhancing the irreplaceable value of the named individual. This significance or value of the individual stems from that individual’s unique qualities, the things that set that individual apart from others, and thus make that individual irreplaceable.

The two functions of proper names on which the present studies focus are the roles they play in bringing attention to the irreplaceable value of an individual (names serving as markers of significance) and in tracking an individual across changes in location. I begin by considering cultural examples of the consequences of naming practices on irreplaceable value and identity tracking. Next, I review the developmental literature examining children’s understanding of proper names. Third, I consider research on children’s tracking of individual identity. Fourth, I briefly look at developmental research on value. Finally, I describe two studies that address the role of proper names in children’s irreplaceable value judgments and tracking of individuals.

1.2 NAMING PRACTICES ACROSS CULTURES

Numerous examples in the anthropological literature illustrate the significance of giving proper names to people. Although naming practices vary cross-culturally (Alford, 1988), personal or proper names are universal. However, this cultural variation has striking consequences for both the value and the tracking of individuals. Who gets a name and who doesn't, when names are conferred, and how the names are used in the culture, all influence which individuals are deemed valuable to keep track of.

Cultures employ names to keep track of individual people within the social group. The convention that is the act of naming plays an important role in the connection of a proper name to the individual that it designates. In Kripke's (1980) causal theory of reference, he proposes the idea that proper names are "rigid designators" that continue to act as referents as long as links remain through a community of speakers to that person in question" (Vom Bruck & Bodenhorn, 2006, p. 7). In Kripke's view, there is a sort of baptismal event that introduces a proper name as referring to an individual and this connection between name and individual is maintained by subsequent use of that name by others to refer to that individual. The act of conferring a proper name is a speech act and as such, naming does something, creates something new (Austin, 1959; Bloch, 2006; Searle, 1995). Just as a marriage ritual creates a new entity, a couple, a naming ceremony creates a social individual (Searle, 1995; Bourdieu, 2000). The baptismal event brings attention to an individual as important, or potentially important socially, as an individual, rather than as just a role or category member. The conferral of a proper name helps constitute the social individual who is maintained by the use of that proper name (Bourdieu, 2000; Kripke, 1980). Even children appear to recognize the conventional aspect of proper names, especially if they have been present for the naming (Homer, Brockmeier, Kamawar, & Olson, 2001).

The timing of the conferral of a proper name varies culturally with consequences for when a child may be considered a person, a social being (Alford, 1988). In many cultures babies are named between birth and nine days after birth, although some cultures wait until a child is one or more years of age, and this delay may be related to high infant mortality or beliefs that supernatural agents seek to harm infants (Alford, 1988). In locations in which infant mortality is high and an infant's survival is uncertain, parents may confer "bad names", as Bloch (2006) calls them, on infants, or give girl names to boys (Watson, 1986) to make infants less attractive to evil spirits or ghosts. Many cultures have naming ceremonies, such as baptism, and in some cases these ceremonies signal entry into society, that is, conferring of social membership, or simply emphasize the importance of the individual (Alford, 1988). However, a proper name differs from a social category label that also implicates a person in the social system, in that a proper name highlights individuality beyond occupying a social role. For example, among the Zafimaniry of Madagascar, the conferral of personal names seven to eight days after birth, does not serve to "evoke a 'social' system, but rather the 'individual' in themselves: an equally immaterial entity whose phenomenological existence is created by acts such as using personal names" (Bloch, 2006, p. 101).

Other naming practices, such as the use of category labels and teknonyms (i.e., parents are referred to by the names of their children, such as, mother of so-and-so) may also have an effect on identity and personhood. Watson's (1986) ethnographic research in the village of Ha Tsuen near Hong Kong demonstrates that whereas men accumulate names during important social transitions that serve to further individuate them, women, who do receive them at birth, lose them at marriage and are essentially nameless as they are referred to by others by labels such as teknonyms or more generic labels like 'old woman.' Watson (1986) argues that these naming

practices serve to deny women full personhood. At death, the personal identity of a woman is obscured in the marking of her grave by the names of her father or husband. Similarly, Geertz and Geertz (1964) claim that the use of teknonyms in Bali create “genealogical amnesia,” resulting in a kinship system in which membership is flexible.

When a name is not known or used, depersonalization and devaluation can result. For example, shortly after the dismantling of apartheid in South Africa, Scheper-Hughes (1996) noted a contrast between the mode of reporting the deaths of blacks and whites that betrayed a difference in value toward the two groups. Whereas the deaths of blacks were listed in terms of body counts, those of whites were accompanied by names and other personal information. This contrasting use of names demonstrates the differentiation in value of the individuals whose deaths were reported.

The presence or absence of personal names at the beginning and end of life also varies cross-culturally and influences how people track and value the not-yet-born, the just born, and the recently dead. In her research with pregnancy loss support groups, Layne (2006) proposes that the naming of fetuses and even blighted ova, serves to confer personhood, that makes their loss all the more significant. Thus, women and men gather to validate the personhood of those lost to miscarriage through support groups and memorial services. While providing a fetus with a proper name may confer it with personhood, the opposite also holds true. In one example described by Layne (2006), a couple pregnant with triplets chose to selectively terminate one of the fetuses to give the other two a better chance. They chose to name the two, but not the fetus selected for termination, even though none of them survived. In choosing not to name the one, the parents chose not to grant personhood to that fetus as was given to the others, perhaps

making termination easier emotionally and morally. Likewise, there is some evidence that infanticide is more common among infants that have not been given names (Balikci, 1970).

The end of life is another transition during which naming practices become salient and important in terms of tracking immaterial identity. There is cultural variation in whether or not the dead keep their names. In some cultures there are taboos that guard against the naming of the dead (Iteanu, 2006). For example, among the Orokaiva in Melanesia, names are thought to belong to the living (Iteanu, 2006). At death, an individual loses his or her name and is referred to as *ahihi* (a plant emblem is used to refer to the dead in this category). Later on the dead disappear into “the depersonalized mass of the dead (*onderi*) which lies beyond the reach of the living” (Iteanu, 2006, p. 65). According to Iteanu (2006), for the Orokaiva, “Names do not belong to the person, are not contiguous to his or her body, do not carry individual memories, and do not need to be mourned” (p. 66). Such practices lead to a deindividualization of the dead. They lose their personal identities.

In contrast to the Orokaiva, in other cultures such as in the United States, the names of the dead are made immortal through memorials (Layne, 2006), such as the Vietnam War Memorial in Washington, DC that lists the names of fallen soldiers. In addition, in the aftermath of September 11, 2001, and the Asian tsunami of 2004, identifying and listing the names of the dead has become an important practice. The inscription of names on tombstones or ancestral tablets also serves to keep the names of the dead alive in memory (Kiong, 1993). Among the Efe in Africa, summoning the dead involves calling out their names and it is believe that they will only respond to their names (Sawada, 1998). When used to refer to a deceased individual, proper names can serve as a vehicle for continued identity.

Proper names also contribute to the instantiation and tracking of supernatural beings, such as spirits. According to Lambek (2006), “Names help to *realize* spirits: noumenal beings are brought to sustained human attention and become relatively fixed in their natures, such that we may speak of an identity relation, in large part through the process of naming” (p. 118). Thus naming plays an important role in the identity of a spirit that may or may not have a body, by providing them with a linguistic form. Lambek posits that “in referring to and addressing persons and spirits, names provide them with a vehicle for identity, that is, that identity is implicit in reference and address” (2006, p.118). Spirits, lacking bodies, cannot be tracked perceptually and thus having a name provides them with both identity and a means by which they may be tracked.

Thus, these examples from the anthropological literature suggest that although there are cultural variations in naming practices, these practices likely recruit cognitive universals, but in different ways to create this variation. Proper names elicit certain types of thinking about a named entity that are not elicited if an entity does not have a proper name. Providing a name helps constitute personhood, in part by drawing attention to an entity as important, or at least as having potential value. By denying a name, attention to an entity is also denied and that individual fades from memory. The use of the name of a dead individual keeps the memory of that individual alive, perhaps contributing to afterlife beliefs and the tracking of the identity of that individual even after the person is no longer present in bodily form. In addition, these different naming practices suggest that use of a proper name highlights the irreplaceable value of the individual and his or her individual subjective agency (a mind or soul rather than simply body). In sum, these examples point to three conclusions: 1) cultures recruit proper names to assist in the tracking of individuals within the community, 2) proper names can serve as vehicles

for the immaterial identity of disembodied agents such as gods and ancestors, and 3) proper names can function confer or mark the irreplaceable value of a member of society.

1.3 CHILDREN'S UNDERSTANDING OF PROPER NAMES

Early in development, children understand that proper names refer to individuals. The majority of the research examining children's understanding of proper names has focused on children raised in English-speaking language environments. In English, proper names are syntactically distinct from count nouns. Proper names also differ from pronouns and other deictic words such as the demonstratives 'this' and 'that' whose meaning is context-bound (Bloom, 1990). Children acquire an understanding of proper names early in development (Bloom, 1990; Garcia-Ramirez & Shatz, 2011). Infants as young as 4.5 months distinguish between their names and other words (Jusczyk & Mandel-Emer, 1997). By two years of age, children recognize proper names as specifying individuals and are able to use syntactic information to identify terms as proper names, if such cues are available in their language (Katz, Baker, & Macnamara, 1974; Gelman & Taylor, 1984; Hall, 1999; Hall, Lee & Belanger, 2001; Jaswal & Markman, 2001). Children are able to use other word-learning assumptions, such as mutual exclusivity and familiarity, when such syntactic information does not distinguish between proper and common nouns, as in Japanese (Imai & Haryu, 2001).

By four years of age, children demonstrate a bias that proper names refer only to unique individuals, and will resist giving the same proper name to more than one entity (Hall, 1996; Hall & Belanger, 2005; Hall & Graham, 1999), unless the name is explicitly stated as a name belonging to both entities (Hall, 1996). Thus, despite the common experience of encountering

people who share the same proper name and of people who have more than one proper name (e.g., Barack Obama was referred to as Barry by friends at school and is now called President Obama), preschoolers tend to assume that there is only one proper name per entity and only one entity per proper name (Hall, 1998). However, with explicit instruction, children are able to override this default assumption (Hall, 1996).

1.3.1 What gets a proper name?

In the research on children's understanding of proper names, the type of object that receives a novel label makes a difference in whether children interpret it as a proper name or as a count noun. Children as young as two years of age seem to recognize that things like dolls and stuffed animals have names, but things like blocks do not (Katz et al., 1974; Gelman & Taylor, 1984). In many of these paradigms, children are presented with objects that vary in terms of features of animacy. For example, children are shown either an animate surrogate or an inanimate entity that is labeled with a novel word modeled syntactically as either a proper name or a common noun (e.g., "zav" or "a zav"). Using such a paradigm, Katz et al. (1974) found that children only interpreted the novel label as a proper noun when it was presented syntactically as a proper noun for an animate-like entity.

Building on this research, Gelman and Taylor (1984) also looked at the performance of 2-year-olds in a similar study that used unfamiliar items and also distracter items to eliminate the possibility of an effect of familiarity. Children were presented with either an unfamiliar stuffed animal-like toy or a crazy comet block-like toy that was labeled with a nonsense word framed either as a proper name or a common noun. Children were then asked to pick out "zav" or "a zav" from a line-up of items including the named object, another category member, and an

outside category member. The results replicated the Katz et al. (1974) finding that children as young as two years of age interpret a label presented syntactically as a proper name when used to refer to an animal-like toy, but not a block-like toy. Jaswal and Markman (2001) also found that when two- and three- year –old children are presented with animate and inanimate pairs and asked to choose Dax, a dax, or one, they chose the animate item when asked to choose the word framed as a proper name, and will only use the named item to perform various actions on the entity that bears the proper name. This finding held up in both inferential and ostensive learning contexts.

Although children will make distinctions in nameability between inanimate and animate entities, they do not consider all animals to be worthy of a proper name. Hall (1994) found that not all 3-and 4-year-old children were willing to give a name to a non-pet animal such as a caterpillar. However, an emphasis on the relationship of the animal to the experimenter made a difference, with children more likely to confer a proper name on a non-pet animal if that animal was presented as being owned by the experimenter. The emphasis on the relationship of the target entity to the experimenter did not hold across category boundaries, as the same effect was not found for complex artifacts that were presented as owned by the experimenter.

In addition, children do not simply rely on a categorical distinction between animates and inanimates, but consider independent features of animacy in their judgments of nameability. Jipson and Gelman (2007) asked children various questions (e.g., biological, psychological, perceptual, artifact) about entities including a robot and faceless animals (e.g., starfish) that varied in terms of features such as being alive and having a face. In addition, they asked if each thing was nameable. They found that by four years of age children were able to discriminate between inanimate and animate things in answering whether or not they were nameable, however

they also responded that inanimates such as robots could also have names (as did older children and adults). Jipson and Gelman (2007) explain this finding by pointing out that the robot had a face, and this feature may have contributed to the response that it was nameable.

Although in general the research suggests that children deem animates and their surrogates, but not inanimate objects, as namable, Sorrentino (1997) found that girls as young as two years of age will interpret a novel label as a proper name for an inanimate object if that object has been attributed mental states. In this study, children were introduced to two alien-looking animals and two foam shapes. All were first labeled with a novel count noun and then all were removed except the target that was labeled with a novel proper name. In the mental state condition, the target objects were presented as having mental states, and in the neutral condition, they were merely described in terms of obvious features. The other objects were brought out and children were then requested to perform 10 actions, six with the named object, and four with the distracter objects. Children interpreted the novel label as a proper name for both the animate-like objects and the inanimate objects presented as having mental states.

When explicitly asked what kinds of things can have a name, both children and adults, recognize that only certain kinds of things get proper names. Children use semantics to interpret novel words as proper names by two to three years of age, applying them to animals and dolls more often than to artifacts (Baker et al, 1974; Gelman & Taylor, 1984; Hall, 1994). When asked to list what can have a name, both children and adults list people and animals most often (Hall et al., 2004). Hall et al. (2004) show that five-year-olds stick to people, animals, and dolls when listing namable things, whereas adults have a more inclusive category of namable things including a variety of artifacts as well as things like institutions and sports teams. Hall et al. (2004) explain this age difference by arguing that children have limited exposure to the naming

of various entities and their early experiences with naming tend to deal with people, animals, and dolls. Additionally, Hall et al. (2004) contend that young children do not yet know about many of the things that adults name, such as monuments, institutions, and events. In contrast to this observed developmental difference in what is thought to receive a name, Hall et al. (2004) found no difference between children and adults in terms of the justifications for what makes an entity nameable. Both adults and children mention individuation and social interaction/affection as the primary reasons for naming. Therefore, Hall et al. (2004) explain that experience, rather than different conceptions of proper names, accounts for the difference between children and adults in their lists of nameable things. In sum, the results of these studies suggest that children initially consider animates with mental states as worthy of proper names, and by adulthood, expanding the category of proper namable things to include other entities that are considered important to individuate.

1.3.2 Tracking paradigms in proper name research

Children have been shown to be able to use proper names to track entities across space and superficial changes in appearance. A number of studies have used tracking paradigms to examine children's understanding of proper names. In these paradigms, an individual entity receives a proper name, often a nonsense word in the syntactic form of a proper name, and this individual undergoes some sort of change, such as change of location or appearance (superficial or permanent). This changed individual is then paired with another unnamed individual that matches it in some way (is identical or shares some relevant property) and children are asked to pick out the individual bearing the name. If children interpret a proper name as referring to a unique individual across changes in location or appearance, they should select the original

individual. However, if they interpret it as a common noun or referring to a particular property, they should choose at chance. These studies find that by two years of age, children are able to track identity using proper names when a named individual is moved from one location to another and then paired with an identical object (Hall, Lee, & Belanger, 2001). Three-year-old children are able to track an individual marked in some way that is moved from one location to another, had its marker removed and paired with an identical object in the original location (Liittschwager & Markman, 1993). Sorrentino (2001) replicated these findings using a similar paradigm with one change: the final identical object was outfitted with the original marker to disentangle the name and that property.

There is some evidence that children are able to use proper names to track individuals even when the appearance changes. Three-year-old children are able to track the identity of a named individual that has undergone changes of location and superficial appearance when contrasted with another individual perceptually identical to the original appearance of the named individual and in its original location (Liittschwager & Markman, 1993; Sorrentino, 2001). Hall, Waxman, Bredart and Nicolay (2003) found that by four years of age, children are able to pair a descriptive proper name (e.g., “Mr. Red”) with a property (e.g., green appearance) that contrasts with the meaning of the name. In this research, children were presented with narratives in which a character like Mr. Red who initially has a red appearance, undergoes either a superficial or a permanent change in color. Four-year-old children were able to override the contrast between name meaning and appearance, to track individual identity. This finding suggests that proper names function differently from perceptual properties in designating individuals, and that by four years of age, children are able to use form class cues to interpret a descriptive name as a proper name even if it does not accurately describe the target individual. In addition, Hall et al. (2003)

found that even three-year-old children were able to track a named individual over the transformation when the name was non-descriptive.

1.4 TRACKING INDIVIDUAL IDENTITY

The proper name literature demonstrates that early on children are able to track individual identities as picked out by proper names. However, they limit their interpretation of novel proper names to animate sorts of things. In contrast to this evidence of an early understanding of identity via tracking, other literature suggests that children's ability to track identity, as conceptualized as mind or brain or insides, is a later developmental achievement.

The tracking of identity might not be a single process that encompasses both animate and inanimate entities. Individual identity might not be construed in the same way for both objects and people. In part, identity for both objects and agents derives from perceptible characteristics and spatiotemporal continuity. However, we are not able to keep track of such continuity all the time and characteristics can change. Bullo and Rysview (2007) argue for a distinction between object and agent tracking. They argue that rather than agents simply reducing to objects (bodies), tracking of agents is best captured by what they call an organism-dependent approach. According to this view, agents' bodies, as organisms are understood as objects, however, agent-specific features must also be taken into account when tracking intentional agents. In addition, this organism-dependent approach calls for a distinction between two types of tracking, perceptual/motor tracking and epistemic tracking (Bullo & Rysview, 2007). Perceptual and motor tracking is used for both objects and agents as the cognitive system tracks the spatiotemporal trajectory of individuals. According to Bullo and Rysview (2007), epistemic tracking "refers to cases in

which the target individual cannot be perceived but can be located or identified on the basis of correct information gathered by such sources as reasoning or communication” (p. 277). Epistemic tracking is reliant on language and thus proper names become especially important in this type of tracking. Since proper names refer to individuals across situations and in all possible worlds, they might be attaching to something that is as intangible as mind or soul or essence or history. For example, proper names help people identify and track current and former friends on social networking sites like facebook.

1.4.1 Tracking the identity of objects

Similar processes likely underlie tracking for both objects and agents, at least when it comes to the object properties that bodies possess. How might tracking differ for bodies and minds? Perceptual tracking of bodies involves several features such as perceptual similarity and spatiotemporal continuity, as well as information concerning category membership and causality.

In terms of similarity, research paints a mixed picture of children’s use of this feature to identify individuals. Preschool aged children appear to understand biological change (Rosengren, Gelman, Kalish, & McCormick, 1991). However, other research suggests that young children are influenced by the appearance of objects in their judgments of what things are (Chandler, Boyes, Ball, & Hala, 1987; Flavell, Flavell, & Green, 1986; Keil, 1989; Liittschwager, 1995). In research examining children’s understanding of kind identity, it has been demonstrated that children as young as five years are able to override perceptual information when making judgments concerning whether kind identity is maintained over superficial transformations (Keil, 1989). However, when the transformations involve insides rather than surface changes, children are less likely to respond that kind identity is maintained. Change in appearance does seem to

influence children's judgments of individual identity (Chandler et al., 1987; Gutheil & Rosengren, 1996; Keil, 1989) although changing a proper name does not (however other research suggests that changing a name does have consequences for preschoolers' understanding of gender constancy, see Beal & Lockhart, 1989). Given young children's seeming reliance on appearances, it is not surprising that Liittschwager (1995) found that four-year-olds are less willing than adults to allow identity to continue even across relatively minor changes in appearance. Adults and children demonstrate a gradual decrease in their judgments of identity continuity as changes become more drastic with the post-transformation individual becoming increasingly dissimilar perceptually to the pre-transformation individual (Liittschwager, 1995; Rhemtulla, 2005). It is unclear what children understand concerning the role of a proper name in establishing identity, that is, whether simply having a name versus not having a name influences identity tracking.

Another influential factor in determining individual identity of objects is spatiotemporal information, that is, the trajectory in terms of space and time, of an individual. People tend to occupy one place at a time and follow continual paths rather than disappear and reappear. This spatiotemporal continuity could serve as a useful cue in tracking the identity of an individual. More specifically, in studies involving transformation, how the transformation is depicted spatially may affect responses. Gutheil, Gelman, Klein, Michos, and Kelaita (2008) specifically set out to examine four- and five-year old children's use of spatiotemporal cues in contrast to proper name and appearance, in tracking individual identity. They found that even when two individual stuffed toys were identical in proper name and physical appearance, children nevertheless distinguished them in terms of spatiotemporal location and the subsequent difference of mental states.

Causal information may also aid in the tracking of objects. Drawing on Nozick, Rips et al. (2006) propose a causal continuer approach, arguing that people take into account causal information in tracking individuals across transformations. That is, a particular individual at one moment in time is causally connected to the individual at a prior moment in time, regardless of difference in appearance. Rips et al. (2006) emphasize the role of causality in generating and maintaining individual identity. In their view, [c]ausality is important in this context because the theory's chief idea is that the continuer of the original object must be a causal outgrowth of that original" (Rips et al., 2006, p. 7). They acknowledge that their approach is similar to that of psychological essentialism (Gelman, 2003), however, rather than pointing to specific causal mechanisms, their theory "takes no stand on the existence of a unique, distinctive cause that would answer to the notion of an essence" (Rips et al., 2006, p. 8).

Some theorists have claimed that in order to understand individuals, we first must be able to conceptualize sortals. According to Blok et al. (2005), a sortal is "a count noun, like *table*, that is capable of singling out individual tables in a way that allows us to enumerate them" (p. 5). In contrast with an exemplar theory of categorization (Medin, 1989; Blok et al., 2005) in which an understanding of a category is abstracted from experience with individual members, a number of theorists argue that sortals underlie categorization (Hall, 1996; Macnamara, 1982; Reyes, 1994; Xu & Carey, 1996). That is, category understanding is conceptually prior to an understanding of individual identity. In this view, individuals belong to kinds and this background of kind membership aids in tracking individuals. Since kind membership is constant across situations (except in the case of counterintuitive transformations), and proper names pick out individuals from kinds, proper names rely on this modal constancy as the backdrop to identification. The argument is that "a proper name needs the support of such a kind in order to specify the

individual and in order to account for the tracing of that individual's identity across situations" (Hall, 1999, p. 341). Evidence for the sortal view of individual identity, indicates that infants first use the object sortal as the basis for individuation and by 12 months, basic-level sortals become privileged (Xu, 2007; Xu & Carey 1996; but see Bonatti, Frot, Zangl, & Mehler, 2002, for the evidence supporting a human first hypothesis).

However, research with preschool-aged children and adults involving cross-category transformations provides counter evidence to the sortal view. Liittschwager (1995) found that preschoolers and adults, when presented with transformations that ranged from no change to basic level change to ontological change, demonstrated a gradual decrease in judgments of continued identity, rather than a sudden drop off at the basic level. She argued that these results do not support Macnamara's claim that sortals underlie individual identity. Similarly, Blok, Newman, and Rips (2005) found that adults, in a brain transplant paradigm, dissociate individual identity from category membership.

This evidence does not mean that sortals are completely irrelevant to identity. Rhemtulla and Hall (2009) also have shown that adults will maintain that individual identity can withstand transformation across basic-level category boundaries. However, in these studies, adult participants demonstrated a u-shaped curve in identity continuity judgments, with transformations within the basic-level eliciting fewer continuity judgments than those that cross the basic-level category boundaries, and then dropping off again for transformations that crossed ontological boundaries. In addition, they argued that this finding does not support causal continuity theory that predicts that a causal process results in product that is closely related to its predecessor. Rhemtulla and Hall (2009) found that participants' individual persistence ratings for the most closely related post-transformation individuals (within-basic category members) were

lower than those for less closely related ones. Furthermore, they found that properties and proper names do not function in the same way. Whereas proper names refer to the entire individual, properties only refer to an aspect of the individual. In accord with this distinction, they found that participants were more likely to allow for the continuity of proper name than of property across transformations.

1.4.2 Tracking the subjective identity of agents

Thus, research suggests that to some extent, perceptual factors as well as causal and category information, aid in tracking individual bodily identity. However, agents also possess properties that distinguish them from inanimate objects and that make tracking more of a challenge (Bulot & Rysview, 2007). Agents in general have properties, such as autonomous movement, that make them more unpredictable than inanimate objects. Even babies differentiate inanimate objects and agents in terms of trajectory (Kuhlmeier, Bloom, & Wynn, 2004). Research indicates that the ability to distinguish between animate and inanimate entities emerges in infancy and continues to develop into the preschool years (Johnson, 2000; Wellman & Gelman, 1998). Research using imitation and attentional (e.g., habituation/violation of expectancy) paradigms has found that the following characteristics contribute to attributions of agency: having a face and eyes, asymmetry along one axis, non-rigid transformation, self-propulsion, and contingent behavior (Johnson, 2000). How do these features figure into children's understanding of proper names? Research by Jipson and Gelman (2007) suggests that by age four, children draw on features of animacy in judgments of whether entities can have a proper name. In addition, other research suggests that when an inanimate object is presented as having mental states, children will interpret a novel label as a proper name (Sorrentino, 1997).

The idea that individual identity follows the mind or brain or soul rather than the body across transformations and transplants, rests on the notion of intuitive dualism, that the mind and body are separate and separable entities. Bloom (2004) and Bering (2005) claim that children are intuitive dualists. The evidence to support this claim is derived from research on the afterlife beliefs of children and adults as well as research with infants gauging object and social knowledge. On this account, mind is equivalent to soul (Astuti & Harris, 2007; Bering & Bjorkland, 2004; Bering, Blasi, & Bjorkland, 2005; Cohen & Barrett, 2008; Harris & Gimenez, 2005). In particular, the notion of dualism may underlie the belief in the persistence of individual identity after death (Bering & Bjorkland, 2004). That is, construing individual identity as located in the mind allows for the tracking of identity after death. In contrast, Richert and Harris (2006; 2008) suggest that children are not intuitive dualists and demonstrate that both children and adults recognize that the mind and soul are unique entities with different functions. However, others propose that in addition to an essentialist approach to identity, narrative is also available as a conceptual frame to account for self-continuity (Chandler, Boyes, Ball, & Hala, 1987; Chandler, Lalonde, Sokol, & Hallett, 2003).

In the identity research, particular emphasis has been placed on the identity of mentalistic agents, in accordance with implicit dualism. There is the possibility that tracking individual identity differs from the tracking of mere objects when it comes to those individuals that are believed to possess mentalistic agency. For those individuals that have minds, individual identity might be construed as located in the mind. Some research on children's understanding of individual identity has taken the approach of Locke (Gutheil et al., 2008) and conceptualized identity as an individual's memories, personal preferences, and contents of the mind (Corriveau, Pasquini, & Harris, 2005; Gutheil & Rosengren, 1996; Johnson, 1990). Proper names identify

individuals, individual identities. At some level, young children understand this role of proper names. However, children's understanding of individual personal identity is still developing. Children's conception of identity, it has been argued, develops from a more concrete, behavioral conception to one that is more abstract and mentalistic (Aboud & Ruble, 1987).

A number of studies investigating children's understanding of the mental or subjective aspect of individual identity rely on proper names as an indicator of identity. In these studies, using cross-category transformation and transplant paradigms to determine where children locate identity, the proper name of the individual is one measure of identity. Johnson (1990) presented children aged five to eleven years with hypothetical brain transplant scenarios between a child (the participant) and a pig, a child and a baby, and a child and another child. Each of the individuals involved in these transplant scenarios had a proper name. The results indicate that by seven years of age, children have a conception of identity as residing in the brain. Building on Johnson (1990), Gottfried, Gelman, and Schultz (1999) presented preschoolers, school-age children, and adults with brain, stomach, and insides transplant scenarios involving familiar animals. The transplants involved cross-category transplants and the animals involved were not identified by proper names. Overall, the results suggest that children do not reach adult levels of response until around third grade (i.e., 8 years of age). This research indicated that children initially characterize the brain as a battery of sorts that involves general competencies.

Building on this research, Corriveau et al. (2005) examined whether younger children are able to track identity across transformation if the transformation involves the mind versus the brain. They argued that the hypothetical brain transplant might be more difficult for young children to understand. Thus, in their study, they presented five-year-olds, seven-year-olds, and adults with a cross-category magical transformation (e.g., from a named boy to an unnamed

horse) framed as either involving the mind or the brain. Participants were asked questions about the identity and category membership of the post-transformation individual. Overall, the performance of five-year olds was at chance for the brain story, but above chance for the mind story, whereas the seven-year-olds performed above chance for both types of story. The seven year-olds were above chance for all questions in the mind story, and performed similarly for the brain story with the exception of the name question. Although adults linked proper name, identity, and brain, the five- and seven-year-olds did not. The five-year olds did not link proper name, mind, and identity, but both the seven-year-olds and the adults did. For the name question (e.g., “If you asked him who he was, what would he say ‘I’m Chris!’ or ‘I’m a horse?’”), neither brain nor mind was significant for five-year-olds; mind but not brain was significant for seven-year-olds; and both brain and mind were significant for adults. However, the forced-choice name question pitted a proper name against a category label. The problem with that question is that the post-transformation individual really could be construed as both because the body would accord with the category label and the mind or brain with the proper name. These studies indicate that the mind and brain come to be understood as the location of identity. However, it is unclear what the role of proper name is in these instances. Does it refer to the brain or mind only if that is where identity is located? The question is problematic because it does not get at whether children are tracking identity along with mind or brain. Rather, responses to that question reflect which type of identity is most salient to children and adults. Post-transformation Chris is both Chris and a horse. The results of the study indicate that 5-year-olds seem to understand mind as the location of identity, however they did not link this to proper name. Seven-year-olds are beginning to link identity, proper name and mind, but do not yet make these connections for brain.

In sum, while the proper name literature demonstrates that young children are able to track identity, other literature suggests that children's ability to track identity, as conceptualized as mind or brain or insides, is a later developmental achievement. The question remains as to what kind of identity is being tracked with a proper name. To what does a proper name attach: a person's body, brain, insides, mind, or soul? When confronted with a transformation of an agent, do children engage in both epistemic tracking and object tracking? Which type of identity, immaterial or physical, takes precedence? Are children able to use proper names to track individual identity across change even before they understand the mind or brain as the location of identity? Research indicates that children as young as two years of age understand the individuating function of proper names. In addition, there is also evidence that they make some connection between mental states and proper names, even though they have yet to achieve theory of mind or locate identity in the mind (Sorrentino, 1997). Therefore, children may be able to use proper names to track identity even in the face of drastic perceptual change and without a full-fledged understanding of mind.

1.4.3 Summary of identity research

Most of the studies examining identity have used a person or a mentalistic agent as the starting point. However, in the individual persistence literature, individual identity is not explicitly construed as mind, and relies on the assumption that the proper name refers to the individual in question. In those studies the proper name is the measure of individual persistence across transformation. In the identity tracking literature, individual identity is explicitly construed in mentalistic terms, incorporating memories and personal preferences. In these studies, proper name is also used as a measure of continuity of identity across transformation.

The transformations and transfers involved in both identity persistence and mentalistic or subjective identity literatures encompass a number of variations. Transformations of individuals have involved various mechanisms including transplants (Johnson, 1990; Gottfried et al, 1999), machines (Rhemtulla & Hall, 2009), and magic (Corriveau et al, 2005; Liittschwager, 1995). In addition, the transformations themselves vary in terms of how many individuals are involved and in how the transformation is depicted. In some studies, a named target individual is transformed into something else and the participant is asked if the post-transformation individual is the named target (Corriveau et al, 2005; Liittschwager, 1995; Rhemtulla & Hall, 2009). In those studies that employed pictures, the picture of the post-transformation individual is placed on top of the picture of the pre-transformation individual (Liittschwager, 1995; Rhemtulla & Hall, 2009). In other studies, there is also a transformation, but it is specified that the mind or brain remains the same and that it is only the body that has changed (Corriveau et al, 2005). In the Johnson (1990) hypothetical brain transplant studies, two bodies were involved in the hypothetical situations.

Previous studies also differ in terms of what category boundaries get crossed during the transformations or transfers, ranging from appearance and within-category changes to cross-ontological boundary crossings. In research by Liittschwager (1995), transformations involved a change of state (e.g., from dry to wet), physical appearance, age, basic kind, and animacy. Rhemtulla and Hall's (2009) research with adults involved transformations that either changed or maintained basic-level kind category. The results of these studies are mixed. On the whole, judgments of identity continuity decrease as the post-transformation individual become increasingly dissimilar to the target. However, Rhemtulla and Hall (2009) have found that within-category transformations, such as when a German Shepherd changes into a Golden Retriever, are judged to result in lower identity continuity than when a dog transformed into a

cat. Thus, it is still unclear whether maintenance of basic-level kind is necessary for identity as suggested by Macnamara (1982).

Although children come to locate individual identity in the mind later in development, even young children do have some understanding of individual identity as evidenced in their understanding of proper names. It is likely that they are able to use proper names to engage in epistemic tracking. However, the parameters of this ability in young children are not clear. Are children able to use proper names to track individual identity across the type of drastic changes found in the identity literature? In addition, how is this tracking ability related to judgments of irreplaceable value?

1.4.4 Irreplaceable Value

An individual valued for his or her individuality cannot be replaced. For example, there is only one authentic Elvis Presley. Elvis impersonators, no matter how good and indistinguishable from the original Elvis, are considered only impersonators and do not possess the same value as the original Elvis. The original Elvis cannot be replaced. Human individuals possess unique combinations of biology and experience with varying histories, experiences, relationships, thoughts, knowledge, and physical characteristics. The function of proper names to mark or confer value on individuals has not been explicitly examined in the psychological literature, but there is some evidence that named entities are also perceived as more valuable and less replaceable than other things. Hall et al. (2004) report that children and adults mention importance and relationship in their justifications of why certain things can have names, and they more often give proper names to people and other animates than other types of entities. And, other research demonstrates that adults judge characters possessing a greater degree of agency as

more valuable (Gray, Gray, & Wegner, 2007). Gray et al. (2007) found that “with the progressions from no mind...to adult human mind...characters become more highly valued. Thus, both dimensions correlated with a liking for a character, wanting to save it from destruction, wanting to make it happy, and perceiving it as having a soul” (p. 619). Things that are of high value have certain attributes and those things are the type of things that we give names. Thus there is likely an integral connection between things that are valued and things that are named.

Although studies looking specifically at the connection between names and value have not been conducted, research does indicate that preschool aged children do have some understanding that authentic objects and objects that have a history of ownership are more valuable than identical objects without such a history (Frazier & Gelman, 2009; Frazier, Gelman, Wilson, & Hood, 2009; Hood & Bloom, 2008; Jacobs & Johnson, 2001). In a study of attachment objects, Hood and Bloom (2008) found that children preferred the original attachment object over an exact copy. In this study, 3- to 6-year-old children were shown a “copy machine” that could duplicate objects. The experimenter copied a toy that was the experimenter’s and then asked children which toy they would like to keep. Most children chose the copy. However, when the copied object was the child’s attachment toy, most children chose the original. In a second study in which either Queen Elizabeth’s spoon or an ordinary silver spoon was duplicated, 6-year-olds expressed that the original Queen Elizabeth’s spoon was more valuable than a duplicate, whereas a duplicate silver spoon was just as valuable as the original that lacked such a history. This research suggests that the history of an individual object adds to its value, an idea also supported by research by Jacobs and Johnson (2001) in which even preschoolers, when asked to choose only one of two items to put in a moving van, chose an object with a connection to known agents

over objects lacking such connections. In another study, Johnson and Jacobs (2001) demonstrated that children recognize Mr. Rogers' sweater as more worthy to be in a museum than an identical, but new sweater never worn by Mr. Rogers. However, other research suggests that preschool aged children's understanding of original objects is incomplete and thus may influence their understanding of the value of unique individuals (Evans, Mull, & Poling, 2002).

In sum, developmental research suggests that things other than people that are recognized as important as individuals, due to characteristics such as ownership and history, also are judged as more valuable than identical things that lack such characteristics. However, research has not addressed the role of proper names in contributing to the perceived value of individuals, bringing attention to the potential value of the individual as an irreplaceable individual, as suggested by evidence in the anthropological literature.

1.5 RESEARCH QUESTIONS

Proper names are the primary way in which we track certain animates and this type of epistemic tracking of individuals develops earlier and is more basic than tracking individual minds. That is, the initial concept of the individual identity of agents is premental and available to children before acquiring a full-fledged understanding of mind as the location of identity. This individual identity is not simply bodily or physical identity. Children begin using names to track identity and later elaborate where identity is located and of what it is comprised. Since children's experience is limited early on, the understanding of proper names is restricted to people, dolls, and pets. It is these entities that are important in the life of a young child and with which the child is engaged in relationships. Proper names highlight the importance of these entities,

reflecting their irreplaceable value. Thus value defined as irreplaceability becomes linked to the possession of a proper name. With experience, the category of proper nameable things expands. This expansion occurs as children become acculturated and other types of things become important and valued as individuals, including things like books, artwork, and schools. The naming of these individuals highlights their value and importance, making them irreplaceable.

The anthropological literature suggests that proper names highlight value and aid in tracking, however research has not examined the development of intuitions that follow from the conferral of a proper name, particularly as pertains to irreplaceable value. Previous research has demonstrated that young children are able to track individuals across some changes. However research has not addressed whether younger children, who do not locate identity in the mind or brain, nevertheless are able to track subjective, mentalistic identity, using proper names, across magical transfers as depicted in fairytales. The present studies build on previous research by examining children's ability to use proper names, in contrast to mind and other labels, to track identity across changes in location and in magical transfers. In addition, the present research examines children's understanding of the value implications of proper names.

The goals of the present studies are:

- 1) to determine if children are able to use proper names to track individual material identity across change in location and individual subjective identity across magical transfers
- 2) to examine the development of the understanding of the irreplaceable value that comes along with having a proper name

The purpose of the proposed research is to examine the development of the ability to use proper names to track individual identity as well as children's understanding of the value implications of proper names. In addition, the proposed research examines the development of

children's understanding of subjective identity and whether children are able to use proper names as a vehicle for that identity before they understand mind as the locus of identity. More specifically, the studies address children's ability to use proper names in contrast to mind and other labels (trait labels, category labels, and possessive pronouns), to track identity across transfers (changes in location and magical transfers). Furthermore, the proposed research examines the possible consequences of proper names for children's thinking about individuals: whether proper names contribute to moral intuitions such as a sense of an individual as irreplaceable.

Study 1a examined children's ability to use proper names to track identity as well as the influence of proper name versus other types of labels on judgments of the replaceability on different kinds of toys (stuffed toy, toy car) in four- and seven-year-old children and adults. Previous research has shown that by six years of age, children demonstrate an understanding of the value that stems from ownership or history, and even younger children have some appreciation of the value of an object that is connected to someone (Hood & Bloom, 2008; Jacobs & Johnson, 2001). However, whether children link the idea of irreplaceable value to entities that have proper names in contrast to those that do not is still an open question.

Study 1b examined whether four- and seven-year-old children are able to track immaterial identity across a magical transfer earlier with proper names than with mind. Given the evidence that young children understand proper names and are able to use them to track named individuals across minor changes, it is possible that the ability to track identity develops prior to the understanding of mind and thus, even young children should be able to use proper names to track identity across drastic magical transfers. Therefore, the present study is designed to examine whether young children, before achieving a sense of mind as the locus of identity, are able to

track subjective identity across magical transfers. Study 1b also examined whether the ontological category (person or dog) influences children's ability to track identity. Previous research has suggested that the type of boundary (within basic level category to different ontological category) crossed in the transfer influences judgments of continuity of identity. In accordance with the findings of Rhemtulla and Hall (2009) it is hypothesized that given the within-basic level category contrast effect, children will show greater reluctance to track identity across a within category (person to person) transfer. Furthermore, this study examines the affect of content and category on irreplaceable value judgments.

Study 2 examined the ability of four- and seven-year-old children and adults to use proper names versus trait labels to track subjective identity across transfers differing in degree of ontological distance (person, dog, stone) from the target individual. In addition, this study examined the affect of label type and category on irreplaceable value judgments.

2.0 STUDY 1A: OLD TOY STUDY

Study 1a examined children's use of proper names to track identity as well as the influence of proper names on judgments of irreplaceable value. Previous research has demonstrated that children as young as four years of age, are able to use spatiotemporal information to track a named toy and differentiate it from toys identical in both appearance and label (Gutheil et al., 2008). In addition, research has shown that children as young as two years of age are able to use proper names to keep track of individual toys that have changed position and even appearance (Hall et al., 2001; Sorrentino, 2001). Study 1a builds on previous research by similarly contrasting a named toy with an identical toy labeled with other types of labels. Similar to procedure used in other studies (Hall et al., 2001; Sorrentino, 2001), the procedure in Study 1a required children to use a proper name to track a toy across changes in position and in contrast to a toy identical in appearance but bearing either a category label only or a category label modified by a possessive pronoun to indicate ownership. In addition, in Study 1a, the influence of type of toy was examined, in that a stuffed animal (animate surrogate) was compared to a toy car (inanimate). Given the findings of previous research, children as young as four years of age should be able to use a proper name and spatiotemporal information to track an individual toy across changes in position and when presented with an identical toy that differs only in how it is labeled. In addition, in Study 1a, unlike in previous studies, the target toys were labeled with actual, but unusual, proper names ("Shelby" and "Lyle") rather than novel labels, since previous

research has already established that children use syntactic information to interpret novel labels as proper names (Hall, 1995).

Unlike previous studies, Study 1a also examined whether or not children make a connection between having a proper name and being valued as an irreplaceable individual identity. An individual valued for his or individuality cannot be replaced. For example, there is only one authentic “Mona Lisa” painting. Copies of the painting, no matter how good and indistinguishable from the original, are considered forgeries and do not possess the same value as the original. The original “Mona Lisa” cannot be replaced. Additionally, humans are individual with no one having the exact same combination of biological make-up and experience. What makes an individual unique may include such things as history, experience, relationships, thoughts, knowledge, physical characteristics. Although studies looking specifically at the connection between names and value have not been conducted, research does indicate that preschool aged children do have some understanding that authentic objects and objects that have a history of ownership are more valuable than identical objects without such a history (Frazier & Gelman, 2009; Frazier, Gelman, Wilson, & Hood, 2009; Hood & Bloom, 2008; Jacobs & Johnson, 2001). Jeshion (2009) argues from a philosophical standpoint that proper names mark an individual as valuable and that individuals valued as unique, irreplaceable individuals are the ones given proper names.

For the purpose of Study 1a, value was defined as the judgment of an individual as irreplaceable. Children were asked to judge the replaceability of an old and worn toy bearing a proper name in contrast to an identical toy without a proper name. Children participated in one of two label conditions. In one condition, the second toy was referred to by a category label only. In a second condition, the second toy was referred to by a category label modified by a possessive

pronoun indicating ownership, to determine if a proper name alone marks irreplaceable value, or if ownership conveys irreplaceable value equivalent to having a proper name. This second condition was included to address the question of whether a proper name matters beyond mere relationship. Children might infer from an object's having a proper name that the experimenter has a relationship or history with the object, or it is possible that a proper name suggests irreplaceable value that goes beyond ownership. Ownership does not necessarily imply that a toy is considered irreplaceable. It was hypothesized that toys with proper names would be judged as more irreplaceable than toys marked with category labels. However, if proper names mark an irreplaceable value to a greater degree than mere ownership, children would treat the toys labeled with proper names as more irreplaceable than those labeled with category labels modified by a personal pronoun to designate ownership. If proper names imply a relationship, then in the responses to the value questions, children should treat proper names as equivalent to possessive pronouns. The label condition was included to control for ownership as a possible explanation for irreplaceable value judgments.

Two different types of toys were contrasted to determine if named animate surrogates are judged as both more likely to bear a proper name and inherently more valued as irreplaceable than other named inanimate objects. Previous research suggests that children are less willing to accept novel labels with syntactical cues suggesting a proper name, as proper names for entities such as inanimates and even animates such as worms (Gelman & Taylor, 1984; Hall, 1994), unless children are explicitly told that the entities possess mental states (Sorrentino, 1997). In those studies, children treated novel labels applied to such entities as category labels rather than proper names. In Study 1a, children were presented with toy cars and stuffed toy elephants bearing actual proper names (rather than novel labels modeled as proper names). Would children

accept the proper name for the toy car? In order to examine this question, children ages 4 and 7 years were tested. Previous research has indicated that by 4 years of age children are able to track individual identity in many situations, however this ability is still developing. Based on the findings of previous research, it was hypothesized that the youngest children would be able to keep track of the object labeled with a proper name. However, if younger children interpret the proper name as a category label for the car but not for the stuffed toy, they might not differentiate between the two toy cars, thus choosing them equally for both identity and irreplaceable value questions. It is possible that older children, who have more experience with proper names conferred on inanimate objects, might be more willing to accept a proper name for the toy car and demonstrate this with equivalent tracking of individual identity for both toy types. If children accept the proper name for the toy, they should be able to track that toy. It was hypothesized that the label type of the second toy presented would not have an effect on children's ability to track the target toy.

Does a proper name in and of itself mark irreplaceable value regardless of type of object as Jeshion (2009) argues? Research suggests that adults value agents more than entities with less or no agency (Gray, et al., 2007) and that both children and adults list as nameable, people, animals, and animate surrogates more often than inanimates (Hall et al., 2004). Would children presented with an animate surrogate be less likely to judge the toy as replaceable than those presented with an inanimate toy car? If children accept a proper name for a toy car, would they also consider that individuated car as less replaceable than a generically identical car, despite both being inanimate objects? It is possible that value judgments are related to identity tracking ability, in that especially for younger children, the stuffed toy would be judged as irreplaceable more often than the toy car. However, if children do accept the proper name for the named object

and are able to track the individual successfully, it was hypothesized that regardless of age, children would judge objects labeled with a proper name as less replaceable than those labeled with a category label or possessive pronoun.

2.1 METHOD

2.1.1 Participants

Participants included 64 four-year-olds (mean: 4.77, range: 3.97 - 5.88) and 64 seven-year-olds (mean: 7.31, range: 6.17 - 8.78). The participants were recruited from preschools and schools in Grand Rapids, MI, and preschools and afterschool programs in Pittsburgh, PA. Children were tested individually at their schools. The children participating in this study also participated in Study 1b.

2.1.2 Materials

Two stuffed animals and two toy cars were used. The pairs of toys were identical and were made to look old and worn in identical ways (e.g., both stuffed toys had the same eye missing, and both cars had identical scuff marks). The stuffed animal was a blue elephant with a red ribbon with white hearts tied around its neck. The toy car was green and of comparable size to the stuffed elephant. In addition, there was a small wastebasket in the room where the session took place.

2.1.3 Design

The between-subjects factors were Toy Type (two levels), Label Contrast (two levels), and Age. The two levels of Toy Type were animate surrogate (stuffed animal) and inanimate object (a toy car). The two levels of Label Contrast were proper name versus category label and proper name versus possessive pronoun. The two levels of Age were younger (four-year-old) children and older (seven-year-old) children.

2.1.4 Procedure

Participants were tested individually. Half the children were presented with a pair of stuffed animals (elephants) and the other half with a pair of toy cars. In all conditions, the target toy was labeled with a proper name. Half the participants heard the second toy labeled with a category label (an elephant, a car) and the other half of the participants heard the second toy labeled with a category label modified by the possessive pronoun “my.” Thus, participants were assigned to one of four conditions: 1) elephant-category label, 2) elephant-possessive pronoun, 3) car-category label, 4) car-possessive pronoun.

Introduction (naming) and play phase. The experimenter took the target toy out of a bag and introduced the child participant to the toy by labeling it with a proper name (e.g., “This is Shelby/Lyle”). Then the experimenter continued, “I like to play with Shelby/Lyle.” The experimenter then drew attention to an identifying feature of the toy. “Look, Shelby/Lyle has a ribbon with hearts/a door that can open. Isn’t that neat?”

Value 1 phase. Then the experimenter pointed out the condition of the toy. “Oh no! Look, Shelby’s/Lyle is old and worn. I don’t think Shelby/Lyle will ever be new again.” The

experimenter then asked the child, “What should I do?” After recording their open-ended response, children were presented with two options. “Should I get a new one?” or “Should I keep this one?” The order of these option questions were counterbalanced across participants. Finally, after each response to each option question, children were asked a justification question. For example, “Why do you think we should get a new one/keep this one?” The target toy was then placed to the left of the child.

Identity 1 phase. Then an identical toy was taken out of the bag. This toy was introduced with a category label for half of the participants and with a category label modified by a possessive pronoun for the other half of the participants. The experimenter then continued, “I like to play with [the elephant/the car/my elephant/my car].” “Look, [the elephant/the car/my elephant/my car] has a ribbon with hearts/a door that can open. Isn’t that neat?” Each toy was placed equidistant in front of the child participant, with the second toy to the right of the child and the named toy to the left of the child. The experimenter then asked the child to perform an action (e.g., “Can you touch Shelby’s ear/ open Lyle’s door?”) on the target toy, to determine if children could track the identity of the named toy.

Value 2 phase. In the next phase of the experimental session, the experimenter picked up the toys, presented the two toys, side by side and asked, “If I have to throw one away, which one should I throw away?”

Identity 2 phase. Then the experimenter responded (regardless of the child’s response) that the target toy should be thrown away (“This one is old and worn. I am going to throw it away”) and put the named toy in the wastebasket. The experimenter then asked, “Where is Shelby/Lyle now?” to get a final measure of children’s ability to track the identity of the named toy.

2.2 RESULTS

2.2.1 Responses to Identity Questions

The identity questions tested children's ability to track a named toy across changes in location and in contrast to an identical toy. The two identity questions required children to select one of the two toys by pointing or touch. A correct response was a touch or point indicating the toy that was labeled with a proper name at the beginning of the experimental session. Responses to both identity questions were coded as follows. If a child chose the toy labeled with the proper name, the response was coded as '1'. All other responses were coded as '0,' with the exception of "none" and "I don't know" which were removed from the analyses. The responses to both identity questions were summed to create the variable of Identity, with a possible range of 0-2. A variable, index, was created that distinguished between responses to the first and second identity questions. In this index variable, responses to the first identity question were coded as '1' and responses to the second identity question were coded as '2.'

An initial Repeated Measures Logistic Regression was performed on Identity with Sex (male, female), age group (younger, older), toy (stuffed toy, toy car), label condition (category label, possessive pronoun), and index (question 1, question 2) as the predictor variables. Sex did not have any significant effect on identity tracking.

To examine the hypotheses that younger children would have no problem tracking a toy labeled with a proper name, that their ability to track would depend on toy type, and that older children would demonstrate greater ability to track identity, a Repeated Measures Logistic Regression was performed on Identity with age group (younger, older), toy (stuffed toy, toy car),

label condition (category label, possessive pronoun), and Index (question 1, question 2) as the predictor variables. All assumptions were met.

The three-way interactions were run individually. None of the interactions were significant. Subsequently, a Main Effects Only Model was run. Age group significantly predicted responses to the identity questions ($\chi^2(1) = 14.25, p < .001$). Younger children were less likely than older children to successfully track the identity of the toy. Overall, younger children correctly chose the named toy 66.14% of the time, compared to 91.33% for the older children.

In addition, the specific question asked significantly predicted children's responses ($\chi^2(1) = 5.66, p = .017$). Children were better at identifying the named toy on the second identity question ($M = .85, SE = .042$) in which they were asked where the named toy was after it had been thrown away, than on the first question ($M = .75, SE = .052$).

In comparing the responses of the combined age groups on the first identity question to chance, it was revealed that children's responses differed significantly from chance, $t(125) = 6.07, p < .001$. However, when looking at the age groups separately, only the responses of the older children differed significantly from chance, $t(63) = 4.43, p < .001$. Younger children responded at chance to the first identity question, $t(61) = 1.47, p = .15$. For the second identity question, the responses of the combined age groups ($t(112) = .065, p = .95$) and of the younger children did not differ significantly from chance, $t(62) = 2.52, p = .015$. However, the responses to the second identity question of the older children differed significantly from chance, $t(62) = 6.79, p < .001$.

2.2.2 Responses to Irreplaceable Value Questions

To examine whether having a proper name influenced children's responses to the irreplaceable value questions, analyses were performed separately for the Open-ended Value Question, the Value One phase (questions 1 and 2), and the Value Two question.

2.2.2.1 Open-ended Value Question

Children were presented with an open-ended value question to elicit their spontaneous ideas for what might be done with an old and worn toy, prior to presenting them with questions specifically addressing replaceability. Responses to the open-ended value question ("What should I do [with the old and worn, named toy]?") were categorized as follows. If a child responded that the toy was replaceable (e.g., "get a new one," "throw it away," etc.), the response was scored as '0'. A response indicating that the toy was valued and should not just be replaced (e.g., "keep it," "fix it") received a score of '1'. Other responses such as "I don't know", no response, unclassifiable were coded as '2'. Responses to the open-ended value question were independently coded by the experimenter and a second coder who was unaware of the hypotheses of the study. Inter-rater reliability was 96.21% and disagreements were resolved through discussion.

Responses to the Open-ended Value Question were analyzed using Multinomial Logistic Regression with age group (younger, older), toy (stuffed toy, toy car), and label condition (category label, possessive pronoun) as the predictor variables. All assumptions were met. Three different models were run: Main effects, Two-way Interactions, and Three-way interactions.

Responses to the open-ended value question were significantly predicted by age group ($\chi^2 (2) = 8.74, p = .013, \text{Nagelkerke } R^2 = .12$). The children in the younger age group were 4.23 times more likely than older children to give responses coded as “other” than responses indicating that the toy should be replaced in response to the question, “What should I do [with the old and worn toy]?” $B = 1.44, \chi^2 (1) = 6.63, p = .010, \exp(B) = 4.23$. That is, when asked what children thought the experiment should do with the old toy, younger children more often proffered responses that fell into the category of “other” than responses indicating that they thought the toy should be replaced or kept (see Table 1). Although overall the number of keep responses was higher than the number of replace responses, a chi-square analysis considering only the replace and keep responses indicated that there were no significant differences by age, $\chi^2 (1) = .107, p = .74$.

Table 1. Response frequencies for open-ended value questions by age group and category of response.

	Replace	Keep	Other
Younger	14	29	21
Older	20	36	6

2.2.2.2 Value one questions

The value one phase of questions examined children's thoughts about the replaceability of the named toy, explicitly asking whether the experimenter should get a new one or keep the named toy. Responses to the first two value questions ("Should I buy a new one?" and "Should I keep this one?") were coded as '0' for 'no' and '1' for 'yes.' All other responses ("I don't know", "none", no response) were removed from the analysis. Responses to the two value questions ("Should I buy a new one?" and "Should I keep this one?") were collapsed to create one variable: value one. In addition, a variable, called Index was created to encompass both replace and keep. For the Index variable, responses to the replace question, "Should I buy a new one?," was coded as '1' and responses to the keep question, "Should I keep this one?," were coded as '2.'

To examine the influence of toy type and age on responses to the value one question, two Repeated Measures Logistic Regressions were conducted. An initial Repeated Measures Logistic Regression was performed on value one with sex (male, female), age group (younger, older), toy, (stuffed toy, toy car) and label condition (category label, possessive pronoun) and Index (replace, keep) as predictors. There was no significant effect of sex. Subsequently, a Repeated Measures Logistic Regression was performed on value one with age group (younger, older), toy type (stuffed toy, toy car), label condition (category label, possessive pronoun), and index (replace, keep) as predictors. All assumptions were met.

There was a significant age group X index interaction ($\chi^2(1) = 5.14, p = .023$). Younger children ($M = .83, SE = .057$) were more likely than older children ($M = .67, SE = .12$) to want to "replace" the toy. Pairwise comparisons indicated that the effect was driven by the older children

who responded that the toy should be kept ($M = .86$, $SE = .46$) more often than that the experimenter should get a new one ($M = .69$, $SE = .064$), and this difference was marginally significant, $\chi^2(1) = 3.70$, $p = .054$.

The toy type X index interaction was also significant ($\chi^2(1) = 5.57$, $p = .018$). Children were more likely to want to replace the toy car ($M = .82$, $SE = .067$) than the stuffed toy ($M = .68$, $SE = .12$). Pairwise comparisons revealed that children presented with the stuffed toy more often responded that the toy should be kept ($M = .87$, $SE = .043$) than that the experimenter should get a new stuffed toy ($M = .70$, $SE = .060$) and this difference was significant, $\chi^2(1) = 4.69$, $p = .030$.

Children's responses to the value one questions were also compared against chance. The responses of all children to the first value one question were significantly different from chance, $t(124) = 4.41$, $p < .001$. The responses of younger children to the first value question were also significantly different from chance, $t(62) = 4.36$, $p < .001$. However, the responses of the older children were only marginally significant in comparison to chance, $t(61) = 1.99$, $p = .051$. The older children did not consistently respond either affirmatively or negatively to the question of whether the experimenter should get a new toy. For the second value one question of whether the experimenter should keep the toy, responses were significantly different from chance for younger children ($t(61) = 2.79$, $p = .007$), older children ($t(61) = 3.92$, $p < .001$), and combined age groups ($t(123) = 4.73$, $p < .001$). Overall, children were more likely to choose to keep the toy ($M = .77$, $SD = .43$).

Children's justifications for their responses for keeping or replacing the toy were elicited to examine children's reasons for choosing to keep or replace the toy. Justifications for the two questions were coded separately. For the first question, asking "Should I get a new one?",

responses were coded as Replaceable if a child responded affirmatively and justified the response by referring to replaceability. All other responses including “I don’t know,” no response, or unclassifiable were coded as ‘other.’ For the second question, “Should I keep this one?”, responses were coded as Irreplaceable if a child responded affirmatively and justified the response by indicating positive irreplaceable qualities of the toy. All other responses including “I don’t know,” no response, or unclassifiable were coded as ‘other.’ Justifications were independently coded by the experimenter and a second coder who was unaware of the hypotheses of the study. Inter-rater reliability was 90.15% and disagreements were resolved through discussion.

When asked if the experimenter should keep the toy, the older children more often answered both yes, and due to qualities pointing to irreplaceable value (see Table 2). In contrast, when children were asked whether the experimenter should get a new toy, younger children more often answered yes, because the old, named toy was replaceable because it was “old,” “dirty,” “broken,” and a new one would be better (see Table 2).

Table 2. Numbers and percentages of responses to value one questions by explanation category and age group

“Should I get a new one?”	Replaceable	Other responses
Younger	39 (60.94%)	25 (39.06%)
Older	27 (42.19%)	37 (57.81%)
“Should I keep this one?”	Irreplaceable	Other responses
Younger	27 (42.19%)	37 (57.81%)
Older	42 (65.63%)	22 (34.38%)

Children’s responses across the two value one questions were also examined. Children’s responses across the questions were coded as consistently responding to keep the toy, consistently responding to replace the toy, and inconsistent responding. A chi-square analyses conducted to examine the affect of age on performance across value questions, was not significant, $\chi^2 (2) = .3.079, p = .21$. The majority of children responded inconsistently across the two value questions (see Table 3).

Table 3. Responses across value one questions by age group.

	Responses across value one questions		
Age	Keep Toy	Replace Toy	Inconsistent
Younger	16	10	38
Older	12	18	34

Children explanations across the value questions were also examined. Justifications were categorized as consistently referring to value, consistently referring to replaceability, consistently other, and inconsistent. Although older children more often than younger children consistently mentioned value to justify their responses, a chi-square analysis examining age and justification category was not significant, $\chi^2(3) = 6.56, p = .088$ (see Table 4).

Table 4. Justifications across value one questions by age group.

	Justifications across value one questions			
	Value	Replaceability	Other	Inconsistent
Younger	10	20	6	28
Older	22	13	4	25

2.2.2.3 Value 2 Question

The second value question, (“If I have to throw one away, which one should I throw away?”) required children to judge the comparable irreplaceability of the named toy and the identical toy lacking a name, by selecting one to be thrown away. Responses to the second value question were coded as follows. If the second toy, the one labeled with a category label or possessive pronoun was chosen, the response was coded as ‘0’. If the toy labeled with a proper name was chosen, the response was coded as ‘1.’ Responses of “both,” “none,” and “depends were coded as ‘other.’ Responses of “I don’t know” and those in the category ‘other’ were removed from the analysis. A dichotomous logistic regression was performed on responses to Value Two with age group (younger, older), toy (stuffed toy, toy car), and label condition (category label, possessive pronoun) as the predictor variables. All assumptions were met. There were no significant results. A logistic regression including sex as an independent variable was also conducted. There were no significant results. Whether or not the second toy presented was labeled with a category label

or a possessive pronoun did not make a difference in children's selections of which toy was more replaceable. That is, children did not differentiate between the two types of labeled toys in contrast to the named toy in terms of irreplaceability.

To examine the hypothesis that children would be less likely to choose to throw away the toy labeled with a proper name, a Chi-square was run on responses to the Value 2 question by age. Although a greater number of older children than younger children chose the toy with the category label (with or without a possessive pronoun) over the one with the proper name, the observed values did not differ significantly from expected values, $\chi^2 (2) = 5.33, p = .070$.

The responses of children to the second value question were also compared against chance. Results indicated that responses did not differ significantly from chance for the younger children ($t (58) = .82, p = .42$), the older children ($t (53) = -.75, p = .46$), or the combined age ($t (112) = .065, p = .95$).

2.2.2.4 Identity and Value

To examine whether children's responses to the value two question were related to their ability to track identity, three variables were created. For the "Identity" variable, children who selected the toy labeled with a proper name for both identity questions received a code of '1.' Children who selected the toy referred to by category label for at least one of the identity questions, received a code of '0.' For the "Value" variable, children who indicated that the toy labeled with a category label should be thrown away received a coding of '1'; children who indicated that the toy with the proper name should be thrown away received a code of '0.' Finally, combined understanding of "Identity & Value," was constituted by children who scored 1 on both the "Identity" and "Value" items.

To determine whether children’s responses to the value two question was related to their responses to the identity questions, a chi-square with the variables of “Value” and “Identity” was conducted, but was not significant, $\chi^2 (1) = 1.048, p = .35$. Chi-squares were also conducted for each age group and were also not significant (younger: $\chi^2 (1) = 1.50, p = .31$, older: $\chi^2 (1) = .21, p = .73$). However, a chi-square analysis examining understanding both “Identity & Value” by Age Group was significant, $\chi^2 (1) = 4.34, p = .037$. As depicted in Table 5, overall, while the majority of children across age groups failed to understand both identity and value, older children more often evidenced consistent understanding.

Table 5. Number of children who understand both identity and value by age group

	Identity & Value	Other	Total
Younger	15	49	64
Older	26	38	64
Total	41	87	128

2.3 DISCUSSION

Study 1a set out to examine children's ability to use a proper name to track identity as well as their understanding of the irreplaceable value linked to proper names. The results of Study 1a indicate that older children were better able to track individual identity than younger children. The performance of the 4-year-olds was not as consistent as that of the 7-year-old children. The responses of the younger children to both of the identity questions did not differ significantly from chance. It is possible that in some cases children were interpreting the name as a category label, especially for the toy car. Although there was no effect of toy type, that is whether the toy was a car or a stuffed elephant, found for the identity questions, children's spontaneous comments suggest that some children did interpret the name as a category label. For example, when the second toy car was presented, several children over the course of the interviews asked, "Is that another Lyle?" In contrast, when the second toy elephant was presented, one child asked what its name was, implying that it would have its own proper name. Children may come across multiple instances of named toys, both animate surrogates and branded inanimate objects. Previous research has indicated that preschool-aged children are able to keep track of identical named toys, such as two Winnie the Poohs, who have different knowledge based on different experience (Guthiel et al., 2008). In the present study, the only difference between the two toys, in addition to different spatiotemporal locations, was the label used to refer to each toy. In addition, in contrast to Guthiel et al. (2008), children had minimal interaction with the toys. The children may not have been particularly motivated to keep track of the named toy. If the toy had been the child's own attachment object, the child would likely have been more motivated to track the toy, as has been demonstrated in other research (Hood & Bloom, 2008).

Surprisingly, children's responses to the identity questions differed from question to question. Children were more likely to correctly identify the named individual on the second identity question. Immediately prior to the second identity questions, children were asked to choose one of the toys to throw away. It is possible that the action of throwing away the target toy drew attention to that toy, which happened to be the target toy, influencing children's responses.

In terms of responses to the irreplaceable value questions, in contrast to prediction, age differences were found between the 4-year-olds and the 7-year-olds. For the open-ended value question, younger children were less forthcoming with suggestions for what to do with the old and worn toy than were older children. This finding is likely driven by the lesser ability of younger children to articulate responses to the open-ended question. Age also influenced children's responses to questions concerning whether the experimenter should get a new toy or keep the old one. Younger children were more willing to replace the toy than were older children. In their explanations of their answers, younger children more often pointed to aspects of the toy that made it replaceable, such as that it was old, dirty, and broken. In the present study, younger children may have focused on the external appearance of the toys rather than on more abstract characteristics such as name and relationship (being owned by the experimenter), consistent with preschool children's focus on appearances (Flavell et al., 1983).

The type of toy also influenced children's judgments of a toy's replaceability. Children responded more often to replace the toy car than the stuffed toy. This finding suggests that children viewed the stuffed toy as more valuable than the toy car. This finding is in accordance with other research examining value in that the animate surrogate in this study was viewed by participants as less replaceable than the toy car that did not bear any characteristics of animacy

(Gray et al., 2007). The finding also corresponds with the finding of Hall and colleagues (2004) that children more often list animate surrogates more than inanimate objects as deserving of a proper name.

The label of the toy did not make a difference in terms of irreplaceable value judgments. Responses to irreplaceable value questions in the category label condition did not differ significantly from those in the possessive pronoun condition. Neither proper name nor ownership influenced children's judgments of replaceability. In their explanations of their responses to the irreplaceable value questions, children often referred to the appearance of the toy as a justification to get rid of it, regardless of whether or not it had a proper name, or was owned by the experimenter. However, this does not mean that children are insensitive to the influence of names and ownership on the value of objects. In their explanations for the Value 2 question, several children did highlight names and other unobservable properties of the toys that they viewed as contributing to their value. For example, one four-year-old justified his selection of a toy to be thrown away by offering "because he doesn't have a name." More seven-year-olds than younger children included names and unobservable qualities in their explanations of their answers. One seven-year-old justified throwing away the toy with the category label by highlighting its lack of a name in contrast to the named toy, "because the other one has a name." Some children even made inferences based on the differential naming status of the toys: "Lyle might have been more special, because that's just a car and that's Lyle," "because I would think that you had Shelby longer because it has a name and this one is just named an elephant." Other seven-year-old children inferred that the named toy had a longer history of relationship with the experimenter: "because that one [my elephant], well you haven't had it very long and Shelby you've had for very long," "because you really don't know that one [child pointed to a car], but

this one [child pointed to Lyle] has a lot of your memories,” “because you love that one [child pointed to Lyle] more.”

Finally, analyses of children’s responses across identity and value questions indicated that overall, children did not tend to both accurately track the identity of the named toy and indicate that it was irreplaceable. In this regard, identity and value judgments were not tightly linked. However, older children were significantly more likely than younger children to both accurately track the named toy and to deem it as irreplaceable. These results suggest that with age children become better able to utilize proper names to track individual toys and to recognize the irreplaceable value that accompanies a proper name.

The results of Study 1a demonstrated that children do value stuffed toys as less replaceable than toy cars, however, there was no evidence that proper names influence judgments of irreplaceable value. Study 1a demonstrated children’s ability to use proper names to track individuals in contrast to identical, but unnamed others, across changes in physical position. However, are children able to use proper names to track individuals across a magical transfer of identity? Study 1b examined children’s ability to use proper names to track individual identity as construed in mental terms.

3.0 STUDY 1B: PROPER NAME VERSUS MIND TRANSFER STUDY

The purpose of Study 1b was to examine whether children are able to use proper names to track mentalistic, subjective identity before they are able to do so with minds. Previous research suggests that five-year-old children are beginning to be able to track individual identity using mind when the transfer crosses category boundaries (Corriveau et al., 2005). The understanding of the brain as the location of mentalistic or subjective identity continues to develop into middle childhood (Corriveau et al., 2005; Johnson, 1990). However, other researchers argue that even babies have a tendency to think in terms of dualism (Bloom, 2004; Kuhlmeier, et al., 2004). In this view, it is intuitive to think of people as comprised of minds and bodies that are separable. Although the evidence suggests that young children are a bit confused when it comes to tracking subjective identity using mind, proper name understanding emerges early (Jusczyk & Mandel-Emer, 1997). Perhaps children are able to use proper names to track both bodily and subjective identity before they have a full-fledged understanding of subjective or mentalistic identity as rooted in the mind or brain. In this view, proper names might serve as a vehicle for subjective identity.

Building on previous research (Corriveau et al., 2005; Johnson, 1990; Liittschwager, 1994), the present study also employed hypothetical magical situations to examine conceptions of identity. Children were presented with stories in which a target character's identity was magically transferred to the body of either a person or a dog. The magical transfer involved

either the proper name or the mind of the target character. Children were subsequently asked which character now possessed different aspects of the target character's subjective identity, as defined as feelings, preferences/traits and memories/knowledge. These questions were asked to determine whether children judge subjective identity as remaining with the body, or following the transfer of mind or proper name.

The different categories involved in hypothetical transplants and transformations have been demonstrated to have an effect on judgments of continued identity. Older children demonstrate some difficulty tracking identity in person-to-person brain transplants in contrast to person-to-pig transplants (Johnson, 1990; Corriveau et al., 2005). Even adults offer lower identity continuity scores for within basic-level category transformations than for those that cross basic-level categories (Rhemtulla & Hall, 2009). Therefore, Study 1b also examined whether the ontological category (person or dog) influences children's ability to track identity across a magical transfer of either proper name or mind. That is, do children have an easier time accepting a transfer of a person's identity when the recipient is a dog, than when it is another person, as suggested by the findings of previous research (Johnson, 1990; Rhemtulla & Hall, 2009)?

Children aged four and seven years were chosen to participate in the study. Four year olds were chosen because at that age children are beginning to demonstrate an understanding of mind as evidenced in the passing of false-belief tasks (Wellman, Cross, & Watson, 2001). However, this understanding does not extend to the conceptualization of the mind as the locus of identity or the brain as a container for thoughts (Corriveau et al., 2005; Gottfried et al., 1999). Although preschoolers understand that the mind and brain are required for thinking, it is not until around 7 years of age that children demonstrate a relatively firm understanding of mind and

brain as the locus of identity and as a container for thoughts and memories (Corriveau et al., 2005; Gottfried et al., 1999; Johnson, 1990). Thus, these two ages groups were compared to examine developmental differences in children's understanding of mind and proper name as vehicles for subjective identity.

In addition, questions concerning irreplaceable value were included to explore whether children would be able to infer value, defined as irreplaceability, based on the transfer of subjective identity. In the value questions, value was defined as irreplaceability based on the emotional connection between friends: which character the friend would want with him/her, and which one the friend would not choose to leave behind in the woods. It was assumed that the friend would recognize the target's subjective identity as the essence of the friend, and would thus want that part of the friend rather than the body of the target. It was thus hypothesized that participants would choose the recipient of the transfer as more valuable and less replaceable than the target character. In addition, given developmental differences in children's understanding of subjective identity (Corriveau et al., 2005), it was hypothesized that younger children would be less likely than older children to choose the recipient as more valuable. In addition, since research with adults indicates that entities with greater agency are more valued than those with less (Gray et al., 2007), it was also hypothesized that if younger participants are more focused on the external appearance of the character, they would judge a dog with a person's subjective identity as less valuable than a person with another person's subjective identity.

Overall, given the findings of previous research, it was hypothesized that older children would demonstrate a better understanding of identity as separable from the body than would younger children. If young children are able to conceptualize subjective identity as connected to proper names even before they fully understand mind as the location of identity, then in Study 1b

younger children would be expected to demonstrate a better understanding of the proper name than mind as a vehicle for subjective identity. However, given the results of previous research, it was hypothesized that older children would perform similarly for both proper name and mind. In terms of the category of the transfer recipient, it was hypothesized that overall, subjective identity scores would be higher for the transfer involving the dog than for the transfer involving a person. For the irreplaceable value questions, it was hypothesized that responses would depend on the age of the participant, with younger children less successful in tracking subjective identity across the transfer and thus demonstrating lower irreplaceable value scores. Finally, it was also hypothesized that if children are more focused on external characteristics than subjective identity, even if they are successful in tracking that identity, their responses to the irreplaceable value questions would depend on whether the recipient of the post-transfer individual was a dog or a person.

3.1 METHOD

3.1.1 Participants

Participants included 64 four-old (mean: 4.77, range: 3.97-5.88) and 64 seven-year-old children (mean: 7.31, range: 6.17-8.78). These participants also participated in Study 1a. There were 16 participants in each of four conditions (proper name-person, proper name-dog and mind-person, mind-dog) per age group (younger and older), for a total of 128 participants. The participants were recruited from preschools and schools in Grand Rapids, MI, and preschool and afterschool programs in Pittsburgh, PA. Children were tested individually at their schools.

3.1.2 Design

The between-subjects variables are Vehicle (Proper Name, Mind), Category of Post-Transfer Individual (Person, Dog), and Age (4-year-olds and 7-year-olds).

3.1.3 Procedure

Each participant was presented with one story about a magical transfer of identity. For half of the participants, the transfer was marked by an uncommon proper name and for the other half it was marked by mind. In addition, within both the proper name and mind conditions, half the participants received a story involving a person to person transfer and half received a story involving a person to dog transfer.

In all vignettes, participants were shown pictures of two people and either a third person or a dog. Two of the people, the target and the friend (witness to the magical transfer), were labeled with a proper name. The third entity was the post-transfer host (either an unnamed person or an unnamed dog). In the experimental session, the experimenter first presented the children with a picture of either a girl or boy (depending on the gender of the participant), and indicated the name of the character (e.g., “This is Sally”). Children then received three pieces of information about subjective aspects of the target character: a feeling (e.g., happy), a preference or trait (e.g., likes ice cream), and a memory or knowledge (e.g., knows how to tie shoelaces). Then the experimenter presented a picture of another child (a boy or girl depending on the gender of the participant) and indicated that the child was the target character’s friend (e.g., “This is Sally’s friend Juniper”). Then the experimenter presented a picture of either another child or a dog, and labeled the third character with a category label (e.g., “This is another

girl/boy” or “This is a dog”). The three characters were placed in front of the child. A story was then told about an encounter in the woods with a wizard (whose picture was shown) resulting in a magical transfer (“One day Sally, Juniper, and the other girl went for a walk in the woods. While they were walking, they met a wizard”). Each time a character was mentioned, the experimenter pointed to that character. In the proper name condition, the story describes that the wizard put the named target individual into the post-transfer host (either a person or a dog): “The wizard said ‘abracadabra’ and put Sally [experimenter pointed to target] in the dog’s/other girl’s body [experimenter pointed to third character]. Now Sally is in the dog’s/other girl’s body.” In the mind condition, the wizard puts the target’s mind into the post-transfer host (“The wizard said ‘abracadabra’ and put her mind [experimenter pointed to target] into the dog’s/other girl’s body [experimenter pointed to third character]. Now her mind is in the dog’s/other girl’s body”). The wording of the stories was intentionally ambiguous concerning the structure of the transfer (fusion, displacement). Finally, the experimenter drew attention to the friend as a witness to the event: for example, “Juniper saw everything that happened.”

At the end of each vignette, children were asked a series of questions by the experimenter. First, they were presented with comprehension check questions to ensure they understood the story. (“Which one looks like Sally [the target]?” “Which one is Juniper [the friend]?” and “What did the wizard do?”). Incorrect responses were corrected with a repetition of the story and the data of children who do not understand the correction were excluded from analyses. Seventeen 4-year-olds and three 7-year-olds were corrected. Since, all twenty of these participants indicated that they understood the correction by correctly answering the repeated comprehension questions, none of the participants were excluded from analyses. Participants were presented with a total of five test questions: one identity question, three subjective

questions, and two value questions (see Appendix A). The identity question requested participants to indicate the location of the target individual post transfer (e.g., “Where is Sally now?”). The three subjective questions made reference to the three pieces of subjective information included in the story. The value questions involved a choice of which entity should be left behind and which individual the friend would really want to be with. For each of the questions, participants indicated their answers by pointing. After participants responded to each question, they were asked for an explanation of their response.

3.2 RESULTS

3.2.1 Tracking Identity

Given the possibility that children might have interpreted the transfer scenario as involving an incorporation of the bodies of target and recipient, responses to the identity question were analyzed separately from the responses to the subjective questions. Answers to the identity question, “Where is [name of character] now?,” were coded as to whether participants pointed to the recipient of the transfer (1), or to one of the other characters (0).

To determine whether participants’ responses to the identity question were influenced by the independent variables, a Poisson Regression was used to analyze the data (due to a violation of the homogeneity of variance assumption). An initial Poisson Regression was performed on identity scores with sex (male, female), age group (younger, older), vehicle (mind, proper name), and category (person, dog) as predictors. There were no significant effects of sex. Subsequently,

a Poisson Regression was performed on identity with age group (younger, older), vehicle (mind, proper name), and category (person, dog) as predictors. All assumptions were met.

The vehicle condition was significant with the recipient of the transfer chosen more often in the proper name condition ($M = .84, SE = .047$) than in the mind condition ($M = .58, SE = .066$), $\chi^2(1) = 8.72, p = .003$. In addition, the age group x vehicle interaction was significant, $\chi^2(1) = 4.42, p = .036$. Pairwise comparisons revealed that the difference between vehicle conditions was significant for the older children, $\chi^2(1) = 14.79, p < .001$, but not for the younger children, $\chi^2(1) = 2.073, p = .15$. As shown in Figure 1, children in the proper name condition more often pointed to the recipient as the bearer of the proper name, than those in the mind condition, and this effect was especially pronounced among children in the older age group.

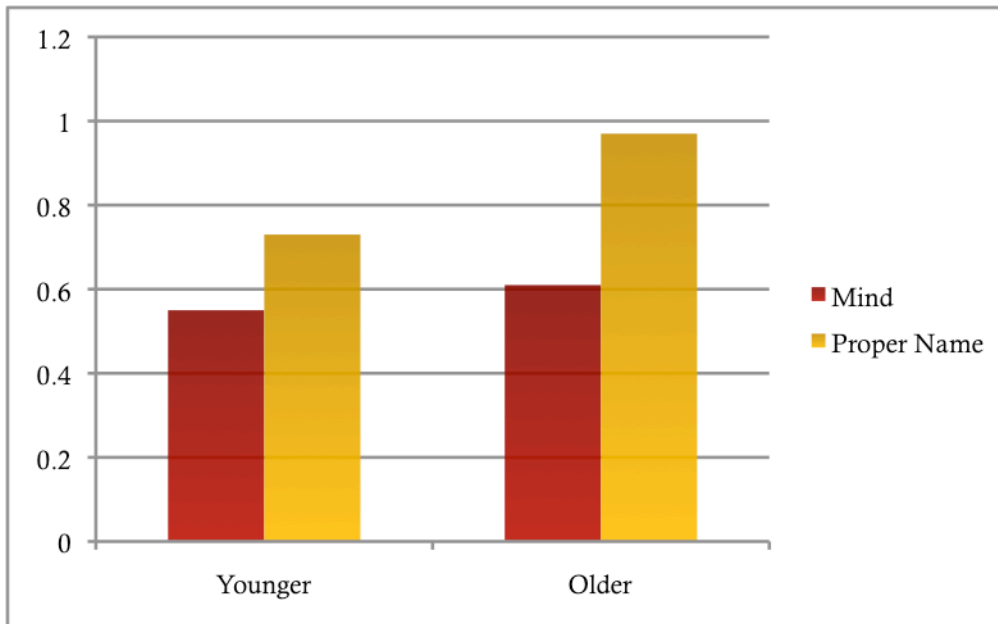


Figure 1. Mean scores for identity by age group and identity vehicle.

3.2.2 Tracking Subjective Identity

In order to test influences of age, identity vehicle, and ontological category, on children’s ability to track identity across a magical transfer, responses to the subjective questions were examined. Scores for subjective identity were created by combining the responses to the three subjective questions. If a participant pointed to the recipient of the transfer, indicating that subjective identity was judged as having been transferred from target to recipient, the response was coded as ‘1.’ All other responses were coded as ‘0.’ Subject Identity scores ranged from 0-3.

Due to a violation of the homogeneity of variance assumption, a Poisson Regression was used to analyze the data. An initial Poisson Regression was performed on subjective identity

scores with sex (male, female), age group (younger, older), vehicle (mind, proper name), and category (person, dog) as predictors. There were no significant effects of sex. Subsequently, a Poisson Regression was performed on subjective identity scores with age group (younger, older), vehicle (mind, proper name), and category (person, dog) as predictors. All assumptions were met.

Overall, there were significant effects of each of the three independent variables ($\chi^2(7) = 36.22, p < .001$). There was a significant prediction of subjective identity scores by age group, ($\chi^2(1) = 36.01, p < .001$). Overall older children had higher subjective identity scores ($M = 2.67, SE = .16$) than younger children ($M = 1.42, SE = .12$). That is, older children were more likely to understand that the subjective identity of the target individual was transferred to the body of the recipient. Subjective identity scores were also significantly predicted by vehicle ($\chi^2(1) = 6.21, p = .013$). Overall, subjective identity scores were higher for mind ($M = 2.22, SE = .17$) than for proper name ($M = 1.71, SE = .12$). Participants were more likely to judge that the subjective identity of the target individual was transferred to the recipient in the mind condition than in the proper name condition. In addition, subjective identity scores were significantly predicted by ontological category ($\chi^2(1) = 15.22, p < .001$). Subjective identity scores were higher for person ($M = 2.39, SE = .17$) than for dog ($M = 1.59, SE = .12$). Participants were more likely to judge that the subjective identity of the target was transferred when the recipient was a person than when it was a dog.

The age group x vehicle interaction was also significant ($\chi^2(1) = 5.70, p = .017$). As shown in Figure 2, younger children had higher subjective identity scores for mind ($M = 1.84, SE = .23$) than for proper name ($M = 1.10, SE = .13$), whereas for older children, there was no significant difference between mind ($M = 2.68, SE = .24$) and proper name ($M = 2.65, SE = .20$).

Pairwise comparisons revealed that the difference between scores for mind and proper name was significant for the younger children ($\chi^2 (1) = 7.61, p = .006$), but not for the older children. In contrast to expectations, younger children were more likely to judge that subjective identity was transferred to the recipient in the mind condition than in the proper name condition.

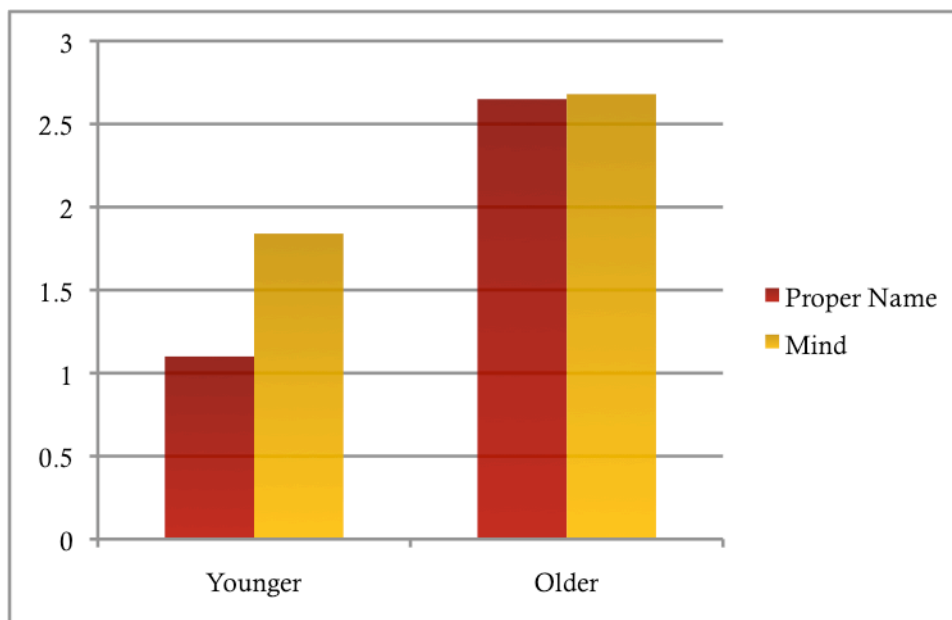


Figure 2. Mean subjective identity scores by age group and identity vehicle.

Furthermore, the vehicle x category interaction was also significant ($\chi^2 (1) = 6.39, p = .011$). Subjective identity scores for dog were higher in the mind condition ($M = 2.01, SE = .22$) than in the proper name condition ($M = 1.22, SE = .13$). Pairwise comparisons revealed that this difference was significant for dog ($\chi^2 (1) = 10.57, p = .001$), but not for person (see Figure 3).

Transfer of subjective identity was more likely to have been judged to occur for dog in the mind condition than in the proper name condition. The vehicle of identity, mind or proper name, did not influence responses when the recipient of the transfer of identity was a person.

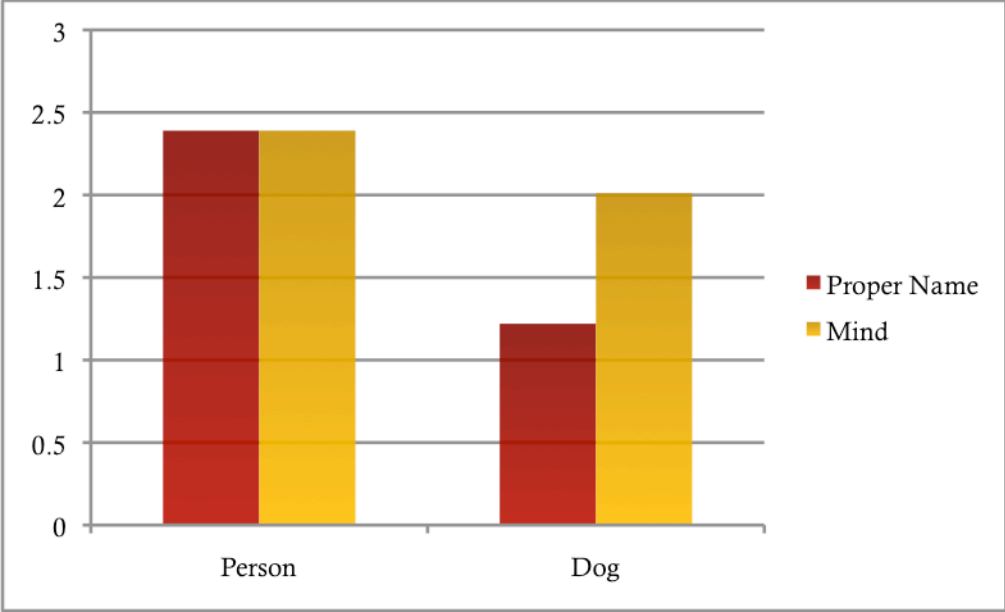


Figure 3. Mean subjective identity scores by ontological category and identity vehicle.

Explanations were elicited to determine whether children took into account the transfer in answering the subjective identity questions. The explanation for each subjective identity question was coded according to whether participants mentioned the transfer (e.g., “because the wizard switched their minds,” “because he’s a dog now”), appealed to the story or appearance (e.g., “because she is the one who knows,” “because he lost his sweater”), or provided some other

explanation (“I don’t know,” no response, unclassifiable). Explanations were coded by the experimenter and another coder blind to the hypotheses. Inter-rater reliability was 95.31% and differences were resolved through discussion.

In their explanations, older children mentioned the transfer more often than any other type of response and more often than the younger children (see Table 6). However, children’s explanations also revealed variation in how children interpreted the transfer scenario. Some children interpreted the scenario, not as a one-way transfer of identity, but as a switch of bodies: “the wizard changed the bodies.” Others interpreted the result of the wizard’s action as a fusion of the two characters: “now they are one.” Several children interpreted the situation as resulting in the recipient’s stomach as the location of the target character: “Sally is in the girl’s stomach.”

Table 6. Percentages of explanations for subjective identity questions by age group and justification category.

	Transfer	Story	Other
Younger	26.17%	15.63%	58.20%
Older	58.20%	10.55%	31.25%

3.2.3 Judgments of Irreplaceable Value

The responses to the irreplaceable value questions were combined to create one value variable. Responses were coded according to whether participants had tracked the identity of the target to the recipient, and recognized that the friend would choose the subjective identity of his or her friend (the target) as more irreplaceable than the other character. Thus, for the first value question (“Who should [the Friend] leave behind in the woods?”), responses that included the recipient received a ‘0’. All other responses received a 1. For the second value question (“Which one does [the Friend] really want with him/her?”), responses that included the recipient received a ‘1’ and all other responses received a 0. An irreplaceable value score was created by summing the scores for the two value questions, with possible scores ranging from 0-2.

An initial Poisson Regression was performed on irreplaceable value scores with sex (male, female), age group (younger, older), vehicle (mind, proper name), and category (person, dog) as predictors. All assumptions were met. There were no significant effects of sex. Subsequently, a Poisson Regression was performed on irreplaceable value scores with age group (younger, older), vehicle (mind, proper name), and category (person, dog) as predictors. All assumptions were met. Overall, there was no significant prediction of any of the predictor variables on the irreplaceable value scores. In contrast to expectations, neither age group nor category influenced participants’ responses to the irreplaceable value questions.

3.2.4 Identity and Value

Analyses were also conducted to determine whether children's understanding of irreplaceable value was in any way connected to their understanding of subjective identity continuity.

A chi-square analysis was run to examine whether participants who understood subjective identity as having been transferred also understood the value of the transferred subjective identity. The numbers of participants who understood subjective identity (by having responded on 2-3 questions that subjective identity had been transferred) and the number of those who understood value continuity (by having responded on 1-2 of the value questions that the transferred subjective identity was valuable) were examined in a chi-square analyses, $\chi^2 (1) = 6.22, p = .013$. As seen in Table 7, participants who understood subjective identity more often also interpreted that identity as irreplaceable and thus valuable. However, a similar number of those who did not interpret subjective identity as having been transferred also judged that identity as irreplaceably valuable. In addition, those who did not respond that subjective identity was irreplaceable more often did not transfer subjective identity.

Table 7. Number of participants who understood and did not understand irreplaceable value and subjective identity.

	Understand Subjective Identity		
Understand Irreplaceable Value	Yes	No	Total
Yes	48	44	92
No	10	26	36
Total	58	70	128

To examine individual response patterns across question types, a new variable of response pattern was created. Participants demonstrating a strong subjective identity stance, by responding that individual identity was transferred and that subjective identity was transferred on at least two of the three subjective identity questions and responded that the subjective identity of the target was valued as irreplaceable on at least one of the value questions, received a score of “1.” Participants who tracked subjective identity across the transfer and who responded that this identity was valued on at least one of the value questions, but who responded that subjective identity was tracked on less than 2 of the subjective identity questions received a score of “2.” Participants who either got identity only or identity and subjective identity but not value received a score of “3.” All other response patterns received a score of “4.”

A Chi-Square analyses examining the number of participants in each age group who fell into each response category indicated that older children more often transferred both identity and

subjective identity and viewed identity as irreplaceably valuable, $\chi^2 (3) = 1.589E1, p = .001$ (see Table 8).

Table 8. Response category by age group.

	Response Category			
	All	ID and Value	ID and Subjective and ID only	Other
Younger	8	21	13	22
Older	26	10	15	13

3.2.5 Analyses across studies 1a and 1b

In order to compare participants' performance on identity and irreplaceable value questions across studies, several variables were created. For Study 1a, to examine whether children's responses to the value two question were related to their ability to track identity, three variables were created. For the "Understand Identity" variable, children who selected the toy labeled with a proper name for both identity questions received a code of '1.' Children who selected the toy

referred to by category label for at least one of the identity questions, received a code of '0.' For the "Understand Irreplaceable Value" variable, responses to the value two question that indicated that the toy labeled with a category label should be thrown away received a coding of '1.' Responses to the value two question indicating that the toy with the proper name should be thrown away received a code of '0.' Finally, for the variable of "Understand Both," if children received scores of 1 for both "Understand Identity" and "Understand Irreplaceable Value," then they received a code of '1.' If the total score for the sum of "Understand Identity" and "Understand Irreplaceable Value" was less than 2, then the participant was given a code of '0.'

For Study 1b, to examine individual response patterns across question types, a new variable of response pattern was created. Participants demonstrating a strong immaterial identity stance, by responding that individual identity was transferred and that subjective identity was transferred on at least two of the three subjective identity questions and responded that the subjective identity of the target was valued as irreplaceable on at least one of the irreplaceable value questions, received a score of "1." Participants who tracked identity across the transfer and who responded that this identity was valued on at least one of the value questions, but who responded that subjective identity was tracked on less than 2 of the subjective identity questions received a score of "2." Participants who either got identity only or identity and subjective identity but not value received a score of "3." All other response patterns received a score of "4."

In addition, a new variable combining responses to the identity questions from both study 1a and study 1b was created to examine the performance of individuals across studies. Participants who successfully tracked identity in Study 1a and responded that identity was transferred in Study 1b received a score of "2." Participants who successfully tracked identity in either Study 1a or 1b but not in the other, received a score of "1." Participants who did not

successfully track identity in Study 1a and who did not view immaterial identity as having been transferred in Study 1b, received a score of “0.”

Analyses were conducted to determine whether children who were successful at tracking identity in Study 1a also tracked identity across the magical transfer in Study 1b. Older children more often than younger children successfully tracked identity in both studies, with none of the older children failing to track identity in both studies (see Table 9). A chi-square conducted on age group and identity tracking across Studies 1a and 1b was significant, $\chi^2 (2) = 2.33E1, p < .001$.

Table 9. Identity tracking patterns of children across studies by age group

	Identity Tracking Across Studies 1a and 1b			
Age	Both yes	Yes and no	Both no	Total
Younger	20	31	13	64
Older	42	22	0	64
Total	62	53	13	128

Children’s performance on the Irreplaceable Value questions was also examined across studies 1a and 1b. Of those participants who responded that subjective identity was irreplaceably

value in Study 1b, half of the participants viewed the named toy in Study 1a as irreplaceable and half did not, as shown in Table 10. A chi-square analysis of performance on responses to the value two question in Study 1a and the value questions in Study 1b was significant, $\chi^2 (1) = 3.96$, $p = .047$. However, a chi-square analysis examining the age group and performance on the value questions across studies revealed that age group was not significantly related to understanding irreplaceable value, $\chi^2 (2) = .55$, $p = .76$.

Table 10. Responses to value questions across studies 1a and 1b.

	Irreplaceable Value Across Studies 1a and 1b			
Age	Both yes	Yes and no	Both no	Total
Younger	21	30	13	64
Older	25	27	12	64
Total	46	57	25	128

3.3 DISCUSSION

Study 1b set out to examine whether children are able to use proper names to track mentalistic, subjective identity before they are able to do so with minds. Overall, older children demonstrated higher subjective identity scores than did younger children. That is, older children were more

likely than younger children to track subjective identity via magical transfer from target to recipient. This result is consistent with the findings of previous research that have shown that older children have a better understanding of mentalistic, subjective identity than do younger children, as demonstrated in magical transformation and hypothetical brain transplant scenarios (Corriveau et al., 2005; Johnson, 1990). Furthermore, in their explanations of the responses, older children mentioned the transfer more than younger children did. The older children appeared to better understand the transfer scenario and its consequences for the subjective identity of the target character.

The vehicle of identity did make a difference, although not as expected. Subjective identity scores were higher in the mind condition than in the proper name condition. Participants more often judged that subjective identity was transferred to a recipient when mind was used than when proper name was used. This difference in subjective identity scores between proper name and mind conditions was especially pronounced in the performance of the younger children. When looking at responses to the identity question (“Where is [named character] now?”), the scores of both younger and older children were higher in the proper name condition than in the mind condition. In contrast, younger children had higher subjective identity scores in the mind condition than in the proper name condition, although the vehicle of identity did not make a difference for the older children. Although children in the proper name condition judged the recipient as bearer of the target character’s name more often than those in the mind condition, this did not mean that they necessarily interpreted that subjective identity went along with the name. For younger children, mind rather than proper name, seemed to serve as a conceptually easier vehicle for the transfer of a subjective, mentalistic identity. It is possible that for younger children it was easier to think of mind as a container of thoughts, memories, and preferences that

can be removed from one individual and placed in another. A proper name may have been too abstract and ambiguous to the younger children to serve as an effective vehicle for the subjective aspects of identity, since proper names are usually used to refer to an embodied individual, encompassing both body and mind.

The category of the post-transfer individual was also a significant predictor of subjective identity scores. Overall, subjective identity scores were higher for person than for dog. This finding contrasts with Rhemtulla and Hall (2009) who found that with adults, personal identity is judged to persist more in cross-basic than in within-basic transformations, and with Johnson's (1990) finding that children had a more difficult time with transferring subjective identity in child-to-child brain transplants, than in those involving a pig or a baby as recipient. However, the finding concurs with that of Liittschwager (1995) who observed a gradual decline in children's identity persistence judgments from minor changes to transformations crossing the boundaries of ontological categories. The children in the present study appeared more willing to transfer subjective identity in person-to-person transfers than in person-to-dog transfers.

Within the dog condition, the vehicle of subjective identity also made a difference. Subjective identity scores for dog were higher in the mind condition than in the proper name condition, although the scores for person did not significantly vary between identity vehicle conditions. The person-to-dog transfer may have been more difficult for children especially when the transfer involved proper name only. Children in the mind condition may have had an easier time conceptualizing the person-to-dog transfer, perhaps using the mind as a container of identity metaphor (Gottfried et al, 1999).

In terms of irreplaceable value, none of the predictor variables were significant. In contrast to the hypothesis and despite the significant effect of age found for the subjective

identity questions, younger and older children did not differ significantly in their responses to the value questions. One of the questions used to gauge value judgments required children to choose which character the friend should leave behind in the woods. Several participants did not like this question, suggesting that it was mean and that the friend should not leave anyone behind. In addition, the category of the transfer recipient did not influence responses to the value questions. A dog housing a human subjective identity was judged as no less valuable (in terms of getting left behind, or not wanted by the friend) than a person housing the subjective identity of a different person.

In looking at children's performance across both identity and value questions, the majority of children who interpreted subjective identity as having been transferred also judged that subjective identity as irreplaceably valuable. This finding suggests that the understanding of the irreplaceable value of subjective identity is dependent on and a later developmental achievement from mere understanding of subjective identity.

Analyses across Studies 1a and 1b revealed that older children more successfully tracked identity in both studies. None of the older children failed to track identity in both studies. The results for irreplaceable value were less clear-cut. Of those children who seemed to understand value in the transfer scenario, less than a third also responded that the named toy should be kept and not thrown away. Taking the results of these two studies together, ability to track identity develops with age and understanding irreplaceable value is a more complex and context-dependent process.

The results of Study 1b indicate that younger children have more difficulty using proper names than minds as vehicles for subjective individual identity. However, questions concerning bodily identity were not included in Study 1b. Do children view identity as separable into

subjective and physical components as suggested by the idea of intuitive dualism? In addition, in both the proper name and mind conditions, proper names were used to refer to the target character, even though when the actual transfer was described, that proper name was only mentioned in the proper name condition. Does a proper name serve as a better vehicle for subjective identity than other types of labels, such as trait labels? Also, the transfer recipients were limited to a person and a dog, and did not include an inanimate object, lacking mental states. In Study 2, questions about physical identity were added. In addition, proper names were contrasted with trait labels rather than with mind. Furthermore, an inanimate object, a stone, was included as a recipient of the magical transfer of subjective identity.

4.0 STUDY 2: PROPER NAME VERSUS TRAIT LABEL TRANSFER STUDY

Study 2 examined the ability of children and adults to use proper names versus trait labels to track subjective identity across magical transfers differing in degree of ontological distance from the target individual. The purpose of the study was to determine whether children are able to use both proper names and trait labels equally well to track individual identity. In addition, in Study 2, the effect of the category of the transfer recipient on identity tracking was examined. Finally, Study 2 also explored the influence of both label and category on irreplaceable value judgments.

Trait labels and proper names serve distinct functions. Whereas proper names are used to pick out individuals, trait labels can be applied to more than one individual. A trait label describes an aspect of a person (e.g., nice, smart), but does not distinguish that person as a unique individual. Although some philosophers argue that proper names are themselves descriptive (Garcia-Ramirez & Shatz, 2011), psychological evidence supports the view that names do not function in the same way as descriptions (Garcia-Ramirez & Shatz, 2011). However, this research did not examine the distinction between descriptive labels and proper names in terms of tracking subjective identity. Can a descriptor like a trait label serve the same function as a proper name to track the transfer of subjective identity?

In the developmental literature, both traits and mind are central to children's developing understanding of identity (Johnson, 1990). Young children use trait labels to make inferences about psychological states and future behavior (Alvarez, Ruble, & Bolger, 2001; Gelman &

Heyman, 1999; Heyman & Gelman, 1999; 2000). Although children as young as three years of age are able to make inductive inferences from trait labels, such as “nice,” they have yet to coordinate these traits into a coherent concept of individual identity (Johnson, 1990). Are children able to use trait labels as a vehicle for tracking subjective identity (apart from appearance) before they have obtained a coherent understanding of traits?

Study 2 contrasted proper names with trait labels to determine whether proper names are unique in acting as a vehicle for subjective identity. Given the results of Study 1b for children’s responses to the identity question, it was expected that younger children would identify the transfer recipient as the bearer of the proper name. It was hypothesized that the tracking of identity of participants in the trait label condition would depend on age with younger children less able to use trait labels to track individual identity across a magical transfer. However, given the results of Study 1b concerning tracking subjective identity, it was expected that even though children are able to track the identity of character across the transfer, as measured by location of the name or label of the character, overall, older children and adults would be more successful in tracking subjective identity than would younger children. Additionally, if children are able to use trait labels to organize individual identity in the same way that they use proper names, then there should be no difference between the two label conditions. However, if proper names uniquely act as a vehicle for subjective identity, then there should be observed differences in subjective identity scores between the proper name and trait label conditions. Furthermore, there might be an effect of age, with older children and adults, who have a better understanding of traits and their connection to identity, being better able to use trait labels as vehicles for subjective identity.

In Study 2, physical identity was contrasted with subjective identity. In the scenarios, in addition to the appearance of the target character in the picture, the experimenter mentioned an

unobservable physical condition (e.g., “he has a scrape on his knee). Tracking of physical identity was gauged by questions concerning the appearance and physical characteristic of the target character. This contrast between physical and subjective identity was added to examine whether children would distinguish between the two in terms of the result of the magical transfer. According to intuitive dualism, these two aspects of identity should be easily separated. For example, in some versions of afterlife beliefs, the soul is separated from the body. How do we conceptually track both aspects of the deceased individual, the physical remains and the immaterial soul? In the course of each magical transfer scenario, the physical identity of the target character does not change. Given that even young children have no problem in tracking individuals using spatiotemporal cues, it was expected that there would be no age difference in responses to the physical identity questions.

Study 2 also expanded the degree of ontological distance from the target to the recipient in testing transfer recipients. As in Study 1b, person and dog were included as recipients of identity in the magical transformation. In Study 2, stone was added to examine the effect of an entity of greater ontological distance from the target. In research in which participants were presented with transformations, ontological distance influenced identity continuity judgments (Liittschwager, 1995). In Study 1b, the ontological category of the transfer recipient did not influence participants’ responses to the question of the post-transfer location of the named target identity. Thus, it was predicted in Study 2 that ontological category would not affect responses to the identity question, “Where is [target character] now?” In contrast, given the results of both Liittschwager’s (1995) research and Study 1b, it was predicted that subjective identity scores would be highest for person-to-person transfer, and lower for person-to-dog and person-to-stone transfers. However, other research suggests that categorically different hypothetical transplant

recipients may be conceptually easier to imagine as possessing the target's subjective identity (Johnson, 1990). It is also possible that scores would be higher for the transfer involving the dog than for the one involving a person if a within-category transfer is conceptually more difficult than a cross-category transfer (Johnson, 1990; Rhemtulla & Hall, 2009). A transplant or transfer between two equivalent people could entail competing subjectivities (Cohen & Barrett, 2008). The addition of a stone as a transfer recipient, provided an example of an ontologically different entity that distinctly lacks a mentalistic, subjective identity. Subjective identity scores for stone were predicted to be higher than those for person and dog since a stone does not possess a mental identity that could compete with that of the target character.

Does the type of label used to refer to an individual, influence judgments of value? Jeshion (2009) emphasizes that proper names uniquely serve to mark the irreplaceable value of the individual. A trait label, such as "nice girl" can be used to refer to more than one person, and thus does not necessarily refer to an individual who cannot be replaced, since there are other girls who could be considered "nice." Questions concerning value were also included to determine whether a proper name is interpreted as marking greater value relative to that marked by trait labels. If proper names mark value in a way that trait labels do not, it would be expected that irreplaceable value scores would be lower in the trait label condition, especially in the child groups.

Finally, Study 2 further examines whether the ontological category of transfer recipient influenced judgments of irreplaceable value. Building on Study 1b, Study 2 explored the effect of category on value judgments. In Study 1b, ontological category did not influence judgments of irreplaceable value. However, in Study 1b, both transfer recipients were agents. In Study 2, a

stone was included to determine whether the target's subjective identity would be considered less valuable when housed in an animate object than when occupying the body of another agent.

4.1 METHOD

4.1.1 Participants

Participants include 32 four-year-olds (mean: 5.05, range: 3.90 - 5.68), 34 seven-year-olds (mean: 7.53, range: 6.09 - 8.45), and 42 adults (mean: 19.49, range: 18.20 – 22.11). The child participants were recruited from preschools and schools in Grand Rapids, MI, and preschool and afterschool programs in Pittsburgh, PA. Children were tested individually at their schools. Adults were recruited from the introductory psychology subject pool at a public university in Pittsburgh, PA.

4.1.2 Design

The between-subjects variables were Label Type (two levels) and Age (three levels). The two levels of Label Type were proper name and trait label. The three levels of Age were four-year-old children, seven-year-old children, and adults. The within-subjects variable was Category of Post-Transformation Individual (three levels). The three levels of Category were person, animal (dog), and inanimate object (stone).

4.1.3 Procedure

Each participant was presented with three vignettes in one of two label conditions: proper name condition or trait label condition (see Appendix B). In the proper name condition, the target individual was labeled with an uncommon proper name. In the trait label condition each target individual was labeled with a category label (girl, boy) modified by a trait (nice, ice-cream lover, smart). The target person was either a girl or boy, the animal was a dog, and the inanimate object was a stone. These entities were chosen to represent categories of varying ontological distance from the target individual. In total, there were three within-subjects conditions: 1) person-to-person, 2) person-to-dog, and 3) person-to-stone. Participants received three items of information about subjective aspects of the target: a feeling (e.g., happy), a preference or trait (e.g., likes ice cream), and a memory or knowledge (e.g., knows how to tie shoelaces). The vignettes also included one item about a physical aspect of the target (e.g., has a stubbed toe). The presentation order of the stories was counterbalanced across participants within the proper name and trait label conditions.

During the experimental session the experimenter first presented child participants with a picture of either a girl or boy (matched to the gender of the participant), and identified the character with either a proper name or a trait label, depending on the condition (e.g., “This is Cleo,” “This is the smart girl”). Children then received three pieces of information about the target character. This information included a trait, an emotion, knowledge, and a physical condition (e.g., a scrape on the knee). Then the experimenter introduced the picture of another child, the target’s friend (e.g., proper name condition: “This is Cleo’s friend Millie”; trait condition: “This is her friend”). The experimenter then showed a picture of the third character: a person, a dog, or a stone (“This is another girl/boy/a dog/a stone”). During the introduction of the

characters and the story, the experimenter pointed to each character whenever he, she, or it was mentioned. Then participants were told a story: “One day the [characters] went for a walk in the woods. While they were walking they met a wizard [the experimenter showed a picture of a wizard].” In the trait condition, participants were then told about the magical transfer of the identity of the target to the body of the third character (e.g., “The wizard said ‘abracadabra’ and put the smart girl into the dog’s body. Now the smart girl is in the dog’s body”). Finally, participants were told that the friend was a witness to the transfer (“Millie/the friend saw everything that happened”).

At the end of each vignette, child participants were first presented with comprehension check questions (same as in Study 1b) to ensure they understood the story. Incorrect responses were corrected. There were 10 instances in which four-year-old participants were corrected, receiving a repetition of the story. In each of these instances children indicated that they understood the correction by correctly responding to the repeated comprehension questions and their data was included in the analyses. Participants were presented with a total of five test questions: one identity question, three subjective identity questions, three physical identity questions, and two irreplaceable value questions (see Appendix B). The identity question always was presented first and the rest of the questions were presented in a random order. The identity question requested participants to indicate the location of the target individual after the transformation. The three subjective questions make reference to the three pieces of subjective information included in the story. In both the proper name and trait label conditions, one of the subjective questions was related to a trait (social: “nice”, intellectual: “smart”, and preference: “loves ice-cream). These traits match the trait labels used in the trait label condition. The physical identity questions referred to the physical aspects of the target, including appearance

and the one physical characteristic mentioned in the story. The irreplaceable value questions involved a forced choice of which entity should be left behind and which individual the friend really wanted to be with. Child participants indicated their responses by pointing to the pictures of the characters. After participants responded to each question, they were asked for an explanation of their response.

Adult participants received the stories and questions in a questionnaire format.

4.2 RESULTS

Since the distribution was bimodal and therefore not suitable for ANOVA, the data for Identity, Subjective Identity, Physical Identity, and Irreplaceable Value were analyzed using a Repeated Measures Poisson Regression using Generalized Estimating Equation (Liang & Zegler, 1986).

4.2.1 Tracking Identity

Responses to the identity question were analyzed separately from the responses to the subjective questions, to determine whether participants viewed the identity of the target, as marked by name as having been transferred to the recipient. Given the results of Study 1b, it was expected that responses to the identity question would not depend on label type, but that younger children would select the recipient as bearer of the label less often than older children and adults. Answers to the identity question, “Where is [name of character] now?,” were coded as to whether participants pointed to the recipient of the transfer (1), or to one of the other characters

(0). In order to examine the effect of ontological category, participants' responses to the identity question were analyzed in terms of individual story.

To examine the effects of the independent variables on responses to the identity question, an initial Repeated Measures Poisson Regression using Generalized Estimating Equation was performed on subjective identity scores with sex (male, female), age group (younger, older, adult), label type (proper name, trait), as between-subjects predictor variables and category (person, dog, stone) as a within-subjects predictor variable. All assumptions were met. There were no significant effects of sex. Subsequently, a Repeated Measures Poisson Regression using Generalized Estimating Equation was performed on subjective identity scores with age group (younger, older, adult), label condition (proper name, trait), as between-subjects predictor variables and category (person, dog, stone) as a within-subjects predictor variable. All assumptions were met.

The analyses revealed effects of age group, label type, and category on participants' responses to the identity question. With age, participants increasingly selected the transfer recipient as the location of the target character's name post transfer, $\chi^2(2) = 11.18, p = .004$. Pairwise comparisons revealed that younger children ($M = .85, SE = .043$) were less likely to transfer identity than were both older children ($M = .98, SE = .021$) and adults who were at ceiling performance ($M = 1.00, SE = 0$).

Overall, participants in the proper name condition ($M = .99, SE = .0071$) selected the transfer recipient more often than those in the trait label condition ($M = .89, SE = .032$) and this difference was significant, $\chi^2(1) = 8.63, p = .003$. In addition, the effect of ontological category on responses was significant, $\chi^2(2) = 6.041, p = .049$, with participants selecting the recipient as

bearer of the name more often in the stone scenario. Pairwise comparisons revealed that none of the contrasts was statistically significant.

In addition, the age group x label type interaction was significant, $\chi^2(2) = 8.66, p = .013$. As shown in Figure 4, children in the younger age group in the proper name condition more often selected the recipient as bearing the name than those in the trait label condition. Pairwise comparisons indicated that there were no significant differences between age groups for participants in the proper name condition. Younger children in the trait label condition ($M = .74, SE = .073$) were less likely to judge that the post-transfer individual was the bearer of the trait label than were older children ($M = .96, SE = .041$) and adults whose performance was at ceiling ($M = 1.00, SE = 0$), $\chi^2(2) = 13.72, p = .001$. The responses of the older children did not differ significantly from those of the adults.

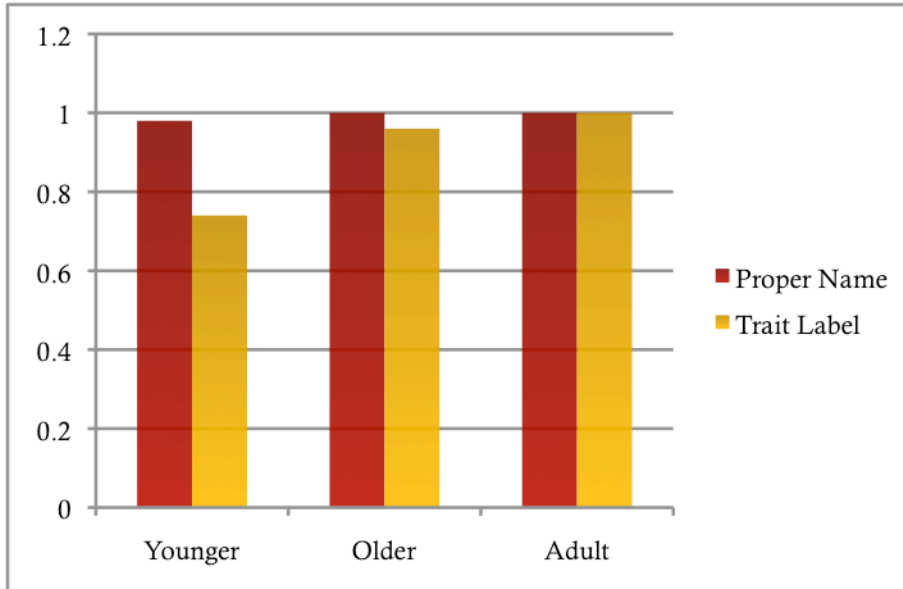


Figure 4. Mean scores for identity by age group and label type.

The label type x category interaction was also significant, $\chi^2(2) = 11.77, p = .004$. Participants in the proper name condition selected the recipient more often as the bearer of the label than those in the trait label condition, regardless of ontological category. In contrast, participants in the trait label condition responded that identity had been transferred more often when the transfer recipient was a stone than when it was a person or a dog (see Figure 5). Pairwise comparisons indicated that within the trait label condition, participants more often transferred identity for stone ($M = .98, SE = .021$) than for both person ($M = .86, SE = .052$) and dog ($M = .84, SE = .057$), $\chi^2(2) = 12.025, p = .002$.

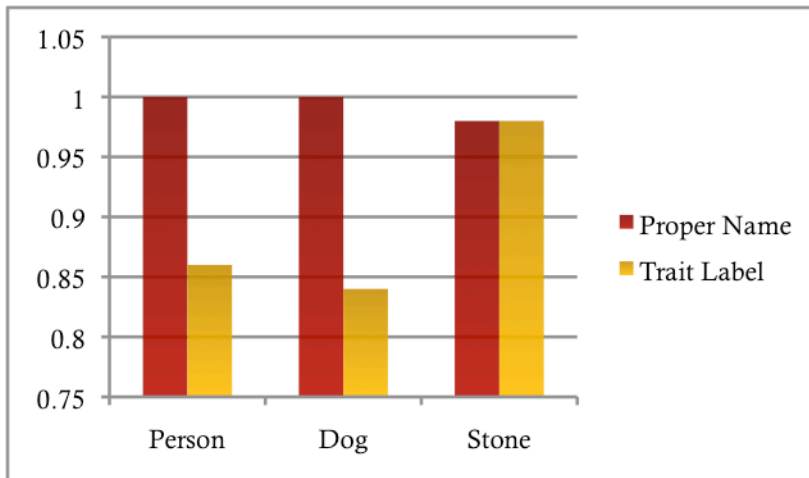


Figure 5. Mean scores for identity by ontological category and label type.

Finally, the age group x label type x category interaction was significant, ($\chi^2(1) = 5.70, p = .017$). On closer examination, the responses of adults to the identity question were not affected by either label type or the category of the recipient. However, the responses of child participants in the trait label condition were dependent on the ontological category of the recipient. More specifically, younger children in the trait label condition were less likely than younger children in the proper name condition to select the recipient as bearer of the name when that recipient was either another person ($M = .69, SE = .12$) or a dog ($M = .63, SE = .12$).

Since the adults performed at ceiling, the performance of the child groups was analyzed separately. To examine the effects of the independent variables on responses to the identity question for the child groups only, an initial Repeated Measures Poisson Regression using Generalized Estimating Equation was performed on subjective identity scores with sex (male, female), age group (younger, older), label type (proper name, trait), as between-subjects

predictor variables and category (person, dog, stone) as a within-subjects predictor variable. All assumptions were met. There were no significant effects of sex. Subsequently, a Repeated Measures Poisson Regression using Generalized Estimating Equation was performed on subjective identity scores with age group (younger, older), label type (proper name, trait), as between-subjects predictor variables and category (person, dog, stone) as a within-subjects predictor variable. All assumptions were met.

The analyses revealed effects of age group, label type, and category on participants' responses to the identity question. With age, participants increasingly selected the transfer recipient as the location of the target character's name post transfer, $\chi^2(1) = 6.50, p = .011$. Younger children ($M = .85, SE = .043$) were less likely to transfer identity than were older children ($M = .98, SE = .021$).

The effect of label type was also significant, with participants in the proper name condition ($M = .99, SE = .0071$) selecting the transfer recipient more often than those in the trait label condition ($M = .89, SE = .032$) and this difference was significant, $\chi^2(1) = 8.63, p = .003$. In addition, the effect of ontological category on responses was significant, $\chi^2(2) = 6.041, p = .049$, with participants selecting the recipient as bearer of the name more often in the stone scenario. Pairwise comparisons indicated that none of the comparisons between different categories was significant.

In addition, the age group x label type interaction was significant, $\chi^2(1) = 4.66, p = .031$. Children in the younger age group in the proper name condition more often selected the recipient as bearing the name than those in the trait label condition. Younger children in the trait label condition ($M = .74, SE = .073$) were less likely to judge that the post-transfer individual was the bearer of the trait label than were older children ($M = .96, SE = .041$).

The label type x category interaction was also significant, $\chi^2 (2) = 11.18, p = .004$. Overall, participants in the proper name condition selected the recipient more often as the bearer of the label than those in the trait label condition, especially for scenarios in which the transfer recipient was another person or a dog. Pairwise comparisons revealed that in the trait label condition responses to stone ($M = .97, SE = .031$) differed significantly from responses to both person ($M = .80, SE = .072$) and dog ($M = .77, SE = .078$), $\chi^2 (2) = 12.84, p = .002$. In the trait label condition, participants more often responded that identity was transferred when the recipient was a stone than when it was either a person or a dog.

Finally, the age group x label type x category interaction was significant, ($\chi^2 (1) = 5.70, p = .017$). Child participants, in the trait label condition, especially those in the younger age group, were more affected by category of the recipient. Younger children in the trait label condition were less likely to select the recipient as bearer of the name when that recipient was either another person ($M = .69, SE = .12$) or a dog ($M = .63, SE = .12$), compared to younger children in the proper name condition who chose the recipient at ceiling for those two categories. Pairwise comparisons revealed that in the trait label condition, younger children were less likely than older children to transfer identity from the target to a dog, $\chi^2 (1) = 5.33, p = .021$.

4.2.2 Tracking Subjective Identity

Responses to the subjective questions were examined by creating subjective identity scores to test the hypothesis that a proper name in contrast to a trait label can serve as a vehicle for mentalistic subjective identity. Given the results of Study 1b, it was predicted that participants' responses to the subjective questions would depend on the age of the participant and the category of the transfer recipient. The subjective identity scores were created by coding participants'

responses in terms of whether subjective identity was considered to have changed location as a result of the magical transfer. Responses in which participants selected the recipient, indicating that the target individual's identity was construed as having been transferred to the other individual, received a score of '1'. All other responses received a score of '0'. The variable, subjective identity was created by summing scores for the three subjective identity questions, resulting in scores with a possible range of 0-3. Responses to the identity question were not included in the subjective identity score.

To examine the effects of the independent variables on responses to the subjective identity questions, an initial Repeated Measures Poisson Regression using Generalized Estimating Equation was performed on subjective identity scores with sex (male, female), age group (younger, older, adult), label type (proper name, trait), as between-subjects predictor variables and category (person, dog, stone) as a within-subjects predictor variable. All assumptions were met. There were no significant effects of sex. Subsequently, a Repeated Measures Poisson Regression using Generalized Estimating Equation was performed on subjective identity scores with age group (younger, older, adult), label type (proper name, trait), as between-subjects predictor variables and category (person, dog, stone) as a within-subjects predictor variable. All assumptions were met.

There was a significant prediction of subjective identity by age group ($\chi^2(2) = 30.28, p < .001$). Subjective identity scores increased with age. Pairwise comparisons revealed significant differences between younger ($M = .43, SE = .13$) and older children ($M = 1.55, SE = .23$), between younger children and adults ($M = 2.24, SE = .14$), and between older children and adults. With age, participants increasingly responded that subjective identity was transferred from the target character to the body of the recipient. However, in contrast to predictions, neither

label type nor ontological category significantly predicted responses to the subjective identity questions.

To examine the effects of the independent variables on the responses of the child groups only to the subjective identity questions, an initial Repeated Measures Poisson Regression using Generalized Estimating Equation was performed on subjective identity scores with sex (male, female), age group (younger, older), label type (proper name, trait), as between-subjects predictor variables and category (person, dog, stone) as a within-subjects predictor variable. All assumptions were met. There were no significant effects of sex. Subsequently, a Repeated Measures Poisson Regression using Generalized Estimating Equation was performed on subjective identity scores with age group (younger, older, adult), label type (proper name, trait), as between-subjects predictor variables and category (person, dog, stone) as a within-subjects predictor variable. All assumptions were met.

There was a significant prediction of subjective identity by age group ($\chi^2(1) = 13.81, p < .001$). Subjective identity scores increased with age. Younger children ($M = .43, SE = .13$) were less likely than older children ($M = 1.55, SE = .23$), to transfer the subjective identity of the target character to the post-transfer individual. However, in contrast to predictions, neither label type nor ontological category significantly predicted responses to the subjective identity questions.

Explanations for the subjective identity questions were examined concerning whether participants referred to the transfer or to other story descriptions. The goal of the explanation analysis was to determine whether participants made their selections due to an understanding of transferred subjective identity, because of a focus on the appearance of characters and statements in the story, or for other reasons. Explanations were categorized as “transfer” if participants

mentioned the transfer in the story (e.g., the wizard changed them”). Responses were categorized as “story” if participants appealed to the story or repeated descriptions from the story (e.g., “it said so in the story,” “because she was the one who lost her sweater”). Explanations that did not fit into either of those categories, as well as “I don’t know” responses, were labeled as “other.” Justifications were independently coded by the experimenter and a second coder who was unaware of the hypotheses of the study. Inter-rater reliability was 98.78% and disagreements were resolved through discussion. Overall, references to the transfer occurred more often in the older and adult age groups than in the younger age group (See Table 11).

Table 11. Percentages of explanations for subjective identity questions by age group and justification category.

	Transfer	Story	Other
Younger	22.92%	38.54%	38.54%
Older	52.94%	28.76%	18.30%
Adult	67.46%	20.63%	11.90%

4.2.3 Tracking Physical Identity

The transfer scenario was designed to distinguish the physical body from subjective identity, thus, physical identity questions were included in Study 2 to make sure that participants

differentiated between the two. The goal of the physical identity questions was to determine whether participants judged physical identity to stay with the body of the target or to have moved to the body of the transfer recipient. It was hypothesized that regardless of age, label condition, and category of recipient, participants would select the body of the target as bearing physical markers. Thus, responses that included the target character, indicating that the physical identity of the target was judged as remaining with his or her body, received a score of '1.' All other responses received a score of '0.' The variable, physical identity, was created by summing scores for the physical identity questions, with possible values ranging from 0-3.

To analyze the effects of the independent variables on responses to the physical identity questions, an initial Repeated Measures Poisson Regression using Generalized Estimating Equation was performed on physical identity with sex (male, female), age group (younger, older, adult), label type (proper name, trait label), as between-subjects predictor variables and category (person, dog, stone) as a within-subjects predictor variable. All assumptions were met. There were no significant effects of sex on physical identity responses. Subsequently, a Repeated Measures Poisson Regression using Generalized Estimating Equation was performed on physical identity with age group (younger, older, adult), label type (proper name, trait label), as between-subjects predictor variables and category (person, dog, stone) as a within-subjects predictor variable. All assumptions were met.

There was a significant prediction of physical identity by age group ($\chi^2(2), p < .001$). Younger children ($M = 2.33, SE = .17$) and adults ($M = 2.46, SE = .13$) displayed similar levels of continuity whereas older children had scores ($M = 1.36, SE = .23$) that were significantly lower than both younger children and adults as revealed in pairwise comparisons. Both younger children and adults judged that physical characteristics remain with the body of the target

individual. However, older children were more likely to judge that physical characteristics of the target ended up with the recipient, post transfer. This result suggests that older children, in contrast to predictions, were less likely than participants in the other two age groups, to distinguish the physical body from subjective identity in the magical transfer scenarios.

To analyze the effects of the independent variables on the responses of the child groups only to the physical identity questions, an initial Repeated Measures Poisson Regression using Generalized Estimating Equation was performed on physical identity with sex (male, female), age group (younger, older), label type (proper name, trait label), as between-subjects predictor variables and category (person, dog, stone) as a within-subjects predictor variable. All assumptions were met. There were no significant effects of sex on physical identity responses. Subsequently, a Repeated Measures Poisson Regression using Generalized Estimating Equation was performed on physical identity with age group (younger, older, adult), label type (proper name, trait label), as between-subjects predictor variables and category (person, dog, stone) as a within-subjects predictor variable. All assumptions were met.

There was a significant prediction of physical identity by age group ($\chi^2(1) = 8.39, p = .004$). Younger children ($M = 2.33, SE = .17$) were more likely than older children ($M = 1.36, SE = .23$) to judge that physical characteristics remain with the body of the target individual. However, older children were more likely to judge that physical characteristics of the target ended up with the recipient, post transfer. This result suggests that older children, in contrast to predictions, were less likely than younger children, to distinguish the physical body from subjective identity in the magical transfer scenarios.

Explanations for the physical identity questions were examined to determine whether participants justified their responses in terms of the transfer, physical appearance of the character

and statements from the story, or for some other reason. It was expected that the most common explanations for physical identity questions would involve references to the character's appearance or to statements in the story. Explanations for the physical identity questions were coded according to whether the 'transfer' was mentioned (e.g., "because the wizard put her into the stone"), whether appearance or the 'story' (e.g., "it said so in the story that her knee was scraped," "in the picture") was highlighted, or 'other.' Justifications were independently coded by the experimenter and a second coder who was unaware of the hypotheses of the study. Interrater reliability was 96.74% and disagreements were resolved through discussion. Younger children and adults justified their answers by pointing to aspects of the story or to the pictures (e.g., "because it said so in the story") and the appearance of the character more often than the transfer, whereas older children predominantly mentioned the transfer (see Table 12).

Table 12. Percentages of explanations for physical identity questions by age group and justification category.

	Transfer	Story	Other
Younger	25.69%	40.97%	33.33%
Older	50.00%	31.22%	10.78%
Adult	19.58%	79.10%	1.32%

4.2.4 Judgments of Irreplacable Value

The two value questions were primarily asked to examine whether label condition and category influence judgments of the irreplaceable value of the target character’s subjective identity. The idea behind these questions was that if the a proper name highlights irreplaceable value, and if the identity to which that proper name refers gets transferred to a different body, then that body, the body of the recipient, would be selected as more valuable than the other choices. For the first irreplaceable value question (“Who should the Friend leave behind in the woods?”), the correct response was considered any response that did not include the recipient of the target’s subjective identity, indicating that the friend would not want to leave his or her friend’s subjective identity in the woods. Responses to this question that did not include the recipient received a ‘1.

'Responses that included the recipient received a '0.' For the second irreplaceable value question ("Which one does the Friend really want with him/her?"), the correct response was considered to involve selection of the recipient of subjective identity. Responses to this question that included the recipient received a '1' and all other responses received a '0.' An irreplaceable value score was created by summing the scores for the two value questions, with possible values ranging from 0-2.

To analyze the effects of the independent variables on responses to the value questions, a Repeated Measures Poisson Regression using Generalized Estimating Equation was performed on irreplaceable value scores with sex, (male, female), age group (younger, older, adult), label type (proper name, trait label), as between-subjects predictor variables and category (person, dog, stone) as a within-subjects predictor variable. All assumptions were met.

There was a significant prediction of irreplaceable value by age group ($\chi^2(2) = 39.01, p < .001$). Younger ($M = .63, SE = .081$) and older children ($M = .72, SE = .11$) did not differ significantly from each other. Both younger and older groups differed significantly from adults ($M = 1.39, SE = .097$) with adults demonstrating higher irreplaceable value scores, as revealed in pairwise comparisons. This result indicates that adults were more likely than child participants to both successfully track subjective identity across the transfer and to judge that subjective identity as more irreplaceable to a friend.

There was a significant prediction of value by sex ($\chi^2(1) = 3.99, p = .046$). Overall, males had higher value scores ($M = .96, SE = .077$) than females ($M = .73, SE = .084$). The sex X age group interaction was significant ($\chi^2(2) = 12.03, p = .003$). Males had higher value scores than females, and the scores of both males and females were higher among the older age groups. However, pairwise comparisons revealed that the age difference was only significant for females.

Adult female participants demonstrated significantly higher irreplaceable value scores ($M = 1.58$, $SE = .13$) than those in the younger age groups (older: $M = .56$, $SE = .14$; younger: $M = .45$, $SE = .094$), whereas age did not influence the irreplaceable value scores of male participants. In addition, pairwise comparisons revealed that the sex difference in irreplaceable value judgments was only significant for children in the youngest age group, with younger males demonstrating higher irreplaceable value scores ($M = .82$, $SE = .11$) than younger females ($M = .45$, $SE = .094$). These results indicate that in the youngest age group, male participants more often than female participants chose the recipient of the transfer as more irreplaceable than the other characters. In addition, with age, both male and female participants, more often chose the transfer recipient as more irreplaceable.

To analyze the effects of the independent variables on the responses of the child groups only to the value questions, a Repeated Measures Poisson Regression using Generalized Estimating Equation was performed on irreplaceable value scores with sex, (male, female), age group (younger, older), label type (proper name, trait label), as between-subjects predictor variables and category (person, dog, stone) as a within-subjects predictor variable. All assumptions were met. None of the effects were significant.

Explanations for the irreplaceable value questions were coded according to whether or not the transfer was mentioned. Justifications were independently coded by the experimenter and a second coder who was unaware of the hypotheses of the study. Inter-rater reliability was 99.1% and disagreements were resolved through discussion. Adults mentioned the transfer in their explanations of their responses to the value questions more often than both younger and older children (See Table 13). Despite the sex differences observed in responses to the value judgments, there were no sex differences in the explanations of those responses.

Table 13. Percentages of explanations for irreplaceable value questions by age group and justification category.

	Mention Transfer	No Mention
Younger	9.90%	90.10%
Older	29.90%	70.10%
Adult	67.46%	32.54%

4.2.5 Response Patterns

To examine individual response patterns across question types, a new variable of response pattern was created. Participants were coded as to whether or not they understood subjective identity (transferred), physical identity (not transferred), and irreplaceable value. Understanding of subjective identity was marked by a participant's responding that subjective identity was transferred on at least two of the three subjective identity questions; participants who transferred subjective identity on less than two questions were coded as not understanding subjective identity. Similarly, understanding of physical identity was marked by responding that physical identity was not transferred on at least two of the three physical identity questions. And

understanding irreplaceable value was marked by responding that subjective identity was valued on at least two of the three irreplaceable questions.

An initial analysis was conducted to examine the response patterns by age group. Participants' responses were placed into four categories: understanding of all three (subjective identity, physical identity, and irreplaceable value), understanding of only subjective identity and physical identity, understanding of only subjective identity and irreplaceable value, and other. These response categories were selected to observe the number of participants who understood all three question types, those who understood subjective and physical identity as separate although who did not understand irreplaceable value, those who linked subjective identity and irreplaceable value without regarding physical identity as separate, and all other categories of response. A chi-square analysis on age group and category of response type was significant, $\chi^2(6) = 1.69E2, p < .001$. Adults tended to understand both subjective and physical identity as well as irreplaceable value, whereas child participants did not (see Table 14). Some of the older children did demonstrate a response pattern indicating they understood both subjective identity and irreplaceable value, although not physical identity (see Table 14).

Table 14. Category of response pattern by age group.

Age	Category of Response Pattern				Total
	Understand all 3	Subjective and Physical ID only	Subjective ID and Value Only	Other	
Younger	1	0	5	90	96
Older	6	2	32	62	102
Adult	77	3	19	30	129
Total	84	5	56	182	327

Subsequent analyses focused on participants' performance on pairs of questions types: subjective identity and irreplaceable value, subjective identity and physical identity, and physical identity and irreplaceable value. Given that understanding of irreplaceable value as formulated in Study 2, is dependent on understanding of subjective identity, it was expected that performance on irreplaceable value questions would be related to performance on subjective identity questions. To examine whether participants who understood subjective identity also tended understand irreplaceable value, the data was collapsed across age and analyzed by chi-square analysis. A chi-square analysis examining performance across subjective identity and

irreplaceable value questions confirmed a relationship between understanding subjective identity and inferring the irreplaceable value of such identity, $\chi^2 (1) = 3.66E1, p < .001$ (see Table 15).

Table 15. Response patterns across subjective identity and irreplaceable value questions.

	Understand Subjective Identity		
Understand Irreplaceable Value	Yes	No	Total
Yes	77	30	107
No	80	140	220
Total	157	170	327

However, when the same chi-square analysis was run with the child groups only, the result was not significant, $\chi^2 (1) = 3.02, p = .082$. More children did not transfer subjective identity than did, and were split as to whether they judged the post-transfer recipient as irreplaceably valuable.

According to the idea of intuitive dualism, subjective identity is separate from the material body, thus it was expected that participants who understood subjective identity as transferrable in the magical transfer scenario would also judge physical identity as non-transferrable. A chi-square analysis examining performance across subjective identity and

physical questions indicated that the majority of participants who understood physical identity did not understand subjective identity, $\chi^2(1) = 5.94E1, p < .001$. Of the participants who did transfer subjective identity, roughly half also mistakenly transferred physical identity (see Table 16). This result was likely driven by the performance of the child groups. A chi-square analysis examining performance across subjective and physical identity questions with child groups only was also significant, indicating that the majority of children appeared to understand that physical identity was not transferred but were less willing to transfer subjective identity to the recipient, as seen in Table 17, $\chi^2(1) = 1.15E2, p < .001$.

Table 16. Responses across subjective and physical identity questions, collapsed across age groups.

	Understand Physical Identity		
Understand Subjective identity	Yes	No	Total
Yes	89	81	170
No	143	14	157
Total	232	95	327

Table 17. Responses of child groups only across subjective and physical identity questions.

	Understand Physical Identity		
Understand Subjective Identity	Yes	No	Total
Yes	9	61	70
No	115	13	128
Total	124	74	198

Since the irreplaceable value questions were dependent on understanding of subjective identity, it was expected that participants who understood irreplaceable value would also judge physical identity as non-transferrable. A chi-square analysis of the relation between performance on the physical identity and irreplaceable value questions was not significant, $\chi^2(1) = 1.87, p < .17$. Participants who demonstrated an understanding of irreplaceable value were not significantly more likely to also understand physical identity.

4.3 DISCUSSION

Study 2 examined the ability of children and adults to use proper names versus trait labels to track subjective identity across magical transfers differing in degree of ontological distance from the target individual. As predicted, younger children in the proper name condition were better able to track the identity of the target character than those in the trait label condition. In addition,

as predicted, age group was also a significant predictor of subjective identity scores. With increasing age, participants more often identified the transfer recipient as the host of the target character's subjective identity. This result was similar to the pattern observed in Study 1b, as well as the results found in other research on identity (Corriveau et al., 2005; Johnson, 1990). In Study 2, as in those studies, 7-year-old children demonstrated a better understanding of subjective identity as compared to 4-year-old children. The older the participant, the better they were at tracking individual identity regardless of whether a proper name or a category label is used to mark the individual. Taken together, the results suggest that although children are able to track identity using labels, they are better able to do so with proper names than with trait labels, and this ability to track identity does not entail an understanding that subjective identity is connected to the identity to which a proper name refers. However, by 7 years of age, children demonstrate an understanding that name and subjective identity go together.

Although the results of Study 2 suggest that label type influenced younger children's responses to the identity question, whether the transfer involved a proper name or a trait label did not appear to affect responses to subjective identity questions. Previous research has suggested that descriptions are psychologically different from proper names (Garcia-Ramirez & Shatz, 2011), however, the results of Study 2 do not support a distinction between proper name and trait label in terms of use in tracking subjective identity across a magical transfer. Label type did not influence subjective identity scores, suggesting that descriptive labels can serve a similar function to a proper name at least in a restricted context such as the vignettes in Study 2. Although trait labels can serve the function of proper names in a limited context, other contexts, such as an extended narrative, may serve to highlight the distinction between the two.

Study 2 also set out to examine the effect of the ontological category of the transfer recipient on identity tracking. Responses to the identity question were affected by the ontological category of the transfer recipient. Participants in the trait label condition were less likely than participants in the proper name condition to select the transfer recipient as the bearer of the label, especially for the person-to-person and person-to-dog transfers. However, there was no difference between participants in both label type conditions in their responses for the person-to-stone transfer. The results of Study 2 demonstrating that identity was more often viewed as having been transferred for stone more than person or dog, contrast with the findings of Rhemtulla and Hall (2009) that adults' judgments of the persistence of individual identity drop off when transformations occur across ontological boundaries. In Study 2, for participants in the trait label condition, the stone appeared to serve as better recipient of identity than person or dog. Perhaps this finding is due to the stone's lack of a competing trait-relevant identity. A stone does not possess traits such as being nice or loving ice cream, although a person or a dog potentially does possess such traits. If this were the case, it would be expected that ontological category would likewise influence participants' responses to the subjective identity questions. However, ontological category did not emerge as a significant predictor of subjective identity scores.

Study 2 also included physical identity questions to determine whether participants would distinguish between physical identity and subjective identity in a transfer scenario. The results indicated that age group significantly predicted responses to the physical identity questions. The responses of adults and younger children to the physical identity questions did not differ significantly from each other. However, both groups differed significantly from the older children who had lower physical identity scores. It is possible that the older children were interpreting the transfer in a different way than participants in the other two age groups. That is,

older children may have been relying on a model of transfer that involved incorporation of the two bodies. The explanation data shed light on this. Of the explanations older children provided for their responses to the physical identity questions, 50% referred to the transfer, a much higher percentage than found among participants in the other two age groups. These references to the transfer suggest that some older children interpreted that the body of the target character was transferred along with subjective identity. For example, a few children suggested that the target, body and all, was inside the recipient: “The girl’s toe is stubbed, but the girl is inside the rock”; “because [target] was wearing the dress and now she is inside the other girl.” In addition, during a number of the interviews, especially with older children, participants placed the picture of the target on top of the picture of the transfer recipient. Thus, on average, more children in the older age group than younger children or adults, appeared to have interpreted the ambiguous transfer scenario as the merging of two bodies, or the incorporation of one body into another, than as the transfer of subjective identity only.

Another major objective of Study 2 was to explore the influence of age, label, and ontological category on irreplaceable value judgments. Results indicated that the age of participants did influence their irreplaceable value scores. Adults demonstrated higher irreplaceable value scores than both younger and older children. The explanations for the responses to the irreplaceable value questions indicate that there was an increase in mentioning the transfer with age. Thus, as participants increasingly understand the transfer of subject identity, judgments of irreplaceable value follow along with that. In addition, older children and adults used friendship to justify their responses more than did younger children.

Although sex differences in responses to the irreplaceable value questions were not predicted, the analyses revealed that males demonstrated higher irreplaceable value scores than

females. In addition, there was a significant age group by sex interaction, with the age difference in irreplaceable value scores greater for females than for males. Adult female participants demonstrated significantly higher irreplaceable value scores than those in the younger age groups, whereas age did not influence the irreplaceable value scores of male participants. In addition, the sex difference for irreplaceable value was only significant among the youngest age group. The male and female participants in the younger age group may have been focusing on different aspects of the individual in making their judgments, however no difference was observed in the explanation data in Study 2.

Neither label type nor ontological category had an effect on irreplaceable value scores. Whether a character was referred to with a proper name instead of a trait label, did not have any significant effect on judgments about the irreplaceable value of the target individual. In addition, the ontological category of the transfer recipient did not influence participants' judgments of irreplaceable value. However, analyses of response patterns of participants across subjective identity and irreplaceable value questions indicated that the majority of participants who interpreted subjective identity as having been transferred from target to recipient, also judged that subjective identity as irreplaceably valuable.

5.0 GENERAL DISCUSSION

The present research set out to examine the development of the understanding of two functions of proper names: a) the tracking of individual identity and b) the highlighting of the irreplaceable value of an individual. Study 1a investigated children's ability to use proper names to track toys as well as the influence on value judgments of proper names in contrast to other labels. Study 1b compared participants' use of proper name and mind as vehicles for subjective identity in magical transfer scenarios. Building on Study 1b, Study 2 also employed magical transfer scenarios to examine the use of proper name in comparison to trait label as a vehicle for subjective identity. In addition, both Studies 1b and 2 examined the effect of the category of the transfer recipient on both subjective identity tracking and value judgments. Furthermore, the studies also examined the effect of identity vehicle (mind, proper name, trait label) on judgments of value.

5.1 SUMMARY OF THE RESULTS

5.1.1 Proper Names and Tracking Identity

In Study 1a, children were presented with a toy labeled with a proper name and were required to track the toy across changes in location and distinguish it from an identical toy. Previous

research has demonstrated that even young children are able to track named toys in similar circumstances, thus it was expected that even the youngest children would be able to track the toy labeled with a proper name and distinguish it from the toy identical in appearance, but not in label (Sorrentino, 2001). In Study 1a, children were able to distinguish and track a named toy as distinct from an identical toy referred to by a category label. However, the results indicate that the ability to track the named toy was dependent on age. Whereas the majority of the older children were able to use a proper name to track the identity of a toy, the performance of younger children did not differ from chance. In addition, children were more successful at answering the second identity question (“Where is [named toy] now?”). The action immediately preceding this question (throwing away the named toy) may have directed children’s attention to the location of the named toy, resulting in an increase in correct responses. However, the performance of the younger children also suggests that the ability to use proper names to track a toy across changes in location and when presented with an identical unnamed toy, is still developing. In other contexts children younger than four years of age are able to successfully track a named toy. In the present study, the task presented to children was more demanding since it required children to both keep track of a toy across changes in location even when out of sight and distinguish it from an identical toy. In addition, children were not invited to play with the toy and the toy was not an attachment object, therefore young children might have been less motivated to keep track of the toy. Research by Hood and Bloom (2008) has shown that in a task in which children are asked to hand over an attachment object to be duplicated in a special copier box, children are highly motivated to track and distinguish their attachment object from an exact duplicate. However, in that research whether or not those attachment objects were named was not addressed.

Category membership has been shown to be important for whether an entity gets a name and for the basis of identity (Corriveau et al., 2005; Hall et al., 2004; Johnson, 1990; Rhemtulla & Hall, 2009). In the present studies, the category of the named individual was also varied to examine the influence on identity tracking. In Study 1a, children were presented with an animate surrogate, a stuffed elephant, or an inanimate, a toy car. No effect of toy type was found on children's tracking of the identity of the toys. Although toy type was not found to be significant overall, it is possible that the younger children's lower scores in tracking identity could have been influenced by interpreting the proper name as a category label for the toy car. In research with novel labels, children have been shown to interpret these labels as category labels rather than proper names for toys that do not bear any characteristics of animacy (Gelman & Taylor, 1984). Several of the children's spontaneous comments suggested that they might have interpreted the proper name for the car as a category label. For example, when presented with the second toy car, one child asked, "Is that another Lyle?" In contrast, when presented with the second stuffed elephant, one child asked, "What is its name?" perhaps implying that the second toy elephant would necessarily possess a name different from the first elephant (Hall, 1996; Hall & Belanger, 2005; Hall & Graham, 1999).

Ontological category also played a role in children's responses in Studies 1b and 2. In Study 1b, children who heard that a person's mind was transferred to a dog more often judged that subjective identity had been transferred than children who heard only the proper name transferred to a dog. When the recipient was a person, children's responses to the subjective identity questions were not dependent on the vehicle of identity, with no significant difference between proper name and mind. In Study 2, children in the youngest age group in the trait label

condition more often judged that identity was transferred in the person-to-stone transfers than in either person-to-person or person-to-dog transfers.

5.1.2 Understanding Subjective Identity

The present research also examined children's understanding of subjective, mentalistic identity. In accordance with the findings of previous research (Corriveau et al., 2005), it was expected that the ability to track subjective identity would increase between the ages of four and seven. In terms of tracking subjective identity, a shift with age was also observed in both Studies 1b and 2. In Study 1b, the four-year-old participants demonstrated lower subjective identity scores than the seven-year-olds. This result indicates that regardless of the vehicle of subjective identity employed in the stories, four-year-olds were less willing than seven-year-olds to respond that aspects of the target character's subjective identity were transferred to the body of the transfer recipient. Similarly, in Study 2, age differences in subjective identity scores were also observed. Older children performed significantly better than younger children on the subjective identity questions, and adults performed better than older children. With age, participants more often responded that the target character's subjective identity was transferred to the body of the transfer recipient. The results of Study 2 suggest that regardless of the label used to refer to the target character, identity tracking continues to improve in middle childhood. The results of both Studies 1b and 2, concur with the findings of previous research examining identity that also observed developmental differences in the understanding of mentalistic subjective identity between 4- to 5-year-olds and 7-year-olds (Corriveau et al., 2005; Johnson, 1990).

Although it was expected that there would be a general increase in the understanding of subjective identity with age, the primary goal of Study 1b was to determine if young children would be able to use a proper name as a vehicle for subjective identity before being able to do so with mind. Given children's early understanding of proper names, their ability to use proper names to track individuals, and the intuitive distinction between mentalistic agents and non-agents (intuitive dualism), it was predicted that children in the younger age group would have greater success in tracking subjective identity across a magical transfer by using a proper name rather than mind as the vehicle of identity. The results of Study 1b indicated that both 4- and 7-year-old children, when asked about the location of the named character after the transfer, were better able to track the identity with proper names than with mind. However, the ability to use a proper name to track identity does not entail an understanding of the link between a proper name and subjective identity. In contrast to expectations, younger children in Study 1b demonstrated greater difficulty than older children in using a proper name in contrast to mind, to track individual identity across a transfer. Older children were able to track individual identity equally well for both proper name and mind. The results of Study 1b, concur with those of previous research (Corriveau et al., 2005; Johnson, 1990) demonstrating a similar developmental change in the understanding of subjective identity between the ages of 4 and 7. The results of Study 1b further show that in a magical transfer scenario, even 4-year-olds can track identity, although not subjective aspects of identity, using a proper name. Thus young children who already have an understanding of the link between proper names and identity but do not yet fully grasp subjective identity, can use proper names as a vehicle for identity and track that identity in situations like the stories in Studies 1b and 2. It is possible that the understanding of subjective identity and other forms of immaterial identity, such as soul, build on this foundational understanding of

identity. However, the results of Study 1b also imply that measures relying solely on names are limited in gauging children's understanding of subjective identity and other potential concepts of immaterial identity. Young children might already have a proto-understanding of immaterial identity that becomes elaborated with development.

Why did younger children have such a difficult time with using a proper name as a vehicle for individual subjective identity? Younger children appeared to have an easier time understanding mind as a vehicle for mentalistic aspects of identity. Other research has shown that young children associate mental stuff with the mind (Corriveau et al, 2005). However, a proper name encompasses much more: it refers to the body, the mind, the soul, the person in all possible words. The proper name scenarios were ambiguous concerning what exactly the wizard transferred from the target character to the recipient. Younger children might have been focused on the body and appearances, whereas older children, by 7-8 years of age, were more likely to infer that the proper name in that instance served as a vehicle for subjective identity. In the proper name condition, many of the older children, as well as some of the younger children, spontaneously offered comments that suggested that they interpreted the scenarios as involving a transfer of mind, brain, or soul. One seven-year-old justified his answer to a subjective identity question by explaining that the characters had "switched souls." Another explained that the target character's "brain went into the dog's brain."

Alternatively, children might think of mind in more categorical terms and proper names in more individual terms. Every person has a mind that functions more or less similarly; just the contents tend to vary. However, proper names are individual and refer to individuals (despite some people sharing the same proper name). Thus, the difference in performance for mind and proper name among younger children may point to importance of categorical understanding for

disambiguating a situation like that in the magical transfer stories. A transfer of a mind is easier to conceptualize because there are many minds out there. Proper names do not help disambiguate the situation because they refer to the individual as complete. How can Sally as an individual get transferred? What does it mean when “Sally” (in contrast to “her mind”) gets transferred? To what does “Sally” refer? The younger children were not as good at disambiguation, but with age they develop a better understanding of underlying traits and characteristics as comprising individual identity (Johnson, 1990).

Could an underlying trait, one aspect of identity, be used to track subjective identity across a magical transfer? The philosophical literature suggests that trait labels and proper names serve distinct functions (Garcia-Ramirez & Shatz, 2011; Jeshion, 2009). In Study 2 trait labels were contrasted with proper names as potential vehicles for individual subjective identity. In terms of tracking identity, when asked to select the location of the labeled target character, younger children in the trait label condition chose the transfer recipient less often than those in the proper name condition. Thus, at least for 4-year-old participants, proper names promoted better tracking of identity than trait labels. However, in terms of subjective identity, the results of Study 2 indicated that participants in all age groups used proper names and trait labels equally well to track subjective identity in the transfer scenarios. Although proper names and trait labels theoretically serve different functions, in Study 2, participants were able to use both types of labels to individuate and track the identity of the labeled character. This result supports Jeshion’s (2009) observation that “[d]escriptive names seem to behave in language as *bona fide* proper names” (p. 388). Within the limited context of the stories, participants were able to use trait labels, such as “the smart boy,” to track the subjective identity of a character. The results thus suggest that other labels can serve a purpose similar to proper names at least in a limited context.

However, Jeshion (2009) also maintains that proper names still add something more than mere descriptions or descriptive labels. Perhaps within a more complicated context, such as an extended narrative, trait labels might falter in their usefulness to track individuals. In a classroom full of smart boys, the label of “the smart boy” is not all that useful in helping to track the identity of one particular smart boy.

In Study 2, the tracking of physical identity was also examined to determine whether participants would view the transfer as resulting in the separation of the physical and subjective aspects of the target character. The results of Study 2 indicated that younger children and adults similarly judged the physical aspects of the target character as remaining with the target’s body after the transfer. However, the physical identity scores of the older children differed significantly from both the younger children and the adults, with the older children displaying lower physical identity continuity scores. The older children were more likely than the other two age groups to respond that aspects of the target character’s physical identity were transferred to the body of the recipient. On closer examination, older children may have interpreted the transfer more as incorporation or fusion of two bodies, rather than as the mind of the target going into a different body. Older children often mentioned the transfer in their explanations of their responses to the physical identity questions. Some of the explanations of the older children hint at such an interpretation: “because he is in dog’s stomach,” “because she [the target] was wearing the dress and now she is inside her [the other girl].” Although the younger children and the adults did not differ significantly in terms of physical identity scores, it is unlikely they were interpreting the transfer in the same way. Overall, the younger children appeared to be more focused on appearance, leading to higher physical identity continuity scores, and lower subjective identity continuity scores. Adults demonstrated a clear understanding of the separation

of subjective identity and body, with high scores for both subjective and physical identity. Older children displayed a different pattern, with relatively high scores for subjective identity and low scores for physical identity.

In the identity literature, category membership has been shown to be important for whether an entity gets a name and for the basis of identity (Corriveau et al., 2005; Hall et al., 2004; Johnson, 1990; Rhemtulla & Hall, 2009). In addition, research examining value judgments has demonstrated that the degree of agency of an entity affects value judgments of that entity. In the present studies, the category of the named individual was also varied to examine the influence on identity tracking and subjective identity scores.

In Studies 1b and 2, the category of the transfer recipient was varied to examine the role of category in providing a basis for identity, that is, whether continued category membership is necessary for identity continuity as proposed by both Macnamara (1982) and Xu (2007). In Study 1b, the category involved in the transfer was found to have a significant effect on subjective identity scores. Overall, participants more often inferred that subjective identity was transferred from a person to another person than from a person to a dog. This finding contrasts with that of Rhemtulla and Hall (2009) who found that adults judge identity as persisting more for cross-basic category than for within-basic category transformations. The finding also contrasts with that of Johnson (1990) who found that children were better able to understand the transfer of subjective identity in a brain transplant between a child and a pig, than between a child and another child. However, the findings of the present research concur with the findings of Liittschwager (1995) who observed in four-year-olds, a decrease in persistence of identity judgments from changes in appearance to ontological change. In Study 2, despite a similar procedure to Study 1b and the addition of an inanimate object as a transfer recipient, the

significant effect of ontological category on subjective identity was not replicated. However, the results of Study 2 did include an effect of ontological category on responses to the identity question. Children in the youngest age group in the trait label condition more often viewed identity as having been transferred in the person-to-stone transfer than in the transfers involving another person and a dog. For those children, the stone served as a better recipient for identity than either another person or dog. It is possible that a stone that does not possess pre-existing traits to compete with those of the incoming identity. Dogs and people can be nice and like ice cream, whereas stones do not possess such traits.

5.1.3 Irreplaceable Value and Proper Names

One of the main objectives of the present studies was to explore the influence of proper names on judgments of irreplaceable value. Based on anthropological evidence, it was proposed that a proper name confers or highlights irreplaceable value in a way that other kinds of labels do not (Vom Bruck & Bodenhorn, 2006). It was expected that individual toys and characters marked with proper names, in contrast to trait labels, category labels, and category labels marked with possessive pronouns signifying ownership, would be judged as uniquely valuable, and thus less replaceable. Age was not predicted to influence judgments of irreplaceable value.

In Study 1a, in contrast to the hypothesis, there was evidence that age group predicted children's responses to the open-ended value question and the two questions in the first value phase of the task. Younger children were more likely than older children to provide a response of "I don't know", no response, or some other unclassifiable response, than even to suggest replacing the toy. Thus, younger children did not evidence a clear value stance in their answers to the open-ended value question. Analysis of the responses to the first set of value questions

also revealed an age difference in value judgments of the named toy with younger children were more willing than older children to replace the toy. The relation between identity tracking and value judgment was not significant, so there is not a clear link between younger children's tracking of identity and their greater willingness to get rid of toys that are old and worn. Age difference in irreplaceable value judgments were also found in Study 2, although not in Study 1a. In Study 2, adults were more likely than child participants to both successfully track subjective identity across the transfer and to judge that subjective identity as more irreplaceable to a friend.

The results of Study 1a indicated that toy type also predicted children's responses to whether or not the toy was replaceable. More children responded that the toy car was replaceable than that the stuffed elephant could be replaced. Since the stuffed elephant was an animate surrogate and the toy car lacked features of animacy, this finding is consistent with other research that has demonstrated that higher degrees of agency are more valued (Gray et al., 2007).

Although toy type influenced irreplaceable value judgments, in contrast to expectations, when the toy with the proper name was pitted against the identical toy referred to with a label, children did not judge the toy with the proper name to have any greater irreplaceable value than the other toy. That is, when choosing which toy should be thrown away, children were equally likely to choose the toy with the proper name than the one referred to with a category label or possessive pronoun.

Judgments of irreplaceable value were also examined in Studies 1b and 2. It was expected that the target character's subjective identity would be judged as more valuable than his or her body. In both of those studies, there were no effects of label, age, or category on the irreplaceable value scores. In Study 2, proper name did not appear to confer extra value in comparison to a trait label. It is possible that the particular irreplaceable value questions used in

Study 2 were not alone sensitive enough to capture the way in which proper names highlight and/or confer value on individuals. Other types of questions, similar to those presented by Gray and colleagues (2007), such as “which character do you like best?,” “which one would you give resources to?,” etc., might offer a clearer picture of value. In addition, some of the participants reflected in their explanations of their responses that they did not like the questions because they thought it was not right to leave a character behind: “you shouldn’t leave a person in the woods” (7-year-old), “These are hard questions because the dog is living. Millie would take both” (7-year-old), “she shouldn’t leave anyone in the woods” (adult), “none [should get left behind]. That’s just mean” (adult). Other participants, especially among the older children, responded that it did not make sense because they interpreted the transfer as a bodily incorporation, so there really wasn’t anyone the friend could leave behind. In addition, a number of the child participants expressed that they did not like the question that required them to choose which character the friend would select to be left behind in the woods because they considered such behavior to be mean. These concerns of the child participants highlighted a conflict between individual value and fairness inherent in that particular irreplaceable value question.

5.2 IMPLICATIONS AND LIMITATIONS OF THE FINDINGS

The present research set out to examine the foundations of conceptions of subjective identity as potentially emerging from proper name understanding as well as the development of children’s ability to use proper names to track identity and recognize the connection between proper names and irreplaceable value. It was proposed that children might be able to use proper names as a vehicle for tracking subjective identity before they are able to do so with mind, given that even

young children understand proper names and distinguish them from other kinds of words, infants distinguish between agents and non-agents, and that children are more likely to give names to animates. However, the results of the present study indicate that although young children more successfully track identity using a proper name than mind, they are better able to use mind as a vehicle for subjective identity in magical transfer scenarios. The drastic changes depicted in Studies 1b and 2 are unusual and do not occur in children's daily lives, although children would be familiar with such changes from fairytales, folktales, and religious stories. For example, young children are exposed to stories like the frog prince fairytale and "Sylvester and the Magic Pebble" (Steig, 1987) in which magical transformations result in the subjective identities of the title characters housed in bodies that differ categorically from their original ones. Furthermore, many cultures demonstrate beliefs in spirit possession in which the subjective identity of a person or of a supernatural agent takes over the body of another person (Cohen, 2007). Although children may have experience with such stories and phenomena, the stories used in the present study also required children to draw on their understanding of magical sorts of events. There are plenty of more mundane examples of drastic change that could be presented to children in which understanding of magic would not be a prerequisite or a confound. For example, in stories, without the aid of pictures, readers are often required to track the subjective identity of a character across a narrative in which that character experiences any number of physical and psychological changes. In addition, children are also exposed to drastic biological change, such as the life cycle of a butterfly. Making the link between proper names and subjective identity is important for understanding stories that require keeping track of a character's subjective identity in a narrative. Future research should examine children's ability to track named individuals across more mundane physical, biological, and psychological changes.

In addition, in the present research, the transfer scenarios involving proper names (and also trait labels) were created to be intentionally ambiguous. The story did not explicitly relate what aspect of the target character the wizard transferred to the body of the recipient, although the assumption was that subjective identity was what changed from target to recipient. The majority of adult participants, and many of the child participants also made this assumption. However, there were also a number of unanticipated interpretations of the transfer scenarios, especially among the older children. It is possible that in terms of individual identity, children draw on certain motor-based schemas (Lakoff & Johnson, 1980) that underlie object tracking (Bulot & Rysview, 2007) to frame abstract ideas such as those involved in the transfer stories. Children may first make sense of mind or identity using these motor-based object schemes. There are a number of schemas they can use, such as container (Gottfried et al., 1999). Sometimes these schemas allow for success in a task, but at other times they lead to confusion. In addition, Cohen and Barrett (2008a; 2008b) have proposed that there are several ways to conceptualize spirit possession, such as the fusion of two subjectivities, the displacement of one by another, or even an oscillation in which the two spirits fight for control of the body. In research by Cohen and Barrett (2008a; 2008b), participants were presented with hypothetical spirit possession scenarios in which the mind of one character went into the other character. The majority of adult participants in Cohen and Barrett's (2008a; 2008b) studies demonstrated a displacement model of mind possession.

Although the follow-up questions in Studies 1b and 2, were not geared toward revealing the conceptual model underlying participants' judgments, the explanation data revealed variation in participants' interpretations of the transfer. The explanations children gave to justify their responses in Studies 1b and 2 reveal some of these schemas and models. The majority of

participants simply mentioned a one-way transfer suggestive of displacement (e.g., “her mind is in the other girl,” “Hank is in that rock,” “the fairy got the brain to this brain”), with no mention of the possibility of two minds occupying the same body. Some of the participants interpreted the transfer as a switch between the target and the recipient: “because he got switched,” “they transformed bodies,” “because they switched bodies,” “because the wizard changed their bodies,” “because they switched souls,” “because the dog and the girl switched.” Also among these interpretations was bodily incorporation of the target character into the body of the recipient: “because [the target] is in the dog’s stomach,” “he’s [the target] stuck inside of him [recipient],” “because [the target] got the scar in her body and now it is in [recipient’s] body.” There was also evidence of mental fusion, with one 7-year-old explaining that “when Cleo goes inside then her feelings are inside the dog and the dog’s feelings are also still inside.” Thus, at least when an explicit schema for identity, such as mind, is not offered, participants, especially children, appear to come up with a variety of interpretations, drawing on a variety of schemas and models. Future research should explicitly examine the various schemas children employ in subjective identity transfer scenarios, including whether children also prefer a displacement model of possession or whether there are developmental changes in conceptualizing transfers of subjective identity.

The results of Studies 1b and 2 support that idea that the intuitive dualism that has been argued to underlie conceptions of personhood is more complex than a simple separation of mind and body. Research examining conceptions of mind, soul, and, more recently, spirit, suggests that conceptions of personhood and personal identity are complex and vary cross-culturally (Richert & Harris, 2008; Roazzi, Nyhof, & Johnson, submitted). It has been proposed that proper names may promote a kind of psychological essentialism for individuals (Gelman, 2003; Richert

& Harris, 2008). The results of the present research suggest that young children do not treat proper names as equivalent to minds when it comes to the transfer of individual subjective identity. When presented with an ambiguous transfer scenario, young children do not assume, as do older children and adults, that proper names refer to a subjective identity. Thus, with age, participants did appear link interpret proper names to the mentalistic, subjective aspect of individual identity in contrast to bodily identity. Future research should examine how proper names function in contrast to mind or soul in afterlife beliefs in contrast to magical transformations. To what does a person's proper name refer once that person has died? The body? Or something else like mind or soul?

The results of the present research also provided evidence that identity does not necessarily break down if the category of the individual changes, as suggested by the sortal-first view of object identity (Macnamara, 1982; Xu, 2007). However, the view that identity is rooted in category membership and that continuity of category membership is necessary for identity to be maintained, primarily concerns the identity of objects and bodies. Mentalistic agents are different, especially if intuitive dualism is taken into account. If minds and bodies are separable, the identity of an agent is not necessarily constrained by a body. As the present studies and prior research (Corriveau et al., 2005) have shown, identity construed as thoughts, memories, knowledge, and preferences, is viewed as separable from the body. Children and adults are able to think about the mind of a person as being transferred and still functioning in the body of a dog and even a stone. However, these results do not mean that categories are not important for thinking about individual subjective identity. In the present research, younger children were better able to understand subjective identity transfer when presented as a transfer of mind than when presented as the more ambiguous transfer of proper name. In the more ambiguous transfer

scenarios involving proper names and trait labels, older children and adults likely inferred some sort of category of vehicle for subjective identity, such as mind, brain, or soul, things that it is assumed all agents possess.

The present research set out to explore children's understanding of the connection between an object's having a proper name and its possessing value. In the anthropological literature, there is a clear link between names and value. For example, in naming a fetus, parents reflect that they already consider it to be a unique, irreplaceable individual, whereas, choosing not to name one fetus among several, may make it emotionally easier to terminate that fetus (Layne, 2009). However, the results of the studies did not demonstrate an effect of label on irreplaceable value judgments. One limitation of Studies 1b and 2, involving the transfer scenarios, was that the irreplaceable value of the character with the proper name was not directly compared with that of the character bearing other labels. An additional limitation of the studies was that the stories and the value questions might not have been sensitive enough to capture the way in which proper names highlight and/or confer value on individuals.

There a number of ways that value might be defined and measured. For example, in research examining understanding of authentic objects, value was measured by asking participants about the monetary value, desirability of objects, and whether the object deserved to be put in a museum (Frazier & Gelman, 2009; Frazier, Gelman, Wilson, & Hood, 2009; Hood & Bloom, 2008; Johnson & Jacobs, 2001). However, asking questions to ascertain the value of individual agents differs in some ways from asking those questions of authentic objects. Although history and relationship contribute to the value of both agents and authentic objects, there are also ways in which the valuing of those entities differs. One measure of the value of authentic objects is monetary (Frazier et al., 2009). In the past some people may have been

valued in terms of monetary worth, but now we would consider such valuation as crass and unethical. Ethical considerations were reflected in the explanations of several participants in Studies 1b and 2 who stated that they did not like the value question requiring them to choose one character to be left behind because they thought it was be mean. Gray et al. (2007) took a more positive approach to measuring participants' value judgments of agents by asking questions such as, "which character do you like best?," "which one would you give resources to?."

This distinction in measuring value between objects, authentic and otherwise, and agents raises the question of how children view the object-agent distinction when it comes to judging value. The way people think about objects and agents is flexible. Adults, in contrast to 5-year-olds, include more objects in the category of nameable entities (Hall et al., 2004). In addition, adults name their cars and talk to their computers. Although adults may treat objects as animate, they also have been known to objectify and dehumanize other people. Examples from the anthropological literature suggest that proper names can contribute to the validation of the individual's personhood and the denial of a proper name may lead to dehumanization and objectification (Scheper-Hughes, 1996). In conversation, a person can make choices concerning how to refer to an individual to send a message concerning how that person values that individual. For example, as Jeshion (2009) has pointed out, in one of the 2008 presidential debates, John McCain referred to Barack Obama as "that one," and this choice of label was taken by many as intended to belittle Obama. Of course, there are other labels that may be used to show respect, such as titles and honorifics, or to demean, such as nicknames and name-calling (Brewer, 1981; Crozier & Dimmock, 1999). However, proper names uniquely highlight individuality. Future research should examine whether children are sensitive to the effect of

various labels, especially nicknames, and whether the use of different labels affects how they think about agents and objects.

The present research indicates that even young children are able to use proper names to track identity and that this ability continues to develop with age. The present research contributes to identity research by demonstrating that children as young as 4 years of age are able to use proper names to track identity, but not subjective, mentalistic identity, across a magical transfer. In ambiguous transfer scenarios, children draw on a variety of schemas, not all of which lead to success in the task. With increasing age, children come to link labels for individual agents, such as proper names and trait labels, with subjective identity. Future research is required to examine the variety of ways in which children conceptualize individual immaterial identity, including subjective identity, and how these conceptions change with age. Furthermore, although there was no conclusive evidence in the present studies that proper names contribute to judgments of irreplaceable value, recognition of irreplaceable value appears to increase with age, although the connection between proper names and irreplaceable value was only evident in the responses of adults. However, several comments by children suggested that they are not insensitive to the contributions of names and relationships to the irreplaceable value of toys and agents. Future research is required to examine whether and how children distinguish between the value of objects and agents, and if proper names play a role in how these entities are perceived.

APPENDIX A

SAMPLE TRANSFER SCENARIOS AND QUESTIONS FROM STUDY 1B

Paragraph. Sample 1: Person-to- Person Transfer - Mind Condition-Girl

Pictures of three different people. Pointing to one picture, This is Sally. She likes to make lots of friends. Today she is happy because it is her birthday. She knows that in a special part of the woods there are yummy berries. *Pointing to the other picture* This is Sally’s friend Juniper. *Pointing to the third picture* This is another girl. One day Sally, Juniper and the other girl went for a walk in the woods. While they were walking they met a wizard. The wizard said “abracadabra” and put her mind in the other girl’s body. Now her mind is in the other girl’s body. Juniper saw everything that happened.

Comprehension Checks: Which one looks like Sally?

Which one is Juniper?

What did the wizard do?

Identity Question:

Where is Sally now?

Subjective Questions:

Which one now feels happy because it is her birthday?

Which one now knows where the yummy berries are?

Which one now likes to make lots of friends?

Irreplaceable Value Questions:

Which one should Juniper leave behind in the woods?

Which one does Juniper really want with her?

Sample 2: Person –to-Dog Transfer – Proper Name Condition-Boy

Pictures of two different people and one dog. Pointing to one picture, This is Cal. He knows all the answers to the questions his teacher asks. He is sad today because he could not find his favorite orange sweater to wear. He knows that his grandma knit it just for him. Pointing to the other picture This is Cal’s friend Mick. Pointing to the third picture This is a dog. One day Cal, Mick and the dog went for a walk in the woods. While they were walking they met a wizard. The wizard said “abracadabra” and put Cal in the dog’s body. Now Cal is in the dog’s body. Mick saw everything that happened.

Comprehension Checks: Which one looks like Cal?

Which one is Mick?

What did the wizard do?

Identity Question:

Where is Cal now?

Subjective Questions:

Which one now feels sad today because he couldn’t find his sweater?

Which one now knows his grandma knit the sweater for him?

Which one now knows all the answers?

Value question:

Which one should Mick leave behind in the woods?

Which one does Mick really want with him?

APPENDIX B

SAMPLE TRANSFER SCENARIOS AND QUESTIONS FROM STUDY 2

Sample 1: Person-to-Dog Transfer – Proper Name Condition-Boy

Pictures of two different people and one dog. Pointing to one picture, This is Cal. He knows all the answers to the questions his teacher asks. He has a scrape on his knee. He is sad today because he could not find his favorite orange sweater to wear. He knows that his grandma knit it just for him. Pointing to the other picture This is Cal’s friend Mick. Pointing to the third picture This is a dog. One day Cal, Mick and the dog went for a walk in the woods. While they were walking they met a wizard. The wizard said “abracadabra” and put Cal in the dog’s body. Now Cal is in the dog’s body. Mick saw everything that happened.

Comprehension Checks: Which one looks like Cal?

Which one is Mick?

What did the wizard do?

Identity Question:

Where is Cal now?

Subjective Questions:

Which one now feels sad today because he couldn’t find his sweater?

Which one now knows his grandma knit the sweater for him?

Which one now knows all the answers?

Physical Identity Questions:

Which one now has _____ hair

Which one now is wearing a _____ shirt ?

Which one now has a scrape on his knee?

Irreplaceable Value Questions:

Which one should Mick leave behind in the woods?

Which one does Mick really want with him?

Sample 2: Person-to- Person Transfer – Trait Condition-Girl

Pictures of three different people. Pointing to one picture, This is the nice girl. She makes lots of friends. She remembers going to the beach last summer with her friends. She has a scar on her elbow. This morning she lost her favorite doll so she is feeling sad. Pointing to the other picture This is her friend. Pointing to the third picture This is another girl. One day the girls went for a walk in the woods. While they were walking they met a wizard. The wizard said “abracadabra” and put the nice girl in the other girl’s body. Now the nice girl is in the other girl’s body. The friend saw everything that happened.

Comprehension Check: Which one looks like the nice girl?

Which one is the friend?

What did the wizard do?

Identity Question:

Where is the nice girl now?

Subjective Questions:

Which one now feels sad because she lost her favorite doll?

Which one now remembers going to the beach?

Which one now makes lots of friends?

Physical Identity Questions:

Which one now has _____ hair?

Which one now is wearing a _____ dress?

Which one now has a scar on her elbow?

Irreplaceable Value Questions:

Which one should the friend leave behind in the woods?

Which one does the friend really want with her?

Sample 3: Person-to-Stone Scenario – Proper Name Condition - Boy

Pictures of two different people and one stone. Pointing to one picture, This is Hank. He loves to eat all flavors of ice cream. He knows that when he goes to grandma’s house, he always gets to eat ice cream. He stubbed his toe. He is feeling a little sick today. Pointing to the other picture This is Hank’s friend Nolan. Pointing to the third picture This is a stone. One day Hank and Nolan took the stone and went for a walk in the woods. While they were walking they met a wizard. The wizard said “abracadabra” and put Hank in the stone. Now Hank is in the stone. Nolan saw everything that happened.

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