WHAT'S IN A NAME?: PRESCHOOLERS TREAT A BUG AS MORAL AGENT WHEN IT HAS A PROPER NAME

By

Hailey Luralyn Pister

Honors Thesis

Appalachian State University

Submitted to the Department of Psychology

And the Honors College

In partial fulfillment of the requirements for the degree of

Bachelor of Science

December, 2017

Approved by:

_____

Robyn Kondrad, Ph.D, Thesis Director

_____

Jack Kwong, PhD, Second Reader

_____

Andrew Smith, Phd, Psychology Honors Director

_____

Jefford Vahlbusch, Ph.D., Dean, The Honors College

What's in a Name?: Preschoolers Treat a Bug as a Moral Agent when it has a Proper Name

Hailey Pister

Appalachian State University

Abstract

Children encounter anthropomorphized objects on a daily basis: in advertisements, media, and books. Past research suggests that features like eyes or displaying intentional, goal-directed behaviors, increases how humanly non-human agents are perceived. When adults and children anthropomorphize, they become more socially connected and empathetic towards those entities. In advertising, this anthropomorphic effect is used to get people to connect with the product. This thesis explores what effect anthropomorphizing might have on preschoolers' moral reasoning about those entities, and suggest that it increases the likelihood that children will explain non-human agents' harmful actions in a moral sense. Specifically, the present study examines the anthropomorphic effect of a proper name on moral reasoning in preschoolers. Four- and 5-year-olds who heard a story about a caterpillar named "Pete" who was killing plants in their garden were more likely than children who heard about a "caterpillar" to think it was appropriate to squish it. We argue that because children believed Pete could experience the world (e.g., emotions) and had agency (e.g., intentional action) more so than an unnamed caterpillar, then Pete could also be held morally accountable for its harmful actions. A proper name has an interesting effect on preschoolers' moral reasoning about non-human agents.

What's in a Name?: Preschoolers Treat a Bug as a Moral Agent when it has a Proper Name

As the sole survivor of a plane crash, Tom Hanks, in the movie, *Castaway*, lived alone for four years on a small, unpopulated island. He became so desperate for human interaction that he anthropomorphized a volleyball: he drew a face on it, named it Wilson (after the brand), and developed such an emotional connection that he mourned its loss when it washed away. In this example, naming the ball seemed to be a key feature that helped Hanks develop a humanlike attachment to it. A name seemed to transform the volleyball into something capable of humanlike capacities such as feeling emotions or having ideas. Past research has shown that giving humanlike characteristics, such as eyes or goals, to non-human agents leads to increased emotional connection (Serpell, 2002), increased empathy and understanding towards the agent (Harrison & Hall, 2010), and increased moral attributions and responsibilities placed on the agent (Waytz, Heafner & Epley, 2014; Epley, Waytz & Cacioppo, 2007). But there is little research specifically examining the anthropomorphic effect that a proper name has on people's attributions of humanlike qualities to non-human agents.

This thesis is part of a larger project with adults and preschoolers that explores the effect of naming a non-human agent, like an insect, on attributions of human, and especially moral capacities. Specifically, this project examines whether naming a caterpillar that is killing garden plants will lead preschoolers to treat the caterpillar in a more humanlike way than one that is not named: expecting it to be able to think about and be morally culpable for its behavior and to experience emotions like pain or fear.

Anthropomorphism is the tendency to attribute humanlike characteristics, like having emotions or intentional behavior, to non-human agents (Epley, Waytz & Cacioppo, 2007).

Previous research on the effects of anthropomorphism in adults has found that anthropomorphizing can have important consequences for people's judgments and behaviors related to the non-human agent. For example, advertising posters about environmental conservation that were anthropomorphized with features like eyes, mouths, and emotional distress led adults to express more support for the environment, more willingness to purchase environmentally-friendly products, and to feel more connection with nature than posters that were not anthropomorphized (Tam, Lee, & Chao, 2013). Adults rate technology, such as automated vehicles, as more reliable when the vehicle is anthropomorphized with a name, gender, and voice than when it is not (Waytz, Heafner, & Epley, 2014). Similarly, pet owners who anthropomorphize their pets experience more emotional connectedness, empathy (Harrison & Hall, 2010) and responsibility for that pet's well-being (Serpell, 2002) than pet owners who anthropomorphize their pets less often. Anecdotally, food-source animals are usually not given names, presumably for the opposite effect: less emotional connectedness and sense of responsibility, making it easier to kill and eat them. The point is that making non-human agents more humanlike changes how adults view the agent, their expectations about it, and how they treat it.

Anthropomorphizing changes the way adults explain events, particularly those that they would not otherwise understand because adults attribute humanlike mental abilities to the anthropomorphized agent. Attributing human mental abilities, like having beliefs or feelings, to non-humans helps adults to apply their previous knowledge and experiences to explain ambiguous actions of non-humans (Epley et al., 2007). For instance, Waytz, Epley, Monteleone, Gao, and Cacioppo (2010) found that when a computer inexplicably crashed on a regular basis, people explained those events by giving the computer human capabilities,

such as "having a mind of its own". The more unpredictable the "behavior" of the computer, the more humanlike mental abilities the adults applied to it. The more predictable the behavior, adults rated the computer as lacking a "mind of its own" as well as not being able to act on its beliefs. A similar effect was found when adults interacted with unpredictable robots (Waytz et al., 2010). Adults asked a robot any 10 yes-or-no questions of their choosing. The robot's responses were rigged to answer "yes more", "no more", or "yes" and "no" equally. When robots were unpredictable in how they responded, participants explained the behavior by attributing human capacities to it (i.e., free will, consciousness, intentions, beliefs). In contrast, when the robot's responses were predictable, participants claimed that the robot was stable and easier to control.

Adults are more likely to treat non-human agents as moral agents who are worthy of care and concern when they are anthropomorphized. For example, Ahn, Kim, and Aggarwal (2014) showed adults a lightbulb that had humanlike features (nose, mouth, eyes) and held a sign with the message, "I'm burning hot, turn me off when you leave!". Compared to a lightbulb that lacked humanlike features, adults were more likely to turn the lightbulb off and felt more anticipatory guilt for noncompliance. The authors argue that adults may be attributing more moral considerations to a humanlike lightbulb and as a result feel more obligated to turn it off to protect it from harm.

Complementing this argument, Waytz, et al., (2014) found that adults applied more blame to an anthropomorphized autonomous vehicle when it made a mistake than a non-anthropomorphized one. Adults participated in a driving simulator in which the car was either the car was either agentic (having control of its speed and steering), anthropomorphized (having same controls as agentic but also possessing a name, gender, and

voice), or a normally operating car (Waytz et al., 2014). While in this driving simulator, the vehicle was involved in an accident and adults were asked to rate how much they blamed the car, as well as how much they trusted and liked the vehicle. Results showed that adults rated the agentic and anthropomorphized vehicles as more trustworthy and likable than the normal vehicle, but adults also placed more blame on the agentic and anthropomorphized vehicle for the accident. When an autonomous vehicle could control its actions, adults treated it as a moral agent that was responsible for those actions.

Like adults, children's expectations about non-human agents change when agents are made more humanlike. In one study, infants as young as six months were shown wooden shapes with googly eyes that were moving up and down a ramp. One shape made several unsuccessful attempts to climb the ramp, and was either pushed down or helped up by two other anthropomorphized shapes. Later, when infants were given an opportunity to interact with the helpful or harmful shape, they avoided the harmful one (Hamlin, Wynn, & Bloom, 2010). Interestingly, infants did not have the same reaction when the googly eyes were removed and the shapes became inanimate objects as they did to the humanlike shapes that seemingly had goals and emotional life (Hamlin et. al, 2010; see also Hamlin, 2015). In other words, anthropomorphizing the shapes led infants to hold them morally accountable for their actions the way they do with humans– at least to the extent that they "punished" the harmful shape using social exclusion. They did not imbue human abilities like intentional behavior when the shapes were dehumanized and thus did not consider morals as an explanation for the way the shapes moved on the ramp (Scarf, Imuta, Colombo, & Hayne, 2012).

This link between moral accountability and humanness is even more developed in preschoolers. The more humanlike the non-human agent is, the more control children believe

it has over its own actions Preschoolers have been shown to attribute goals and intentionality when encountering a humanlike robot (Kamewari, Kato, Kanda, Ishiguro, & Hiraki, 2005). Somewhat older children become more selective with the human attributes they project onto non-human entities even when they are anthropomorphized. For example, 4 and 5-year-old children expected a named robot to have goal directed behaviors and biologically living qualities (e.g. being "alive"), but did not attribute those capacities to other types of machines, like an anthropomorphized TV, (Somanader, Saylor, & Levin, 2011).

Older children are mixed as to the extent to which personified objects, even extremely humanlike ones like humanoid robots, should be considered as moral agents. For example, in one study 9-year-olds had a conversation and played a game with a humanoid robot, Robovie (Kahn Jr, Kanda, Ishiguro, Freier, Severson, Gill, & Shen, 2012). The experimenter then put Robovie in a closet before it had a chance to finish its turn and did so without regard for Robovie's objections (i.e., "I want to keep playing the game. Please don't put me in the closet."). Interviews with the children revealed that most believed that Robovie had mental states (e.g., was intelligent and had feelings) and that Robovie deserved fair treatment and protection from psychological harm. But, they did not view Robovie as having other moral rights like civil liberties (e.g., it could be bought and sold).

One reason why there are developmental differences in the effect of anthropomorphizing on moral accountability may have to do with children's changing perspective taking abilities. Children are beginning to understand that humans have unique mental states, desires and beliefs during the preschool years; this is known as theory of mind (Wellman & Liu, 2004). Understanding that humans have differing mental states allows children to better understand what varying agents should be capable of and the expected

perspective of that agent (Lane, Wellman, & Evans, 2010). When individuals anthropomorphize, they are better at perspective taking (Batson, Early, & Salvarani, 1997; Myers, Saunders, & Garrett, 2003;). For example, in one study 4-year-olds were better able to reason about the needs of an animal in distress when they drew it in an anthropomorphized form (Myers et al, 2003). In other words, when animals and objects take on humanlike qualities, children are more likely to reason about its mental states in relation to its behaviors. This is particularly true when the non-human agent is in distress (Batson et al., 1997; Myers et al., 2003). To summarize, when children anthropomorphize, they are more likely to perspective take, consider reasons for behaviors, and recognize needs of a non-human agent.

Perspective taking is also related to feelings of empathy. Empathy is the ability to comprehend the affective or cognitive status of another being (Eisenberg & Miller, 1987). Airenti (2015) argues that to truly feel empathetic one must have a sense of connection to the target and make an assumption that it has a mental life. Because anthropomorphism involves attributing mental states to non-human entities, Airenti suggests that empathy for a non-human entity is facilitated when it is anthropomorphized. Relatedly, Eisenberg (1987) argues that prosocial behavior (e.g., protecting something or someone from harm) arises in part from feelings of empathy towards a target. Taken together, understanding what a mental life is facilitates feelings of empathy and prosocial behavior. Therefore, as children become better at mentalizing, they may also become better at mentalizing about non-human, anthropomorphized agents.

Anthropomorphizing can occur in a variety of ways for both adults and children: adding humanlike features like faces (Ahn et. al, 2014; Hamlin et al., 2010), goal-directed behavior (e.g., Hamlin et al., 2010; Waytz et. al, 2010), and socially-contingent interactions

(Kahn Jr et.al, 2012), to name a few. The feature this project was particularly interested in exploring was providing a proper name to non-human agents. A proper name serves to individualize its referent from other, similar referents (e.g., Tom vs. boy) and is a uniquely human characteristic (compared to, for instance, eyes) (Hall, Veltkamp, & Turkel, 2004). The handful of studies that included a name as a means of anthropomorphizing in adults did not isolate the effect of a name. There are no studies we have found with children and using names to anthropomorphize, but there is some work that explores what toddlers will induce about category members when they are given proper names.

Gelman and Taylor (1984) showed 2-year-olds stuffed animals and block-like toys and labeled one of them with either a proper name (e.g., "Zav") or a common noun (e.g., "a zav"). Later the experimenter asked the toddlers to manipulate the toys (e.g., "put Zav/a Zav in the basket."). When animals (but not blocks) were referred to with a proper name, toddlers assumed there was only one of them. They would select the one specific stuffed animal to manipulate whereas they would select both block-like toys equally as often. This study suggests that proper names lead young children to induce humanlike qualities about non-human objects, and that it was easier for toddlers to anthropomorphize animals than artifacts (see also Hall, Lee, & Bélanger, 2001, who found that dolls were easier to anthropomorphize with proper nouns than stuffed animals).

Older children become selective about what things are "allowed" to be given proper names. For example, they accept that people, dogs and cats can have names, but resist names for flowers, candy, and leaves (Hall et. al, 2004). They may be selective about what can be named because they assume that named objects also have human qualities, and they know that not everything in the world should have those capacities. In terms of the thesis, children

may not think that caterpillars or other bugs are entities that should have names, and so they may not treat a named or unnamed bug any differently.

In summary, anthropomorphizing influences our expectations and treatment of non-human entities. Several studies have shown that when non-humans are made more humanlike we view them as moral agents, capable of observing, evaluating, and judging others, being culpable for their own actions and deserving of punishment for moral transgressions. We also become more emotionally connected and empathetic to personified agents, wishing to protect them from harm, behavior prosocially towards them, and placing a priority on their welfare.

This thesis investigates the extent to which anthropomorphizing via naming activates these outcomes in preschoolers. We thought this age was a particularly interesting age to study because children are just beginning to develop clear boundaries about what a moral action is, compared to other behaviors like social conventions. For example, children from ages 3- to 7-years participated in a study in which they observed 5 different immoral actions and had to make a judgement of whether the action was immoral and deserving of punishment (Smetana, 1981). The results showed that children can identify an immoral act, even if there is no explicit rule about the behavior, and believe violations deserve punishment (Smetana, 1981). Children in this age group show that they understand humans as being moral agents and are to be held accountable for their actions. In our study, children might think harming the garden is a moral violation for personified caterpillars. Preschoolers also have a newly forming understanding of others' mental lives, and so their way of thinking about who can be held as a moral agent may be different from adults' conceptions.

Preschoolers learn that a caterpillar, who is either named Pete or not named, is eating plants in a garden that the children have worked hard to create. Children are told that the

caterpillar's actions will ultimately kill the garden plants and they must decide whether to squish it or save it. Children are also later asked about their expectations of the caterpillar's ability to experience the world in a humanlike manner (e.g., to feel pain or fear) and to have agency (e.g., act intentionally).

One hypothesis is that children may consider a named caterpillar as a moral agent: able to think about the consequences of its behavior, make choices that are benevolent or malevolent, and be culpable for those choices. In this case, a caterpillar ought to "know better" than to cause harm, an important moral transgression in the preschool years, and one that is consider serious and punishable by children this age (e.g., Smetana, 2006). Children may be more likely to want to punish (by squishing) a named than an unnamed caterpillar.

Alternatively, preschoolers may feel more emotionally connected to a named caterpillar, experience more empathy towards it, and be more likely to want to protect the caterpillar from harm even though it is harming the garden. In other words, children may be more willing to squish an unnamed, less humanlike caterpillar because they are less likely to attribute moral rights to it and are more focused on saving the garden plants.

Methods

Participants

Thirty-two children between the ages of four and five-years-old (*M* =4;10; range = 4;0 to 5;11; 16 girls) participated. Children in this study were primarily white, from middle-class backgrounds, and were recruited from the local community. Two children (one 4-year-old boy and one 5-year-old girl) were excluded due to a video camera technology malfunction and error in procedure, respectively.

Design

This study was a between subjects design with naming status as the between-subjects factor of interest. Fifteen participants were in the named condition (M_{age}=4;11; range = 4;0 to 5;11 ; 7 girls). Fifteen participants were in the unnamed condition (M_{age}=4;9; range = 4;2 to 5;3 ; 9 girls).

Materials

Each session was audio and video recorded using a video camera. The emotion scale was printed on a piece paper with a paper-clip attached as the slider and showed five faces in a horizontal line that gradually progressed from a frowning face on the left to a smiling face on the right (Appendix A). Two identical containers were used in a sticker task; one had a picture of a house, and the second a picture of a caterpillar. The storybook was shown using a PowerPoint presentation on a laptop.

Procedure

Approval documents from the IRB and consent forms used can be found in Appendix B and Appendix C, respectively. Participants were tested individually in the laboratory or in a quiet room within a preschool for a single 10-minute session during which children heard a

story about a caterpillar and answered several questions. The researcher sat across from the children at a small table and began the study by reading a story to the children about either Pete the caterpillar or an unnamed caterpillar and asked them to imagine that they were the main character.

Children in the named condition learned about a caterpillar named Pete. The researcher showed children a picture of a house and garden and said, "I want you to imagine that this is your house, and in your backyard you have a garden. You worked hard planting all of those plants in your garden!" This part of the story served to place children as the main character in the story and to help them feel a sense of ownership over the garden. The researcher than explained that a caterpillar was crawling on the plants and eating the leaves. She asked children to imagine that they named and handled the caterpillar, "You look like a Pete. After naming Pete, you hold him in your hand.". Children are then told they have to decide what to do with Pete and the consequences of either choice: they can either do nothing about Pete and the garden plants will die because Pete will eat all the leaves. Or, they can squish Pete so that he can't eat any more leaves, and save the plant. The procedure for children in the unnamed condition was exactly the same, except that the caterpillar was simply referred to as "the caterpillar" rather than as Pete.

After the story, the researcher asks children a series of questions. First, she asks children to decide how likely they are to squish Pete/the caterpillar by using a sliding scale (Appendix A). She explains that they can move a paper clip slider to a number between 0, meaning that they are really sure they would not squish, to 4, meaning that they are really sure they would squish. Next, the researcher asked the children if they thought it was okay or not okay to squish Pete/the caterpillar and to explain their answer.

Regardless of their initial response, children were asked to imagine how they would feel if they really did squish Pete/the caterpillar and to indicate how good or bad they would feel using a face scale. The face scale had five faces with expressions ranging from feeling really bad to feeling really good. The faces scale was adapted from the previously validated Wong Baker Faces Pain Rating Scale (Tomlinson, von Baeyer, Stinson, & Sung, 2010).

The next phase of the study involved a sticker task and a questionnaire. The sticker task was meant to measure whether the children were willing to give up a valued good to help save Pete/the caterpillar. First, the researcher showed children a container with 10 stickers and asked them to pick out their five favorites. Children then saw two more identical containers, one with a picture of a house and the other with a picture of the caterpillar from the story. The researcher explained that, "the box with the house on it is where you can put stickers to take home with you. The box with the caterpillar on it is where you can put stickers to give to Pete/the caterpillar from our story. Each sticker that gets put in this box helps save the caterpillar from getting squished. You can put as many stickers as you want in the box to take home, and as many stickers as you want in the box to give to Pete/the caterpillar." The researcher then turned away, so that she did not influence the children's response.

Once the children completed the task, the researcher then proceeded with a questionnaire that measured how much agency and experience the children attributed to the caterpillar from the story (Appendix A). Agency is considered the ability to independently act on one's own free will. To measure agency, children were asked "Can Pete/the caterpillar think like you do? Can Pete/the caterpillar can do things on purpose like you do? Can Pete/the caterpillar remember things like you do?" We were also interested in the type of

experiences children thought the caterpillar was capable of having. The researcher asked children "Can Pete/the caterpillar feel pain like you do? Can Pete/the caterpillar can feel hungry like you do? Can Pete/the caterpillar have feelings, like being happy or scared, like you do?" to measure how much experience the children granted the caterpillar. Summative scores were created for both variables, ranging from 0 (least experience/agency) to 3. The child was reminded that there were no right or wrong answers, that the researcher just wanted to know what the child thought, and to answer each question with a yes or a no.

At the end of the study the researchers asked the children, "to tell me how much you like caterpillars using these faces". The same faces scale used previously was used here, but the faces meaning ranged from really disliking caterpillars to really liking caterpillars. The children were then thanked for their participation, for being a great helper, and asked if they had questions. If the study was conducted in the lab, they were given the stickers they allocated for home and the choice between two small gifts (e.g. a beach ball, a yo-yo, t-shirt).

These questions were asked in the same order for all children regardless of condition. Which side the sticker boxes in the sticker task were placed on was counterbalanced across conditions.

Results

Preliminary results revealed no differences in age, gender, or order so all analyses were collapsed across those variables.

A one-way MANOVA was conducted with naming status (named; unnamed) as the independent variable and willingness to squish (0-4 scale), how child would feel to squish (0-4 scale), expectations about caterpillar's experience (0-3 summative score), expectations about caterpillar's agency (0-3 summative score), and sticker sacrifice (0-5) as dependent measures. As Figure 1 shows, there were two factors where the conditions differed. There was a significant difference between the named (M = 2.47, SD =.83) and unnamed (M=1.67, SD= 1.18) conditions for experience, F (7, 22) = 4.62 , p = .04, partial η^2 = .142. What this means, is that naming the caterpillar led children to expect it to have experiences such as feeling pain, hunger, and emotions like happiness and sadness. There was also a significant difference between the named (M = 1.6, SD =1.12) and unnamed (M = .87, SD =.99) condition for agency, F (7, 22) = 3.6, p = .068, partial η^2 =.114. As with experience, children in the named condition expected the caterpillar to be more humanlike in its mental life than children in the unnamed condition: being able to think, have intentions, and memories.

Although children in the named condition perceived Pete's experience and agency to be more humanlike than children in the unnamed condition, children in both conditions were equally (un)willing to squish the caterpillar (M_{named} = 2.26 , SD_{named} =1.58 vs. Mun_{named} =2.26, $SD_{un\text{named}}$ =1.83). Children also did not differ by condition on how willing they were to sacrifice a valued resource – their favorite stickers – in order to save the caterpillar (M_{named} = 3.6, SD_{named} =1.05 vs. Mun_{named} =3.6, $SD_{un\text{named}}$ =1.12). Children in both conditions were willing to sacrifice, on average, 1.4 stickers to the cause of saving the caterpillar. Children in

both conditions felt about the same (about average on a scale of 0 to 4, with 4 = feels very good) when asked to imagine that they did squish the caterpillar (M_{named} = 2.67, SD_{named} = 1.63 vs. $M_{unnamed}$ =1.8, $SD_{unnamed}$ =1.82).

The number of children who responded, "it's ok" to squish the caterpillar was marginally different by condition. There were more children in the named condition who responded "yes" (10 children) than in the unnamed condition (4 children), Fisher's exact test, p = .07. In other words, although children earlier were equally (un)willing to squish the caterpillar themselves, when asked if it was OK to squish it, children in the named condition said yes.

How children felt about squishing the caterpillar (4 = really good) was moderately correlated with whether they said it was OK or not to squish it. In the named condition, $r(28)$ = .657, p = .004, and in the unnamed condition, $r(28)$ = .669, p = .003, children who said it was OK to squish the caterpillar felt better if they imagined squishing it than did children who said it was not OK but squished it anyways. Similarly, how children felt about squishing the caterpillar was strongly correlated with how likely they said they were to squish it initially (4= very likely). In the named condition, $r(28)$ = .812, p = <.0001, and in the unnamed condition, $r(28)$ = .789, p = <.0001, children who were more likely to squish the caterpillar felt better about squishing it than those who were less likely to squish it but asked to imagine doing so anyways.

Taken together, these results suggest that a proper name influences whether children think that a non-human agent can experience the world and think like a human can. A name also affects preschoolers' decision about whether it is OK or not to squish a harmful insect. In short, preschoolers think that personified harmful caterpillars ought to be squished – even

if they don't want to be the one to squish it. The qualitative data, described next, offers some insight into why children might think so.

Children were asked to explain why they thought it was OK or not OK to squish the caterpillar. Three children (2 in the named condition and 1 in the unnamed condition) responded with "I don't know". The remaining explanations fit into one of four categories: focus on the plants (e.g., "It's OK because the plant will be dead if you don't squish it"; "It's not OK because the plant's won't really die"), focus on Pete/caterpillar (e.g., OK: "caterpillars eat plants and that's not good" vs. not OK: "the caterpillar could die"), respecting nature (e.g., OK: no examples vs. not OK: "they are a part of nature"), or concern about themselves (e.g., OK: no examples vs. not OK: "it might sting me"). Most children gave one reason, but 1 child in the unnamed condition and 4 children in the named condition provided two reasons for their decision.

Saying it was OK to squish the caterpillar was more common in the named (10 children) than in the unnamed (4 children) condition. In the unnamed condition, all explanations centered around protecting the plants (e.g., "the plant will be dead if you don't"). Explanations were more varied in the named condition. Four explanations were focused on punishing Pete for hurting the plants (e.g., "then it would be dead"). Three explanations focused on protecting the plant (e.g., "the plants might die"). Three explanations focused on themselves (e.g., "I like to"). Importantly, only children in the named condition seemed concerned about holding the caterpillar morally responsible for harm. It did not occur to children in the unnamed condition that the caterpillar ought to be punished for the harm it caused the plants.

Saying it was not OK to squish the caterpillar was more common in the unnamed condition (11 children) than in the named condition (6 children). In the unnamed condition, 5 explanations focused on concern for the caterpillar's well-being (e.g., "the animal should stay alive"). One explanation expressed doubt about the plant's need for protection (e.g., "the plant won't die"). Two explanations were about following general rules about respecting nature (e.g., "they are a part of nature"). Four explanations were about their own well-being (e.g., "it would sting me"). In the named condition, 4 explanations expressed concern for Pete (e.g., "it is bad for caterpillars"). One child was skeptical about the plant actually being harmed ("it might not eat the plant"). One child cited concern for nature more generally ("I love nature"), and 2 had no explanation.

Regardless of whether children said it was OK or not to squish the caterpillar, children in the named condition at least considered the caterpillar in their reasoning somewhat more often than children in the unnamed condition (8 explanations vs 5, respectively). Children in both conditions mostly reasoned about the plants if they said it was OK to squish the caterpillar and mostly reasoned about the caterpillar if they said it was not OK to squish it.

Discussion

What's in a name? For preschoolers in this study, a name changed the way they judged the harmful actions of a non-human. They were more likely to say it was OK to kill a harmful, named bug than one that was not named. Compared to an unnamed bug, children were more likely to believe a named bug could experience pain, hunger, and feelings like people do. And they were more likely to believe a named bug could think, behave intentionally, and remember things the way people do. Although a name activated moral thinking about the caterpillar's harmful behavior, it was not enough of a motivation to convince children to kill the caterpillar themselves or to sacrifice a valuable resource to save the caterpillar.

One reason why children thought it was more OK to kill Pete and less OK to kill an unnamed caterpillar, is because Pete was considered a moral agent. Being a moral agent means that an entity can discern right from wrong and can be held accountable for its actions (Gray & Wegner, 2009). Preschool-aged children expect moral transgressions - behaviors that violate the rights or welfare of others – to be punished appropriately (e.g., Kondrad, 2013, Smetana, 1981). Harming the plants was a moral transgression in part because Pete ought to have known better, being capable of thinking about right from wrong. In contrast, an unnamed caterpillar was just a bug trying to survive– incapable of thought and therefore incapable of understanding right from wrong. Indeed, as one child said, "caterpillars like to eat plants". That's just what they do, there is no bad intention behind it. Only a moral agent can intentionally mean to do harm.

That children think it is acceptable to squish a named bug but not an unnamed one is an interesting finding for two reasons. First, it is the opposite of how adults respond to a

similar paradigm (Monroe & Kondrad, in prep). Adults are more likely to sacrifice their plants and protect Pete. They feel more emotionally connected to Pete and more anticipatory guilt about killing it despite the damage it is wreaking on their garden; adults feel little remorse about killing an unnamed and harmful caterpillar. These reactions are typical of adults when reasoning about anthropomorphized objects (e.g., Ahn et. al 2014; Serpell, 2002). This study shows that children reason very differently. Adults want to save Pete, preschoolers want him squished. One question for future research is to explore what cognitive differences might lead preschoolers' judgments to focus on moral culpability and adults on protection from harm when non-humans are anthropomorphized. It is possible that adults may be more sensitive than children to harmful punishments if they have to dole out the punishment themselves. When adults are more physically distant from harm they are more willing for it to occur (Fei, Jiaxi, Lei, Shoupeng, Danmin, & Jiaxi, 2017). This may not be the case for children. For example, adults are willing to kill one person to save five in contexts where they are physically separated from the harm (i.e., they flip a switch that kills someone vs. they push someone off a bridge with their own two hands).

A second reason that it is interesting that more children thought it was OK to squish Pete but not an unnamed caterpillar is because previous research has suggested that children this age tend to focus on the outcome rather than the intention of a moral agent (Kahn Jr et. al, 2012). For example, children believe someone who intentionally hits another person is equally punishable as someone who does it on accident (Xiaoying, Yifang, & Xiaolu, 2017). But in this thesis work, the ability to have intentional actions – part of what we measured as moral agency – seems to influence how children are reasoning about appropriate consequences. A named caterpillar is judged as having more agency or more intention, and

children were more likely to say it was OK to punish its harmful behavior by squishing it. Future work could explore why in this case, children do seem to consider intention in their moral reasoning. One possible explanation is that when children encounter an entity that they believe has full control over their actions, the children view them similarly to how they would another human (e.g., Kahn et. al, 2012). In other words, children might place the burden of responsibility on Pete but not on a caterpillar because if Pete thinks like a human, then he must have known that it was not okay to eat my plants. Doing it anyways then was no accident; he was in full control of his actions and therefore the victim deserves retribution and Pete deserves punishment.

Although children in the named condition thought it was OK to squish Pete, they did not really want to do it themselves. When they were asked how likely they would be to squish Pete, they were noncommittal. Similarly, children in the unnamed condition were not willing to give up many of their valued stickers to help save the caterpillar even though they thought it should not be squished. One question for future work would be to make clearer the amount of harm the caterpillar was causing and how many stickers it would take to save him (vs. squish him). If children had a more extreme vision that all the plants would die, not just one or two, or if they better understood the amount of effort it took to grow the garden in the first place, or if they knew exactly what they had to sacrifice to save the caterpillar or ensure it would be squished, we would have a clearer understanding of the effect of naming.

Future research could also explore whether secondary emotions like guilt would change the type of consequence children thought Pete should have for harming the garden plants. In this study, they thought it would be OK to squish him for his behavior, but what if Pete felt guilty for what he had done? Vaish (2018) suggests that guilt is a key emotion for

facilitating children's willing to cooperate and get along with others. Secondary emotions are essential components for increasing empathy (Waytz & Epley, 2010). Seeing the caterpillar feel guilty might lead children to feel more willing to treat it in a way that would lead to a resolution rather than "the final solution". Likewise, if children had a more extensive interaction with Pete – they actually got to hold a real caterpillar, play with it, see it do tricks and so forth – they may become more socially connected to it and be more willing to, like adults, overlook the harmful behavior.

Finally, individual differences in how likely children are to anthropomorphize could explain some of the variance in our data. Waytz and Epley (2010) developed the adult Individual Differences in Anthropomorphism Questionnaire (IDAQ), which could be adapted for use in young children. Participants are first shown two videos of animals interacting, and then they rated the emotions, both primary (fear, pain, surprise, anger) and secondary (admiration, shame, remorse, guilt) of the animals from the video. Adults who had higher IDAQ scores (rated agents as more anthropomorphic) attributed more secondary emotions to the animals from the video. Perhaps children with higher IDAQ scores would respond more like adults – a name would make them feel socially and emotionally connected with the caterpillar and therefore increase an empathic response.

Proper names elicit anthropomorphizing in preschool aged children, just as they do with adults. However, preschoolers differ in their interpretation of a named caterpillar's harmful actions compared to adults. They view a named caterpillar as morally culpable for its actions, deserving to be squished. This is an interesting first step towards understanding how preschoolers attribute moral rights to nonhuman agents.

References

Ahn, H. K., Kim, H. J., & Aggarwal, P. (2014). Helping fellow beings: Anthropomorphize social causes and the role of anticipatory guilt. *Psychological Science, 25*(1), 224-229. doi: 10.1177/0956797613496823

Airenti, G. (2015). The Cognitive Bases of Anthropomorphism: From Relatedness to Empathy. *International Journal of Social Robotics, 7*(1), 117. doi:10.1007/s12369-014-0263-x

Batson, C. D., Early, S., & Salvarani, G. (1997). Perspective Taking: Imagining How Another Feels Versus Imaging How You Would Feel. *Personality and Social Psychology Bulletin, 23*(7), 751-758. doi:10.1177/0146167297237008

Eisenberg, N., & Miller, P. A. (1987). The relation of empathy to prosocial and related behaviors. *Psychological Bulletin, 101*(1), 91-119. doi:10.1037//0033-2909.101.1.91

Epley, N., Waytz, A., & Cacioppo, J. T. (2007). On seeing human: A three-factor theory of anthropomorphism. *Psychological* Review, *114*(4), 864-886.doi:10.1037/0033-295X.114.4.864

Fei, C., Jiaxi, Z., Lei, S., Shoupeng, W., Danmin, M., & Jiaxi, P. (2017). Framing Effect in the Trolley Problem and Footbridge Dilemma: Number of Saved Lives Matters. *Psychological Reports, 120*(1), 88-101. doi:10.1177/0033294116685866

Gelman, S. A., & Taylor, M. (1984). How two-year-old children interpret proper and common names for unfamiliar objects. *Child Development*, 1535-1540. doi: 10.1111/1467-8624.ep7304464

Gray, K., & Wegner, D. M. (2009). Moral typecasting: Divergent perceptions of moral agents and moral patients. *Journal of Personality and Social Psychology, 96*(3), 505-520. doi:10.1037/a0013748

Hall, D. G., Lee, S. C., & Bélanger, J. (2001). Young children's use of syntactic cues to learn proper names and count nouns. *Developmental Psychology*, *37*(3), 298. doi: 10.1037//0012-1649.37.3.298

Hall, D. G., Veltkamp, B. C., & Turkel, W. J. (2004). Children's and adults' understanding of proper namable things. *First Language, 24*(1), 6-32. doi:10.1177/01427237040548

Hamlin, J. K. (2015). The case for social evaluation in preverbal infants: gazing toward one's goal drives infants' preferences for Helpers over Hinderers in the hill paradigm. *Frontiers In Psychology,* 51563. doi:10.3389/fpsyg.2014.01563

Hamlin, J. K., Wynn, K., & Bloom, P. (2010). Three-month-olds show a negativity bias in their social evaluations J. Kiley Hamlin et al. Social evaluation by 3-month-old infants. *Developmental Science*, *13*(6), 923-929. doi:10.1111/j.1467-7687.2010.00951.x

Harrison, M. A., & Hall, A. E. (2010). Anthropomorphism, empathy, and perceived communicative ability vary with phylogenetic relatedness to humans. *Journal of Social, Evolutionary, and Cultural Psychology*, *4*(1), 34-48. doi:10.1037/h0099303

Kahn Jr, P. H., Kanda, T., Ishiguro, H., Freier, N. G., Severson, R. L., Gill, B. T., & Shen, S. (2012). "Robovie, you'll have to go into the closet now": Children's social and moral relationships with a humanoid robot. *Developmental Psychology, 48*(2), 303. doi: 10.1037/a0027033

Kamewari, K., Kato, M., Kanda, T., Ishiguro, H., & Hiraki, K. (2005). Six-and-a-half-month-old children positively attribute goals to human action and to humanoid-robot motion. *Cognitive Development, 20*(2), 303-320. doi:10.1016/j.cogdev.2005.04.004

Kondrad, R. (2013). Breaking the Rules: Young Children's Judgments of Peers Who Misbehave. *Dissertation published at the University of Virginia archives*. Retrieved November 10, 2017

Lane, J. D., Wellman, H. M., & Evans, E. M. (2010). Children's understanding of ordinary and extraordinary minds. *Child Development*, *81*(5), 1475-1489.

Monroe, A. & Kondrad, R. (in prep). Moral attributions of preschoolers and adults for anthropomorphized insects.

Myers Jr, O. E., Saunders, C. D., & Garrett, E. (2003). What do children think animals need? Aesthetic and psycho-social conceptions. *Environmental Education Research, 9*(3), 305-325. doi: 10.1080/1350462032000093165

Scarf, D., Imuta, K., Colombo, M., and Hayne, H. (2012). Social evaluation or simple association? Simple associations may explain moral reasoning in infants. *PLoS ONE 7*:e42698. doi: 10.1371/journal.pone.0042698

Serpell, J. (2002). Anthropomorphism and anthropomorphic selection beyond the cute response. *Society & Animals, 10*(4), 83-100. doi: 10.1163/156853002320936926.

Serpell, J. A. (2009). Having our dogs and eating them too: Why animals are a social issue. *Journal of Social Issues*, *65*(3), 633-644. doi: 10.1111/j.1540-4560.2009.01617.

Smetana, J. G. (1981). Preschool Children's Conceptions of Moral and Social Rules. *Child Development, 52*(4), 1333–1336. doi:10.2307/1129527

Smetana, J. G. (2006). Social-cognitive domain theory: Consistencies and variation in children's moral and social judgments. In M. Killen & J. Smetana (Eds.), *Handbook of Moral Development*, 119–154. Mahwah, NJ, US: Lawrence Erlbaum Associates Publishers.

Somanader, M. C., Saylor, M. M., & Levin, D. T. (2011). Remote Control and Children's Understanding of Robots. *Journal of Experimental Child Psychology, 109*(2), 239-247.

Tam, K. P., Lee, S. L., & Chao, M. M. (2013). Saving Mr. Nature: Anthropomorphism enhances connectedness to and protectiveness toward nature. *Journal of Experimental Social Psychology*, *49*(3), 514-521. doi: 10.1016/j.jesp.2013.02.001

Waytz, A., Cacioppo, J., & Epley, N. (2010). Who sees human? The stability and importance of individual differences in anthropomorphism. *Perspectives on Psychological Science*, *5*(3), 219-232. doi: 10.1177/17456916103693

Waytz, A., Heafner, J., & Epley, N. (2014). The mind in the machine: Anthropomorphism increases trust in an autonomous vehicle. *Journal of Experimental Social Psychology,* 52,113-117. doi: 10.1016/j.jesp.2014.01.005

Waytz, A., Morewedge, C. K., Epley, N., Monteleone, G., Gao, J. H., & Cacioppo, J. T. (2010). Making Sense by Making Sentient: Effectance Motivation Increases Anthropomorphism. *Journal of Personality and Social Psychology, 99*(3), 410. doi:10.1037/a0020240

Wellman, H. M., & Liu, D. (2004). Scaling of Theory-of-Mind Tasks. *Child Development*, *75*(2), 523-541. doi:10.1111/j.1467-8624.2004.00691.

Xiaoying, B., Yifang, W., & Xiaolu, Z (2017). Development of Understanding of Intentionality and Moral Judgments in Preschoolers. *Social Behavior & Personality: An International Journal, 45*(5), 859-872. https://doi.org/10.2224/sbp.6296

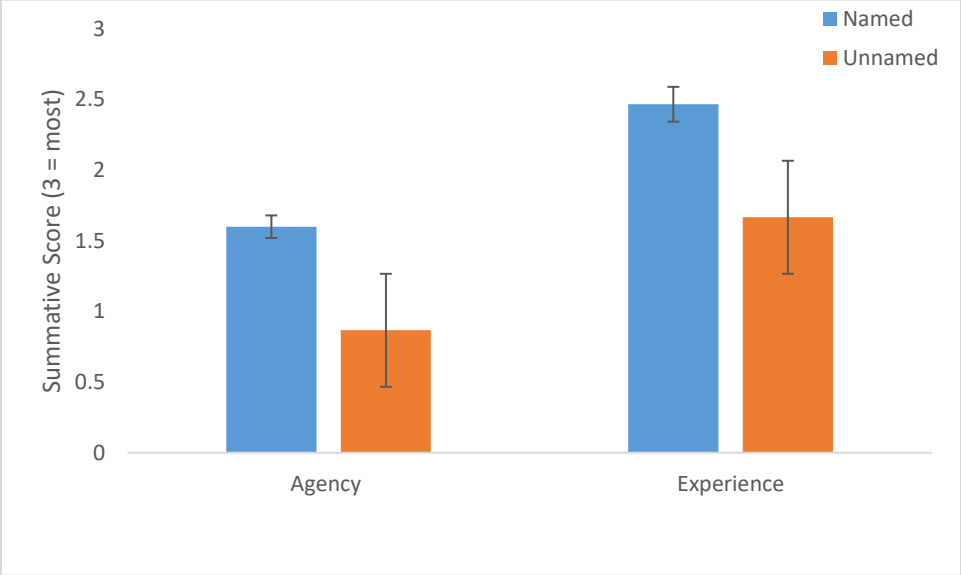


Figure 1. Children rated Pete as having more agency (*M* = 1.6, *SD* =1.12) and experience (*M* = .87, *SD* =.99) (could feel emotions, pain, and hunger) in comparison to the unnamed caterpillar.

Appendix A

Experimenter Script

NAMED CONDITION

We are going to read a story about a caterpillar (on computer), and afterwards you'll answer some questions about the story and what you thought about it.

Slide 1: Imagine that this is your house, and in your backyard you have a garden. Here it is!

Slide 2: You worked hard planting all those plants in your garden.

Slide 3: As you look at your plants, you notice a caterpillar crawling on one plant and eating the leaves.

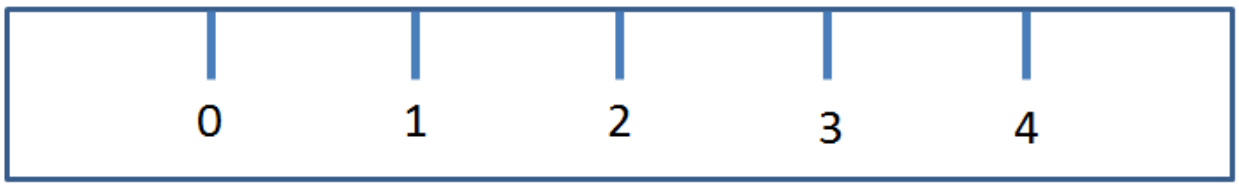
Slide 4: As you look at the caterpillar crawling and eating, you pick him up and think, "You look like a 'Pete'."

Slide 5: After naming Pete, you hold him in your hand, and you have to decide what to do with him.

Slide 6: You could do nothing about Pete. The plant will die if you do nothing because Pete will eat all the leaves (point to dead plant). Or, you could squish Pete so that he can't eat any more leaves, and that will save the plant. (point to live plant)
Now I need you to help answer some questions about the story and how you feel. There are no right or wrong answers, just tell me what you think.

1. Remember, you get to decide what to do about Pete. One thing you might do is squish Pete. You can use this slider to show me how LIKELY you would be to squish Pete.

   If you keep the slider over here (0) it means you are really, really sure you would not squish Pete. If you move it to the 1, it means you would not squish Pete, but you're only a little bit sure about that. If you move it to the 2, it means you don't know if you would squish Pete or not. If you move it to the 3, it means you would squish Pete, but you're only a little bit sure about that. If you move it all the way over here (5) it means you are really sure you would squish Pete. Can you slide the slider to show me how likely you would be to squish Pete?



2. Do you think it is OK or NOT OK to squish Pete? Can you tell me why you think so?

3. Now, I want you to imagine how you would feel if you really did squish Pete.

This face (far left) means squishing Pete would make you feel really, really bad. This face means you'd feel a little bit bad about squishing Pete. This face means you wouldn't feel bad or good about squishing Pete. This face means you'd feel good about squishing Pete. And this face means you'd feel really, really good about squishing Pete. Can you point to how squishing Pete would make you feel?

Sample Stories and Scale

Scale: 

4. For this question, you get to pick your 5 favorite stickers out of this box (have 10 in the box to start). Those are really neat stickers you picked! You get to decide what to do with the stickers. Do you see these two containers? This one with the house on it is where you can put the stickers you want to take home with you. And this one with the caterpillar on it is where you can give stickers for Pete. Every sticker that gets put in this box helps to keep Pete from getting squished. You can put as many stickers as you want in your container to take home and as many as you want in Pete's container! I'm going to turn around now so I can't see where you put your stickers. Tell me when you're all done!

OK great! Now I have just a few more questions. Remember, there are no right or wrong answers, it's just what you think. You can answer each question with a "yes" or a "no". OK?

5. Experience (create a summative score, 0-3; 1 point for each "yes")
    a. Can Pete feel pain like you do?
    b. Can Pete can feel hungry like you do?
    c. Can Pete have feelings, like being happy or scared, like you do?

6. Agency (create a summative score, 0-3)
    a. Can Pete think like you do?
    b. Can Pete can do things on purpose like you do?
    c. Can Pete remember things like you do?

7. Can you tell me how much you like caterpillars using these faces? This one (far left) means you really, really don't like them and this one (2nd from left) means you don't like them just a little. This one (middle) means you don't like or dislike them. This one (2nd from right) means you like them a little bit, and this one (far right) means you really, really like them. Can you point to the face that shows how much you like caterpillars?

Sample Stories and Scale

Scale: 

Ending the game

You were really helpful today, thanks for answering so many questions for me! It was really neat to learn about what you thought about the story and the caterpillar. Did you have any questions about the game we played today? Well you know what, I have a thank-you gift for you to take home today for being such a great helper. Let's go get it!

NOT NAMED CONDITION (replace all "Pete" references with "the caterpillar")

Appendix B

Appalachian STATE UNIVERSITY

INSTITUTIONAL REVIEW BOARD

Office of Research Protection
ASU Box 32068
Boone, NC 28608
828.262.2692
Web site:
http://researchprotections.appstate.edu
Email: irb@appstate.edu
Federalwide Assurance (FWA)
#00001076

To: Robyn Kondrad
Psychology
CAMPUS EMAIL
From: Lisa Curtin, PhD, IRB Chairperson
Date: 6/23/2017
RE: Notice of IRB Approval by Expedited Review (under 45 CFR 46.110)
STUDY #: 17-0348
STUDY TITLE: Moral Rights - Hypothetical Scenario
Submission Type: Initial
Expedited Category: (7) Research on Group Characteristics or Behavior, or Surveys, Interviews, etc.
Approval Date: 6/23/2017
Expiration Date of Approval: 6/22/2018

The Institutional Review Board (IRB) approved this study for the period indicated above. The IRB found that the research procedures meet the expedited category cited above. IRB approval is limited to the activities described in the IRB approved materials, and extends to the performance of the described activities in the sites identified in the IRB application. In accordance with this approval, IRB findings and approval conditions for the conduct of this research are listed below.

Appendix C

Parent/Legal Guardian Consent for Child to Participate in Research

Information to Consider About this Research

Title of Research: Moral Rights – Hypothetical
Principal Investigator: Dr. Robyn Kondrad (ASU)
Department: Psychology
Contact Information:
Dr. Robyn Kondrad: agelabs@appstate.edu; 828-262-6978

What is the purpose of this research? You are invited to participate in a research study to investigate how children learn about their environment. By conducting these studies, we hope to learn more about the kinds of verbal and non-verbal information children pay attention to, and how they use that information to guide their behavior. For example, if a non-human entity looks more like or shares more characteristics with humans, will they be more likely to attribute moral feelings like empathy and moral rights like not being harmed to that entity? The results of these studies will be presented at research conferences and published in scholarly journal articles.

Why am I being invited to take part in this research? You are being invited to allow your child to participate because your child is the right age for the questions we are interested in studying. If you volunteer for your child to participate in the study, your child will be one of about 100 children to do so.

What will I be asked to do? The research procedures will be conducted in a quiet space either at your child's school or daycare facility at a time designated by the teacher or in our research space at Appalachian State University. The time required for your child's participation is one 15- to 20-minute session. The session will be video-taped so the research team can have an accurate record of your child's responses. If you agree to allow your child to participate, your child will be asked if s/he would like to play a game with the researcher. If your child verbally agrees, then we will play a game where your child gets to learn about some bugs and will decide what will happen to the bugs. At the end, we'll ask your child some questions about how they were feeling and what they were thinking during these games. We may also ask parents to complete a short questionnaire about your child's experience with insects and other pets.

What are possible harms or discomforts that I might experience during the research? Some children may experience stress about whether the bugs in the story should be squished or harmed in any way. The researcher will explain that the children can choose to keep the bugs safe from harm if that's what they prefer. The researcher will ensure that your child is comfortable during the study. Children will learn that no bugs were harmed at the end of the study, and will get to watch a cute

video about kittens. Children generally enjoy playing the types of games we use in our research.

What are possible benefits of this research? There may be no personal benefit from your or your child's participation but the information gained by doing this research may help others in the future. This research should help us learn more about how children attribute moral rights to non-human entities like bugs.

Will I be paid for taking part in the research? We will not pay you for the time you volunteer your child to be in this study; however your child (if you or the preschool/daycare allows it) will receive a small item (e.g., stickers or a small toy) for participating. It will not cost you, your child, or (if applicable) your child's preschool/daycare anything to participate.

How will you keep my private information confidential? The information that your child provides in the study and his/her videotape will be kept confidential. Your and your child's information will be combined with information from other children taking part in the study when we share it with other researchers. You and your child will not be identified in any published or presented materials. Identification codes but not names will be used on all documents. Your files will be stored in the investigator's office under lock and key. Identifiable information will be destroyed once we are no longer working with it. Videotapes will be digitally archived and password-protected, and will be viewed only by trained research assistants unless you have given explicit permission for other uses on the video release form attached.

Whom can I contact if I have a question? The people conducting this study will be available to answer any questions concerning this research, now or in the future. You may contact the Principal Investigator at 828-262-6978. If you have questions about your rights as someone taking part in research, contact the Appalachian Institutional Review Board Administrator at 828-262-2692, through email at irb@appstate.edu or at Appalachian State University, Office of Research, IRB Administrator, Boone, NC 28608.

Do I have to participate? You and your child's participation in this study are voluntary. You and/or your child have the right to stop the study and/or withdraw from it at any time without penalty. If you or your child chooses to withdraw from the study, all video and data from your child's session will be destroyed. If at any point you or your child want to stop participating or to withdraw from the study, simply tell the researcher and the session will be ended immediately.

This research project has been approved on 06/23/2017 by the Institutional Review Board (IRB) at Appalachian State University. This approval will expire on 06/22/2018 unless the IRB renews the approval of this research.

Parent/Legal Guardian Consent for Child and Self to Participate in Research
Information to Consider About this Research

Title of Research: Moral Rights - Hypothetical
Principal Investigators: Dr. Robyn Kondrad (ASU; agelabs@appstate.edu; 828-262-6978) Department: Psychology

I have decided I want to take part in this research or I want my child to take part in this research. What should I do now? If you have read this form, had the opportunity to ask questions about the research and received satisfactory answers, and want to participate with your child, then sign the consent form and video release form below and return it to the researcher or your child's teacher (if applicable). You may keep a copy of the consent agreement for your records.

Video Authorization: With your permission, video recordings taken during the study may be used in research presentations of the findings of the study, or for a variety of other reasons listed below. Your child's name would not be associated with any of these uses. If at any time in the future you change your mind about what you selected below, simply notify us by contacting Dr. Robyn Kondrad (828-262-6978; agelabs@appstate.edu) and we will stop using it (except in the case of already published books or journals).

Please review the authorization below, indicate whether you **do** (Yes) or **do not** (No) agree to the video recordings being used in each of the ways indicated below, and then sign your name and date at the bottom.

Professional presentations of the findings (e.g., conferences)	Yes	No
In presentations to psychology classes at Appalachian State	Yes	No
In presentations at workshops or other recruiting events	Yes	No
On the AGE Labs website at Appalachian State	Yes	No
On the AGE Labs Facebook page	Yes	No
On scholarly websites (e.g., Dept. of Psychology at ASU)	Yes	No
In news reports of this research	Yes	No
On display in the AGE Labs or the Dept. of Psychology at ASU	Yes	No

Consent for CHILD to participate

Child's Name (Print)	Birthdate (MM/DD/YY)	Sex (M/F)	Race/Ethnic Identity

Parent/Legal Guardian Name (Print)	Signature	Date

Consent for PARENT to participate

Parent/Legal Guardian Name (Print)	Signature	Date