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Perceived Similarity and Its Effects on Empathy and Prosocial Behavior

A Dissertation submitted in partial satisfaction
of the requirements for the degree of

Doctor of Philosophy

in

Psychology

by

Courtney C. Baugh

June 2022

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ABSTRACT OF THE DISSERTATION

Perceived Similarity and Its Effects on Empathy and Prosocial Behavior

by

Courtney C. Baugh

Doctor of Philosophy, Graduate Program in Psychology

University of California, Riverside, June 2022

Dr. Rebekah Richert, Chairperson

Prior research has documented the relationship between empathy and prosocial behavior in children (e.g., Batson, 1987, 1991; Eisenberg et al., 1987; Radke-Yarrow et al., 1983; Strayer & Roberts, 1989), as well as a relationship between empathy and perceived similarity (Håkansson & Montgomery, 2003; Miller et al., 2011).

Additionally, research has provided evidence for the mediating effect of perceived similarity on the relationship between empathy and prosocial behavior in adults (Batson et al., 1981; Gaertner & Dovidio, 1977; Krebs, 1975), but few studies have examined these relationships in children (Panofsky, 1976), and perhaps none have examined these relationships in regard to media characters. The purpose of the current study was to assess the extent to which children's feelings of similarity or difference to media characters affected children's cognitive empathy and theory of mind abilities.

Additionally, the current study examined whether children's predictions of prosociality

would be affected by perceived similarity. Thirty-two 4- to 6-year-old children participated in an approximately 30 minute Zoom interview in which children created two characters: one character similar to the child and one character different from the child based on gender, skin tone, and other outward physical aspects. The created characters were inserted into two real-apparent emotion theory of mind stories that assessed children's cognitive empathy and theory of mind abilities. Analyses indicated that children's cognitive empathy and theory of mind abilities did not differ depending on which character the child was reasoning about. Additionally, children did not attribute significantly less prosocial behavior to the different character. Findings are discussed in terms of mechanistic processes that may play a role in perceived similarity and its differential effects on learning and reasoning abilities during early childhood.

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Perceived Similarity and its Effects on Empathy and Prosocial Behavior

Chapter 1: Introduction

How do we decide who is like us or not? For adults, this decision is based on aspects of other people like gender (Hoffner & Buchanan, 2005), shared personality and lifestyle traits (Eyal & Rubin, 2003), or because the other person is how they want to be (Hoffner & Buchanan, 2005). Children also decide whether someone else is like themselves based on gender (Baugh, Richert, Schlesinger, & Sakkis, 2019; Katz & Kofkin, 1997), as well as physical proximity, sharing a toy, or liking the same activities (Edmiston, 2008). As a construct, perceived similarity is one aspect of identification with another person. In adults, operationalizations of identification with another tend to include feelings of similarity, empathy, perspective-sharing, and motivation/goal-sharing with another person (Cohen, 2001). In children, identification most often refers to a child's perceptions of similarity with another person (Bandura, 1997), including media characters.

According to social learning theory, when we see someone similar to ourselves succeed at something, then we believe we can also succeed at that same thing (Bandura, 1997). Research on children's feelings of similarity with media characters has supported this idea. When children feel similar to a media character, they learn more from that character (Baugh, Schlesinger, & Richert, under review; Calvert, Strong, Jacobs, & Conger, 2007). The current study seeks to investigate whether identification with others relates to children's predictions of prosocial behavior in others. In particular, the study

examines if perceived similarity increases cognitive empathy and theory of mind, thereby increasing predictions of prosocial behavior.

Identification

Theoretical Foundations

Several well-known psychologists have theorized about the nature of the self and how we decide who we are and who is like us, including Freud (1940/1949), Erikson (1968), and Marcia (1966). To Freud (1940/1949), identification (a process that allows one person to draw similarities between themselves and another) was a defense mechanism, arising from a child's subconscious need to replace their same-gender parent. Building off Freud's ideas, Wollheim (1974) believed that identification was both an internal and external process by which we imagine ourselves to be this other target person and also behave as that target person would. Betelheim (1943) suggested that identification could be thought of as sharing perspectives with another and viewing the world in a similar fashion. He argued that when children identify with the hero in a story, for example, they vicariously experience that character's triumph and learn that good has rewards (Betelheim, 1976). Erikson (1968) viewed our ability to identify with others as a part of socialization that develops early in life. Children frequently practice perspective-taking in their play, which allows them to identify with a community or group (Mead, 1934).

According to newer perspectives, children's identities form in two overlapping ways (Holland, Lachicotte, Skinner, & Cain, 1998). First, identity is the result of children's participation in the practices of their own culture. Second, identity is produced

as children are involved in social interactions. According to these theories, identification with another is a subconscious socialization process by which a person leaves behind their own identity and adopts that of another person, which includes both thinking of oneself as the that other person and behaving as the other person would, while viewing the world through a secondary point of view.

Identifying with another person can scaffold our ideas about our own abilities. According to social cognitive learning theory (Bandura, 1997), learning from others through observation incorporates a variety of social cognitive processes, such as perspective-taking and theory of mind (Bulgarelli & Molina, 2016). Indeed, even before formal schooling begins, children understand that other people gather knowledge through their own perceptual experiences (which can be incorrect or different from another person's; Astington & Pelletier, 2005). Additionally, according to Bandura (1997), feelings of similarity are important to a person's self-efficacy. Bandura has defined self-efficacy as a belief in one's ability to succeed in specific situations or accomplish a task. When people have high self-efficacy, they are more likely to try to complete a task and persist longer in doing so than those with low self-efficacy (Schunk, 1990). Several factors affect self-efficacy, including modeling or vicarious experience. The internal dialogue that occurs when modeling is taking place is, "If they can do it, I can do it." When we see someone succeed, our self-efficacy increases, and when we see someone fail, our self-efficacy decreases. This is especially true when we perceive the model to be similar to ourselves.

In addition to these processes relating to learning from others, they could also be expected to be related to our predictions of another person's behavior. Young children use perspective-taking and theory of mind abilities to reason about what another person knows and how that person's knowledge should inform their behavior (Slaughter, 2015). Interestingly, one study found that 3-year-olds (who had previously been unable to lie) who participated in training that taught them about mental-state concepts gained the ability to deceive (Ding, Wellman, Wang, Fu, & Lee, 2015). Deception is a complex ability relies on understanding the mental states of others and how mental states inform subsequent behavior (Lee, 2013). Therefore, it stands to reason that the social cognitive processes that allow us to identify with and learn from others also allow us to predict the behavior of others.

In the field of psychology, media research has often conflated identification with other similar constructs. Vicarious experience, or adopting the goals, emotions, and thoughts of another person, is the most researched function of identification by media researchers (Cohen, 2001). However, because audience members can respond to media characters in a variety of ways, distinguishing between these dimensions of responses has been difficult. People can like/dislike characters (affinity; Newton, Buck, & Woelfel, 1986), believe themselves to be similar to or different from characters (perceived similarity; Reeves & Miller, 1978), be sexually or romantically attracted to characters (attachment; Cohen, 2001), imitate what characters do (Hoffner, 1996), and develop parasocial relationships with characters (Horton & Wohl, 1956). One approach used to characterize identification involves defining identification in terms of liking a character,

wanting to be like a character (wishful identification; Hoffner, 1996), and perceived similarity to the character (Calvert et al., 2007; Liebes & Katz, 1990; Maccoby & Wilson, 1957). To measure identification, some researchers have asked participants to rank the distance they felt between a character and themselves (Newton et al., 1986; Reeves & Miller, 1978), while others have conflated identification with imitation (Huesmann Lagerspetz, & Eron, 1984; Wiegman, Kuttschreuter, & Baarda, 1992), which does not account for the internal aspect of identification. Still others have measured identification using a wider range of variables, such as liking, perceived similarity, friendship, role modeling, and perceived ability to work with the character in question (Basil, 1996).

Given these different approaches to measuring identification, several factors seem to be central in most operationalizations of identification: empathy, perspective-sharing, motivation/goal-sharing, absorption (the extent to which self-awareness is lost when being exposed to that character; Cohen, 2001), and feelings of similarity. When a person identifies with a media character, they replace their role as audience member with the identity and role of the character in question (Cohen, 2001), so that when that character succeeds, the audience member should feel vicarious happiness or triumph (Oatley, 1994). This conceptualization of identifying and feeling similar to another person (or in this case, a media character) is in line with Bandura's (1997) social learning theory, which says that when we see someone to whom we feel similar succeed, we believe we can also succeed at that same task. The aspect of identification focused on for the current study is perceived similarity. The current study measures and examines the role that each play in children's predictions of others' prosocial behavior.

Perceived Similarity

Perceived similarity, which can be thought of as the extent to which a person feels they are similar to another person or media character (Montoya, Horton, & Kirchner, 2008), has been the focus of many studies in adults. For example, research has shown that people are more inclined to like another person who they believe has the same birthdate as themselves (Miller, Downs, & Prentice, 1998) or similar surnames, despite ethnicity (Jones, Pelham, Carvallo, & Mirenberg, 2004). Adults are more likely to like, understand, trust, help, and listen to a person they perceive to be similar to themselves (Moss, Garivaldis, & Toukhsati, 2007). Individuals who share many similarities, such as job, interests, ethnicity, religious beliefs, personality traits, etc. are more likely to have affinity for and support each other (AhYun, 2002; Moss et al., 2007; Schneider, Goldstein, & Smith, 1995). Perceived similarity has also been found to predict romantic liking, even more than actual similarity (Tidwell, Eastwick, & Finkel, 2012). It is believed that these types of associations are formed because we view ourselves favorably and subconsciously assume that anyone like us also has desirable traits (Pelham, Carvallo, & Jones, 2005).

The idea that we view ourselves, and therefore someone like us, favorably is called implicit egotism. Implicit egotism is the idea that humans gravitate toward people, places, and/or things that resemble the self (Pelham et al., 2005). Research has indicated that our perceived similarity judgments about others are rooted in our own identity (Pelham et al., 2005). In other words, once we identify aspects of ourselves, we are able to draw similarities between ourselves and others regarding those aspects. For example,

around the age of 2, children are able to recognize their own gender, and subsequently, gender becomes a salient characteristic in terms of young children's categorization of others (Bussey, 2011). Skin tone is also a salient categorization factor for children in early childhood for similar reasons (e.g., Dunham, Chen, & Banaji, 2013). It is not until around the age of 7 years that children begin describing themselves in terms of internal qualities, such as traits and abilities, at which point they begin to compare and contrast themselves with others on such internal qualities (e.g., Cimpian, Hammond, Mazza, & Corry, 2017). Thus, in early childhood, children make perceived similarity judgments about others based on outward physical characteristics rather than inward traits. For this reason, the current study seeks to prime perceived similarity in young children using outward physical characteristics, such as gender, skin tone, and hair color.

As the social cognitive learning theory predicts (Bandura, 1997), perceived similarity to someone modeling how to do something can also predict a person's success at specific tasks. One study found that male college students' feelings of similarity to a person who was modeling anagram tasks predicted participants' subsequent success at the same type of task (Brown & Inouye, 1978). In other words, when a participant watched a model to whom they felt similar fail at the task, they did poorly on the task themselves. However, when participants felt they were better-skilled at the task than the model, they performed better than the model did. This is not surprising in the context of social learning theory, which suggests that when a person sees someone to whom they feel similar succeed, they feel they can also succeed at a similar task (Bandura, 1997).

In terms of children, research has shown that perceived similarity can predict imitation (Rosekrans, 1967), attitudes toward others (Bak & Siperstein, 1987), and categorization (Sloutsky & Fisher, 2004). In one study, preadolescent boys watched a video in which a male model was portrayed as either similar or dissimilar to the participant in terms of background and interests. High feelings of similarity to the model predicted greater imitation of the model's behaviors (Rosekrans, 1967). Another study found that children responded more positively toward another child with learning disabilities with whom they felt similar than toward a learning-disabled child with whom they had low perceived similarity (Bak & Siperstein, 1987; Siperstein & Chatillon, 1982). Additionally, children rely on perceptual similarity when categorizing other living things, such as pairing animals together because they look and/or sound the same (Sloutsky & Fisher, 2004).

Regarding younger children, some recent research has begun to focus on what happens when children feel similar to a media character. One study found that when children felt similar to Dora from *Dora the Explorer*, they displayed more creative problem-solving with the same items Dora used to solve a problem in the show (Calvert et al., 2007). Additionally, when children felt similar to Sid from *Sid the Science Kid*, they were more likely to ascribe real, person-like traits to Sid and also had higher beliefs in Sid's problem-solving expertise (Baugh, Richert, & Schlesinger, 2019). In another study, when children felt similar to a novel media character, they were also more likely to remember what that character did in a video clip (Baugh, Schlesinger, & Richert, revisions under review). There is also evidence that perceived similarity to a novel media

character can be effectively increased and decreased when presenting that character to children as similar to or dissimilar to them on the aspects of gender and color, movie, and snack preferences (Baugh et al., revisions under review). Given the potential for perceptions of similarity to media characters to support children's prosocial learning, the current study investigates two potential developmental mechanisms that might promote the connection between similarity and learning: theory of mind and cognitive empathy reasoning, constructs that are outlined in more detail later in the introduction.

Educational Media Characters

A large body of research has looked at the impact of educational media on young children and on what children tend to learn or not learn from educational media that is tailored to them (Bryant, Alexander, & Brown, 1983; Din & Calao, 2001; Fisch, 2004; Hess & McGarvey, 1987; Krcmar, Grela, & Lin, 2007). Generally speaking, children's educational media is successful in teaching children school readiness skills in the areas of science, mathematics, and literacy (Bryant et al., 1983; Fisch, 2004). This effect is increased with television programming that allows children to be engaged through simulated socially-contingent content, such as *Dora the Explorer*, in which children are asked questions by the characters in the show and given time to answer, after which the character answers the question (Lauricella, Gola, & Calvert, 2011). Other evidence has suggested that children's learning from media characters is also increased when children feel similar to the characters they are watching (Baugh, Schlesinger, & Richert, revisions under review; Calvert et al., 2007).

Although research has shown that children learn academic skills from educational videos (Anderson, Huston, Schmitt, Linebarger, & Wright, 2001), young children have difficulty learning prosocial messages from educational media, such as anti-bullying or acceptance of those with disabilities (Mares & Acosta, 2008). In one study, children were shown clips of the show *Clifford the Big Red Dog* in which a dog with a disability was introduced to Clifford and his group of friends. In the original version of the episode, one of Clifford's friends showed hesitation and fear at interacting with the new friend. An edited version of the clip did not contain these fear responses, instead focusing on the positive resolution (Clifford and his friends accepted the new friend, recognizing that disabilities are not dangerous). Children were randomly assigned to watch either the original or the edited version of the clip. Children who viewed the original version were not able to pick out the prosocial messages of acceptance; however, children who viewed the edited version showed higher levels of comprehension of the intended message (Fisch, 2000; Mares & Acosta, 2008).

Research has suggested that difficulties in learning prosocial messages from media may arise because children do not see the relationship between the fantastical characters in the stories or videos they watch or read and the people they interact with daily (Mares & Acosta, 2008; Richert & Schlesinger, 2017). However, being able to connect the lessons, whatever the content, to the child personally can assist learning (Cingel & Krcmar, 2017). In one study, participants were divided into four conditions: control (children watched an episode of *Arthur* that did not feature a moral message alone) and three treatment conditions in which the participants viewed an episode of

Arthur that featured a moral message. The treatment conditions consisted of participants viewing the episode alone, the parent watching with the child but acting naturally during the show (i.e., as they would at home), or the parent watching with the child but engaging in active mediation (researchers told parents to discuss/explain the show's content with their children). Results indicated that children who viewed the show with their parent mediating scored higher on comprehension, perspective-taking, and moral reasoning measures than the control group, because parents were connecting the themes of the show to the children on a personal level (Cingel & Krcmar, 2017). If children are assisted in making connections between themselves and what they are watching, it is possible that these connections can facilitate learning. Building on prior research into perceived similarity and learning prosocial or moral lessons, the current study examines whether children's perceived similarity to media characters can facilitate children's theory of mind and empathy reasoning regarding those characters, as well as perceived similarity's effects on children's predictions of a bystander's prosocial behavior.

Social Implications

As both a cognitive and socioemotional construct, perceived similarity affects one's views of others and of their own group membership in varied ways. Research shows that humans of all ages tend to prefer in-group members over out-group members (Hailey & Olson, 2013). According to social identity theory (Tajfel & Turner, 1986/2004), favoritism toward in-group members is caused by a motivation to have a positive group identity, which is evolutionarily adaptive. Children believe that people should share their resources more with in-group members (specifically, family and

friends) than with strangers (Olson & Spelke, 2008) and seem to actively share more with in-group rather than out-group peers (Fehr, Bernhard, & Rockenbach, 2008). When empathy was induced, another study found that children helped in-group and out-group members equally; however, when empathic understanding was not induced, children were more likely to help members of their in-group (Sierksma, Thijs, & Verkuyten, 2015).

However, some research has shown that there may be times when children prefer out-group over in-group members. Few studies have attempted to assess the contexts in which children prefer out-group members, but those that have posit that favoring out-group members can occur when group norms are at play (Rutland, Hitti, Mulvey, Abrams, & Killen, 2015). In middle childhood, children prefer out-group members who hold to their in-group's norms over an in-group member that does not adhere to group norms (Abrams, Rutland, & Cameron, 2003). This effect seems to extend into adolescence, such that adolescents also prefer an out-group member's deviance over an in-group member's deviance when the in-group member's actions are a threat to the group's identity (Rutland et al., 2015). These findings may indicate that children's preference for in-group or out-group members may be driven by a desire to uphold the standards of the group in which the child is a member.

Another interesting social effect of perceived similarity is related to the concept of bystanders. Early research on the bystander effect suggested that group size may be an important factor in adults' decisions of whether to help a stranger or not (e.g., Harris & Robinson, 1973; Latané & Darley, 1968). However, other factors may also play a role in decisions to help another person. For example, researchers found that if bystanders were

allowed to get to know one another, group size did not inhibit helping behavior (Rutkowski, Gruder, & Romer, 1983). Social identity theory (Tajfel & Turner, 1986/2004) suggests that people's behavior can be motivated by the social group in which they perceive themselves to be. Both past (e.g., Dovidio et al., 1997; Hornstein, Masor, Sole, & Heilman, 1971) and contemporary (e.g., Gonultas & Mulvey, 2021; Palmer, Rutland, & Cameron, 2015) research has shown that bystanders are more likely to help an in-group over an out-group member; however, as previously mentioned, this tendency is not universal (Abrams et al., 2003; Rutland et al., 2015; Sierksma et al., 2015). Bystanders may help an out-group member when attempting to avoid perceptions of prejudice (Saucier, Miller, & Doucet, 2005) or when group boundaries are flexible (Levine, Prosser, Evans, & Reicher, 2005).

Identification and Predicting What Others Will Do

To summarize above points, research shows that perceived similarity to educational media characters can increase learning from those characters (Baugh et al., revisions under review; Calvert et al., 2007). When children are scaffolded by adults to make connections between what they are watching and their own lives, learning is increased (Cingel & Krcmar, 2017). Additionally, perceived similarity to others predicts children's sharing behaviors (Fehr et al., 2008; Olsson & Spelke, 2008) and helping behaviors (Sierksma et al., 2015). This effect extends into adulthood, where research shows that adults are more likely to help an in-group member over an out-group member (Gonultas & Mulvey, 2021). However, research has not examined whether perceived

similarity to another person will aid in predictions of how others will behave generally, and specifically whether others will behave prosocially.

A developmental question that remains is whether children reason differently about people similar to or different from themselves when those individuals are either the target of a negative event or a bystander to a negative event happening to another person. If the same social cognitive mechanisms are at play (namely perspective-taking and theory of mind), then we would predict that children would be able to reason about the mental state and attribute prosocial behavior of a person high in perceived similarity to the child. In the current study, children's predictions about whether a bystander (who is either the child's in-group or out-group) will help another person (who also varies by whether they are in the child's in-group or out-group).

Prosocial Behavior

Prosocial behavior can be broadly defined as actions that are meant to benefit people other than oneself (Batson & Powell, 2003). Behaviors falling under this category begin to appear in the second year of life, and possibly earlier (Brownell, 2012). In regard to how prosocial behaviors emerge, some research has shown that infants respond to the distress of others during the first year of life (Geangu, Benga, Stahl, & Striano, 2010; Roth-Hanania, Davidov, & Zahn-Waxler, 2011). During toddlerhood, children begin to display sharing, helping, and cooperating behaviors, especially when they receive support from their caregivers (Dunn & Munn, 1986; Rheingold, 1982; Ross & Lollis, 1987). In terms of developmental trajectories of helping, comforting, sharing (of information or resources), and cooperative behaviors in toddlers, more recent research

has shown that children spontaneously share information with adults (Liszkowsky, Carptner, & Tomasello, 2008). Infants' pointing behaviors by 12 months of age indicate an understanding of others' knowledge and a prosocial motive to help by providing information. Additionally, around 18 to 24 months, toddlers spontaneously share food and toys with adults (Brownell, Svetlova, & Nichols, 2009; Vaish et al., 2009). By the time children are 2 years old, their helping behavior is not influenced by parental presence and/or encouragement, which suggests that it is spontaneous and intrinsically motivated (Warneken & Tomasello, 2013).

Around the end of the second year of life, research shows that toddlers' prosocial behavior is governed by the context they are in. For example, 2-year-olds decide to help or not based on another person's needs and traits, such as friendliness, helpfulness, and trustworthiness (Dunfield & Kuhlmeier, 2010; Vaish et al., 2009). Additionally, engaging in one type of prosocial behavior does not necessarily predict a toddler's engagement in another type of prosocial behavior (i.e., sharing versus comforting; Dunfield, Kuhlmeier, O'Connell, & Kelley, 2011). Toddlers engaged in more prosocial behavior (sharing, helping, and comforting) when they saw an adult in need than when the adult did not require help, and they engaged in each prosocial behavior with similar frequency, but there was no correlation between the types of prosocial tasks (Dunfield et al., 2011).

By the time children are preschool-aged, their prosocial behaviors become motivated by moral reasoning (Eisenberg-Berg & Hand, 1979) and their own personal emotional experience (Eisenberg et al., 1990). Helping and comforting behaviors are

related to a child's sociability, or the number of sociable interactions with peers they are engaged in. This would suggest that children's helping and comforting behaviors reflect an interest in people and a desire to interact with them successfully (Eisenberg-Berg & Hand, 1979). Children's spontaneous sharing behaviors also are motivated by needs-oriented reasoning (recognizing the physical or psychological need of another person and considering that need in their reasoning) and negatively correlated to hedonistic reasoning (motivated by selfish gains; Eisenberg-Berg & Hand, 1979). This suggests that the social cognitive processes of perspective-taking and theory of mind (required to recognize and reason about the needs of others) are related to children's prosocial behaviors, namely sharing.

In terms of a child's own emotional experience, sadness is positively correlated with helping, while heart rate deceleration (which is indicative of a sympathetic response; Campos, Butterfield, & Klinnert, 1985; Eisenberg et al., 1988a) is also positively associated with helping behaviors (Eisenberg et al., 1990). In those studies, children watched videos depicting children in distress, which were designed to elicit empathy. Children's emotional responses were assessed through self-report, facial, and heart rate indexes. While viewing the distressed children, the participants subsequent helping behaviors toward the person in the video were positively associated with personal feelings of sadness, but negatively associated with feelings of personal distress. Additionally, heart rate deceleration was positively associated with helping the person in the video, while heart rate acceleration (commonly associated with fear, anxiety, or

personal distress; Craig 1968; Eisenberg et al., 1988a; Eisenberg et al., 1988b) was associated with not helping.

To summarize, previous research indicates that by the time children are preschool-aged, their prosocial behaviors are motivated by social cognitive processes. Children's desire to successfully interact with others, which requires theory of mind and empathy, may be related to helping and comforting behaviors (Eisenberg et al., 1990). Across many studies, research shows that children between the ages of 2-12 years who possess an advanced theory of mind are more likely to act prosocially (Imuta, Henry, Slaughter, Selcuk, & Ruffman, 2016). Additionally, many studies support the idea that increased empathy can lead to increased prosocial behaviors (e.g., Batson, 2011). The current study examines if the ability to understand a particular aspect of theory of mind (namely, real-apparent emotions) and cognitive empathy might explain relationships between perceived similarity and predictions of another person's prosocial behavior.

In addition to these social cognitive processes being relevant to children's own prosocial behaviors, they are also relevant to understanding who children predict will behave prosocially: someone who is like themselves, or someone who is very different. Research indicates that children as young as 2 years of age have comparable sympathetic arousal when they help someone and when they see that person being helped by another (Hepach, Vaish, & Tomasello, 2012). Additionally, 2-year-olds' helping behaviors seem to be motivated by a desire to see a person in need receive the required assistance (Hepach, Vaish, Grossmann, & Tomasello, 2016). Thus, it seems that from a young age, children desire for others to receive needed help and also experience some vicarious

physiological event when observing helping behaviors. Research also suggests that children attribute certain emotions to people based on that person's actions. When children observe a person behaving prosocially, they assume that person is doing so based on their own emotional state, such as feeling guilty or sad (Malti & Krettenauer, 2013). However, few studies have attempted to assess children's predictions of whether a bystander will behave prosocially based on perceived similarity alone, and without any other information (e.g., indication of the bystander's emotional state). As previously mentioned, research suggests that we view ourselves generally favorably (Pelham et al., 2005). It perhaps follows that we would also view someone similar to us in a favorable manner as well. Thus, it is possible that children may predict prosocial behavior from a character with high perceived similarity in comparison to a character with low perceived similarity.

Although one study found that perceived similarity on the basis of shared interests but not ethnicity was positively associated with empathy for and subsequent sharing with another child (Panofsky, 1976), in children, few studies have been conducted studying the relationship between all three constructs of interest: social cognition (specifically, empathy and theory of mind), perceived similarity, and prosocial behavior. The current study examines (a) whether perceived similarity to media characters facilitates children's theory of mind and cognitive empathy, and (b) whether perceived similarity to media characters will affect children's predictions of a bystander's prosocial behavior.

Social Cognition

Social cognition can be defined as thinking about one's own thoughts, emotions, motivations, and behaviors as well as those of others (Olson & Dweck, 2009). Theory of mind, or the understanding of the mental activity of oneself and others, is a much-researched social cognitive process (Wellman & Liu, 2004). Empathy, an (congruent) emotional response to another's affective state (Eisenberg et al. 2014), is another social cognitive process that has been the subject of many studies. The following sections will expand upon theory of mind and empathy as social cognitive processes and how they may relate to perceived similarity.

Theory of Mind

Definitions and theoretical foundations. Theory of mind is the ability to understand and reason about another person's mental states, including their knowledge, emotions, and motivations. In the past several decades, researchers have begun to consider theory of mind to constitute multiple cognitive achievements (rather than a single cognitive process) that seem to have a developmental progression (Wellman & Liu, 2004). Wellman and Liu's (2004) work suggests that young children's theory of mind abilities unfold in the following chronological order: diverse desires (understanding that two people can have differing desires about the same items); diverse beliefs (understanding that two people can have differing beliefs about the same items while the child does not know which belief is correct); knowledge access (child has knowledge and reasons about whether another person has the same knowledge); contents false belief (understanding another person's beliefs about the contents of a labeled container when

the child knows what is inside); explicit false belief (predictions of how another person will behave given their false belief); belief emotion (predictions of how another person will feel given their false belief); and finally, real-apparent emotion (understanding that a person may inwardly feel one way but outwardly display something else).

Research regarding children's performance on real-apparent emotion tasks is most relevant to the current study. Real-apparent emotion tasks generally follow a common format: first, children hear a story in which a character experiences a negative or positive event; second, children are asked to identify the emotion that the character feels; third, the story explains that the character has a reason to not want their real emotion to be known to social partners; and fourth, children are asked which type of emotion the character should outwardly display (e.g., Gardner, Harris, Ohmoto, & Hamazaki, 1988; Sudo & Farrar, 2020). Early work from Harris and colleagues (1986; 1988) found that 6-year-old children (compared to 4-year-olds) understood that a person is capable of misleading others about their emotional state by outwardly displaying an emotion discrepant from what they feel. However, research from Joshi and MacLean (1994) suggests that in addition to age, both gender and cultural background may interact to influence children's ability to grasp the difference between real and apparent emotions. More specifically, English and Indian children were compared on their performance on real-apparent emotion tasks, and Indian girls as young as 4 years old were found to perform above chance, which was not the case for Indian boys or English boys/girls of the same age. These findings suggest that real-apparent emotion understanding is

facilitated by certain gendered social norms, such as the perception in India that girls should avoid displaying negative emotions in social settings (Joshi & MacLean, 1994).

In order to understand why someone would mask their true felt emotion, children must be able to perspective-take and identify another's emotional state. Real-apparent emotion tasks assess whether children can understand another person's motivation for displaying a particular emotional state given a particular social context. Real-apparent emotion understanding emerges around the age of 6 years (Harris et al., 1988), while emotion identification and perspective-taking emerges earlier (e.g., Newcombe & Huttenlocher, 1992). Real-apparent emotion understanding is important for predicting behavior because children understand from an early age that the behavior of others is motivated by their mental and emotional states (Slaughter, 2015). Understanding how a person coordinates their emotions to correspond with the social goals of an interaction is integral to real-apparent emotion reasoning, which requires children to reason about a person's outward behavior given an internal affective state and a particular social context.

Relationships between theory of mind and perceived similarity. Theory of mind and perceived similarity have a documented relationship across both adult and child literature. In one study, adult participants were asked to predict another person's mental state. When participants had high perceived similarity with their counterpart, they were more likely to project their own mental state onto their counterpart; in other words, participants assumed that someone like them would have a similar mental state (Ames, Weber, & Zou, 2012). Neuroimaging research seems to support this idea. Functional overlap in the medial prefrontal cortex has been associated with both theory of mind

reasoning and processing information about the self (Mitchell, Banaji, & Macrae, 2005). However, one study found that activation of the ventral medial prefrontal cortex, which is implicated in self-referencing tasks, was associated with perceived similarity during theory of mind tasks. This finding suggests that when adults have high perceived similarity with another person, they engage in self-reflection to infer that person's mental state (Mitchell et al., 2005). In young children, this also seems to be the case. Three-to-5-year-old children performed significantly better on theory of mind when (specifically, false belief) when reasoning about their twin than when reasoning about their friends (Cassidy, Fineberg, Brown, & Perkins, 2005). Taken together, research suggests that we are able to use perceived similarity to help us make judgments about the mental state of another person by reflecting on our own mental state.

Relationships between theory of mind and prosocial behavior. Whether theory of mind capabilities correspond to subsequent prosocial behavior is a well-documented question. Some research has indicated that for children between the ages of 4.5-6 years old, both theory of mind and emotion understanding are positively related to prosocial behavior according to parent reports (Eggum et al., 2011). This effect seems to continue into adolescence. One study found that theory of mind between the ages of 5-7 years was associated with improvements in prosocial behavior in adolescence, leading to higher peer acceptance and lower peer rejection (Caputi, Lecce, Pagnin, & Banerjee, 2012). Additionally, a recent meta-analysis provided evidence that being able to reason about the thoughts and feelings of another person increases 2-12-year-old children's tendency to act prosocially (Imuta et al., 2016). Therefore, the current study will assess whether

children's theory of mind can be scaffolded by perceived similarity, and whether this will correspond to children's predictions of another person's prosociality.

Empathy

Definitions and theoretical foundations. A conceptual debate has surrounded the construct of empathy. The debate hinges on whether empathy includes both an affective and cognitive component (Barnett, 1990). Some researchers have defined empathy in a purely cognitive fashion as an ability to recognize and understand the thoughts, feeling, and perspective of another person (Borke, 1971; Buckley, Siegel, & Ness, 1979), while others have adopted a view that empathy is vicariously experiencing an emotion that is like the emotion of another individual (Batson & Coke, 1981; Hoffman, 1984). Empathic emotion-sharing can come from having direct contact with the outward affective cues of another person or from merely knowing about another person's emotional state, so the cognitive component of empathy should be expected to play a varying role in a person's empathic arousal, depending on the situation (Barnett, 1990).

Several models incorporating both the cognitive and affective components of how empathy develops in children have been proposed. Feshbach's (1978) three-component model of empathy outlines three required antecedents to empathy, the first two of which are cognitive and the third affective: the ability to differentiate and classify others' affective states, the ability to perspective-take, and the emotional capacity to outwardly share an affective response with another. Hoffman (1977) also proposed a three-component model of empathy that attempts to explain how both cognitive and affective factors change and interact with each other to produce empathy and moral development.

The three components in this model are affective, cognitive, and motivational. To sum up Hoffman's (1977) model, the development of the ability to distinguish between self and other and of theory of mind sets up a capacity to have empathic responses that motivate action.

According to Eisenberg and colleagues (2014), empathy is defined as an emotional response (congruent to another's emotional response) caused by another person's emotional state. An important point on this view of empathy is that it requires differentiation between the self and others. Eisenberg and colleagues' (2014) model of empathy adds contextual components that are relevant to the current study. In Eisenberg's definition, empathy involves both cognitive and affective aspects, but in addition, this definition points out that empathy based on identifying another's emotional state and empathy based on perspective-taking may require different cognitive abilities (Eisenberg et al., 2014). Importantly, merely feeling the emotion that another person feels would not constitute empathy in Eisenberg and colleagues' (2014) model. For example, alerting others to imminent danger would likely cause a shared emotional response of fear, but this would generate a separate, own feeling of fear in others rather than fear stemming from an empathic perspective-taking process. Therefore, according to this view of empathy, both cognitive and affective processes are necessary to achieve empathy, and the cognitive processes of emotion differentiation and perspective-taking are separate and necessary processes (Eisenberg et al., 2014).

Yet another model of empathy outlines four stages a person moves through when experiencing empathy where one stage must precede all subsequent stages (Marshall,

Hudson, Jones, & Fernandez, 1995). The first stage involves recognizing another's emotional state, followed by the ability to perspective-take. Third, an emotional or compassionate response is evoked, and then steps are taken to ameliorate the distress of the other person.

From a developmental model, acquiring empathy also involves moving through four stages during childhood (Hoffman, 1987). Infants, unable to distinguish between themselves and others (Hoffman, 1975), respond to the distress of others with their own distress or contagious crying (Sagi & Hoffman, 1976). Around 18 months of age, children are beginning to be able to distinguish between themselves and others. By the time children are 2 years of age, they begin to understand others' emotional states, share that emotional state, and attempt to alleviate distress of others (Zahn-Waxler & Radke-Yarrow, 1990), and by 3 years old, children have started developing perspective-taking skills (Marvin, Mossler, & Greenberg, 1976). In this stage, children can display empathy for people who are not present (Cress & Holm, 1998). Children become aware of the existence of the personal histories and identities of other people by late childhood, and in this stage, they can show empathy for an ongoing situation of another person rather than thinking of distress as a short-lived and temporary state only (Hoffman, 1984). As children continue to develop, they begin to learn that their own feelings and experiences are separate and sometimes different from those of others. Throughout the rest of childhood, children's ability to understand and effectively respond to others' emotional states continues to develop (Selman, 1980), and children's empathic abilities become more complex as well (Hoffman, 1977).

Research on the empathic skills and tendencies of children has shown that empathic responses vary greatly depending upon the context in which they occur. For example, children's empathic responses are stronger and occur more often in response to their mothers' distress rather than that of strangers (Kiang, Moreno, & Robinson, 2004; Robinson, Zahn-Waxler, & Emde, 2001). Children do still display empathic behaviors and responses toward unfamiliar adults (Vaish, Carpenter, & Tomasello, 2009) and children (Williams, O'Driscoll, & Moore, 2014). By the time children are toddlers, they display victim-oriented responses such as attempting to understand another person's distress and the situation causing it, concern shown through verbal or facial expressions, and instrumental helping actions (Zahn-Waxler, Schiro, Robinson, Emde, & Schmitz, 2001). However, sometimes children respond to another's distress by ignoring it or becoming angry at the victim (Kiang et al., 2004; Zahn-Waxler, Radke-Yarrow, Wagner, & Chapman, 1992).

For the purposes of the current study, empathy will be understood as most closely matching Eisenberg and colleagues' (2014) model of empathy. The current study explores the cognitive aspects of empathy as separately occurring processes that require the differentiation of self from others. Children were tasked with creating characters that, while differing in perceived similarity, were nonetheless separate entities from the child. The current study seeks to examine whether children's perceived similarity to media characters facilitates cognitive empathy (specifically, children's ability to predict and classify another person's emotional state) on a real-apparent emotion theory of mind task.

Empathy and perceived similarity: Relations to prosocial behavior. Perhaps the most well-known theory of how and why empathy and prosocial behavior are related is the empathy-altruism hypothesis (Batson, 1987, 1991), which is the idea that the more empathy we feel for a person in distress or in need, the more altruistic motivation we experience to alleviate that distress or need. In other words, empathy for another person causes an altruistic motivation to help that person (Batson, 1991). Many studies have supported the empathy-altruism hypothesis (e.g., see Batson, 2011 for a review; Batson et al., 1988; Batson et al., 1989; Burks, Youll, & Durtschi, 2012; Coke, Batson, & McDavis, 1978; Dovidio, Allen, & Shroeder, 1990; Stocks, Lishner, & Decker, 2008).

However, despite the evidence supporting the predictive relationship between empathy and prosocial behavior, findings have been inconsistent across the literature (Underwood & Moore, 1982; Eisenberg et al., 1988). This is likely due to several reasons. First, many studies do not delineate between distress and anxiety. Second, prosocial behaviors have not been always been clearly distinguished between. For example, depending on their age, a child may be more likely to comfort another person than to share resources, or vice versa. Third, empathy has typically been assessed using self-report measures, and a child's verbal skills (or lack thereof) may impede their ability to accurately report their emotional state or that of others (Eisenberg et al., 1988). Assessment procedures may be the most likely reason for any inconsistent results in the literature regarding the relationship between empathy and prosocial behavior (Iannotti, 1985). Regardless, potentially conflicting research has indicated that sympathy (a cognitive rather than affective process) predicts prosocial behavior in middle (Carlo et al.,

2010) and early childhood (Edwards, Eisenberg, Spinrad, Reiser, Eggum-Wilkens, & Liew, 2015). Given these relations between the more cognitive aspects of empathy and prosocial behavior, the current study adds to this literature by examining relations between cognitive empathy and predictions of others' prosocial behavior.

Empathy and perceived similarity. The relationship between empathy and perceived similarity has been documented in literature focusing on research with both adult and child populations. One study found positive associations between empathy for a target person and feelings of similarity to that target person's situation in adults (Håkansson & Montgomery, 2003). Other research has shown that feelings of similarity to a sexual assault victim based on the victimization experience leads to empathic feelings toward that victim, as well as reduced attitudes toward the victim's culpability (Miller, Amacker, & King, 2011). A body of research has also shown that perceived similarity with another person mediates the relationship between empathy and prosocial behavior (Batson, Duncan, Ackerman, Buckley, & Birch, 1981; Gaertner & Dovidio, 1977; Krebs, 1975). In one study, participants who felt similar to a target who was experiencing electric shocks volunteered to take the shocks for them (Batson et al., 1981). Feelings of similarity to a victim in an emergency resulted in increased helping behaviors (Gaertner & Dovidio, 1977). Another study found that participants felt more empathy for targets experiencing an electric shock when they felt similar to that target, resulting in participants volunteering to take the electric shocks for the target rather than keeping a monetary reward for themselves (Krebs, 1975).

In children, the relationship between empathy and perceived similarity is also supported (Feshbach & Roe, 1968; Rosekrans, 1967; see Shantz, 1975 and Smith, 1989 for review). In one study, children were shown a series of slides depicting other children feeling either happiness, sadness, fear or anger. Children's empathy was measured by whether the participant reported feeling the same emotion as the child on the slide. Participants who saw pictures of children the same gender as themselves reported higher feelings of empathy for that child (Feshbach & Roe, 1968).

One study has found contradicting evidence for the nature of the relationship between perceived similarity and empathy in adults (Batson, Lishner, Cook, & Sawyer, 2005). In this study, college students read a story about a woman named Kathy who had reconstructive surgery on her leg and was undergoing physical therapy. The story made it clear that Kathy's rehabilitation was hard and painful, but that Kathy did not give up on it. Experimenters manipulated Kathy's similarity to the participants, who were female college students. Kathy was presented as being either a 40-year-old clothing store clerk (dissimilar condition), a 20-year-old clothing store clerk (moderately similar condition), or a 20-year-old college student (similar condition). Results indicated that participants felt most empathy for Kathy in the dissimilar condition, followed by the similar condition, and then the moderately similar condition. While the results of many other studies contrast with this one, Batson et al.'s (2005) findings may be explained by participants displaying more empathy for an older woman going through painful physical therapy than a younger woman doing so, because of the expected hardship a more advanced age would place on this type of rehabilitative therapy. Thus, Batson et al.'s

(2005) findings cannot be clearly attributed to feelings of similarity. The current study will therefore examine whether children's cognitive empathy can be affected by perceived similarity.

Relations between cognitive empathy and theory of mind. Whether empathy and theory of mind are distinct or overlapping constructs is an important developmental question. On a conceptual and definitional level, there is clearly much overlap. Empathy describes our ability to share another's affective state, but also to recognize and understand that affective state in relation to oneself (cognitive empathy), while theory of mind describes our ability to explain and predict others' behavior through mental state reasoning (Decety, & Svetlova, 2012). However, while empathy requires some level of identification with another person (specifically, emotion sharing), a theory of mind reflects our ability to distinguish between ourselves and others, specifically the understanding that others' internal and mental states are not our own, even though they can be similar to or different from our own (Frith & Frith, 1999).

Building on this idea, fMRI research has suggested that theory of mind requires more cognitive, mentalizing processes, while empathy relies more on internal affective representations (Hooker, Verosky, Germine, Knight, & D'Esposito, 2008). When participants were asked to predict how a False Belief character would feel if they had a correct belief, neural activation was found in areas such as the superior temporal sulcus, medial prefrontal cortex, temporal poles, somatosensory related cortices (SRC), inferior frontal gyrus, and thalamus, regions involved in both theory of mind and emotion. However, greater neural activity in primarily emotion-related regions (such as the

bilateral thalamus) was associated with higher empathy (Hooker et al., 2008). Additionally, while brain activity during empathy and theory of mind tasks overlap, distinct neural networks are responsible for each one (Völlm et al., 2006). Theory of mind and empathy showed common brain activation in areas such as the medial prefrontal cortex and temporal poles. However, theory of mind showed unique activation in the lateral orbitofrontal cortex, middle frontal gyrus, cuneus, and superior temporal gyrus, while empathy showed higher activation in the anterior and posterior cingulate and amygdala (Völlm et al., 2006). These findings suggest that while both theory of mind and empathy require brain areas associated with mental state inference, empathy additionally requires areas associated with emotional processing. The current study seeks to examine cognitive empathy and theory of mind as overlapping but distinct skills, and to explore whether perceived similarity to story characters influences children's cognitive empathy and/or theory of mind.

The Current Study

Prior research has documented the relationship between empathy and prosocial behavior in children (e.g., Batson, 1987, 1991; Eisenberg et al., 1987; Radke-Yarrow et al., 1983; Strayer & Roberts, 1989), as well as a relationship between empathy and perceived similarity (Håkansson & Montgomery, 2003; Miller et al., 2011).

Additionally, research has also provided evidence for the mediating effect of perceived similarity on the relationship between empathy and prosocial behavior in adults (Batson et al., 1981; Gaertner & Dovidio, 1977; Krebs, 1975), but few studies have examined these relationships in children (Panofsky, 1976), and perhaps none have examined these

relationships in regard to media characters. The proposed research has four primary research objectives with accompanying hypotheses.

Research Objective 1: The first research objective is to examine if children's cognitive empathy scores vary when thinking about a character similar to themselves and different from themselves. Children were tasked with building two characters: one person that is just like the child, and one person that is very different from the child. Then, these characters were inserted into two real-apparent emotion stories. One character was the actor, and the other was a bystander. The actor character experienced a negative event, and children were asked how the character felt because of what happened.

Hypothesis 1. Children will perform better on the cognitive empathy question when they are reasoning about the similar character than when they are reasoning about the different character.

Research Objective 2: The second objective of the current study is to examine children's real-apparent emotion theory of mind performance for similar and different characters. In the real-apparent emotion stories, it was explained to children that while the character(s) feels a negative emotion, they have a motivation to conceal that emotion from others around them. Then children were asked how the character's facial expression should look.

Hypothesis 2: Children will perform better on the real-apparent emotion question when they are reasoning about the similar character than when they are reasoning about the different character.

Research Objective 3: The third objective of the current study is to examine children's predictions of who will behave prosocially. After the real-apparent emotion question, it was explained to children that the bystander character witnessed the negative event occur, and then children were asked what the bystander character did next. Children's open-ended responses to this question were coded for prosociality. The literature suggests that children will attribute more prosocial behaviors to the character similar to themselves (Batson et al., 1981; Gaertner & Dovidio, 1977; Krebs, 1975; Panofsky, 1976).

Hypothesis 3: Children will attribute more prosocial behavior to the character that is similar to themselves rather than the character different from them.

Research Objective 4: The fourth research objective was to examine if the hypothesized relations between predictions of prosocial behavior and perceived similarity is explained by cognitive empathy and theory of mind.

Hypothesis 4: Cognitive empathy and theory of mind will be positively correlated with predictions of prosocial behavior for the similar character but not for the different character.

Chapter 2: Methods

Participants

Participants were children-caregiver dyads, with children ages 4 to 6 years old. Caregivers were recruited from social media (e.g., Facebook) and word-of-mouth. After caregivers filled out an online form that collected demographic data about the child (i.e., gender, age, primary language) and their family (i.e., approximate household annual

income, primary languages spoken in home), dyads were scheduled for a 30-minute Zoom interview. Parental consent forms were emailed to caregivers at the time of scheduling. Caregiver consent and child assent were obtained verbally at the beginning of the interview and video recorded. The final sample consisted of 32 children ages 4 to 6 years old ($M = 5.57$, $SD = .92$; 46.9% female). Dyads were from multiple areas across the United States and were fluent in English. The ethnic breakdown of the sample is as follows: 43.8% ($n = 14$) White/European American; 21.9% ($n = 7$) Hispanic/Latinx; 18.8% ($n = 6$) reported multiple ethnicities; 9.4% ($n = 3$) Black/African American; 6.3% ($n = 2$) Asian/Asian American. A power analysis for paired-samples t -tests with power set to 80% indicated that to detect a large effect with alpha constrained to .05, a total sample size of 31 participants was required. Participants were compensated with virtual versions of the characters and stories they created, as well as another book of their choice sent through the mail.

Materials

Characters. Children were prompted to create two characters: one person who is like the child (similar character) and one person who is very different from the child (different character). The order in which characters were created was counterbalanced across participants. Similar to how an eyewitness might create an image of a person using aspects of faces, children chose specific features of a character from an array of static cartoon-like elements. Children were prompted to choose the following aspects of each character: gender; skin tone; eyebrow color; hair color and style; clothing (dress or shirt/pants) and clothing color; shoe color; and presence and color of eyeglasses. In

between choosing each piece, children were verbally prompted with statements reminding them of which character they were building (e.g, “If this person is just like/very different from you, what color should their hair be?”). Once completed, the similar character was named either Sam or Sky, and the different character was named either DJ or Drew. Name choice was dependent on whether the caregiver reported that the child knew someone with any of the aforementioned names, in which case a name was not used.

Conditions. Two stories were created for the current study, and each child received both stories. These stories are versions of Harris and colleagues’ real-apparent emotion theory of mind tasks (1988). Each character acted as either the observer or the protagonist in the story. Story order and character role (protagonist vs. observer) was counterbalanced within and across participants. In these stories, Sam/Sky and DJ/Drew have a rocket ship, which they take into outer space. While flying through space, the characters see a planet and decide to land, but must put on space helmets to exit the rocket ship. Each story unfolds in three parts, and assessed three aspects of children’s emotional reasoning: cognitive empathy, theory of mind, and prosocial attributions.

Tripping Story. In Part 1, the protagonist trips over a crater, and aliens that live on the planet see this occur and laugh. Children were then asked how the protagonist felt about falling and being laughed at (Question 1 – cognitive empathy). If children reported a negative emotion (i.e., sad, angry), they were scored 2 points and the story continued to Part 2. If children reported a positive emotion, the interviewer re-read Part 1 and asked Question 1 again. If children gave a negative emotion, they were scored 1 point. If

children gave a positive emotion, the interviewer explained the correct answer before moving on, and children were scored 0 points.

In Part 2, the interviewer then explained that even though the protagonist felt negatively, they did not want the aliens to think of them as a crybaby. Children were then asked how the protagonist's face should look (Question 2). If children gave an emotion more positive than the answer to Question 1 (i.e., happy), they were scored 2 points and the story continued. If children gave a negative emotion, the researcher re-read Part 2 and asked Question 2 again. If children gave a positive emotion, they were scored 1 point. If children gave a negative emotion, the interviewer explained the correct answer before moving on, and children were scored 0 points. Scores on Questions 1 and 2 were averaged to obtain a theory of mind score, which ranged from 0-2, with higher scores indicating better theory of mind.

In Part 3, the interviewer explained that the observer character watched the previous scenario. Children were then asked what the observer character did next (Question 3). Children were prompted to continue giving responses for Question 3 up to 4 times. If children gave a response of "I don't know" to any of the prompts, no further prompts were given, and the interviewer progressed to Story 2.

Sneezing Story. In Part 1, the protagonist approaches an alien to say hello, but the alien sneezes on them. Children were then asked how the protagonist felt about being sneezed on (Question 1 – cognitive empathy). Scoring was identical to Story 1 – Question 1. In Part 2, the interviewer then explained that even though the protagonist felt negatively, they did not want to hurt the alien's feelings. Children were then asked how

the protagonist's face should look (Question 2). Scoring was identical to Story 1 – Question 2. In Part 3, the interviewer explained that the observer character watched the previous scenario. Children were then asked what the observer character did next (Question 3). Children were prompted to continue giving responses for Question 3 up to 4 times. If children gave a response of “I don't know” to any of the prompts, no further prompts were given, and the interview ended.

Measures

Much research has documented potential correlates with theory of mind, including executive function. Research suggests that executive function and theory of mind development are related cognitive skills, especially in early childhood, and that while individual variation exists in both skills, they develop simultaneously (for a review, see Perner & Lang, 2000). Additionally, the methods of the current study require rule-switching: children must create a character similar to themselves and a character different from themselves, and reason separately about both of them. The current study seeks to examine whether theory of mind can be scaffolded by perceived similarity; therefore, executive function is also measured so that it can be controlled for in analyses of the effect of perceived similarity on theory of mind.

The first task children completed assessed their inhibitory control. A day/night version (Gerstadt, Hong, & Diamond, 1994) of the Stroop task was used. In this task, children were trained to say “day” when they saw a picture of the moon, and to say “night” when they saw a picture of the sun. Using a PowerPoint presentation, participants were then shown these pictures in a random order to complete 16 trials. An

incorrect response was scored as a 0 and a correct response as a 1. Scores were summed for a final inhibitory control score of 0 to 16, with higher scores indicating better inhibitory control.

Many studies examining real-apparent emotion understanding in preschool-aged children focus on two main questions in the scoring of these theory of mind tasks (e.g., Gosselin, Warren, & Diotte, 2002). The first question asks children to identify the emotion felt by the character in a story. For the purposes of the current study, this first question will correspond to children's cognitive empathy scores. The cognitive empathy question requires children to identify another's emotional state, as well as perspective-take. This is line with both Feshbach's (1978) and Eisenberg's (2014) respective models of empathy, with a focus on the cognitive aspects (Carlo, Mestre, Samper, Tur, & Armenta, 2010; Edwards, Eisenberg, Spinrad, Reiser, Eggum-Wilkens, & Liew, 2015). The second question asks children about how that character's face should look if they have a motivation to conceal their real emotion. For the purposes of the current study, this second question will correspond to children's real-apparent emotion theory of mind understanding.

Composite variables and coding procedures. Total cognitive empathy scores were obtained by summing children's scores on Tripping Story – Question 1 and Sneezing Story – Question 1 for a possible range of 0 to 4, with higher scores indicating greater cognitive empathy. Additionally, theory of mind scores were obtained by summing children's scores on Tripping Story – Question 2 and Sneezing Story –

Question 2 for a possible range of 0 to 4, with higher scores indicating better real-apparent emotion understanding.

Children's open-ended responses to Tripping Story – Question 3 and Sneezing Story – Question 3 were coded for two things. First, responses were coded for prosocial behavior (i.e., helping, comforting) such that each prosocial response was scored 1 point. Children's open-ended responses were coded independently by two raters, one of whom did not know the hypotheses of the study; neither rater knew the condition of each participant during coding. Cohen's κ was run to determine the level of agreement between raters. For the first story, there was substantial agreement between raters (Altman, 1999), $\kappa = .64$, $p < .001$, 95% CI [.41, .82]. For the second story, there was also substantial agreement between raters, $\kappa = .73$, $p < .001$, 95% CI [.53, .90]. Across both questions, prosocial response scores were summed for a range of 0 to 8, with higher scores indicating that a participant attributed higher amounts of prosocial behavior.

Additionally, children's open-ended responses were coded for "I don't know" and otherwise nonresponses. Children could have been asked the open-ended question up to 4 times for each story. If children responded "I don't know", did not give a response, or said they had no ideas the first time they were asked the open-ended question, that child received a score of 4 for nonresponse. If they gave a nonresponse to the second trial of the open-ended question, they received a nonresponse score of 3. If a child gave a nonresponse to the third trial, they received a nonresponse score of 2. If children gave a nonresponse to the last trial, they received a nonresponse score of 1. If children never gave a nonresponse (i.e., gave a novel answer to each question trial), they received a

nonresponse score of 0 for that story. Cognitive empathy, theory of mind, and prosocial responses were also separated by character (similar vs. different) so that children's potentially differential reasoning across characters could be assessed.

Procedure

After the Stroop task, children built the similar and different characters. Once the pieces for the characters were chosen, the interviewer assembled the characters and inserted them into the real-apparent emotion theory of mind stories. During character and story assembly, an assistant showed participants a PowerPoint presentation explaining the book options children could choose from as their compensation for participation. Once a book was chosen, the interviewer showed children a PowerPoint presentation of the theory of mind stories with the child's similar and different characters as the protagonist and bystander. The order in which children created the characters was randomized and counterbalanced across participants, resulting in approximately 56% of participants creating the dissimilar character first. The order in which stories were presented to children was also counterbalanced within and across participants. Lastly, within each story, the role of each character was also counterbalanced within and across participants. Therefore, children were assigned to one of two character-building conditions (similar first or dissimilar first), and one of four story order conditions (e.g., Story Condition A means that a child heard the Tripping Story first, and the similar character was the one who tripped).

Chapter 3: Results

The results section is organized into 3 parts: (1) a descriptive overview of the data; (2) analyses testing the hypotheses; and (3) exploratory analysis of children's open-ended responses.

Descriptive Overview

Initial analyses examined overall descriptive information for participants' inhibitory control, cognitive empathy, and theory of mind scores. On the day/night Stroop task, 75% of participants scored the maximum of 16 points ($M = 14.13$, $SD = 4.20$). The remaining participant scores were spread across the range of 2 to 15. As expected, this sample performed well above chance, given the average sample age of just over 5.5 years old. Children's inhibitory control was not significantly related to cognitive empathy ($r = -.03$, $p = .87$) or theory of mind ($r = -.10$, $p = .62$). Cognitive empathy, theory of mind, and prosocial responses were summed across both stories, for a possible maximum score of 4 for both cognitive empathy and theory of mind, and a possible maximum score of 8 for prosocial responses. For cognitive empathy, children scored a mean of 3.19 ($SD = .93$), indicating that on average, children were fairly accurate in reporting the main character's emotional state after experiencing an adverse event. For theory of mind, children scored a mean of 2.38 ($SD = 1.31$), indicating that children did a little better than average on predicting how the main character's face should look if they are attempting to mask their emotional state. Lastly, out of a possible maximum of 8 prosocial responses per participant, children gave an average of 2.5 ($SD =$

1.85) prosocial responses. This indicates that overall, children were assigning prosocial responses to characters in approximately 31% of trials.

Next, analyses examined cognitive empathy, theory of mind, and prosocial responses from the first and second stories (Time 1 and Time 2, respectively). Since cognitive empathy and theory of mind were scored on an ordinal scale, a Wilcoxon signed-rank test was conducted to compare Time 1 to Time 2 scores. There was no difference between cognitive empathy at Time 1 ($M = 1.56, SD = .62$) and at Time 2 ($M = 1.63, SD = .55$), $Z = -.52, p = .60$, Cohen's $d = .12$. However, there was a significant difference between children's theory of mind scores from the first story ($M = 1.00, SD = .80$) to the second story ($M = 1.38, SD = .79$), $Z = -3.00, p < .05$, Cohen's $d = .48$. This indicates that children performed significantly better on theory of mind the second time they were tested. A paired-samples t-test was conducted to assess differences between prosocial responses at Time 1 ($M = 1.13, SD = 1.01$) and Time 2 ($M = 1.38, SD = 1.13$), indicating that the number of prosocial responses children gave at Time 1 did not differ from the amount given at Time 2, $t(31) = 1.31, p = .20$, Cohen's $d = .23$.

To examine whether children performed better between the tripping versus sneezing stories, cognitive empathy, theory of mind, and prosocial responses were compared across story types, rather than story order. Average cognitive empathy scores did not differ across story types (tripping: $M = 1.56, SD = .62$; sneezing: $M = 1.63, SD = .55$), $Z = -.52, p = .60$, Cohen's $d = .12$. Similarly, theory of mind did not differ across story types (tripping: $M = 1.25, SD = .76$; sneezing: $M = 1.13, SD = .87$), $Z = -.77, p = .44$, Cohen's $d = .15$. Prosocial responses also did not differ between story types

(tripping: $M = 1.41$, $SD = 1.07$; sneezing: $M = 1.09$, $SD = 1.06$), $t(31) = 1.67$, $p = .11$, Cohen's $d = .30$.

Lastly, gender and age relationships were tested. Girls and boys performed similarly on inhibitory control (girls: $M = 14.93$, $SD = 3.59$; boys: $M = 13.41$, $SD = 4.66$), $t(30) = 1.02$, $p = .32$, Cohen's $d = .37$, on the cognitive empathy measure (girls: $M = 3.07$, $SD = .96$; boys: $M = 3.29$, $SD = .92$), $Z = -.69$, $p = .49$, Cohen's $d = .23$, and on the number of prosocial responses given (girls: $M = 2.87$, $SD = 1.77$; boys: $M = 2.18$, $SD = 1.91$), $t(30) = -1.06$, $p = .30$, Cohen's $d = .37$. However, boys ($M = 2.82$, $SD = 1.24$) performed better on the theory of mind measure than girls ($M = 1.87$, $SD = 1.25$), $Z = -2.10$, $p < .05$, Cohen's $d = .76$. Theory of mind showed a significant positive relationship with child age, Spearman's $r = .37$, $p < .05$, and with cognitive empathy, Spearman's $r = .36$, $p < .05$, indicating that as theory of mind scores increased, so did child age and cognitive empathy; however, cognitive empathy and age were not significantly related, Spearman's $r = .13$, $p = .49$. As expected, children's inhibitory control was also positively related to age, $r = .43$, $p < .05$, indicating that as age increased, so did inhibitory control scores.

Actual Similarity to Characters

To check whether the similar and different characters created by children reasonably corresponded to actual similarity/difference with the child, the characters that children created were coded for actual similarity. The character pieces used to code for actual similarity were gender, skin tone, hair color, hairstyle, and eyebrow color. Each piece was coded on a scale of 0 to 3, with 3 being as close to the child as possible (given the choices), and 0 being as different from the child as possible (given the choices).

Scores for each piece were summed together by character, so that each character's actual similarity to the child could range from 0 to 15. A paired-samples *t*-test was conducted to assess whether actual similarity to the child differed significantly by character. Actual similarity was significantly higher for the similar character ($M = 12.91$, $SD = 2.29$) than the different character ($M = 3.81$, $SD = 3.45$), $t(31) = 10.37$, $p < .01$, Cohen's $d = 3.11$. This indicates that children understood the prompts regarding the character creation tasks and successfully created characters similar to or different from themselves on the outward physical aspects chosen.

Hypothesis Testing

Prior to testing the hypotheses of the current study, relationships among variables of interest were examined. (For complete correlation tables, see Tables 1 and 2.) Total theory of mind scores (summed across both stories) were significantly positively correlated with cognitive empathy at Time 2, $r = .42$, $p < .05$, but not related to cognitive empathy at Time 1, $r = .05$, $p = .79$. Cognitive empathy at Times 1 and 2 were significantly positively related, $r = .42$, $p < .05$; additionally, theory of mind at Times 1 and 2 were significantly positively related, $r = .35$, $p < .05$. Similarly, prosocial responses at Times 1 and 2 were significantly positively related, $r = .50$, $p < .01$. These findings indicate that children's own performance on cognitive empathy and theory of mind was similar across stories.

Hypothesis 1 predicted that children would score higher on cognitive empathy when reasoning about a similar character versus a different character. To test this hypothesis, a Wilcoxon signed-rank test was conducted to compare children's cognitive

empathy scores between the Same ($M = 1.69$, $SD = .54$) and Different characters ($M = 1.50$, $SD = .62$). The analysis indicated that character similarity did not affect children's cognitive empathy scores, $Z = -1.39$, $p = .17$, Cohen's $d = .33$. Hypothesis 2 similarly predicted that children's theory of mind scores would be better when reasoning about the Same ($M = 1.31$, $SD = .78$) character versus the Different ($M = 1.06$, $SD = .84$) character. Results again indicated that character similarity did not affect children's theory of mind scores, $Z = -1.53$, $p = .13$, Cohen's $d = .31$.

Hypothesis 3 predicted that children would attribute more prosocial behaviors to the similar ($M = 1.19$, $SD = .97$) versus the different character ($M = 1.31$, $SD = 1.18$). To test this hypothesis, a paired-samples t -test was conducted. The analyses indicated that character similarity did not affect children's prosocial responses attributed to the characters, $t(31) = .64$, $p = .53$, Cohen's $d = .11$. Hypothesis 4 predicted that cognitive empathy and theory of mind would be positively correlated with predictions of prosocial behavior for the similar character but not for the different character. As seen from Table 2, this hypothesis was not supported by the data. Cognitive empathy for the similar character was not significantly correlated with predictions of the similar character's prosocial behavior, $r = -.13$, $p = .47$, nor was theory of mind significantly correlated with predictions of prosocial behavior for the similar character, $r = .09$, $p = .62$.

Exploratory Analyses

Exploratory analyses examined whether the number of children's "I don't know" and otherwise non-responses differed between the Same and Different characters. On average, children gave 2.19 ($SD = 1.23$) non-responses when predicting the Same

character's behavior and 2.38 ($SD = 1.21$) non-responses when predicting the Different character's behavior. A paired samples t -test indicated that character similarity did not affect the number of non-responses given by children, $t(31) = 1.29, p = .21$, Cohen's $d = .15$. Across 32 participants and a combined 256 total free-response trials, only 3 responses could be considered aggressive (i.e., pushing the aliens), accounting for 1.17% of all responses. For this reason, analyses examining differences in attributions of aggressive behavior between the Same versus Different characters were not possible or meaningful.

Chapter 4: Discussion

The goal of the current study was to examine whether young children would perform better on measures of cognitive empathy and real-apparent emotion theory of mind when reasoning about a character similar to them versus a character different from them. Research has indicated the many benefits that perceived similarity can have for young children's learning (Baugh et al., 2019; Baugh et al., revisions under review; Calvert et al., 2007; Cingel & Kremer, 2017). This study sought to examine whether the benefits of perceived similarity extend to social cognitive processes, specifically empathy and theory of mind performance for young children, as earlier research has suggested (Panofsky, 1976).

Another goal of the current study was to examine whether children would attribute more prosocial behaviors to the character similar to or different from themselves. Perceived similarity can predict young children's behavior toward others, such that children tend to behave more prosocially toward members of their in-group than

members of the out-group (Fehr et al., 2008; Olson & Spelke, 2008). Since humans generally view themselves favorably (Pelham et al., 2005), it follows that children may predict that a character with high perceived similarity would behave prosocially toward an out-group member in distress.

To test these ideas, children created two characters: one that is similar to themselves, and one that is different from themselves. Then, these characters were inserted into two counterbalanced real-apparent emotion theory of mind tasks in which the characters faced problems (such as, tripping or being sneezed on). Children were asked questions about how the character felt (cognitive empathy), and about how their facial expression should look if the character was attempting to mask their emotions (theory of mind). Children also gave free responses to what the bystander character did after observing the aforementioned adverse experience, and these responses were coded both for prosociality and for non-response. Children's cognitive empathy, theory of mind, prosociality, and non-responses were compared between the similar and different characters.

The first category of findings was directly related to the study hypotheses. Few studies have examined perceived similarity in young children's and its relationship to cognitive empathy. One study found that second graders empathized more with children who they judged to be similar to themselves in terms of interests than a dissimilar child (Panofsky, 1976). Therefore, Hypothesis 1 predicted that children would score better on cognitive empathy when reasoning about the similar character than when reasoning about the different character. This hypothesis was not supported by the data. Children's mean

cognitive empathy score overall was 3.19 out of a maximum of 4; this indicates that overall, children performed well on this task without much variation across participants. While the spread of the data was slightly larger when reasoning about the different character, whether the character was similar to or different from the child did not affect children's ability to identify the emotion that the character was feeling.

The lack of difference in responding based on whether the character was similar or different could be explained by several factors, including the sample size (cognitive empathy was higher when regarding the Same character, but not significantly so) and the age of participants (this sample skewed on the older side of the study's age range). However, another possible explanation is that children's creative process of building the characters scaffolded their reasoning about the different (i.e., out-group) character (Chu et al., 2015), while perceived similarity scaffolded children's reasoning about the similar character (Panofsky, 1976). It is possible that children scored above average on cognitive empathy across both characters because the similar character is like themselves, which would not require a lot of effort to reason about; and children were able to reason about the different character in a similar way because, as the creator, they could reason about the character's state of mind. Furthermore, the creative process in the current study required and primed children to consider the thoughts and motivations of the different character (i.e., "If this person is really different from you, what color shirt should they wear?"), which could have scaffolded children's cognitive empathy. Conversely, it could be that cognitive empathy is not manipulable by perceived similarity. Further research

attempting to isolate the potential mechanistic role of perceived similarity on cognitive empathy is necessary to draw a definitive conclusion.

Similar reasoning may explain the null findings in regard to Hypothesis 2, which predicted that children would score better on theory of mind when reasoning about the similar character than when reasoning about the different character. This hypothesis was also not supported by the data, which indicated that perceived similarity to the characters did not significantly affect children's understanding of the character's ability to outwardly display an emotion discrepant from their inward emotional experience. Again, it is possible that children's scores did not differ between the same and different characters because children's reasoning about the different character was scaffolded by the creative process (Chu et al., 2015).

However, children overall performed worse than average on the theory of mind portion of the stories. This is slightly surprising, given that research suggests approximately half of children should successfully pass real-apparent emotion theory of mind tasks by the age of 5 to 5.5 years (Pons, Harris, & de Rosnay, 2004). This discrepancy may have occurred because of the current study's modality. Due to the virtual nature of the study, children were verbally asked how the character's face should look rather than having a physical scale of faces in front of them to choose from. Regardless, the current study did not find evidence that perceived similarity can scaffold children's theory of mind reasoning; if that were the case, children would have performed better than average on the theory of mind task. While at a descriptive level children did perform better when reasoning about the similar character than the different character

(higher mean, more children receiving the maximum score, and less receiving the minimum score), this difference was not significant. This indicates that perceived similarity to the characters did not affect children's ability to reason about that character's motivations.

The third hypothesis predicted that children would attribute more prosocial behaviors to the bystander character when the character was similar to themselves than when the character was different from themselves. Research has indicated that children behave more prosocially toward in-group members (e.g., Fehr et al., 2008; Olson & Spelke, 2008), and since humans view themselves generally favorably (Pelham et al., 2005), it follows that children would predict a character with high perceived similarity to behave more prosocially than a character with low perceived similarity. However, this prediction was not supported by the data, which showed no difference in prosocial responses between the Similar and Different characters.

There are two reasons that potentially explain children attributing equal prosocial behavior between the two characters: first, group boundaries may have been flexible (Levine et al., 2005), and second, children may have identified more with the person experiencing the adverse event. Perhaps unique to the current study is one potential scenario in which group boundaries may be flexible. When a person creates something, research shows that they experience an increase of positive emotions and motivations (Chu, Quek, Bhangaonkar, Ging, & Sridharamurthy, 2015). This effect is called the maker mindset, coined by Dougherty (2013). When children are prompted to engage in a creative process that requires problem-solving and culminates in an observable creation,

many positive outcomes are fostered, such as critical thinking, collaboration, communication, sense of agency, and self-confidence (Chu et al., 2015). During middle to late childhood, children in whom a maker mindset is primed also show an affinity for their creation (Chu et al., 2015). In the current study, it is possible that children felt some affinity for the characters they created, which may have blurred group boundaries. This could potentially have resulted in children having positive views of an outgroup member (specifically, the character that is different from themselves) that that may not otherwise have in the absence of any information about that outgroup member.

Another reason that children may have attributed equal prosocial responses to the Different and Similar characters is related to the study design. If the intended target of prosocial behavior (rather than the bystander-actor with low perceived similarity) has high perceived similarity with the child, it may be that children predicted the bystander to behave prosocially because that is how the child themselves would want to be treated in the target's place. In fact, research shows that children as young as 7 are able to reason about how they would want to be treated if they were in another person's position (Rubin-Vaughan, Pepler, Brown, & Craig, 2011). It is possible that this effect may have been strengthened when children had high perceived similarity with the person experiencing an adverse event. In that case, in the context of the current study, it may be that children predicted a low perceived similarity bystander to exhibit more prosocial behavior than a high perceived similarity bystander. When children were predicting the behavior of the different character, it was in the context of the similar character experiencing an adverse event. It is possible that children's responses in this case

reflected what they would want someone to do for them, if they were in that scenario (Rubin-Vaughn et al., 2011). However, recall that children did not cognitively empathize with the similar character more than the different character. If that were so, we would expect the idea that children responded with how they would want to be treated to be supported by significant findings regarding hypotheses 2 and 3, which did not occur.

Hypothesis 4 predicted that children's cognitive empathy for the similar character would be positively correlated with predictions of the similar character's prosocial behavior, as would theory of mind for the similar character. This hypothesis was not supported by the data. If it had been supported, this would lend evidence to the idea that the relationship between perceived similarity and prosocial behavior attributions is potentially explained by cognitive empathy and theory of mind. However, given the null results, it could be that perceived similarity cannot scaffold theory of mind and cognitive empathy, as previously mentioned. Null findings for Hypothesis 4 could also in part be an artifact of children performing worse than expected on the theory of mind measure, potentially due to the limitations associated with the study's modality.

To further understand findings in the current study, discussion will now focus on potential interpretations of within-participant patterns. Participants heard two stories: a tripping story, and a sneezing story. The order in which participants heard each story was counterbalanced within and across participants. Descriptive analyses compared participants' cognitive empathy, theory of mind, and prosocial responses across time (i.e., between the first story and second story). Since the object of participants' reasoning on each of these variables differed from time 1 to time 2, it was expected that children's

responses would show differing patterns. Interestingly, children's ability to cognitively empathize with the character experiencing an adverse event did not differ across time, nor did their attributions of prosocial behavior to the bystander character. However, children's theory of mind scores did differ across time, with children on average scoring higher in the second story than the first. Since character role was counterbalanced within and across participants, this likely reflects practice effects rather than an effect of experimental manipulation (for a discussion of the importance of taking into account practice effects when interpreting change across time, see Calamia, Markon, & Tranel, 2012).

Limitations and Future Directions

Several limitations, and therefore opportunities for future research, exist in the current study. The clearest limitation is that of sample size. Having a sample size of 32 limits predictive and group level tests outside of the paired-samples and correlational analyses conducted and reported above. Perhaps with a much larger sample, some of the null findings would be clarified. Continued data collection on this project will allow for additional statistical testing, such as mediation models that include socioeconomic status and/or number of languages in which the child is fluent. Some research has suggested that socioeconomic status affects theory of mind performance in young children (e.g., Ebert, Peterson, Slaughter, & Weinert, 2017; Pears & Moses, 2003). Additionally, while literature has disagreed on whether simultaneous bilingualism is associated with theory of mind benefits, there is much evidence in support of the idea that knowing more than one

language provides children with practice in mental state reasoning, leading to better theory of mind capabilities in childhood (for a recent review, see Schroeder, 2018).

Another limitation of the current study is that the design does not allow one of the fundamental questions of the underlying mechanisms at work to be answered. The question remains: does perceived similarity serve a scaffolding purpose to children's empathizing and theory of mind abilities? Additionally, can perceived similarity affect children's predictions of an out-group member's prosociality? In order to answer these questions, research must isolate two key factors: perceived similarity, and the creative process. While allowing children to create their own similar and dissimilar characters offers a unique aspect to the current study and potentially ensures the dichotomy of high versus low perceived similarity in the characters, the presence of such a creative process may have conflated the results. A study similar to the current study could be conducted with the following experimental conditions: (1) children *only* create a different character, and a similar character is created by the researcher; (2) children *only* create a similar character, and a different character is created by the researcher; (3) children create both characters; and (4) children create neither character. This would give insight into the effect of the creative process on children's reasoning.

A last and necessary future direction focuses on the unanalyzed data in the current study. The current project offers a window into how children view similarity and difference in relation to themselves from an outward and physical standpoint, which is a required first step in answering the aforementioned fundamental questions. Future coding will attempt to further quantify the level of actual similarity that each character

shares with the child who created them to assess how closely children's perceived similarity reflects actual similarity. This would shed light on children's cognitive processes when deciding on issues of perceived similarity and allow for the research design outlined above.

Conclusion

While it may follow from past research that children's cognitive empathy and theory of mind abilities would be affected by children's perceived similarity to the characters they are reasoning about (Panofsky, 1976), this idea was not supported by the current study. Additionally, it was predicted that children may attribute more prosocial behavior to a character with high perceived similarity (Batson et al., 1981; Gaertner & Dovidio, 1977; Krebs, 1975; Panofsky, 1976), or to a character with low perceived similarity (Chu et al., 2015; Rubin-Vaughan et al., 2011). Children's prosocial responses did not differ across characters, and the design of the current study did not allow for isolated testing of the effects of perceived similarity versus the effects of the creative process. However, children's cognitive empathy remained stable across characters and over time, which may suggest that empathy is trait-like. Nonetheless, answering the above questions is beyond the scope of the current study and requires future research.

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Table 1

Correlations among Age, Executive Function, Cognitive Empathy, Theory of Mind, and Prosocial Responses

	EF	Cog. Emp. T1	Cog. Emp. T2	TOM T1	TOM T2	Prosocial T1	Prosocial T2	Total Cog. Emp.	Total TOM	Total Prosocial
Age (months)	.43*	.10	.06	.37*	.18	.26	.10	.13	.37	.22
EF		-.27	.08	.13	-.14	-.15	-.13	.03	-.10	-.17
Cog. Emp. T1			.42*	.00	.25	-.06	-.07	.86**	.15	-.02
Cog. Emp. T2				.27	.55**	-.02	-.09	.79**	.49**	-.03
TOM T1					.32	.07	-.16	.19	.83**	-.07
TOM T2						.18	.00	.40*	.78**	.11
Prosocial T1							.49**	-.06	.14	.84**
Prosocial T2								-.12	-.13	.86**
Total Cog. Emp.									.36*	-.05
Total TOM										.001

* $p < .05$, ** $p < .01$

Table 2

Correlations among Age, Executive Function, Cognitive Empathy, Theory of Mind, and Prosocial Responses by Character Type

	EF	Cog. Emp. - Similar	Cog. Emp. - Different	TOM - Similar	TOM - Different	Prosocial - Similar	Prosocial - Different
Age (months)	.43*	.05	.09	.07	.46**	.22	.08
EF		.16	-.19	-.11	-.04	-.19	-.13
Cog. Emp. - Similar			.29	.16	.19	-.13	-.25
Cog. Emp. - Different				.20	.19	.05	-.04
TOM - Similar					.31	.09	-.11
TOM - Different						.14	-.18
Prosocial - Similar							.49**

* $p < .05$, ** $p < .01$