

PARENTS' IMPACT ON PREGENDER CHILDREN'S TOY PREFERENCES

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Title

Parents' Impact on Pregender Children's Toy Preferences

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**MASTER OF SCIENCE**

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## ABSTRACT

Societal messages of what it means to be a boy or a girl influence children at an early age, shaping their developing identities into adulthood. Parents, for example, offer children toys and other objects that are gender-specific; trucks for boys and dolls for girls. Researchers have recognized the need to focus on gender development in infancy and toddlerhood. Although this research has been mixed, studies have revealed some gender-typed toy preferences. These preferences have been primarily attributed to biological factors. In the current study, parents' encouragement and previous exposure to certain toys and infants' and toddlers' baseline and posttest toy preferences were assessed. Results indicated that parents' encouragement and previous exposure were ineffective in shaping infants' and toddlers' toy preferences. Four-month-olds did not show a preference, while twelve-month-old male toddlers preferred the trucks. These results are consistent with previous research. Implications of the current study and future research are discussed.

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## CHAPTER ONE. INTRODUCTION

The influences of gender constructs (i.e., masculinity and femininity) permeate our daily-lived experiences. Gender shapes individuals on many levels. Clothing choices, career choices, personal and professional interactions, and behavior are all influenced by our perception of gender (e.g., Halim, et al., 2014). Even during childhood, gender constructs shape the ways in which children play with others. For example, boys are encouraged to participate in rough and tumble play and to play with stereotypical masculine type toys (e.g., trucks and guns), whereas, girls are encouraged to play with stereotypical feminine type toys (e.g., dolls) (Blakemore & Centers, 2005; Pomerleau, Bolduc, Malcuit & Cossette, 1990). The focus of research on gender development has historically been on children who are over the age of two, as children have some understanding of not only the concept of gender, but of their own gender identity (e.g., Bussey & Bandura, 1999; Martin, Ruble, & Szkrybalo, 2002; Slaby & Frey, 1975). With the majority of gender development research focusing on children, who have an awareness of gender concepts and gender identity, there exists a limitation in the field. Researchers have neglected to examine how gender constructs are formed throughout infancy. Therefore, the aim of this research project was to examine how parents shape their young infants' gender development. In particular, in the current study I investigated parents' effect on infants' toy preferences.

While empirical evidence of how children under the age of two are influenced by gender constructs is limited, it is clear, through anecdotal evidence, that societal messages are imposed upon infants by parents and others. These messages are observed through responses to and interpretations of infants' behaviors. Parents interpret behaviors differently depending on the sex of their child, even prior to birth. Upon learning the sex of their prenatal infant, parents can be observed using masculine or feminine pronouns (e.g., he, him, his, she, her, hers) and labeling

their infant's activity in terms of masculine or feminine traits. Parents' preoccupation with the sex and related gender typing of their children is also evident in gender revealing parties, nursery décor, and infant clothing. During gender reveal parties, parents make known their infant's sex (e.g., opening a box full of either blue balloons or pink balloons). Nurseries are painted and decorated differently based on the sex of the infant. For example, nurseries for female infants are frequently decorated in pink; where male infants' nurseries are more frequently decorated in blue. Clothing also differs according to sex. Female infant and children are more likely to be dressed in floral patterns and pink colored clothing, while male infant and children are more likely to be dressed in sport-themed and blue colored clothing.

Parents make inferences about their child's gender based on perceived activity level and characteristics. According to Burnham and Harris (1992), adults use cues to make inferences about neonates and older infants' gender through characteristics. For example, if an infant appears to be strong, playful and more of a problem, then adults will assume the infant is a boy (Burnham & Harris, 1992). Adults are not the only people who gender-type infants. Haugh, Hoffman, and Cowan (1990) found children aged 3 to 5 responded to infants based on the gender labels assigned to the infants, regardless of the infants' actual gender. Even in infancy, parents expose infants to toys that are gender-specific. Parents provide more masculine-typed toys (e.g., cars and trucks) to male infants and more feminine-typed toys (e.g., dolls) to female infants. These practices illustrate the emphasis that parents and other members of western society place on differentiating and gender typing infants and children based on sex. Other societies have comparable practices. Research suggests the ways in which adults and peers gender-type children influence children's behavior. It is less clear how these practices shape the emergence of gender concepts throughout infancy.



Philosophers and theorists have speculated on the origins of gender typing, leading to much debate. Some theorists suggest that gender typing and gender-typed behaviors result primarily from biological predispositions. Other theorists posit that gender typing and gender-typed behaviors occur primarily through imposed societal messages of what it means to be a boy or a girl. These debates have generated numerous theories of how children develop gender.

There are three broad theoretical frameworks, with varying explanations of how gender development occurs. Theories include biological, socialization-based, and cognitive approaches. Biological approaches to gender development emphasize the influence of hormones and genetics on gendered behaviors. Conversely, socialization approaches explore external factors such as family (immediate and extended), peers, and larger societal structures (e.g., media and culture) and the impact each of these factors has on gendered behaviors. Finally, cognitive approaches examine children's construction of gender schemas (Berenbaum, Martin, & Ruble, 2008). Each framework provides a lens through which investigations of gender development take place.

### **Biological Theories**

Biological approaches to gender development typically focus on genetic and hormonal explanations for gender development. Androgen, a hormone found in greater quantities in male humans and responsible for masculinization during prenatal development, has received the most attention. The influence of estradiol, the estrogen hormone found in greater quantities in female humans, is less frequently studied (Berenbaum, et al., 2008). Both hormones are present in male and female humans, but levels vary based on sex. One way to assess the influence of hormones is to examine cases of atypical hormone exposure (e.g., congenital adrenal hyperplasia or CAH). CAH is a genetic disease that results from a fetus' exposure to atypically high levels of androgens during the beginning stages of gestation, causing a defect in enzymes that affect

cortisol production. The effects CAH has on girls and boys, both physically and behaviorally, are distinct. Female children with CAH have masculinized genitalia, although they have ovaries, a uterus and are fertile. Male children with CAH experience fewer prenatal effects and their genitalia remain unaltered and unaffected. Both female and male children with CAH may experience puberty at a much earlier age compared to their peers (Berenbaum, et al., 2008).

The disease also appears to influence gender-typed behaviors. Observational studies of female children who are diagnosed with CAH suggest these children have preferences for masculine-typed behaviors (Berenbaum & Hines, 1992; Servin, Nordenstrom, Larsson, & Bohlin, 2003). Berenbaum and Hines (1992) examined the effects of high androgen exposure, both prenatal and postnatal, and compared female and male children with and without CAH. The findings suggest that female children with CAH displayed preferences for masculine-typed behaviors more than the control group. Unlike the female children in the sample, male children with CAH developed traditional masculine gender-typed behaviors, comparable to a male control group (Berenbaum & Hines, 1992; Cohen-Bendahan, van de Beek, & Berenbaum, 2005; Pasterski et al., 2005). Few differences in gender-typed behaviors between male children with and without CAH, but many differences in gender-typed behaviors between female children with and without CAH, suggest a link between androgen and masculine-typed behaviors.

Progesterone, a synthetic-androgen hormone, has also been found to have a positive association with masculine-typed behaviors (van de Beck, van Goozen, Buitelaar, & Cohen-Kettenis, 2009). Van de Beck et al., (2009) found that infants exposed to higher levels of progesterone displayed more masculine-typed traits. Their findings substantiate Collaer and Hines (1995) findings that female toddlers who were exposed to progesterone were more likely to exhibit masculine-typed behaviors. While the influence of exposure to high levels of androgen

on female children's gender-typed behaviors has historically been observed, research that is more recent suggests lower levels of androgen in male children affects their gender-typed behaviors. Jürgensen, Hiort, Holterhus, and Thyen (2007) found that male humans with reduced prenatal androgen exposure tended to engage in feminine-typed behaviors (e.g., toy choices, play behaviors, and preference for female friends). These findings provide further evidence of androgen's effect on gender-typed traits. These and other studies provide a strong evidence for the role of biology in gender development and gender-typed behaviors.

Two subfields of psychology, comparative psychology and evolutionary psychology, have examined the role hormones play in displays of gender-typical behaviors in an attempt to tease apart the influence of biology and socialization. These fields tend to take a biological approach to gender development. Comparative psychologists compare nonhuman specimens that are not or are less likely to be impacted by socialization attempts to human behaviors to understand how biology shapes gender-typed behaviors. Evolutionary psychologists seek to understand how adaptive pressures from the environment influence hormones to elicit gender-typed behaviors.

### **Comparative Psychology**

A comparative psychological approach to gender development is an examination of similarities in biology and behavior across species to understand gender-typed behaviors. Alexander and Hines (2002) found that vervet monkeys show sex differences that parallel those observed in human children. Male vervet monkeys display preferences for masculine-typed toys, while the female vervet monkeys display preferences for feminine-typed toys (2002). Furthermore, there is evidence that non-human primates categorize the information they learn into concepts (Miller, Nieder, Freedman, & Wallis, 2003). These studies demonstrate that

monkeys, like humans, learn gender-appropriate behaviors from their social group and utilize this information to create gender constructs. In addition, Einon, Morgan, and Kibbler (1978) found that juvenile rats' behaviors might be influenced by early social situations. Likewise, Lukkes, Mokin, Scholl, and Forster (2009) found that rats that were isolated during the early part of their development tended to show increased anxiety-like and fear behaviors in adulthood. These studies suggest socialization has a role in development. Comparative studies reveal that while non-human species are clearly influenced by biological components, socialization is still a factor.

### **Evolutionary Psychology**

Evolutionary psychologists also examine non-human species positing that gendered behaviors result from adaptive pressures. They suggest that adaptive pressures have influenced neurological development to predispose certain behaviors distinctive of each sex (Berenbaum, et al., 2008). From this perspective, the gendered attitudes and behaviors men, women, boys, and girls display ensure the survival of the human race. Girls play with dolls to learn and practice nurturing behaviors enabling them to better care for others while boys play with tools, and violent toys (e.g., guns, swords, etc.) to learn the skills that are involved in providing for the family or social group.

This perspective provides an interesting explanation for the origins of gender-typical behavior, but it is not without its critiques. Critics argue that this perspective is limited as it fails to consider the context of gender socialization and postulates that gender is rigid and fixed. This view of gender, the gender binary, contradicts current literature, which instead suggests that individuals experience gender differently (e.g., gender nonconforming; Ehrenshaft, 2011). For example, Gender nonconforming is an umbrella term for a range of subcategories of people who

do not adhere to the limited options provided by the gender binary. More specifically, gender nonconforming is defined as, “children whose gender expression, gender role behavior, and/or gender identity do not conform to the traditional norms” (Dragowski, Scharron-del Rio & Sandigorsky, 2010, p. 360). Ehrenshaft (2011) proposes that there are nine subcategories of gender nonconformity: transgender, gender fluid, gender priuses, gender taureses, protogay, prototransgender, gender queer, gender smoothies, and gender oreos; each category describing a unique way for individuals to define their experiences of gender identity and expression. These subcategories of gender nonconforming identities dispel the belief that gender-typed behavior results from evolutionary adaptations as it debunks the notion that gender is fixed and rigid. Furthermore, researchers critique evolutionary psychology as it does not make unique predictions and it is difficult to falsify, thus this approach lacks empirical evidentiary support (Berenbaum, et al., 2008).

As a group, biological theories provide an understanding of how gender-typed behaviors result from differences between the sexes in hormones and other genetically dictated aspects of development. In doing so, they all too often neglect or deemphasize another important factor in gender development – socialization.

### **Socialization Theories**

Socialization is the process in which a person’s attitudes and behaviors change to conform to those regarded as culturally appropriate (Parke & Buriel, 2008). Consequently, gender socialization refers to the process in which people are pressured to conform to gender-typed behaviors and attitudes deemed appropriate by cultural ideals of masculine and feminine behaviors. Through the ecological model, researchers are able to examine how the different systems (e.g., microsystem, mesosystem, exosystem, and macrosystem) affect gender

development (Berenbaum, et al., 2008). The microsystem refers to the relationship between the individual and the settings in which the individual interacts (e.g., home, school, work, place of worship, etc.). The mesosystem is the intermingling of the settings in which individuals participate. For example, how the setting of home and the setting of school are interconnected (e.g., parents and teachers). The exosystem refers to how major institutions of society (i.e., mass media, government agencies, etc.) affects the individual's immediate settings, shaping what happens within each setting. For example, how governmental policies on bullying and zero tolerance influence the school system. The macrosystem, or the overarching cultural or subcultural patterns that impact the exo-, meso-, and micro-systems (Bronfenbrenner, 1977). For example, the social construction of gender and gender-typed attitudes or beliefs directs how others interact with the individual. Research on gender socialization examines the roles parents, siblings, and peers (microsystems) have on gender development (Berenbaum, et al., 2008).

Parke and Buriel (2008) suggest parents socialize their children through the following: encouraging gender-typed activities and interest, instilling gender-typed values and attitudes, and modeling. One way in which researchers have examined parents' encouragement of gender-typed activities and interests is by observing parents' toy selection. Lytton and Romney (1991) found that parents offer children gender-typed toys and appear to be more responsive to gender-appropriate behaviors than to gender-inappropriate behaviors. Parents reify gender-typed behaviors in their children, leading to their children displaying behaviors that are more gender-appropriate. This reification of gender-typed behaviors may be attributed to parental attitudes about how children should behave. Blair (1992) found parents' attitudes were associated with gender typing of children, which may influence children's attitudes. As such, if parents were to have strict adherence towards gender-appropriate attitudes, their children would be more likely

to share similar attitudes. For example, if parents tell their sons not to play with dolls because those are for girls, then boys may be less likely to play with dolls and may seek to avoid those toys. However, the opposite may be true. If parents were to have less strict attitudes for gender-appropriate behaviors, then children may be less likely to have attitudes that perpetuate gender-appropriate behaviors. As such, it is important to examine the influence parents who raise gender-neutral children have on their children's gender development.

Leaper (2000) suggests it is important to consider historical variations in gender-typed attitudes (e.g., women in the work force), as there have been shifts in gender-typed attitudes. One example of this shift is through toy categorization. Toys are slowly becoming less gender specific (e.g., advertisements in Sweden have displayed boys and girls playing with similar toys). While there has been a movement in which advertisements have become more sensitive to gender neutrality, Nelson (2005) found that gender neutral advertisement did not decrease the gender-typed toy preferences of boys and girls, and suggests that cultural and parental attitudes are not as gender-neutral as perceived. Furthermore, Blakemore and Centers (2005) found that while more toys have been labeled gender neutral, some toy types are still gender-typed (e.g., dolls, domestic items, toy vehicles, and action figures). A second-wave feminist analysis (i.e., revisioning gender socialization of children through gender neutral practices) of childcare books and parenting web sites indicated that gender-neutral rearing has been incorporated into child rearing advice; however, gender nonconformity is still perceived as unnatural as it is akin to gay or lesbian sexual orientations (Martin, 2005).

Although gender nonconformity is seen as problematic, parents are more likely to respond positively to what they perceive as gender nonconformity among younger daughters, while their responses to sons differ between acceptance and intolerance (Wood, Demarais, &

Guguala, 2002). While some parents accept or encourage some atypical gender tendencies for boys, this acceptance is balanced by efforts to uphold ideals of masculinity, or how a boy or man should behave and act. These efforts to rectify masculinity are most common amongst heterosexual fathers. Heterosexual fathers are more likely to endorse masculinity, while heterosexual mothers and lesbian and gay parents are more likely to relinquish those ideals (Kane, 2006). Furthermore, adopted children of lesbian and gay parents show less gender-stereotyped play behaviors compared to adopted children of heterosexual parents (Goldberg, Kashy & Smith, 2012). In addition, sons of lesbian mothers were less masculine in their play behavior compared to sons of gay fathers and heterosexual parents (Goldberg, et al., 2012), suggesting parental modeling is a factor of gender development. While gay and lesbian parents are more likely to relinquish those ideas, some research suggests that lesbian and gay parents may be more likely to socialize their children in gender typical ways in order to protect their children from harassment because of the effects of heterosexism and homophobia (Fish, 2008; Goldberg, 2007). However, it is unclear as to what extent parents', heterosexual parents or lesbian and gay parents, socialization attempts affects gender development before the age of two, as few studies examine parents' socialization attempts during infancy.

While few studies examine gender socialization throughout infancy, gender socialization attempts occur during prenatal and postnatal development. Therefore, more research is needed to investigate how gender socialization during infancy may lead to gender-typed behaviors. A child's cognitive ability may limit the impact of socialization attempts. Cognitive theoretical frameworks of gender development consider children's cognitive capacities.



## **Cognitive Theories**

The existing cognitive theories of gender identity development include cognitive development theory, gender schema theory, and social-cognitive theory. These theories offer different perspectives of how gender development occurs and progresses, focusing on the thoughts and ideas of how gender develops.

### **Cognitive Development Theory**

According to Kohlberg's cognitive development theory, a child progresses through three stages of gender development: gender identity, gender stability, and gender consistency (Kohlberg, 1966; Martin, Ruble, & Szkrybalo, 2002; Slaby & Frey, 1975). Gender identity refers to the child's realization that he or she is a boy or a girl. During this stage, children form a gender identity based on their awareness of gendered behaviors, which children learn and acquire from their environment. Once a child has the ability to recognize that gender identity does not change over time, the child has reached the gender stability stage. Through the acquisition of gender stability, children have the cognitive ability to understand that boys grow into men and that girls develop into women; therefore, children recognize gender is a static concept. A child reaches the stage of gender consistency when he or she understands that gender identity is not affected by changes in gendered activities, appearances, or characteristics. This awareness of gender consistency indicates that children grasp their gender identity does not change if they participate in cross-gendered activities. For example, a girl, who understands gender consistency, knows that neither her sex nor her gender identity will not change if she plays with trucks and construction toys (Kohlberg, 1966; Slaby & Frey, 1975). From this perspective, children recognize and classify toys based on gender concepts, but understand that playing with atypical gender-typed toys will not influence or change their physiology or gender identity.

Kohlberg's cognitive development theory provides a foundation for understanding how gender awareness develops based on advances in cognitive capacities, yet there exists limitations of his theory. While research has found positive correlations between gender consistency and the development of gendered behaviors and attitudes (Martin, Ruble, & Szkrybalo, 2002), Kohlberg's cognitive development theory reifies the gender binary and suggests that gender is stagnant. However, Ehrensaft's (2011) work on gender variant and gender nonconforming children suggests gender is not stagnant, but fluid (refer to pages 6 and 7). Furthermore, Kohlberg's theory focuses primarily on gender development of cisgender persons, individuals whose gender identity matches their assigned sex at birth (Levy, 2013), and ignores the unique gender developmental milestones of trans-identified persons. A large-scale report from Rankin and Beemyn (2012) outlines the gender developmental milestones for trans-identified persons. Trans-identified persons typically feel that the gender ascribed to them at birth does not match their own gender identity. As a result, conflict may arise based on the perceived need to conform to gender norms, while attempting to explore their gender expression. For example, people changing their outward appearance to align with their self-image.

In addition to reifying the gender binary and exploring gender development solely in terms of cisgender individuals, Kohlberg's theory does not examine gender socialization throughout the first two years of life. Therefore, I suggest a new developmental period, pregender, be added to Kohlberg's model. Pregender development refers to the development of children who may not be aware of their gender identity, but are still influenced by gendered classifications and are molded through gendered attitudes and expectations. These attitudes and expectations influence the experiences they have and how these experiences shape their gender development. Furthermore, Kohlberg's model does not explain how children begin to form

gender cognitions and gender associations. Gender schema theory addresses this aspect of gender development.

### **Gender Schema Theory**

Gender schema theory is an approach to gender development that combines social learning and cognitive-developmental features and suggests children are actively involved in their gender development (Martin, et al., 2002). This means gender development does not proceed on its own accord, but rather progresses as the child is active within her or his environment (Martin & Dinella, 2001). As such, children's experiences influence their gender development. Children actively construct gender schemas, or "categorical units of information stored in long term memory that aid in encoding, storing and retrieving information" (Woodington, 2010, p. 137), which serve as a guide for children in determining the types of activities they should select (Berenbaum, et al., 2008). In order for a child to construct gender schemas, the child must first learn ideas of gendered behaviors and gendered attitudes. Children acquire this information from their environment, and are then able to utilize these observations in the creation of gender schemas (Berenbaum, et al., 2008). From this perspective, gendered behaviors, like toy preferences, arise from children constructing gender schemas for toys by observing their environment (e.g., parents, siblings, other children, etc.). Gender schema theory provides further insight into gender development. However, this theory focuses solely on the child's individual perspective, failing to fully acknowledge the influence socialization has on the child's gender development. A cognitive approach that does examine the influence of social environment is social-cognitive theory

## **Social-Cognitive Theory**

According to social-cognitive theory, gendered behaviors result from the interaction and influence of environmental events, personal factors, and behavioral patterns (Bussey & Bandura, 1999). This perspective intertwines aspects from social and cognitive approaches by examining the development of children's gendered behaviors; these theorists explore both the social environment of children and the schemas created from the child's interaction with his or her environment. With the implementation of the social aspect, social-cognitive theory advances the cognitive approaches.

Through a social-cognitive perspective, children learn which toys are appropriate for boys and girls from their social environment (e.g., parents, media, siblings, peers, etc.) and construct gendered schemas for toys, resulting in categorizations of gender-appropriate and gender-inappropriate toys. As previously discussed (refer to socialization section starting on bottom of page 9), parents often prefer that their children play with gender-appropriate toys. When parents provide gender-specific toys to their children, they are sending cues about gender categories. These gender categories are further perpetuated through parents' use of language. Gelman, Taylor, and Nguyen (2004), found that parents often labeled gender when they did not have to do so (e.g., pointing at a picture and stating "That's a boy."). Gelman et al., found that by ages 4 to 6, children frequently made gender-stereotyped associations; suggesting children imitated their parents' speech patterns. While gender labeling begins in infancy, few studies have examined how it affects infants' gender development.

The theoretical frameworks of gender development provide a strong foundation for our understanding of how children's gender develops. Biological approaches emphasize the biological component to gender development through hormones and genetics. Socialization

approaches highlight the social aspect of gender development through the interactions with others. Cognitive approaches suggest the progression of gender development occurs through maturation-based advance in gender concepts and application of acquired knowledge of gender to schemas. Regardless of their theoretical perspective, researchers debate the relative influence of biological and social factors and how these come together to form gender-based cognitions. Infant research can help answer some of these inquiries.

### **Infants and Gender**

Historically, researchers concluded that with gender awareness, comes gender preferences (e.g., Weinraub et al., 1984). Weinraub et al., (1984) suggested that children develop gender differences in toy preferences between the second and fourth years of life, once children have a clear understanding of gender and have begun to associate gender with socially appropriate behaviors. Weinraub et al., (1984) found that children, as early as 26 months, showed a preference for gender appropriate toys. These findings indicated that gender-typed toy preferences were associated with the emergence of gender awareness.

However, more recent research suggests infants are sensitive to gender associations at much earlier ages. For example, Serbin, Poulin-Dubois, and Eichstedt (2002), found that 24-month-old infants looked longer at photographs that depicted men and women participating in activities that were inconsistent with gender stereotypes; whereas, Leinbach and Fagot (1993) found that one-year-old infants categorized men and women based on gender-typical hair length and clothing styles. Additionally, Quinn et al., (2002) found the primary caregiver's gender may influence how 3-month-old and 4-month-old infants acquire information about human faces by observing that infants have preferences for faces that similarly represent the gender of their primary caregiver.

Infants also display toy preferences in line with gender expectations very early. Jadva, Hines, and Golombok (2010), found evidence of gender-typed toy preferences in 12-month-olds female toddlers and 18-month-old male toddlers. Furthermore, Alexander, Wilcox, and Woods (2008), found that gender-typed toy preferences might be evident even as early as 8 months. Alexander et al., (2008) found that female infants looked longer at a doll than a truck, and male infants looked about equally in duration to the two toys. These early differences in preferences between male and female infants have primarily been interpreted as originating from biological rather than social factors.

Researchers have considered the possibility that early differences in infants' toy preferences may be due to lower-level shape or color preferences. However, Jadva et al. (2010), found no clear evidence that these toy preferences originated in preferences for color or shape differences. At 12-, 18-, and 24-months male and female infant and toddlers preferred red and round shapes as opposed to pink, blue, and angular objects. These findings are similar to findings by Zemach, Change, and Teller's (2007). Furthermore, Jadva et al. (2010) found that the color brightness of the stimuli had no effect on infants' gender-typed toy preferences. Overall, these findings indicate color and shape did not drive the infants' toy preferences.

Biological explanations of gender development are further substantiated from research on nonhuman primates' toy preferences. Alexander and Hines (2002) reported sex differences in gender-typed toy preferences might be innate because vervet monkeys do not undergo the same degree of gender socialization or gender development as humans, yet have similar gender-typed toy preferences as human infants. Also, recall that high levels of androgen exposure have been found to influence gender-typed toy preferences. Female humans who suffer from CAH show a preference for masculinized toys (Berenbaum and Hines, 1992). These findings suggest toy

preferences are, in part, due to biological factors. Alexander (2003) points out that biological factors for gender roles are influenced by gender socialization.

Although the current literature addresses gender-typed toy preferences in infants through biological approaches, no current literature exists on the possibility of gender socialization affecting young infants' toy preferences. Therefore, in this research project, I aimed to examine how parents' socialization attempts influence infants' toy preferences. In this study, I addressed the following research questions. My overarching research question asks to what extent are gender-typed toy preferences displayed by infants influenced by parental socialization? More specifically, do parents have a short-term influence on toy preferences through joint play and if so, to what extent? Are toy preferences in infancy affected by long-term exposure to experience with certain toys? I hypothesized that if parents are able to influence toy preferences, then infants who are encouraged to play with trucks should have an increased preference for trucks from pretest to posttest and infants who are encouraged to play with dolls should have an increased preference for dolls from pretest to posttest. Furthermore, I hypothesized that infants' exposure to either truck or doll, according to parent reports of number and play with each toy in the home, would influence their initial preference for either toy (familiarity or novelty preferences).

## CHAPTER TWO. METHODS

### **Participant Recruitment and Sample Description**

Parents of infants were identified from birth announcements and commercialized lists, and were contacted via telephone and letters. I recruited 24 4-month-old human infants and 38 12-month-old human toddlers who were counterbalanced to one of the two conditions (encouraged to play with truck or encouraged to play with doll).

Of the 4-month-old infants, five infants were eliminated from analysis for having a clear side preferences ( $n = 3$ , looking to the left greater than or equal to 85% of trials or less than or equal to 15% of trials), low inter-rater reliability ( $n = 1$ ), and procedural error ( $n = 1$ ). Of the 12-month-old toddlers, 21 toddlers were eliminated from analyses for having a clear side preference ( $n = 6$ ), fussing out of the experiment ( $n = 11$ ), lacking parental encouragement during play session ( $n = 3$ ), and parent attaching meaning to the stimuli during test trials (e.g., “you like the doll”;  $n = 1$ ). Interestingly, there were no 4-month-olds nor 12-month-olds removed from analyses because of parents’ inability to encourage play with either the truck or the doll. This finding suggests that parents were successful at influencing infants’ attention to the specified toy in both play conditions (encouragement of truck or encouragement of doll).

The 4-month-old final sample included 19 participants; a majority of them were female ( $n = 12$ ), while the rest were male ( $n = 7$ ). The 12-month-old final sample included 17 participants; approximately half of them were female ( $n = 9$ ), while the rest were male. Table 1 shows how many female and male infants and toddlers participated in each condition. The participants were Caucasian ( $n = 33$ ); others were Hispanic ( $n = 1$ ) and Biracial ( $n = 1$ ). The level of education of the parents who participated included college education ( $n = 27$ ), some college ( $n = 5$ ), high school ( $n = 2$ ), and some high school ( $n = 1$ ).



Table 1  
*Number of infants and toddlers in each condition based on age and sex*

	Play with Truck	Play with Doll
4-month-old		
Female	7	5
Male	4	3
12-month-old		
Female	4	5
Male	4	4

### **Research Design**

The design was mixed method, cross-sectional. The between-subject factors were sex (male or female) and play session condition (encourage truck or encourage doll), and the within subject factor was the test time (pretest or posttest).

### **Apparatus and Materials**

Objects used during the test trials were four dolls and four trucks. These objects were paired together based on size, which was between 6.2 cm wide X 6.2 cm high and 11.6 cm wide x 14.4 cm high for trucks and 6.0 cm wide x 11.1 cm high and 11.1 cm wide and 20.0 cm high for dolls, and color.

### **Forced choice preferential looking task**

For the 4-month-old task, a puppet-stage-like apparatus, 60 cm high x 105 cm wide x 25 cm deep, sat on a table 72 cm high. The sidewalls were wood grain and the back wall was a gray marbled pattern with a hole in the center. The hole was large enough for the experimenter to place his or her hands and objects on a white felt platform. The stage was lit with 16-watt fluorescent bulbs attached to the sidewalls and six 25-watt halogen bulbs across the ceiling. Centered on the gray laminate floor was a white felt platform 60 cm wide x 15 cm deep. Infants viewed the events through an opening in the front of the apparatus 52 cm high x 80 cm wide. A

screen was lowered over the opening to signal the end of each trial. Behind the puppet-stage-like apparatus were four white curtains that concealed the observers and to each side of the stage a canvas-covered frame, 146 cm x 88 cm, concealed the infants from the experimental room.

### **Selection task**

For the 12-months-olds' task, a blanket was placed on the floor and four white curtains, which concealed the experimental room and a research assistant who was tasked with handing the objects to the experimenter, surrounded the blanket.

### **Play session**

A black table, 45.5 cm long x 65.5 cm wide x 70.1 cm high, was used during the play session. The play session objects (trucks and dolls) varied across size and color.

### **Questionnaire**

The amended Affordance in the Home Environment for Motor Development – Infant Scale (AHEMD-IS) toy inventory questionnaire was used to measure exposure to certain types of toys, primarily dolls and trucks (see Appendix C). Parents estimated the number of toys they had in their household in each of the categories and how many hours their infant played with those types of toys. The categories of toys were hand toys, stuffed toys, dolls and play figures, books with pictures, blocks, puzzles, household item toys, balls, musical instruments, vehicle toys, dress-up toys, baby swings and toys. Parents had to approximate how many toys their infant had were certain colors (e.g., blue, yellow, red, green, pink, and purple).

### **Procedure**

On arrival to the lab, parents and infants were taken to the reception area where a research assistant informed the parents about the procedures for the study and had the parents fill out the intake forms (informed consent, demographic information, and the amended AHEMD-IS;

see Appendix A, B and C). Once the parent completed the paperwork, a research assistant took the parent and the infant into the testing room.

Two developmentally appropriate assessment methods were used to determine infants' and toddlers' toy preferences. The 4-month-olds' toy preferences were assessed using the forced choice preferential looking task. The 12-month-olds' toy preferences were assessed using a selection-based task. Presentation order of the toys was randomized using a randomization generator.

### **Forced choice preferential looking task**

A pretest and posttest forced choice preferential looking task was used to assess 4-month-old infants' toy preferences. Infants sat on their parents' lap in front of the puppet-stage-like apparatus. An experimenter put on white gloves in front of the infants, to familiarize infants with the gloved hand that they would later see in the apparatus. The first trial was a familiarization trial, in which the experimenter's gloved hands rested for five seconds on the stage floor in the puppet-stage-like apparatus. Next infants saw twelve test trials with an attention-getting trial after every second test trial. Infants were shown four truck/doll pairs, one pair per trial. Each doll and truck pairing was shown for two trials before moving on to the next doll and truck pair. When the screen was removed to start the trial, the experimenter was holding the objects inside the apparatus at a 45-degree angle to the right from center. The experimenter then lifted both objects and rotated the objects back and forth 90 degrees (45-degree to the right from center and 45-degree to the left from center), one movement per second. Each of the twelve test trials lasted for five seconds from infants' first look. If the infants did not look within five seconds, the supervisor called the infants' name. During each trial, two concealed naïve observers determined to which side of the stage infants looked.

### **Selection-task**

A pretest and posttest selection-task was used to assess 12-month-old toddlers' toy preferences. Parents and 12-month-old toddlers were instructed to sit on the floor across from the experimenter. The pretest trial began with one to two familiarization trials to help ensure the child was comfortable selecting an object from the experimenter. During the familiarization trial, a recorder placed objects behind the experimenter's back, which the experimenter grabbed and held them in front of him or her until the infant looked. Once the infant looked, the experimenter wiggled and placed the objects equidistant from the toddler. The toddler had 20 seconds to make his or her selection. If the infant selected an object on the first familiarization trial, the test trials began. The pretest and posttest consisted of eight trials. The test trials began similar to the familiarization trials, but the objects were replaced with the doll and truck pairing and were randomly placed on either left or right sides of the child based on the randomization plan. Toddlers, again, had 20 seconds to make a selection, if the toddler failed to make a selection, then the stimuli used in that test trial were reused after the initial eight trials until the infant made a selection. Observers watched from behind a one-way mirror and indicated which object the infant selected during each trial.

### **Play session**

After the initial pretest, a play session occurred and was video-recorded for coding duration of look and touch to the encouraged and discouraged toy. The play session began with the parent and infant or toddler sitting at a black table. The 4-month-old infants sat in the experimenter's lap across from the parent and the 12-month-old toddlers sat in their parent's lap. A research assistant instructed the parents to interact with only a certain type of toy (either truck or doll) and deter their infant from playing with the discouraged toy. Parents were instructed to

play and speak as they naturally would. The supervisor then placed the play objects on the table in front of the parent and infant. The play session varied in length depending on the infant's age (i.e., five minutes for infants and three minutes for toddlers). These lengths of times were used because the toddlers became bored more quickly than the infants.

Following the play session, the posttest trials were conducted in an identical method to the pretest trials, with the exception that familiarization trials were removed.

## CHAPTER THREE. RESULTS

The proportion of trials in which infants and toddlers preferred either truck or doll was calculated. Each age group was analyzed separately. A 2 x 2 x 2 Analysis of variance (ANOVA) was conducted using sex (male or female) and play session condition (encourage truck or encourage doll) as between-subject factors, and test time (pretest or posttest) as within subject factors and percent of trials preferring the dolls as the dependent variable.

The mixed model ANOVA was first conducted for the 4-month-olds. Results indicated no significant main effects or interactions, all  $p$  values greater than .05. Next, I conducted one sample t-tests with a test value of 50 to determine if there were sex differences in infants' initial toy preferences (i.e., Do male infants prefer trucks? Do female infants prefer dolls?). In Table 2, the means and standard deviations for the percent of trials female and male infants looked at the dolls and the trucks are presented. The t-test was not significant for the 4-month-old female infants,  $t(11) = 1.13, p = .28$ . These results indicate that at pretest, female infants did not look at the doll or the truck greater than expected by chance. Similarly, the t-test was not significant for the 4-month-old male infants,  $t(6) = 1.89, p = .11$ . The results indicate that the 4-month-old male infants did not look at the doll or the truck greater than expected by chance.

I examined the female infants' data in greater detail due to the large variability in scores. Three 4-month-old female infants showed a clear preference for the truck and two 4-month-old female infants showed a clear preference for the doll. I looked at a number of factors to determine if either set of female infants were different from the others including; the gender of the parent participating with the infant, the number of toys and hours of play with each toy to which the infants were exposed at home, and the number of hours the infant spent in childcare.

These infants did not differ from other infants in these factors. Because there were no indications of these females being different, I concluded variability was likely due to individual differences.

Table 2

*Percent of trials 4-month-old female and male infants preferred the doll and truck*

Percent of trials preferring Doll and Truck	<i>M</i>	<i>SD</i>
Female		
Doll	59.75	29.93
Truck	40.25	29.93
Male		
Doll	57.29	10.19
Truck	42.71	10.19

*Note.* \*  $p < .05$ , \*\*  $p < .001$

Next, to determine the effect of parents' encouragement of either the dolls or the trucks, two planned comparisons were conducted using a one-way ANOVA with the test time (pretest or posttest) as the independent variable. Table 3 shows the means and standard deviations for the percent of pretest and posttest trials infants who were encouraged to play with doll or who were encouraged to play with the truck looked at the doll. Four-month-old infants who were encouraged to play with the doll looked equally at the doll in pretest and posttest,  $F(1, 7) = 0.7, p = .80, \eta_p^2 = .01$ . Similarly, infants who were encouraged to play with the truck looked about equally at the doll from baseline to posttest,  $F(1, 10) = .74, p = .41, \eta_p^2 = .07$ . I expected the percent of trials the 4-month-olds looked at the truck to be the inverse of these scores. These analyses indicate that parents' encouragement did not influence infants' toy preferences. In fact, baseline scores were highly positively correlated with posttest scores,  $r = .61, p = .01$ , suggesting that infants were consistent in their preferences from baseline to posttest.

Table 3

*Percent of trials 4-month-olds preferred the doll based on play session condition*

Percent of trials preferring Doll	<i>M</i>	<i>SD</i>
Encourage Doll		
Pretest	65.75	26.48
Posttest	63.75	17.75
Encourage Truck		
Pretest	53.82	22.22
Posttest	57.73	21.48

*Note.* \*  $p < .05$ , \*\*  $p < .001$

Finally, a regression analysis was conducted to determine whether the number of trucks or dolls and the hours of play with truck or dolls in the household predicted initial toy preferences for the doll. In Table 4, I present the relative strength of the individual predictors. For 4-month-olds, the regression equation was not significant,  $R^2 = .22$ , adjusted  $R^2 = -.01$ ,  $F(4, 18) = .98$ ,  $p = .45$ . Based on these results, I concluded that neither the total number of toys nor hours played with each toy in the household predicted 4-month-old infants' initial preferences.

Table 4

*Correlations of the predictors for 4-month-old infants' baseline preference for doll*

Predictors	Correlation between each predictor and the percent of trials preferring dolls	Correlation between each predictor and the percent of trials controlling for all other predictors
# of Dolls	-.28	-.34
Hrs of Doll Play	.21	.38
# of Trucks	-.21	-.06
Hrs of Truck Play	-.01	.00

*Note.* \*  $p < .05$ , \*\*  $p < .001$

The 12-month-olds' data was analyzed in a similar manner as the 4-month-olds' data. A mixed method 2 x 2 x 2 ANOVA was conducted using sex (male or female) and play session condition (encourage truck or encourage doll) as between-subject factors, and test time (pretest or posttest) as within subject factors and percent of trials preferring the dolls as the dependent variable. Results indicated no significant main effects nor interactions, all  $p > .05$ .



Next, I conducted one-sample t-tests with a test value of 50 to determine if there were initial sex differences at baseline assessment. Table 5 depicts the means and standard deviations of the percent of trials that 12-month-old female and male toddlers preferred the doll or truck. The t-test was not significant for the 12-month-old female toddlers,  $t(8) = .23, p = .86$ . Results indicated that at pretest, female toddlers did not look at the doll or the truck greater than expected by chance. Interestingly, the t-test was significant for the 12-month-old male toddlers,  $t(7) = -2.52, p = .40$ . These results indicate that 12-month-old male toddlers looking to the truck and the doll were significantly different from chance. In particular, the male toddlers preferred the truck to the doll.

Table 5

*Percent of trials 12-month-old female and male toddlers preferred the doll and truck*

Percent of trials preferring Doll and Truck	<i>M</i>	<i>SD</i>
Female		
Doll	52.83	37.31
Truck	47.17	37.31
Male		
Doll	22.50	31.21
Truck	78.13*	32.00

*Note.* \*  $p < .05$ , \*\*  $p < .001$

Similar to the 4-month-old infants, two planned comparisons were conducted using a one-way ANOVA with the test time (pretest and posttest) as the independent variable. Table 6 shows the means and standard deviations for the percent of pretest and posttest trials toddlers who were encouraged to play with doll or who were encouraged to play with the truck looked at the doll. Twelve-month-old infants who were encouraged to play with the doll looked equally at the doll in pretest and posttest,  $F(1, 8) = 0.74, p = .42, \eta_p^2 = .09$ . Similarly, toddlers who were encouraged to play with the truck looked about equally at the doll from baseline to posttest,  $F(1, 7) = .272, p = .14, \eta_p^2 = .28$ . These analyses indicate that parents' encouragement did not

influence infants' toy preferences. As with the 4-month-olds, the 12-month-olds' baseline scores were highly positively correlated with posttest scores,  $r = .91$ ,  $p = .01$ , suggesting that toddlers were consistent in their preferences from pretest to posttest.

Table 6  
*Percent of trials 12-month-olds preferred the doll based on play session condition*

Percent of trials preferring Doll	<i>M</i>	<i>SD</i>
Encourage Doll		
Pretest	21.11	30.54
Posttest	26.44	25.37
Encourage Truck		
Pretest	57.94	35.29
Posttest	52.13	28.64

*Note.* \*  $p < .05$ , \*\*  $p < .001$

Finally, a regression was conducted to determine whether the total number of each toy and number of hours played with each toy in the household predicted toddlers' initial preference for dolls. The correlations are shown in Table 7. The regression equation was not significant,  $R^2 = .28$ , adjusted  $R^2 = .04$ ,  $F(4, 16) = 1.16$ ,  $p = .38$ . Similar to the 4-month-old infants, neither the total number of toys nor the total of hours played with each toy in the household predicted 12-month-old toddlers' pretest preferences.

Table 7  
*Correlations of the predictors for 12-month-old toddlers' baseline preference for doll*

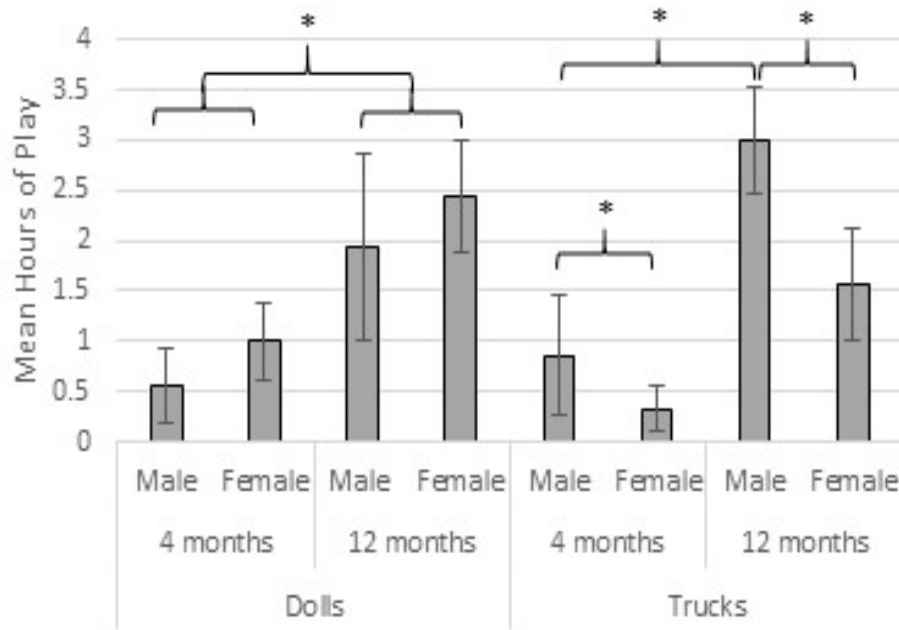
Predictors	Correlation between each predictor and the percent of trials preferring dolls	Correlation between each predictor and the percent of trials controlling for all other predictors
# of Dolls	.36	.07
Hrs of Doll	.36	.16
# of Trucks	.02	.17
Hrs of play Truck	-.22	-.38

*Note.* \*  $p < .05$ , \*\*  $p < .001$

Finally, I was interested in examining whether the types of toys and hours of play with each toy in the home differed for male and female humans at both ages. I conducted a 2 (sex) x 2 (age) ANOVA with total number of each toy and total hours of play with each toy as dependent

variables. Results indicated that for the total number of dolls in the home there was not a significant main effect of age, sex, nor age x sex interaction, all  $p > .05$ . Similarly, results also indicated that for the total number of trucks in the home there was not a significant main effect of age, sex, nor age x sex interaction, all  $p > .05$ .

Interestingly, results indicated that for the total hours of play with dolls in the home there was a significant main effect of age,  $F(1, 32) = 5.69, p = .02, \eta_p^2 = .15$ , but not for sex nor age x sex, both  $p > .05$ ; suggesting that 12-month-olds played with the doll more than the 4-month-olds. Similarly, results indicated that for the total hours of play with trucks in the home there was a significant main effect of age,  $F(1, 32) = 13.12, p < .01, \eta_p^2 = .29$ , and a significant main effect of sex,  $F(1, 32) = 4.49, p = .04, \eta_p^2 = .12$ ; however, there was not a significant main effect of age x sex,  $p > .05$ . These results suggest, in general, that 12-month-old toddlers play more with the trucks and the dolls than the 4-month-olds infants. Males at both ages played more with the truck than the doll. In addition, these results also indicate that parents and others are providing infants and toddlers with similar quantities of dolls and trucks. Figure 1 depicts the mean number of hours male and female infants and toddlers played with each toy.



*Figure 1.* Mean number of hours of play with each toy for males and females at both ages. The 12 month-old toddlers played longer with both toys compared to the 4-month-old infants. At both ages, male infants and toddlers played longer with the truck compared to the doll. The asterisks represent  $p$  values less than .05.

## CHAPTER FOUR. DISCUSSION

The overarching goal of this study was to assess the influence of parents' socialization behaviors on infants' toy preferences. Two primary research questions were addressed. These were, 1) to what extent are infants' and toddlers' gender-typed toy preferences influenced by parents' short-term (experimental procedure) socialization attempts, and 2) are infants' and toddlers' toy preferences predicted by long-term (prior to participating in study) exposure to and experience with similar type of toys? Sex differences were not evident at baseline in the 4-month-old sample. In contrast, 12-month-old male toddlers preferred the truck to the doll, while female toddlers looked at the doll and truck equally. Key findings indicated that parents' attempts to encourage infants' and toddlers' attention to either the doll or truck and discourage attention to either the doll or truck during joint play did not alter initial preferences. Finally, analyses indicated that previous exposure to the trucks or the dolls (i.e., total number of each toy and total hours of play with each toy) did not predict baseline preferences for either the 4-month-olds or 12-month-olds.

The initial sex difference findings, in which 12-month-old male toddlers showed preferences to the trucks, are consistent with previous research. Alexander et al., (2008) found that 4-month-old infants did not display gender-typed toy preferences, but by 8 months, infants appear to show gender-typed toy preferences. Furthermore, Jadva, Hines, and Golombok (2010) found evidence of gender-typed toy preferences in 18-month-old male toddlers.

Many researchers have pointed to the androgen hormone as a cause of male toddlers liking trucks. Androgen, the hormone found in greater quantities in male humans, and progesterone, a synthetic-androgen hormone, have both been positively associated with masculine-typed behaviors (Berenbaum, et al., 2008; Berenbaum & Hines, 1992; Servin,

Nordenstrom, Larsson, & Bohlin, 2003; van de Beck, van Goozen, Buitelaar, & Cohen-Kettenis, 2009). However, if hormones were the sole determinate of toy preferences I would expect 4-month-old male infants to show similar patterns to the 12-month-old male toddlers, but the younger infants did not prefer the trucks to dolls. If biological factors are not the sole indicators of gender-typed behaviors, then alternatives could be cognitive abilities or socialization changes.

One possibility is that compared to the 12-month-old toddlers, 4-month-old infants may not be exposed to as many trucks and dolls. However, this claim is unsubstantiated by parents' reports from the amended AHEMD-IS. Parents indicated that 4-month-olds and 12-month-olds are exposed to similar numbers of dolls and trucks. This finding suggests that the availability of certain toys at these ages is not influencing the differences in 4-month-olds and 12-month-olds' preferences. While 4-month-olds and 12-month-olds have similar numbers of trucks and dolls, it is possible that 12-month-olds were exposed longer to the each toy. Therefore, duration of exposure could have influenced 12-month-olds' toy preferences. Additional factors exist, such as parents' and siblings' gender-typed socialization and gendered attitudes and beliefs could have influenced 12-month-old male toddlers' preferences for trucks.

The finding that male toddlers' displayed gender-typed toy preferences may be related to more rigid stereotyping of boys than girls by parents. Wood, Demarais, and Guguala (2002) found that fathers are more adamant in the adherence of gender roles and are less tolerant of cross-gender behaviors in boys (e.g., more concerned about boy's behaving gender-appropriately than girls behaving gender-inappropriately). Furthermore, by 12 months of age, male and female toddlers behave differently in the presence of their fathers, and research shows evidence that fathers treat their toddlers differently based on perceived gender (Snow, Jacklin, & Maccoby, 1983). Heterosexual fathers, in particular, are more likely to endorse masculinity, while

heterosexual mothers and gay and lesbian parents are more likely to relinquish those ideals (Kane, 2006). One could speculate that the current sample of 12-month-old male toddlers were exposed to such gender typing from their parents, specifically fathers, as they demonstrated clear preferences for the trucks at baseline and posttest. However, in general parents are more flexible in allowing their daughters to play with “boy” toys (Blair, 1992; Tenebaum & Leaper, 2002; Weisner & Wilson-Mitchell, 1990). The parents, of the infants and toddlers from this study, may have been less likely to hold strict gender stereotyped values and may have consciously avoided behaving in gender-typed ways to have children who are less gender-typed.

It is clear that parents treat their children differently based on gender and perceived gender. Our approach was to more directly examine the effectiveness of these socialization attempts. The key findings suggested that infants and toddlers are not receptive to these attempts, at least not from a brief 5-minute interaction. Both 4-month-olds and 12-month-olds were consistent in their preferences from baseline to posttest, indicating that parents’ encouragements did not sway infants’ and toddlers’ toy preferences. These scores were not due to the inability of the parent to successfully direct infants’ attention to a particular toy. The play sessions were video-recorded and coded by trained coders to ensure that the infants looked and touched the encouraged toys more than the discouraged toys. In fact, no participants were removed from analyses for parents’ inability to successfully direct infants’ attention.

This finding is particularly surprising for the trucks given that parents’ play behavior with trucks is particularly salient. Caldera, Huston, and O’Brien (1989) observed that masculine-typed toys (i.e., trucks) and feminine-typed toys (i.e., dolls) elicit different play behaviors from parents. For example, parents tend to be more animated when playing with trucks than when playing with dolls. When playing with trucks, parents make more appealing sounds and gestures that might

increase a child's preference for trucks. These behaviors may lead me to expect an increase in child's preferences for trucks. Interestingly, although many parents exhibited these types of play behaviors during the study's play session, I did not code parents' play styles. Their play behaviors did not alter their infants' and toddlers' posttest preferences. However, if parents and other caregivers were to demonstrate these types of play behaviors at home, over longer periods, then infants and particularly toddlers may show an increased preference for the truck at baseline. While parents' socialization attempts and play styles and behaviors at home were not measured in this study, future research could examine the influence of such behaviors have on infants' toy preferences.

Key findings also indicated that the neither toys available nor hours of play with each toy in home predicted the 4-month-olds' and the 12-months-olds' initial preferences. However, overall, older toddlers played with both toys more than infants. This difference between toddlers' and infants' play may be due to differences in object explorative abilities. In addition, male infants and toddlers played with trucks more at both ages. Older male toddlers played with the truck on average for three hours a week, and male infants played with the truck on average about 45 minutes a week. It is unclear if these differences are a reflection of infants' preferences or if other factors lead toddlers to play more. For example, 12-month-olds have more ability to select own play toys, whereas, infants have to a toy handed to them.

While previous research suggests that parents offer children gender-typed toys (e.g., Lytton & Romney, 1991), the parents in this sample did not seem to offer their infants and toddlers gender-specific toys, but exposed their children to a variety of toys. One possibility for this is that the infants and toddlers in this study had parents who were well educated. In fact, most of our participants had parents who had received a college education. Research suggests



that parental education and income distinguish families with more traditional gendered attitudes (e.g., men are the providers and women are the homemakers), from families with more egalitarian gendered attitudes (Bolzendahl & Myers, 2004; Marks, Lam, & McHale, 2009). Since the 4-month-old and 12-month-old participants had parents who were highly educated, it may be possible that these families hold attitudes that are more egalitarian and thus are not gender-typing their infants and toddlers.

Furthermore, there has been a shift to gender-neutral parenting practices (e.g., Blackmore & Centers, 2005; Martin, 2005). Because of this shift, toys have become less gender-specific. Blackmore and Centers (2005) found that while more toys have been labeled gender neutral, some toy types are still highly gendered (e.g., dolls and trucks). In addition, a second-wave feminist analysis of childcare books and parenting web sites indicated that gender-neutral gender rearing has been incorporated into parenting advice (Martin, 2005). As such, it is possible that these participants are being raised in more gender-neutral or gender variant homes compared to infants in previous studies. The results from the amended AHMED-IS indicate that parents provided 4-month-old and 12-month-old males and females with both dolls and trucks. Again, parental gender-typed attitudes during infancy and toddlerhood were not measured in the current study. Therefore, future research could explore how parents who participate in gender-neutral parenting practices influence their infants' and toddlers' toy preferences. While there has been a shift toward gender-neutral parenting practices, parents, including the parents from this study, could subconsciously reinforce gender-appropriate behaviors.

With parents' reinforcement of gender-appropriate behaviors, children may display behaviors that are more gender-appropriate. In addition to parents' socialization attempts, siblings' socialization attempts may also influence infants' toy preferences. McHale, Updegraff,

Helms-Erikson, and Couter (2001) and Rust et al., (2000) found that children with older, other-gender siblings display less gender-typed preferences, attitudes, and personality traits, as these children have more opportunities to imitate and participate in cross-gender activities. While parental and sibling gendered attitudes and beliefs and play practices were not measured in the current study, these are interesting topics for future research.

Even though I did not find evidence that parents are able to influence a change in their infants' and toddlers' toy preferences in the short-term, something is changing between 4 months to 12 months in infants' and toddlers' toy preferences (even at 8 months; Alexander, et al., 2008). Further research is needed to understand how gender stereotyping is influencing these young infants and toddlers. Therefore, I propose pregender development be added to the preexisting gender development milestones. Pregender refers to the development of children who may not be aware of their gender identity, but are still influenced by gendered classifications and are molded through gendered attitudes and expectations. These attitudes and expectations influence the experiences they have and how these experiences shape their gender development and their acquisition of their gender identity. Further research during this developmental period is necessary to examine and to understand how young children are influenced by gender constructs and how it influences their performance of gender throughout the lifespan. In addition, with a new developmental milestone researchers can examine how other types of socialization or dynamic combination of biological factors, cognitive abilities, and socialization practices influence the changes we see in toy preferences from 4 months to 12 months of age.

### **Limitations**

There are several limitations to this study. First, the sample size for the 4-month-olds and 12-month-olds were small. Because small sample sizes have low power, a small sample size

increases the likelihood of making a Type II error (i.e., reporting there is no significance, when there might be significance). However, nonparametric tests confirmed the results obtained by the ANOVAs. Second, the total number of dolls, total number of trucks, total hours spent playing with dolls, and total hours spent playing with trucks in the home were assessed using the amended AHEMD-IS., a self-report measure. Self-reported data is limited by the fact that it can rarely be independently verified. In addition, self-reports contain several potential sources of bias. For example, parents may not have accurately reported the number of dolls and trucks, nor the total hours spent playing with dolls and trucks due to retrospective bias. These limitations could be overcome by making direct observation of the home environment.

### **Future Research**

The overall results of this study indicate that that parents' short-term influence on their infants' and toddlers' toy preferences was not effective. However, future research using different methods could result in different conclusions. Studies utilizing a longitudinal design could be beneficial in observing how toy preferences change throughout infancy. While this study examined infants' and toddlers' exposure to and experience with trucks and dolls, it did not explore parents' gender-typed attitudes and beliefs. Studies focused on parents' gendered attitudes during infancy could serve as indication of the types of toys and experience parents are likely to provide for their infants and toddlers. Lastly, this study examined how parents' socialize their infants. Studies focusing on the interaction between infants and parents may be beneficial; as they would evaluate the impact, both the child and parent have on the child's gender development.

## **Conclusion**

This study measured two forms of socialization attempts: parents' encouragement of either truck or doll, and infants and toddlers' exposure to each toy. Parents' encouragement and previous exposure to certain toys did not influence infants' and toddlers' toy preferences. While these forms of socialization were ineffective, other methods of socialization should be examined before concluding that socialization, in full, has no influence on infants' and toddlers' toy preferences. Researchers should continue to examine how gender socialization occurs during infancy. Understanding how gender socialization attempts influence younger infants will provide further information on how gender development progresses. The knowledge acquired from future research could be instrumental in understanding gender development.

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## APPENDIX A. INFORMED CONSENT

**NDSU**

**NORTH DAKOTA STATE UNIVERSITY**

701-231-8268

Fax 701-231-9645

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*Department of Human Development and Family Science*

*College of Human Development and Education  
NDSU Dept. 2615  
P.O. Box 6050  
Fargo, ND 58108-6050*

### **PARENT/GUARDIAN PERMISSION TO PARTICIPATE IN RESEARCH**

Early Childhood Toy Preferences  
Infant Cognitive Development Lab

#### **Research Study**

You and your infant are being invited to participate in a study of infant and toddler development under the supervision of Dr. Rebecca Woods, assistant professor in the Department of Human Development and Family Science at NDSU.

#### **Purpose of Study**

The purpose of the study is to gain knowledge about the way infants perceive and think about objects in their environment. Knowledge to be gained from this study is of use to researchers, parents, and educators. Approximately 400 3 to 37-month-old's will participate.

#### **Explanation of Procedures**

This study is conducted in rooms 111 and 112 of the Graduate Center at NDSU. In addition to this form, you will be asked to complete a questionnaire requesting information about yourself and your child. After all forms have been completed, a researcher will provide objects with which your infant will be allowed to play or watch. Your infant may sit on your lap in front of a puppet-stage-like apparatus and watch events presented on the stage or your infant might be asked to pick out an object from those presented. In some cases, you may be asked to assist your child during a 5-minute play session. During the study, you may be asked to look away or close your eyes so that your child's behavior is not influenced. Trained observers will record your child's looking patterns or actions. Sessions will be videotaped and videos will be used for professional purposes only (i.e., to code your child's response, for teaching, or for presentation at professional meetings). If you choose not to allow your child to be videotaped, s/he may still participate in the study. The entire session lasts about 20 to 40 minutes and breaks will be given as needed to ensure the comfort of you and your child.

#### **Approval for your child to be videotaped**

- Yes, I give permission for the session to be video-taped.
- Yes, I give permission for the session to be video-taped, but NOT for use in teaching or presentations.
- No, I do not give permission for the session to be videotaped.

#### **Potential Risks and Discomforts**

There are no direct benefits to you or your child. This study poses no known psychological risk to your baby. At most, your baby will find the event uninteresting or boring.

#### **Compensation for Participation**

You will be offered \$5.00 or a baby item (e.g., infant sized T-shirt, toy, or cup) for your participation. Individual feedback regarding results may not be available; however you may request a summary of the study results once the research is completed.

**Assurance of Confidentiality**

Data and records created by this project are owned by the University and the investigator. All information collected about your child will be held confidential (i.e., your baby’s responses will be coded and stored separately from identifying information). Your child’s identity will not be revealed in the report of the data.

Your baby’s name is kept on file in the Infant Cognitive Development Lab and you may be called to participate again when your child is older. You are under no obligation to participate again and you may request that your child’s name be removed from the calling list now or at any time in the future.

- Yes, I give permission for the Infant Cognitive Development Lab to contact me for future studies.
- No, I am not interested in participating again. Please remove my name from the calling list.

If child abuse is detected in the course of the experimental session, the researchers are obligated to report it to the proper authorities.

**Voluntary Participation and Withdrawal From the Study**

You may ask questions and are free to withdraw from this study at any time without consequence or incurring ill will.

If you have questions about this study, Dr. Woods’ office is room 283A of the E. Morrow Lebedeff Hall and her phone number is (701) 231-9791. If you have questions about the rights of human research participants, or wish to report a research-related problem or injury, contact the NDSU IRB Office at (701) 231-8908 or ndsu.irb@ndsu.edu.

**Consent Statement**

**By signing this form, you are stating that you have read and understand this form and the research project, and are freely agreeing to allow your child/legal ward to be a part of this study. If there are things you do not understand about the study, please ask the researchers before you sign the form. You will be given a copy of this form to keep.**

If possible, both parents/guardians should sign this consent form. Only one signature signifies that only one parent or guardian was available and your child may still participate.

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Parent/Guardian Signature	Printed Name	Date
---------------------------	--------------	------

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Parent/Guardian Signature	Printed Name	Date
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---

Relation to Participant	Name of Child/Legal Ward
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---

Researcher obtaining permission:

Signature	Printed Name	Date
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APPENDIX B. PARTICIPANT DEMOGRAPHIC INFORMATION SHEET

Infant Cognitive Development Lab

**PARTICIPANT INFORMATION SHEET**

**Baby's sex:**     F            M

**Baby's birthdate:** \_\_\_\_\_ **Birth weight:** \_\_\_\_\_

**Baby's Ethnicity:**

\_\_\_\_\_ American Indian     \_\_\_\_\_ Asian/Pacific Islander

\_\_\_\_\_ Hispanic                \_\_\_\_\_ Caucasian, Not of Hispanic Origin

\_\_\_\_\_ Black, Not of Hispanic Origin     \_\_\_\_\_ Other: \_\_\_\_\_

Was baby born:

\_\_\_\_\_ before term?     How many weeks early? \_\_\_\_\_

\_\_\_\_\_ at term?     At 40 weeks.

\_\_\_\_\_ after term?     How many weeks late? \_\_\_\_\_

Has baby suffered any **serious illness or injury**? \_\_\_\_\_

Is there anyone in your infant's immediate or extended family who is **colorblind**?

Yes \_\_\_\_\_ No \_\_\_\_\_

If so, how is this person related to your infant? \_\_\_\_\_

**Parent's Education:** (circle for one or both parents)

Some high school     High school     Some college     College Grad

Video Approval

No video

No presentation

Video

Subject # \_\_\_\_\_

APPENDIX C. AMENDED AHMED-IS QUESTIONNAIRE

**Adapted AHMED  
Toy Exposure Inventory  
For 3 – 18 months**

Date: \_\_\_/\_\_\_/\_\_\_

Subject #: \_\_\_\_\_

**Participant and Parent Information**

Child's Date of Birth: \_\_\_/\_\_\_/\_\_\_

Your Sex: Male  Female  Intersex

Child's Sex: Male  Female  Intersex

Your Age: \_\_\_\_\_

What is your child's birth order? Only child  First child  Second  Third  Other \_\_\_\_\_

Does your child attend Day-Care? Yes  No

If yes, approximately how many hours in a typical week does your child spend at Day-Care: \_\_\_\_\_

How long has your child been attending childcare?

Less than 3 months  3 - 6 months  7 - 12 months  More than 12 months

**Family Characteristics**

Number of siblings who live with your child: \_\_\_\_\_

Child lives with: Mother  Father  Other \_\_\_\_\_

**Instructions:**

*With each toy group listed below, please check  the box for the number of equal or SIMILAR toys you have in your house.*

Please read carefully each group general description before deciding if you have this type of toy.

*Please check  the box to indicate the approximate number of hours per week your child plays with each toy type.*

**FIGURES ARE ONLY EXAMPLES** to help you better understand the description. You do not need to have the exact toy represented to count it in the group. SIMILAR toys and of the same TYPE should be counted.

**1. Hand toys: simple rattles and teething rings**



How many toys like these does your child have?

None:  One:  Two:  Three:  Four:  Five:  More than Five:

How often does your child play with these toys in typical a week?

Never:  1-2 hours  3-4 hours:  5-6 hours:  7-8 hours:  More than 8 hours:




**2. Stuffed toys**



How many toys like these does your child have?  
 None:  One:  Two:  Three:  Four:  Five:  More than Five:

How often does your child play with these toys in typical a week?  
 Never:  1-2 hours:  3-4 hours:  5-6 hours:  7-8 hours:  More than 8 hours:

**3. Dolls and play figures**



How many toys like these does your child have?  
 None:  One:  Two:  Three:  Four:  Five:  More than Five:

How often does your child play with these toys in typical a week?  
 Never:  1-2 hours:  3-4 hours:  5-6 hours:  7-8 hours:  More than 8 hours:

**4. Books with pictures (cloth, card board or plastic)**



How many toys like these does your child have?  
 None:  One:  Two:  Three:  Four:  Five:  More than Five:

How often does your child play with these toys in typical a week?  
 Never:  1-2 hours:  3-4 hours:  5-6 hours:  7-8 hours:  More than 8 hours:

**5. Blocks and Lego type bricks, small play construction sets**



How many sets of toys like these does your child have?  
 None:  One:  Two:  Three:  Four:  Five:  More than Five:

How often does your child play with these toys in typical a week?  
 Never:  1-2 hours:  3-4 hours:  5-6 hours:  7-8 hours:  More than 8 hours:

**6. Puzzles (2 to 12 pieces)**



How many toys like these does your child have?

None:  One:  Two:  Three:  Four:  Five:  More than Five:

How often does your child play with these toys in typical a week?

Never:  1-2 hours:  3-4 hours:  5-6 hours:  7-8 hours:  More than 8 hours:

**7. Household item toys: kitchen utensil sets, vacuums**



How many toys like these does your child have?

None:  One:  Two:  Three:  Four:  Five:  More than Five:

How often does your child play with these toys in typical a week?

Never:  1-2 hours:  3-4 hours:  5-6 hours:  7-8 hours:  More than 8 hours:

**8. Balls of different sizes, textures, colors and shapes**



How many toys like these does your child have?

None:  One:  Two:  Three:  Four:  Five:  More than Five:

How often does your child play with these toys in typical a week?

Never:  1-2 hours:  3-4 hours:  5-6 hours:  7-8 hours:  More than 8 hours:

**9. Musical materials: instruments, music boxes, mobiles, etc.**



How many toys like these does your child have?

None:  One:  Two:  Three:  Four:  Five:  More than Five:

How often does your child play with these toys in typical a week?

Never:  1-2 hours:  3-4 hours:  5-6 hours:  7-8 hours:  More than 8 hours:

**10. Vehicle Toys: trains, helicopters, trucks, cars, etc.**



How many toys like these does your child have?

None:  One:  Two:  Three:  Four:  Five:  More than Five:

How often does your child play with these toys in typical a week?

Never:  1-2 hours:  3-4 hours:  5-6 hours:  7-8 hours:  More than 8 hours:

**11. Dress-up toys and accessories**



How many toys like these does your child have?

None:  One:  Two:  Three:  Four:  Five:  More than Five:

How often does your child play with these toys in typical a week?

Never:  1-2 hours:  3-4 hours:  5-6 hours:  7-8 hours:  More than 8 hours:

**12. Baby swings and rocking toys**



How many toys like these does your child have?

None:  One:  Two:  Three:  Four:  Five:  More than Five:

How often does your child play with these toys in typical a week?

Never:  1-2 hours:  3-4 hours:  5-6 hours:  7-8 hours:  More than 8 hours:

**13. Tools**



How many toys like these does your child have?

None:  One:  Two:  Three:  Four:  Five:  More than Five:

How often does your child play with these toys in typical a week?

Never:  1-2 hours:  3-4 hours:  5-6 hours:  7-8 hours:  More than 8 hours:

**Instructions:**

Please check  the box indicate the approximate number of toys of each color your child has. Place a check  the box to indicate the percent of time your child plays with these toys relative to toys of other colors in a typical week.

	<p>How many BRIGHT MULTICOLORED toys does your child have?</p> <p>None: <input type="checkbox"/>    1-2: <input type="checkbox"/>    3-4: <input type="checkbox"/>    5-6: <input type="checkbox"/>    7-8: <input type="checkbox"/>    9-10: <input type="checkbox"/>    More than 10: <input type="checkbox"/></p> <p>How often does your child play with BRIGHT MULTICOLORED toys compared to other toys in a typical week?</p> <p>0%-9% <input type="checkbox"/>    10%-50% <input type="checkbox"/>    51%-99% <input type="checkbox"/>    100% <input type="checkbox"/></p>
	<p>How many PASTEL COLORED toys does your child have?</p> <p>None: <input type="checkbox"/>    1-2: <input type="checkbox"/>    3-4: <input type="checkbox"/>    5-6: <input type="checkbox"/>    7-8: <input type="checkbox"/>    9-10: <input type="checkbox"/>    More than 10: <input type="checkbox"/></p> <p>How often does your child play with PASTEL COLORED toys compared to other toys in a typical week?</p> <p>0%-9% <input type="checkbox"/>    10%-50% <input type="checkbox"/>    51%-99% <input type="checkbox"/>    100% <input type="checkbox"/></p>
	<p>How many MOSTLY BLUE toys does your child have?</p> <p>None: <input type="checkbox"/>    1-2: <input type="checkbox"/>    3-4: <input type="checkbox"/>    5-6: <input type="checkbox"/>    7-8: <input type="checkbox"/>    9-10: <input type="checkbox"/>    More than 10: <input type="checkbox"/></p> <p>How often does your child play with MOSTLY BLUE toys compared to other toys in a typical week?</p> <p>0%-9% <input type="checkbox"/>    10%-50% <input type="checkbox"/>    51%-99% <input type="checkbox"/>    100% <input type="checkbox"/></p>
	<p>How many MOSTLY YELLOW OR MOSTLY GREEN toys does your child have?</p> <p>None: <input type="checkbox"/>    1-2: <input type="checkbox"/>    3-4: <input type="checkbox"/>    5-6: <input type="checkbox"/>    7-8: <input type="checkbox"/>    9-10: <input type="checkbox"/>    More than 10: <input type="checkbox"/></p> <p>How often does your child play with MOSTLY YELLOW OR GREEN toys compared to other toys in a typical week?</p> <p>0%-9% <input type="checkbox"/>    10%-50% <input type="checkbox"/>    51%-99% <input type="checkbox"/>    100% <input type="checkbox"/></p>
	<p>How many MOSTLY PURPLE toys does your child have?</p> <p>None: <input type="checkbox"/>    1-2: <input type="checkbox"/>    3-4: <input type="checkbox"/>    5-6: <input type="checkbox"/>    7-8: <input type="checkbox"/>    9-10: <input type="checkbox"/>    More than 10: <input type="checkbox"/></p> <p>How often does your child play with MOSTLY PURPLE toys compared to other toys in a typical week?</p> <p>0%-9% <input type="checkbox"/>    10%-50% <input type="checkbox"/>    51%-99% <input type="checkbox"/>    100% <input type="checkbox"/></p>
	<p>How many MOSTLY RED toys does your child have?</p> <p>None: <input type="checkbox"/>    1-2: <input type="checkbox"/>    3-4: <input type="checkbox"/>    5-6: <input type="checkbox"/>    7-8: <input type="checkbox"/>    9-10: <input type="checkbox"/>    More than 10: <input type="checkbox"/></p> <p>How often does your child play with MOSTLY RED toys compared to other toys in a typical week?</p> <p>0%-9% <input type="checkbox"/>    10%-50% <input type="checkbox"/>    51%-99% <input type="checkbox"/>    100% <input type="checkbox"/></p>
	<p>How many MOSTLY PINK toys does your child have?</p> <p>None: <input type="checkbox"/>    1-2: <input type="checkbox"/>    3-4: <input type="checkbox"/>    5-6: <input type="checkbox"/>    7-8: <input type="checkbox"/>    9-10: <input type="checkbox"/>    More than 10: <input type="checkbox"/></p> <p>How often does your child play with MOSTLY PINK toys compared to other toys in a typical week?</p> <p>0%-9% <input type="checkbox"/>    10%-50% <input type="checkbox"/>    51%-99% <input type="checkbox"/>    100% <input type="checkbox"/></p>