

Barbie Brains: The Effect of Barbie Dolls on
Girls' Perception of Male and Female Jobs

by

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In this experiment, 16 three to eight-year-old girls from the Corvallis area came to our lab with one of their parents. After having the child play with either a Barbie Doll or a control toy for five minutes, the experimenter orally administered a questionnaire designed to assess activation of gender stereotypes about jobs and self-perceived ability related to future career ability. The main hypothesis was that after playing with Barbie, girls would be more stereotypical during a picture task. The secondary hypothesis predicted that girls who played with Barbie would say that they could do fewer careers in a question task. Results were insignificant for the main hypothesis and the secondary hypothesis.

Key Words: Barbie, fashion, doll, career, job, stereotype, gender

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I understand that my project will become part of the permanent collection of Oregon State University, University Honors College. My signature below authorizes release of my project to any reader upon request.

Elise Abramson, Author

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Since her creation in 1959, Barbie has been a popular toy for young girls in the U.S. In 1998, on average, girls in the U.S. owned eight of these dolls and approximately two were purchased every second somewhere in the world (Turkel, 1998). With all of her popularity and the persistent part she plays in many girls' lives, little research has yet been done on whether she might have a harmful effect on the development of the girls who love her.

Problems with Barbie

Turkel (1998) argues that all dolls are meant as transitional objects. They are meant to help children attain some independence, teach children about societal roles, and, when the dolls look older, represent how the child should look and act when they grow up. However, Barbie may represent a distorted image of independence (such as by implying that independence is gained through shopping), social roles (such as depicting a limited view of the careers women may have), and adult behavior (such as using physical looks to get what one wants) that parents would not want their children to emulate (Turkel, 1998).

Radford (2007) claimed that Barbie should be thought of as a role model, if not for her physical appearance, then for her careers; for example, during the 2004 presidential election there was a President Barbie. Radford (2007) argues that real women role models are admired because of their accomplishments and Barbie should be thought of in the same way. However, even Barbie's career incarnations are fraught with stereotypical imagery. The Dr. Barbie that was purchased for this experiment (the only current Dr. Barbie that we were able to find) says on the package that she is specifically a "baby doctor," not a pediatrician. Her only medical instruments are that of a stethoscope

and otoscope (which nurses are equally capable of using), some of the “accessories” she comes with are babies and lollipops, and she is wearing jeans with pink glitter, not professional medical attire. The message that this conveys is that though girls can grow up to be doctors, they should still be preoccupied with babies and things that are “cute” (the packaging says that her accessories include two “cute” babies). Furthermore, Veterinarian Barbie is a version of a veterinarian who only works with small, cute pets, Pilot Barbie doubles as a flight attendant, and College Barbie’s dorm room does not have any books (Turkel, 1998).

Putting aside the question of whether Barbie is a good role-model because of her careers, others have problems with the message she sends to girls about their roles in society. For example, the Barbie persona focuses too much on shopping and she reinforces gender differences in ability (Turkel, 1998). One talking Barbie said, as one of her several phrases, “Math is tough” (Turkel, 1998, 169). This type of message reinforces beliefs that our culture has about gender difference in math ability even though a meta-analysis by Hyde, Fennema, and Lamon (1990) showed only a small effect size (0.15) of gender on math ability (as cited in Helgeson, 2009). Additionally, in some of the games and stories created around her, Barbie often trades her youth and looks for material possessions (Turkel, 1998).

Another problem is with Barbie’s appearance. Some believe that she has an unrealistic body and that she is overly-sexualized (Brownell and Napolitano, 1994; Turkel, 1998). In fact, Barbie is based on a “German plaything for men” (Turkel, 1998, p. 169).

Barbie's body has been shown to be unrealistic. Brownell and Napolitano (1994) took the measurements of a woman with a normal BMI (body mass index) who was twenty-two years-old, 5 foot 2 inches tall, and weighed 125 lbs. They found the measurements of this woman's hips and increased all of Barbie's measurements using a ratio that would make Barbie's hips the same size as the woman the researchers measured. The researchers found that in order for this average, healthy adult woman to attain Barbie-like proportions, she would have to increase twenty-four inches in height, decrease six inches in the waist, and gain five inches in the chest, which is not humanly possible.

Not having similar physical dimensions to Barbie, a model whose measurements are unattainable and to which some girls have substantial exposure, could lead to a detriment in body image. Change in girls' body images after exposure to a Barbie Doll has been better studied than her other difficulties and has been shown experimentally by Dittmar, Halliwell, and Ive (2006). Dittmar et al. showed a causal link between exposure to the Barbie image (as opposed to a different type of doll and control images) and an increase in body dissatisfaction in five to eight-year-old girls.

In Dittmar's et al. study (2006), 162 primarily white girls from middle class families between the ages of five to eight were recruited from six schools in the United Kingdom. They were randomly assigned to be exposed to an image of Barbie, a full-figured doll that represented a size-16 body, or a control condition in which there were no body-like images. Girls were then assessed with both a questionnaire about body esteem and a pictorial task in which silhouettes of bodies were shown and girls indicated which one reflected their current body size and which their ideal body size. Body dissatisfaction

was higher in girls exposed to Barbie than girls in the other conditions for most age groups. Though the impact of exposure to Barbie on body satisfaction was not significant for the oldest group of girls (7 ½ and older), the researchers suggested this might be because unrealistic body image by might already be internalized by that age and that early exposure to Barbie Dolls might be a part of this process. In support of this interpretation, older girls reported lower body satisfaction across all conditions compared to younger girls.

Unfortunately, body dissatisfaction is not harmless, nor does it stop as girls mature. According to National Eating Disorder Association (2005) 80% of women are dissatisfied with their bodies. Further, NEDA associates this low body image with the high incidence of eating disorders. According to their statistics, as many as ten million women in the United States suffer from an eating disorder. According to Sullivan (1995), anorexia nervosa leads more people to die prematurely than any other mental illness (as cited in National Eating Disorder Association, 2005). One of the most disturbing things about the prevalence of dissatisfied body image and disordered eating is the young age at which it begins to become an issue. Forty-six percent of nine to eleven-year-olds are at least sometimes on a diet and at least 20% of those who consider themselves normal dieters progress to having some form of eating disorder (Gustafson-Larson & Terry, 1992; Shisslak & Crago, 1995, as cited in National Eating Disorder Association, 2005).

One of the mechanisms through which Barbie may influence children is through the types of play that her image encourages. According to Kuther and McDonald (2004), there are three different ways that children play with Barbie Dolls: imaginative, torture,

and angry play. Torture and angry play are both common and involve disfiguring Barbie Dolls (torture) and acting out scenes in which Barbie did something mean to the child and punishing Barbie for it as a way of releasing emotions (angry). Though both of these types of play are interesting, it is imaginative play which tends to activate female stereotypes and is the type which we most commonly think of when we think of children playing with Barbie Dolls.

Imaginative play involves the child imagining some type of script for their Barbie to take part in. The researchers gave examples such as family life, glamorous events, and weddings. Kuther and McDonald (2004) found in their two focus groups that adolescents, to some extent, perceive Barbie to possess physical perfection. Further, “some” (N not specified) of the girls in the focus group thought of Barbie as a good role model because of her perfection, though the majority perceived that Barbie was unrealistic in terms of body image and health (Kuther & McDonald, 2004, p. 48). However, these were twelve to fourteen-year-olds who claimed that they had long ago stopped playing with Barbie Dolls. It is possible that as children grow up they hear negative things about Barbie, but by the time they form negative feelings about Barbie, many of the toy’s implicit messages have been internalized and reinforced by society. Examples of these messages may include the need to pursue an unhealthy weight and unrealistic physical beauty.

Internalizing Barbie’s messages

Are children able to internalize Barbie’s stereotypical and problematic messages, and if so, at what age? According to Martin and Halverson’s model (1981, as cited in Campbell, Shirley, & Candy, 2004), gender stereotypes are the causes of sex-typed behavior and stereotyped knowledge for concrete items (such as toys) emerges at about

three years of age. In support of this model, Campbell et al. (2004) showed, using a longitudinal study, that stereotypical beliefs and knowledge preceded stereotyped behavior. In this study, boys and girls were interviewed in their homes once around the age of two and again around the age of three. The children were measured on their gender labeling, their knowledge of gender stereotypes, their activity preferences, and their toy preference. For some behavior preferences (such as girls' lower preference for conflict), the correlation of gender knowledge as measured by gender labeling (a general form of gender stereotypes) at age two and behavior at age three was stronger (in this example, -.40) than the correlation between knowledge and behavior concurrently at age two (-.35) or three (-.03). These results seem to indicate that knowledge of what is typical for one's gender can predict later behavior. Campbell et al. (2004) also found that both stereotypical beliefs and behavior increased dramatically between the ages of two and three suggesting that children are internalizing typical messages during this period of development.

There is additional evidence that children who are exposed to stereotypical portrayals internalize those messages. Aubrey and Harrison (2004) found that children who watched more stereotypical portrayals of men and women on television had more stereotypical views of gender roles and acted in more gender-stereotypical ways. Though this study was descriptive (a survey was given to children in class) and not experimental, these results still suggest that there could be a relationship between how children spend their recreational time and their views toward men, women, and ultimately themselves.

Perception of future self

In order to identify how Barbie may affect girls' perceptions of their future careers, we must establish that children have the ability to think of themselves in the future separately from their current self. Atance (2005) found that children as young as three have the ability to predict the needs of their future selves in varying situations. In this study, researchers showed the child (aged 3-5) a picture of a scene and asked them which of three items they would need to bring with them to that scene. Children picked the correct item at a greater rate than chance for all age groups, showing that they understand how their physiological needs may change depending on the situation. If children are able to do that, it is conceivable that they understand why they might like certain types of jobs once they are an adult. Though the ability to predict needs in future states improves greatly with age, it is not unreasonable to conclude that children three and older are able to think of themselves as needing or wanting a certain job when they are older.

Gender difference models

Though there are many examples of gender gaps in areas such as occupation, we do not know for certain why these gaps emerge. There are many theories about why we observe differences between men and women, some of which are developmental in nature (Helgeson, 2009). Though no theory can explain all gendered behavior, two could be used to explain how small differences seen in early childhood could contribute to the larger gender gaps that we see in adults: social learning theory and gender-role socialization.

According to Helgeson (2009), social learning theory is comprised of learning behavior from modeling and learning behavior that is reinforced. In the case of stereotyped behavior, once children begin modeling behavior that parents or others interpret as “normal” for that gender, behavior is reinforced either intentionally or unintentionally (Helgeson, 2009). If children, through positive reinforcement, learn to only follow the example of models who match their gender, their behavior is likely to become increasingly stereotypical (Helgeson, 2009). As discussed earlier, some adults and children view Barbie as an acceptable role model (Radford, 2007; Kuther & McDonald, 2004), thus, gendered play with Barbie and Barbie-like behavior is likely to be an activity reinforced for girls and punished in boys.

Gender-role socialization is partially based on social learning theory, but differs in that models and reinforcement comes from several sources (such as parents, peers, and teachers) in the child’s environment, which gradually shape behavior until it agrees with the child’s gender (Helgeson, 2009). Under this theory, Barbie could have an impact on girls by providing them a model to imitate which leads to positive reinforcement in the short run, but negative long-term consequences. If girls copy the behavior and attitudes that they perceive from Barbie and are rewarded (for example by being able to make friends more easily or by getting more help from adults), they are likely to continue modeling that behavior. Though there is not yet any conclusive evidence that sequence of events happens, one example that was previously discussed (Barbie’s affect on body image) could be explained this way. As discussed above, playing with a Barbie could negatively influence girls’ body image (Dittmar et al., 2006). This feeling might then be reinforced because her friends see negative body image as a normal and thus treat her

with more acceptance and encourage these feelings. Peer reinforcement could then cause the girl's negative body image to continue and later lead to behavior (disordered eating).

Possible pathway of Barbie play to gender gap in opportunities

Though Barbie is a toy that is meant for children, and she may only directly affect girls during the periods in their lives in which they play with the doll, it seems possible that the influence Barbie has could create ripples that turn into waves by adulthood (see Figure 1). Steele (1997) argued that in order for people to succeed academically, they first had to form some type of academic identification. Steele claimed that stereotypes and societal beliefs could interfere with this process, therefore leading to gaps between groups of people in different areas of achievement. For example, if society believes that girls have more difficulty with math, this could interfere with a young girl's perception that she does well in this subject.

Nueville and Croizet (2007) were able to show a causal link between making gender salient to girls and a detriment to their ability to do challenging math in seven to eight-year-old girls. Children were randomly assigned to the activation condition where girls were asked to color a picture of a girl holding a doll, and boys were asked to color a picture of a boy with a ball. In the control condition the children colored landscapes. These researchers found that when gender was activated, girls performed less well on the difficult math problems than the boys, but in the no activation condition, they outperformed the boys on the difficult problems. This seems to indicate that girls are aware that being good at math is not part of their gender role, and that knowing about these gender stereotypes may negatively affect them. This is a phenomenon that Neville and Croizet related to the theory of expectancy confirmation. If a society's expectation

about a subgroup influenced that subgroup in the direction which society predicts, this leads to a confirmation of that expectancy. Therefore, it is difficult to eliminate stereotypes because they appear to be true in uncontrolled settings.

Expectancy confirmation for girls has also been shown, descriptively, to work with gender-related stereotypes for activities. Chalabaev, Sarrazin, and Fontyne (2009) showed that the more girls believed in negative stereotypes involving girls and sports, the less well they performed in a soccer-playing task. In this study, the researchers assessed girls on four dimensions: perceived ability in soccer, stereotype endorsement (that girls were not good at soccer), masculinity and femininity, and actual soccer ability. One finding was that the negative relationship between stereotype endorsement and actual ability was mediated by self-perceived ability. Chalabaev et al. theorized that if girls were internalizing negative stereotypes about women in sports, their resulting beliefs about themselves might influence practicing behavior and choice in activities, which over the long term would lead to a large gender gap in sports ability.

A study by Denissen, Zarrett, and Eccles (2007) provides a possible mediator for Chalabaev's et al. (2009) findings about a relationship between stereotype endorsement and actual ability. Denissen et al. (2007) were able to show a correlation between children's interest, self-perceived ability, and their achievement in many academic and non-academic domains in a longitudinal study of children between the grades one through twelve. Theoretically, interest and self-perceived ability could be mediators between stereotype endorsement and practicing and activity choice (see Figure 1), a mechanism proposed by Chalabaev et al. (2009). The correlation between interest and self-perceived ability was stronger than between either of these two and actual ability. If

anything were to damage a child's self-perceived ability (such as their perception that they were good at math), this relationship could indicate that the child would then decide that they also lack interest in that subject. Alternatively, if a child began to endorse a stereotype that, because of an attribute they possess (such as their gender) that they are not supposed to have interest in a subject, the result could be a drop in their self-perceived ability. Children who either lack interest in a subject or believe that they are not good at it are less likely to spend time improving in that area and will probably try to avoid it. As Chalabaev et al. (2009) proposed, such avoidance or lack of engagement could be the mechanism through which there are changes in actual ability and, eventually, achievement.

Expectancy confirmation and gender-role socialization could result in damaging consequences for girls who play with Barbie Dolls through the proposed pathway (see Figure 1). Reinforcement of a child's behavior can act as a moderator at all steps of this pathway. As related above, Barbie represents many negative female stereotypes. If playing with Barbie leads girls to internalize and endorse such stereotypes, this may damage their self-perceived ability in particular subjects, which are perceived as male-dominated such as math and science (Helgeson, 2009), or lead them to show a lack of interest in those same subjects. If girls, as a result, do not find certain subjects interesting or believe themselves to have no talent for an activity, they may take different classes than boys, study different subjects, and practice different activities, especially if such behavior is seen as typically female and thus reinforced. Differences in practicing and activities will lead to differences in actual ability between girls who participate in gender-atypical activities and those who try to avoid them. Over time this will lead to a

difference in achievement in those areas and to a gap in the opportunities available. In this way, exposure to Barbie in childhood could be changing girls' expectations and interests, altering and limiting the future paths that girls are able to pursue through altering and limiting their current experiences.

The question thus becomes, does exposure to Barbie cause internalized gender stereotypes to become more salient to girls and lead to more rigid gender-related expectations and endorsement? Further do these stereotypes influence their self-perceived ability and their beliefs about the abilities of women in general? The current study focuses on Barbie's influence on career-related gender stereotypes in children aged three to seven.

The current study

In the current experiment, three to eight-year old girls were randomly assigned to play with either a Mrs. Potato Head, a Dr. Barbie Doll, or a Fashion Barbie Doll. After they had played with the toy, they were assessed on whether they believed they could do certain jobs when they grew up, whether boys could do certain jobs when they grew up, and in a picture task, who they thought worked (a man or a woman) in certain workplaces.

In the current experiment, we expect to find that girls who are randomly assigned to play with Barbie Dolls are more likely to respond that men and women have more stereotypical jobs as opposed to non-stereotypical jobs when compared to girls who play with a more neutral toy. We also expect to find that that girls who play with Barbie as opposed to a more neutral toy will have a more limited view of what jobs they can do when they grow up.

Method

Participants

The participants included 16 three to eight-year-old girls (M age = 4.94, SD = 1.39) accompanied by one of their parents. The children were recruited from the Corvallis area mainly through schools and daycare centers such as the Corvallis Montessori School and the OSU Child Development Center. Fliers were put up in these buildings and after permission was obtained from the centers, letters were sent home to parents. Although gender of the accompanying parent was not specified in recruitment, all of the parents were female. Ethnicity also was not specified, but the participants were generally white Caucasians.

Participants were compensated with a five-dollar gift card for the parents and stickers and a book for the child. They received these things if they came to the lab regardless of whether they agreed to be in the study. None of the children or parents declined to participate once they had come to the lab. However, one participant's data was excluded due to clear comprehension problems.

Materials

In the control condition, children played with a Mrs. Potato Head doll (named Jane Potato Head). The doll had no features at the beginning of each trial it except for eyes, which established the doll's gender. Other features were available for the child to put on the doll such as ears, a flowery hat, feet, a nose, and lips (see Appendix A). The first experimental condition was a "doctor" Barbie doll. It wore, at the beginning of the trial, jeans and a shirt with ducks on it (as it was when it was purchased). Accessories for this condition included a stethoscope, a lab coat with the nametag "Dr. Barbie" printed on

it, a hairbrush, and an otoscope (ear examiner; see Appendix B). Finally, the second experimental condition is the “fashion” Barbie doll. This is the same doll as “Dr. Barbie,” but begins by wearing a dress. Her accessories include a fur wrap, a hairbrush, a purse and high-heeled shoes (see Appendix C). All three dolls begin with as few accessories on as possible to allow the child to notice the accessories and put them on the doll if they choose.

The experiment uses two questionnaires, both designed by the researchers. The Child Questionnaire includes some introductory questions, a direct question section, and a picture-figure matching section (see Appendix D). In the direct question section, children are given the name and a brief description of a job and asked if they think they could do that job when they grow up and if a boy could do that job when he grows up. In the picture section, a picture of a workplace is placed in front of the child and the child places one or both of the figures (one is a man and the other a woman) on the picture to indicate which one they believe works there.

The parent questionnaire consisted of exploratory questions such as whether the child had Barbie Dolls at home and how old the child was (see Appendix E).

Procedure

When parents called to make an appointment for themselves and their child, they were screened on whether the child fell into the age range of three to seven. If she did, a half-hour appointment was made for both the parent and the child to come in. After the appointment was made, a researcher used dice to randomly assign which condition they would be in (Jane Potato Head, Dr. Barbie, or fashion Barbie), and to assign the order of questions on the Child Questionnaire (see Appendix D).

On the day of the experiment, a researcher met with the parent and child in the parking lot and walked them to the lab. When the participants entered the lab, another researcher engaged the child in the assent procedure and asked the child to sign or write her name on the assent form. If she was unable to write her name, she was asked to make an “X” and the parent signed next to it to confirm that their child assented. At that point, the research assistant who read the assent form to the child (RA1) asked the child to accompany them into the lab, leaving the door open, and let the child draw with a piece of plain paper and crayons, which were already in the room.

Once the child had left the room, the other researcher (RA2) engaged the parent in the informed consent process. After the experiment had been explained, the parent was given the informed consent document to read and sign. At this time RA2 asked the parent if they would like to watch from the other room in the lab, which is connected to the first by a two-way mirror. As RA2 walked the parent to the observation room they signaled to RA1 whether the parent had agreed to let their child be recorded on audio and video and closed the lab door to indicate that the experiment could begin. Once in the observation room, RA2 turned on the video recorder (if consent was given) and gave the parent the Parent Questionnaire to complete (see Appendix E). The video recorder was left on during the entire experiment and was turned off by RA2 once all of the questions had been asked.

Once the lab door had been closed, RA1 turned on the audio recorder (after asking the child for permission). RA1 then removed the drawing supplies and gave the child an open brown box with the assigned toy and accessories inside. As the assistant put the box in front of the child they said “In this box is a toy. I would like you to play with it

for five minutes.” The child was then allowed to “play” with the toy for the allotted five minutes. The child was not required to “play” with the toy in the traditional sense of the word; most of the children spent their time putting accessories on the toys and taking them off. If the child at any time lost interest or stopped playing with the toy, RA1 used one of the following prompts: “Could you show me what (name of toy) does during a regular day?” “Is that all (name of toy) does during a normal day? Why don’t you show me;” “Does (name of toy) do something different on weekends? Why don’t you show me;” and “Show me how you would play with (name of toy) at home.”

After the five minutes of play was completed, RA1 put the toy and all accessories back into the box and put it inside a cupboard in the room and said, “Now that you have played with (*name of toy*), I’d like to ask you some questions.” RA1 will then begin to orally administer the Child Questionnaire (See Appendix D) which starts with the questions, “Did you like playing with (*name of toy*)?” and “why” or “why not.” Instructions on the use of the questionnaire are in italics on the form.

Once the child had finished the questions RA1 opened the lab door, indicating that the experiment was over and that RA2 and the parent could join them. RA1 then read the child the book designed for debriefing titled “You can do any job you want.” It features pictures of real women who do the same jobs mentioned in the Child Questionnaire and explains that women can do any career they want to do. The book was given to the child’s to keep as their reward for being in the study as well as stickers they picked out.

When the parent had finished their questionnaire and their child has been debriefed, the parent was given the debriefing form, and given their gift card. The assistants then thanked the parent and child and escorted them back to their car.

Results

Main findings

Currently, there have been six girls in the Jane Potato Head condition and a total of ten girls in the Barbie conditions (six played with Fashion Barbie and four played with Dr. Barbie).

In order to perform statistical tests on the nominal data, some scores needed to be combined. The jobs in the Child Questionnaire (see Appendix D) were compared to data from the Bureau of Labor Statistics to determine whether each job was dominated by one gender (Bureau of Labor Statistics, 2008). Jobs were considered to be dominated by one gender if that gender made up more than sixty percent of the people employed in that category. In total ten jobs were considered male dominated: doctor, pilot, engineer, manager, lawyer, politician, athlete, police officer, musician, and construction worker. Five jobs were considered female dominated: nurse, flight attendant, teacher, librarian, and stay-at-home parents. There were four neutral jobs: veterinarian, scientist, artist, and food servers.

Using these data, we calculated percentage of stereotypical choices made in the picture task (such as placing the male cutout on the picture of a manager's office) and the percentage of non-stereotypical choices made in the picture task (such as placing the female cutout on the picture of a manager's office) for each participant. We then calculated the mean percentages for each condition (see Table 1).

Once mean percentages were established, we used an independent samples t-test to determine if there was a difference between the girls who played with Jane Potato Head and the girls who played with Barbie Dolls for stereotypical choices during the picture task (equal variances not assumed; $t(14) = .05, p = .96$). We did the same for non-stereotypical choices (equal variances not assumed; $t(14) = .97, p = .38$). Theoretically, the picture task tested whether internalized stereotypes were activated to a greater extent in the Barbie conditions than the control condition. Results for the main hypothesis were not significant.

To test the secondary hypothesis of whether girls in the Barbie condition had a more limited view of their what they could do when they grow up (and thus diminished self-perceived ability) we calculated the percentage of jobs the participants said they could do when they grew up as part of the question task for each participant. We then found the mean percentages for the girls in the Jane Potato Head condition and those in the Barbie conditions (see Table 2). These means were also compared using an independent samples t-test (equal variances not assumed; $t(14) = .8, p = .44$). Results for the secondary hypothesis were not significant.

Correlations

Other tests that were performed on the data include correlations between the percentages calculated for the primary and secondary hypothesis and data from the Parent Questionnaire (see Appendix E). Percentage of stereotypical job choices made in the picture task and the number of jobs they said they could do when they grew up divided by the total number of jobs on the questionnaire (percentage of yes responses in the question task) were correlated with the number of Barbie Dolls the child owns, the

frequency of play with those Barbie Dolls, and the average hours of television the child watches. None of the correlations with stereotypical responses on the picture task or percentage of yes responses on the question task were significant.

Two interesting correlations did emerge as part of the analysis. The hours of television watched was correlated with both how many Barbie Dolls the child owned ($r = 0.69$, $N = 16$, $p = .003$) and how often she played with them ($r = 0.68$, $N = 16$, $p = .004$).

Discussion

Though we did not find significant results for our main or secondary hypothesis, the small number of participants meant that the study had low power to test our hypotheses. However, this experiment is ongoing and even though we only had ten participants, differences between the children in the control condition and those in the experimental conditions already seem to be emerging (though because of the low power these results could be due to random chance).

If, when the study has been completed, results confirm the hypotheses, it would support the theory that playing with Barbie leads to gaps in opportunities as illustrated by the model that was constructed based on past research (see Figure 1). Significant results would mean that exposure to Barbie could lower self-perceived ability and makes female stereotypes more salient. In the picture task, we were asking girls to show the stereotypes they have about male and female jobs by showing us who (a male or a female) they thought worked in a particular workplace, with a particular job. Significant results in this area could also mean that playing with Barbie causes girls to internalize limiting stereotypes about their gender.

In the question task, we are asking girls about their self-perceived ability to perform different jobs. Significant results in this area could mean that exposure to Barbie causes girls to lower their self-perceived ability to perform certain jobs, especially those that are stereotypically thought of as jobs for men.

In our experiment, we tested the effects of short-term exposure to the toys. Though we do not know anything for certain about the effects of long term exposure, according to the model we have constructed based on past research, short-term exposure could lead to long term consequences. If Barbie causes girls to internalize and endorse female stereotypes and lowers their self-perceived ability, it may influence practicing and choices in activities as Chalabaev et al. suggested (2009). This, in turn, would probably lower actual ability in stereotypically male activities (Chalabaev et al., 2009) and achievement (Denissen et al., 2007). Over time, this would lead to gap in opportunities on average between girls who played with Barbie Dolls and those who did not.

Strengths and Limitations

Though this study has yet to have significant findings related to the hypotheses which inspired its design, a few important points have already been demonstrated. First, this study has shown the feasibility of using an experimental design with young children. Though we had children as young as four, we had no difficulty in establishing assent or administering the Child Questionnaire (see Appendix D). Explanations (such as giving a description of each job) and checks (such as asking the child if one of the cutouts was a man/woman and asking the child to point out the man/woman) were incorporated into the design to confirm that the child understood the task. For the most part, children were easily able to demonstrate their understanding.

A second strength of this study was its methodology. If significant results are found once we have more participants, we will have shown a cause-effect relationship instead of just a correlation relationship. Currently, if we find a statistically significant relationship between playing with Barbie dolls as measured by the Parent Questionnaire (see Appendix E) and activated internalized stereotypes as measured by the picture task, we would not be able to disprove that it is not just girls who have stereotypes who choose to play with Barbie Dolls. However, if we find significant results that support our primary hypothesis we can reasonably conclude that it is Barbie who activates stereotypes that girls have internalized.

Unfortunately, this study is not able to demonstrate whether Barbie can be part of the internalization process for gender stereotypes, though previous literature seems to indicate that this is certainly possible (Campbell et al., 2004; Aubrey & Harrison, 2004). This study also did not address some of the other steps in our model such as the relationship between stereotype endorsement and changes activities chosen and practiced (see Figure 1).

Another limitation of this study is that the girls in our study might not reflect the normal population of girls in the U.S. Our sample came from Corvallis (a small college town) and many were daughters of university professors. This was evident in the fact that the girls who participated in our study had, on average, fewer Barbie Dolls than we would have expected for the general U.S. population ($M = 4.5$, $SD = 1.40$). If the girls in our study were recruited from a population which is more progressive and educated than U.S. averages, it could mean that these girls hear more anti-stereotypical messages, have more non-stereotypical models to follow, and are reinforced differently than the general

population. If this is the case, they might not be as affected by Barbie; in a way, they might have been inoculated somewhat from her influence.

Future studies

This study is the first of many studies which are needed to explore the concepts discussed in this paper. First, future studies should test other steps in this model to determine if Barbie Dolls (or other gender-specific toys) can have long term effects on the children who play with them. Secondly, we need to investigate which aspect of Barbie is responsible for the short-term exposure effects. It could be that Barbie's image makes gender stereotypes more salient when girls play with them or it could be the way that girls are expected to play with Barbie (imaginative play which highlights female gender roles; Kuther & McDonald, 2004). Thirdly, while this study used both a career Barbie and a fashion Barbie, we do not yet have enough participants to fully understand if there is any difference in the effect of playing with one rather than the other. Finally, additional studies are also needed to further explore the other detrimental effects of fashion dolls.

Conclusion

Lytton and Romney's (1991) meta-analysis found that the only gender difference in how parents socialized their children was the toys they encouraged, with a moderate effect size of 0.34 (as cited in Helgeson, 2009). Barbie is not the only toy whose marketing is gender-specific, and she is not the only toy which is given primarily only to boys or only to girls by parents, relatives, and friends. Generally, Legos and action figures are marketed towards boys, while Easy-Bake Ovens and make-up kits are marketed to girls. If exposure to Barbie has the effect of lowering self-perceived ability

and making gender stereotypes more salient, opportunity gaps may emerge between those who played with Barbie during childhood and those who did not. If exposure to Barbie can create a gap, imagine the effect of surrounding children with gender-specific toys for their entire childhood.

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Appendix A



Appendix B



Appendix C



Appendix D

Child questionnaire Toy: _____ Coding Number: _____

The RA1 (the one who sat in the room while the child was playing) will ask the following questions orally to the child once the five minutes of playtime are over and record the answers.

1. Now that you have played with (*name of toy*), I'd like to ask you some questions. Did you like playing with (*name of toy*)? Yes No

2. Why? (or why not)?

3. When you are a grown up do you want to have a job? Yes No (*use 4(a and b) or 5 based on answer*)

4a. (*If yes*) What job do you think you will have? _____

4b. If you could have any job, what job do you think you would like best? _____

5. (*If no*) How would you like to spend your time when you are a grown up? _____

6a. (*Put cutouts in front of child*) Is one of these figures a woman? Y N

Which one? (*Did the child point to the skirted figure?*) Y N

6b. Is one of these figures a man? Y N

Which one? (*Did the child point to the pants figure?*) Y N

7. (*Put a picture in front of the child and give them the instructions. The pictures should be shuffled to ensure random order.*) I'm going to put pictures of places where people work, like this one, in front of you and I want you to put those cutouts on the picture to show me which one you think works there. You can put this one on the picture (*put one of the cutouts on the picture and then take it off*), or this one on the picture (*put the other cutout on the picture and then take it off*). Now this picture is of a _____. Who do you think works there? (*If the child is having difficulty, prompt them by pointing to each of them in turn and say "This one or this one?" Once the child has made their choice, record the picture and the choice and move onto the next picture.*)

Picture	Choice (Male, Female, Both)
1 _____	M F B
2 _____	M F B
3 _____	M F B
4 _____	M F B
5 _____	M F B
6 _____	M F B

7 _____	M	F	B
8 _____	M	F	B
9 _____	M	F	B
10 _____	M	F	B
11 _____	M	F	B
12 _____	M	F	B
13 _____	M	F	B
14 _____	M	F	B
15 _____	M	F	B
16 _____	M	F	B
17 _____	M	F	B
18 _____	M	F	B
19 _____	M	F	B

8. I'm going to read you the name of a job and then ask you if you think you could do that job when you grow up and if a boy could do that job when they grow up. (*Change the "you"/"a boy" order based on a coin flip done before the participants arrive. Start with the highlighted career and then move in the direction of the arrow (up or down). Indicate here which was read asked first: "you"/"a boy".*)

A doctor is someone who makes sick people better.
 Doctor. Can (you) be a doctor when (you) grow up? Y N
 Can (a boy) be a doctor when (he) grows up? Y N

A veterinarian helps sick pets get better.
 Veterinarian. " Y N " Y N

A nurse helps a doctor make sick people better.
 Nurse: Y N Y N

A pilot flies an airplane.
 Pilot: Y N Y N

A flight attendant helps us when we're flying on an airplane.
 Flight Attendant: Y N Y N

An engineer helps design things like computers and bridges.
 Engineer: Y N Y N

A scientist discovers how things work and learns more about them.
 Scientist: Y N Y N

A teacher helps us learn.
 Teacher: Y N Y N

A manager asks people to do things so that everyone works together.
 Manager: Y N Y N

A librarian helps people use the library.

Librarian: Y N Y N

A lawyer makes sure people get treated fairly.

Lawyer: Y N Y N

A politician helps run the government.

Politician: Y N Y N

An athlete plays sports.

Athlete: Y N Y N

A police officer helps keep us safe.

Police Officer: Y N Y N

A musician plays instruments.

Musician: Y N Y N

An artist paints, draws, makes sculptures, or makes some other type of art.

Artist: Y N Y N

A food server is someone who brings people food at a restaurant.

Food Server: Y N Y N

A construction worker makes and fixes buildings.

Construction Worker: Y N Y N

A parent who stays at home to take care of kids: Y N Y N

Appendix E

Parent Questionnaire Toy: _____ Coding Number: _____

Today's Date _____

Please answer the following questions to the best of your knowledge. Feel free to leave a question blank if you are uncomfortable answering or do not know the answer. When the questionnaire refers to "your child" please answer the question about the child who is participating in this study.

1. Please list the jobs that your child has been exposed to (your job, your significant other's job, aunts, uncles, family friends, etc.):

Job	Relationship to child	Gender
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

2. If your child is in school, what grade are they in? _____

3. What is your child's birth date? ____/____/_____

4. What is your child's favorite toy? _____

5. How many Barbie dolls does your child own? _____ (If zero skip to question 7).

6. How often, by your estimate, does she play with them?

- At least once a day
- A few times a week
- Once a week
- A few times a month
- Once a month
- Less than once a month
- Never

7. By your estimate, how many hours of TV does your child watch per week? _____

Table 1

Mean Percentage of Positive Responses in Picture Task

Toy Condition	Stereotypical Res.			Non-Stereotypical Res.		
	Male	Female	Total	Male	Female	Total
Jane Potato Head						
Mean %	58.33	76.67	64.44	26.67	45.00	38.89
Std. Deviation	29.94	15.06	17.21	20.66	29.50	18.58
Combined Barbie						
Mean %	59.00	74.00	64.00	36.00	56.00	49.33
Std. Deviation	31.07	25.03	21.36	32.38	30.98	23.98

Table 2

Mean Percentage of Positive Responses in Question Task

Toy Condition	Stereotypical Jobs	Non-Stereotypical Jobs	Total
Jane Potato Head			
Mean %	81.11	93.33	83.33
Std. Deviation	25.09	8.43	24.78
Combined Barbie			
Mean %	74.67	87.33	70.53
Std. Deviation	32.93	16.76	39.24

Figure Captions

Figure 1. Model of theorized pathway from play with Barbie to opportunity gaps.

