

“Boys Can Be Anything”: Effect of Barbie Play on Girls’ Career Cognitions

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Abstract Play with Barbie dolls is an understudied source of gendered socialization that may convey a sexualized adult world to young girls. Early exposure to sexualized images may have unintended consequences in the form of perceived limitations on future selves. We investigated perceptions of careers girls felt they could do in the future as compared to the number of careers they felt boys could do as a function of condition (playing with a Barbie or Mrs. Potato Head doll) and type of career (male dominated or female dominated) in a sample of 37 U.S. girls aged 4–7 years old residing in the Pacific Northwest. After a randomly assigned 5-min exposure to condition, children were asked how many of ten different occupations they themselves could do in the future and how many of those occupations a boy could do. Data were analyzed with a $2 \times 2 \times 2$ mixed factorial ANOVA. Averaged across condition, girls reported that boys could do significantly more occupations than they could themselves, especially when considering male-dominated careers. In addition, girls’ ideas about careers for themselves compared to careers for boys interacted with condition, such that girls who played with Barbie indicated that they had fewer future career options than boys, whereas girls who played with Mrs. Potato Head reported a smaller difference between future possible careers for themselves as compared to boys. Results support predictions from gender socialization and objectification theories.

Keywords Objectification theory · Barbie · Middle childhood · Socialization

Introduction

Despite movement toward gender equity in U.S. educational attainment (ACLU: Title IX 2013) and hiring and career advancement (International Labour Organization 2013), a number of occupations continue to be highly gender-segregated. For example, figures from the U.S. Bureau of Labor Statistics (2011) indicate that men are more than twice as likely as women to be employed in computer and mathematical occupations, more than 3 times as likely as women to be employed in architecture and engineering occupations, and nearly 5 times as likely as women to be employed in construction occupations. On the other hand, women are nearly twice as likely as men to be employed in social service occupations, and nearly 3 times as likely as men to work in personal care, service, educational, or library occupations. Additionally, the World Bank (2011) notes striking wide-scale gender inequality in employment and earnings worldwide, even in the context of rising rates of women’s global employment over the past 25 years.

Although there are multiple reasons for the lack of women in some occupations and the lack of men in others, one possibility is the impact of gender role socialization, the process through which children learn to abide by culturally prescribed norms for behaviors that result in the perpetuation of gender stereotypes (Bronstein 2006; Bussey and Bandura 2004; Lytton and Romney 1991). Gender schema theory (Bem 1981) argues that children build cognitive schemas for understanding their world and learn early that gender is a critically important lens for organizing information and influencing behavior.

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The present study investigates one element of childhood experience in the U.S. that may relate to choice of occupation along stereotyped lines: gendered socialization experiences through girls' doll play. More specifically, we use objectification theory (Fredrickson and Roberts 1997) to predict that exposure to a sexualized doll (Fashion Barbie) would elicit a state of sexualization similar to the state sexualization experimentally manipulated in a number of studies of objectification in college-age women (see Calogero et al. 2011; Fredrickson et al. 1998). Using an experimental design, we assess whether play with a sexualized doll impacts U.S. girls' cognitions about careers they could hold in the future compared to girls who experienced a non-sexualized condition. We build our argument below by reviewing evidence that state sexualization experiences and self-objectification processes result in negative outcomes for adolescent and college-age women that could be relevant to younger children. In the following review of literature on sexualization and objectification theory, the majority of citations use data based on samples from the U.S.; we note specifically when this is not the case. However, given the similarity of gender socialization processes and the objectification of women in most Westernized cultures (Dohnt and Tiggemann 2006a; Durkin and Paxton 2002; Morry and Staska 2001), we believe that these non-U.S. findings are likely to be relevant for our population of U.S. girls.

Socialization and Sexualization Pressures

Fantasy and play in early and middle childhood are integral domains of socialization—the process of internalizing the values, ideals, schemas, and behavior of a culture (Dittmar et al. 2006; Kuther and McDonald 2004; Sutton-Smith 1997). An important part of socialization in early and middle childhood concerns gender; that is, roles, activities, dress, appearance, and behavior that are considered distinctly appropriate for boys or girls (Powlishta 2004). One facet of gender socialization that has been of increasing concern (APA 2007) is the imperative for girls to be attractive and sexy, even at very young ages, and to focus on appearance even to the exclusion of developing other dimensions such as competence, agency, or self-confidence. The American Psychological Association's Task Force on the Sexualization of Girls defines sexualization as occurring when

- a person's value comes only from his or her sexual appeal or behavior, to the exclusion of other characteristics;
- a person is held to a standard that equates physical attractiveness (narrowly defined) with being sexy;
- a person is sexually objectified—that is, made into a thing for others' sexual use, rather than seen as a person with the capacity for independent action and decision making; and/or

- sexuality is inappropriately imposed upon a person (APA 2007, p. 1).

The report noted that sexualized and objectified representations of women and girls are widespread and appear in virtually all media including television, magazines, video games, music videos, and advertising, as well as many products (APA 2007; see also Coy 2009; Hatton and Trautner 2011). These sexualized representations negatively impact adolescent and adult women around the world who are exposed to them, as we discuss below.

For example, Durkin and Paxton (2002) found exposure to sexualized material was associated with an increased risk for depressive symptoms for their sample of women in Australia and New Zealand, while U.S. researchers have found similar patterns for the outcomes of low self-esteem (Grabe et al. 2007), and body dissatisfaction (Davison et al. 2000; Grabe et al. 2008). Further, the repeated exposure to sexualized material leads to internalization of sexualizing and objectifying messages over time, such that girls learn to think of themselves mostly in terms of how they appear to other people rather than thinking about themselves as actors in their own right. In other words, a girl begins to focus primarily on her physical appearance rather than on her abilities or feelings. This phenomenon is called *self-objectification* (Fredrickson and Roberts 1997).

Evidence of self-sexualization appears to begin quite early in current cohorts. In one study, Starr and Ferguson (2012) found that girls as young as 6 picked a sexualized computer-generated doll image as “popular” and their “ideal self” compared to a non-sexualized doll image. As with sexualization and objectification by others, self-objectification has a host of negative consequences. Of particular interest to an understanding of the effect of self-objectification on career choice are studies that have shown that an induced state of self-objectification leads to intrusive body-related attentional focus and impaired performance on cognitive tasks (see Calogero et al. 2011, for a review). For example, Quinn et al. (2006) found that self-objectification in college-aged women resulted in more frequent body-focused cognitions (e.g., thinking about body flaws, specific areas of the body) during a free-response task. Self-objectification also resulted in lower mathematics performance in two additional studies (Fredrickson et al. 1998; Hebl et al. 2004). In a related study, Graff et al. (2012) found that observer interpretations of a pre-teen girl were significantly and negatively impacted by the level of sexualization of her clothing. College student participants rated the sexualized image as lower in self-respect, morality, intelligence, and capability, compared to the same image in non-sexualized clothing. These results suggest that responding to the cultural emphasis on sexualization by sexualizing oneself may have negative consequences. It is, however, difficult to escape the pressure of sexualizing content.

Sexualizing messages are directed at girls and women from a variety of sources, including print, television, movies, music videos, and advertising, all of which link female gender and an expectation of sexuality (APA 2007). For example, Grabe and Hyde (2009) found that increased exposure to sexually objectifying music video content was associated with increased self-objectification, which in turn was associated with lower body esteem, lower confidence in mathematics ability, and lower psychological well-being in 7th grade girls (about 13 years old). Related results have been obtained from exposure to sexually objectified print and TV programming aired in Australia (Dohnt and Tiggemann 2006a) and Canada (Morry and Staska 2001) and for Australian girls aged 5–8 years old (Dohnt and Tiggemann 2006b).

Based on the theoretical framework of objectification theory, which encompasses both state self-objectification (temporary) and trait self-objectification (long-term), and the supporting empirical evidence reviewed above, we hypothesize that sexualized messages may lead girls to envision a limited set of possible future occupational selves. Playing with sexualized female dolls would be relevant to cognitions about the girls themselves, but would not be expected to impact their cognitions about the capabilities of boys.

The effect of state self-objectification on cognitions about career development has not been investigated in children. However, a survey in the UK (Gould 2008) found that 32 % of female teenage respondents wanted to be models, 29 % wanted to be actors, while only 4 % wanted to be engineers and 14 % wanted to be scientists. These findings suggest that sexualized or appearance-based careers are seen by many adolescent girls as more viable or desirable options than those focused on intelligence or academic achievement. Furthermore, a variety of survey studies in the UK and U.S. indicate that, although girls report a gender-egalitarian view of academic courses and occupations in the fields of science, technology, engineering, and mathematics (STEM), their actual choices in both classroom and career arenas remain rooted in traditional gender roles (e.g., Darke et al. 2002). Findings from one study of 92 English girls aged 10–11 years suggest that the discrepancy between gender-egalitarian attitudes and gender-traditional choices is due to identity pressures that steer girls away from science aspirations because of the association of science with masculinity (Archer et al. 2012). Studies that directly test the effects of state self-objectification on children's cognitions about career options are lacking, yet are necessary in order to better understand the causes of girls' career preferences.

In addition to the dearth of studies on state self-objectification in girls, few studies have directly considered the ways in which products such as children's clothing or toys contribute to a culture of objectification and sexualization. One exception is Goodin et al.'s (2011) study tracing several recent controversies over explicitly sexualized clothing

marketed to young and adolescent girls. Their content analysis of pre-teen girls' clothing in sizes 6–14 on 15 popular U. S. retailers' websites indicated that up to as much as one-third of the girls' clothing for sale had sexualized characteristics, including emphasizing or revealing a sexualized body part, sexualized written content, or having an adult sexualized color or print (e.g., black or red color, leopard or zebra print). These sexualized characteristics often coexisted with childlike characteristics, suggesting a melding of overt adult sexual expectations into childhood. However, Goodin et al. limited themselves to describing the level of sexualization in the clothing, rather than linking exposure to the clothing with any potential outcomes for children.

In the current study, we propose that some toys, in addition to being a broad venue for gender role socialization, also communicate messages of objectification and sexualization. In particular, fashion dolls such as Barbie are physically formed and costumed to communicate messages of appearance-focus and sexualization (Turkel 1998). Such messages contrast with the nurturant expectations conveyed by baby dolls. As such, Barbie dolls are part of the socializing context which communicates appearance-focused and sexualizing messages to girls as young as 3 years old (the lower end of the age range to which Barbie is marketed). Sexualizing messages in early and middle childhood may be especially impactful because the self-concept, which can include ideas about future career options, is rapidly developing in early and middle childhood (Eccles et al. 1993; Harter 1999, 2003). The evolution of self is a major task of childhood, as children learn to distinguish between self and others in infancy, separate from caregivers in toddlerhood, and engage in sibling and peer relationships in early and middle childhood (Harter 2003, 2006; Thompson 2006). Early experiences take place in the context of multiple socialization processes, and are deeply influenced by the degree to which girls encounter and engage with gendered stereotypes, including messages communicated through doll play (e.g., Starr and Ferguson 2012; Turkel 1998).

Dolls as Vectors of Sexualization

Turkel (1998) argues that dolls reinforce cultural ideals about the place of girls and women in society, and carry “cultural messages about how people should look and act” (p. 168). She argues that Barbie dolls, in particular, send cultural information that is potentially damaging for girls' developing self-concepts. Although Barbie is available in a variety of costumes, including athletic wear (which might suggest muscularity or agency) and those relevant to many careers (which might suggest intellectual capacity), her most commonly sold style of dress consists of a form-fitting sparkly evening gown and high heels (in fact, her feet are molded for high heels). This style of dress highlights only the doll's physical

appearance and her unattainable figure; Brownell and Napolitano (1995) showed that, to have the physical measurements of Barbie, an average U.S. adult woman would have to be 2 feet taller, have a neck 3 inches longer, have a chest 4 inches larger, and be 6 inches smaller in the waist. Barbie's unattainable body may have real world impact. For example, Dittmar et al. (2006) found that English girls (aged 5–8 years) reported feeling less satisfied with their own bodies after reading a story illustrated by pictures of Barbie compared to the randomly assigned group who read the same story without any pictures. The present study expands on this experimental design by using a naturalistic play setting, rather than a picture book, to operationalize the independent variable of Barbie exposure.

In addition to her unrealistic appearance, Barbie's career opportunities are laden with markers of sexualization. For example, the currently available Doctor Barbie is marketed as a "baby doctor," not as a "pediatrician," nor is she currently marketed as a different kind of doctor, such as surgeon or ER doctor. "Baby Doctor Barbie's" only medical instruments are a stethoscope and an otoscope (which nurses are equally capable of using), and she wears tight jeans with pink glitter paired with the more professional white lab coat. Similarly, "Veterinarian Barbie" and "Dentist Barbie" are marketed with tight satin mini-dresses, along with a few professional markers of occupation. This mixture of sexualized markers with the professional markers is reminiscent of Goodin et al.'s (2011) finding of sexualized elements incorporated into clothing marketed to young children and does not provide a realistic window into the adult world of work. Yet advertising campaigns encourage girls interacting with Barbie to treat the dolls as having real occupations, and they further encourage aspirational associations with the "I can be... anything" marketing campaign (Mattel 2009).

Surveys indicate that 99% of 3–10 year old girls in the U.S. have at least one Barbie doll (Rogers 1999), making Barbie a highly influential vehicle for the socialization of schemas about gender, beauty, and sexualization for young girls in the U.S. Further, Mattel has a global marketing strategy for Barbie, with sales in 150 countries worldwide (Bannon 1998). Surprisingly, there is little scientific study of Barbie (Kuther and McDonald 2004), and none addressing whether experimentally controlled interaction with Barbie dolls compared to a neutral control influences girls' development of ideas of who they want to be in the future.

The Present Study

In the present experiment, we tested whether randomly assigned exposure to a sexualized doll such as Barbie would affect girls' beliefs about the possibility of different career paths for themselves, compared to exposure to a non-sexualized doll, Mrs. Potato Head. Mrs. Potato Head is an appropriate control condition because play with Mrs. Potato

Head is highly similar to that engaged in with Barbie; however, Mrs. Potato Head is lacking in sexualization cues, thereby allowing us to vary sexualization while holding other elements constant. Mrs. Potato Head is similar to Barbie in the color and texture of plastic that makes up the doll, is a feminine doll with a well-known female persona, and is marketed with clothing and accessories similar to Barbie. Moreover, by choosing Mrs. Potato Head as a control doll (rather than, for example, blocks or model cars), the experimenter was able to use an identical verbal script in each condition.

As the dependent variable, girls reported on the number of occupations they felt they could do in the future and the number of occupations a boy could do in the future, from a set of ten occupations. Using data obtained from the Bureau of Labor Statistics (2011), five of these occupations are male-dominated and five are female dominated.

We consider the following specific hypotheses:

- H1. Main effect of condition (Doctor Barbie vs. Fashion Barbie vs. Mrs. Potato Head): Girls randomly assigned to either of the Barbie conditions will perceive fewer occupations as being possible for them compared to girls in the Mrs. Potato Head control condition. This prediction derives from objectification theory which posits that objectification results in restriction of agency (Fredrickson and Roberts 1997) and from empirical evidence reviewed above which shows that objectification is associated with a restriction of intellectual action and an increase in body concerns (e.g., Grabe and Hyde 2009).
- H2. Interaction of actor (self vs. boy) and occupation type (female-dominated vs. male-dominated): Girls will report more possible male-dominated occupations for boys than for themselves; this difference will be greater than for the female-dominated occupations. Because children in early childhood show rigid adherence to gender stereotypes (Huston 1983; Trautner et al. 2005), we expect girls to report different occupations for themselves compared to boys that will showcase their schemas of the world of work as gendered (Bem 1981; Wilbourn and Kee 2010).
- H3. Interaction of actor (self vs. boy) and condition (Doctor Barbie vs. Fashion Barbie vs. Mrs. Potato Head): Girls randomly assigned to the Barbie conditions will perceive fewer occupations as possible for themselves in contrast to the number of occupations they perceive as possible for a boy. Girls in the Mrs. Potato Head condition are not expected to differ in their expectations about careers for themselves or a boy. Because all careers require some agency, we expect this interaction because of the narrowing of agency expected in the sexualized conditions that is not expected in the control condition (Fredrickson and Roberts 1997). Furthermore, because

of children's existing stereotypes about gender and occupation (see H2), we expect the sexualization condition effect to be strongest in relation to expectations girls have for themselves, rather than their expectations for boys.

- H4. Three-way interaction between actor (self vs. boy), condition (Doctor Barbie vs. Fashion Barbie vs. Mrs. Potato Head) and occupation type (male-dominated vs. female dominated): Girls in the Barbie condition will report more female-dominated than male dominated occupations as possible for themselves. This will not be true for girls in the Mrs. Potato Head condition, or true when girls are reporting the occupations that are possible for boys. This hypothesis extends the logic of H3 such that we expect Barbie play to exacerbate existing gender stereotyped cognitions about occupation but especially about male-dominated careers, either because girls in the Barbie condition will see male occupations are especially agentic, or because it would take an even higher sense of agency to overcome the gender-stereotyping of male-dominated occupations compared to female-dominated occupations. As above, we expect Barbie play to restrict agency for girls randomly assigned to those conditions.

Given that even Barbie dolls sold with costumes for professional careers include some markers of sexualization, and given that Barbie's body is highly unrealistic regardless of dress, in an exploratory fashion we suspected that a professional Barbie would act in a similar sexualizing prompt to a fashion Barbie. However, we tested two Barbie conditions (Fashion Barbie and Doctor Barbie; a detailed description of each is given in the [Method](#) section) in case the marketing is correct and a career costume does prime a career-related schema rather than a sexualized one.

Method

Participants and Recruitment

Forty-five girls (aged 4–7 years) and a parent or guardian were recruited from a moderately-sized college town in Oregon. Information about race of participants was not collected, but the sample appeared to be representative of the local ethnic make-up, which is largely White (see [Table 1](#) for additional demographic details). Parents responded to a flyer or to a letter sent home from their child's classroom. Flyers and letters indicated that participants were being sought for a research study at the local public university "about the possibility of a connection between fashion dolls and perceptions of career options in young girls" and provided email and phone contact information so parents could ask questions about participation. Letters were sent home from 1) two private schools with kindergarten and/or first grades and 2) two public elementary schools with kindergarten and first grades. Private school directors and the public school district office and school principals gave permission for the distribution of letters. Letters introduced the study to parents, explained its purpose and stated that their child's school was facilitating recruitment, but not sponsoring the study. Letters gave the same contact information as flyers for parents to contact the researcher.

Interested parents called the phone number or emailed the address provided on the flyer and letter to make an appointment for participation. All parents who inquired about the study agreed to make an appointment for data collection, and no parents or children withdrew before the study was complete. After inspection of the data, we excluded eight girls due to incomplete information or inability to understand and engage with the task, leaving a total sample of 37 girls, each with a parent respondent.

Table 1 Demographic characteristics of the sample

	Mrs. Potato Head (<i>n</i> =14)	Doctor Barbie (<i>n</i> =14)	Fashion Barbie (<i>n</i> =9)
Mean age	5.8 years	5.1 years	6.0 years
Zero Barbie dolls owned	8	3	4
1–4 Barbie dolls owned	4	7	3
5–10 Barbie dolls owned	0	2	2
11 or more Barbie dolls owned	2	2	0
Frequency of Barbie play: less than once per month	9	5	5
Frequency of Barbie play: less than once per week	2	4	3
Frequency of Barbie play: once per week or more often	3	5	1

Doctor Barbie and Fashion Barbie conditions were combined for the main analyses. There were no significant differences by condition for any of the variables noted in [Table 1](#). Low-frequency responses on the 7-point Barbie play item were combined to show these three major categories for ease of presentation

Barbie Play Variables and Condition Equivalence

Parents reported that 59 % of girls in the sample owned at least one Barbie doll at home; and 57 % had two or more Barbie dolls. On average, girls had 3.89 Barbie dolls at home. Including girls who did not own any Barbie dolls, 41 % of parents reported that their daughter never played with a Barbie and 24 % of parents reported that their daughter played with a Barbie once a week or more.

A one-way ANOVA of the number of Barbie dolls owned by condition (Doctor Barbie, Fashion Barbie, Mrs. Potato Head) showed no statistically significant difference across the three conditions, $F(2, 34)=.535, p=.591$. A Chi-square analysis of the reported frequency of play by condition also showed no statistically significant difference, $\chi^2(12, N=37)=11.917, p=.452$. Additionally, analyses of the two Barbie conditions collapsed compared to the Mrs. Potato Head condition also showed no significant differences in number of Barbie dolls by condition, $F(1, 35)=.092, p=.763$, and frequency of play by condition, $\chi^2(6, N=37)=5.609, p=.468$.

Materials and Measures

Free Play Session

Toys for the free play conditions included a standard, 12-in Barbie doll dressed in two different outfits (“Doctor Barbie” and “Fashion Barbie”, referred to as “Doctor Barbie” and “Barbie” to participants and depicted in Fig. 1) and a Mrs. Potato Head toy (referred to as “Jane Potato Head” to participants). Random assignment using a die-rolling procedure was used to place each participant in a doll condition, resulting in 14 girls in the Mrs. Potato Head condition, 14 in the Doctor Barbie condition, and nine in the Fashion Barbie condition. Child participants were not informed about the other possibilities of toys before or during testing; no child knew that there were other toys possible.

Fig. 1 Fashion Barbie, Doctor Barbie, Jane Potato Head as they were presented to participants



Standard commercial clothing and accessories were used to create two conditions of Barbie play: “Doctor Barbie” and “Fashion Barbie” and the “Jane Potato Head” control condition (see Fig. 1). In the “Doctor Barbie” condition, the doll was dressed as sold: in tight fitting blue jeans embedded with pink glitter strands, a scrubs-style V-neck shirt printed with rubber ducks, a white lab coat imprinted with Barbie in pink, and pink low-heeled shoes. Accessories for this condition included a doll-sized otoscope and stethoscope. In the “Fashion Barbie” condition, the same doll was dressed in a knee-length, form-fitting, low cut V-neck, short-sleeved pink dress with black lace overlay and pink high-heeled shoes. The accessories in this condition included a purse and a hairbrush. The neutral condition, Mrs. Potato Head (referred to as “Jane” for participants), was chosen as the alternative to Barbie play because the toy is a well-known anthropomorphized figure with human facial features as well as human clothing and accessories, allowing for similar types of play and identical dialogue with the experimenter as with the Barbie doll. Mrs. Potato Head is composed of similar color and texture plastic, is approximately the same height as Barbie, projects a female gender but is not sexualized, and is a toy marketed to approximately the same age children as is the Barbie doll. “Jane Potato Head” was presented to participants with one set of eyes, ears and mouth attached, with other eyes, ears, and accessories available for play. Accessories for the Mrs. Potato Head condition included a purse and shoes.

Workplace Photographs

Girls were presented with 8.5×11 in laminated color photographs of 11 workplaces representing 11 different occupations or careers. Photographs were obtained from a Google image Internet search of downloadable images. Based on Bureau of Labor Statistics data specifying the ratio of men to women employed in different occupations; one neutral, five female-dominated, and five male-dominated places of employment

were pictured. The neutral occupation was a server in a restaurant. The female dominated occupations were teacher, librarian, day care worker, flight attendant, and nurse. The male dominated occupations included construction worker, firefighter, pilot, doctor, and police officer. Each picture included a one-sentence description of the photo and a label for the kind of work someone would do in the scene. For example, the picture of the fire station was captioned "This is a fire station, where a fire fighter works." None of the pictures included any human or animal figures, but held recognizable clues as to the career represented (e.g., the classroom showed a colorful rug, the teacher's desk, and student desks). The neutral (restaurant) picture was presented first, as practice, and was not included in statistical analyses. Except for the first (neutral) picture, photographs were presented in random order to each participant to prevent order effects.

Career Cognitions Measure

The data collection regarding cognitions about careers was described to participants as the "picture game." Participants were asked two questions about each of the occupations represented in the photographs. The order of question presentation was randomized for each participant to prevent order effects. Participants were read the caption for each picture and then asked "Could you do this job when you grow up?" and "Could a boy do this job when he grows up?" From this measure, we computed the number of positive endorsements of male-dominated and female-dominated occupations for self and for a boy.

Adult Questionnaire

The parent or guardian who accompanied the child to the appointment and gave consent for the child to participate was also asked to fill out a brief demographic questionnaire. Items included the child's birthdate, grade in school, number of Barbie dolls owned by the child, and the parent's estimate of how often she played with them (response options were never, once/month, a few times/month, every other week, once/week, a few times/week, daily).

Procedure

Free Play Session

After completing informed consent procedures with the parent or guardian and assent procedures with the child, a female experimenter accompanied her into the study room. Each session was completed using one participant at a time, and was videotaped from behind a one-way mirror. The use of the mirrored window also allowed the parent or guardian to

observe the girl during the study. The toy for the randomly assigned condition for each girl was visible on a child-sized play table in the study room, and the experimenter invited the child to play with the toy using a standardized prompt "This is Barbie/Jane. Would you like to play with her for a while?" In the Barbie conditions, the children could take clothes and shoes on and off, brush the doll's hair or use the toy medical tools or accessories such as a purse. In the Mrs. Potato Head condition, the child could use different detachable pieces to make different faces and put on or take off different accessories. If the child seemed unsure of what to do with the toy, the experimenter used a standardized prompt to encourage imaginative play: "What would (Barbie/Doctor Barbie/Jane Potato Head) like to do today?" Otherwise, the experimenter let the child play alone. Experimenters observed, but did not interfere with, the girl's play. If a child asked the experimenter to play, she redirected the play with a standard response: "What would (Barbie/Doctor Barbie /Jane Potato Head) do next?" After timing the free play session for 5 min, the experimenter invited the child to put away the toy and "play a game."

Career Cognitions (Picture Game)

The experimenter explained the "picture game" as a set of pictures where people work and that she would be asking some questions about each picture. Girls were assured that there were no right or wrong answers to any questions. The experimenter explained the procedure by first using a neutral workplace (restaurant). The picture was placed in front of each girl face up and the caption was read (e.g., "this is a restaurant where a food server works"). Then the experimenter asked two standardized questions: "Could you do this job when you grow up?" and "Could a boy do this job when he grows up?" The 10 workplace pictures were then presented in random order for each girl. Each girl was randomly assigned to report about themselves first or about a boy first. Girls responded yes or no to each question for each picture and the experimenter noted their responses on a standardized data collection form.

Debriefing

After all pictures were presented, girls were thanked for their participation and, as a debriefing procedure, read a pamphlet showing women in a variety of careers. Girls were allowed to keep the pamphlet as well as a few stickers as a thank you, then reunited with their parent or guardian. Adults were given a written and verbal debriefing process and had any additional questions answered, then compensated \$5.00 in appreciation of their participation.

Results

Analytic Technique

Our primary method of analysis was mixed factorial ANOVA. We chose this method over chi-square analysis (even though our outcome measure is a count variable) because ANOVA provides many advantages, especially the ability to easily test for interactions (which are key research hypotheses in our study). The mixed model ANOVA does not assume that the dependent variables have a normal distribution; rather, it assumes that the linear contrast scores do (Maxwell and Delaney 2004). To test for non-normality, we computed our contrast scores by hand and ran descriptive statistics on those new variables. Absolute values of all skewness coefficients were below 1.60; absolute values of all kurtosis coefficients were below 2.8. Thus, our linear contrast scores exhibited only modest amounts of non-normality and the ANOVA analysis would be expected to perform properly. Accordingly, that is our main analytic technique, as reported below.

Data Reduction

Preliminary inspection of means by condition suggested no main effect of Barbie type (Doctor Barbie vs. Fashion Barbie), and no interaction between Barbie type and actor in the career cognition question (i.e., a boy vs. self). A 2 (condition: Fashion Barbie vs. Doctor Barbie) \times 2 (occupation type: female-dominated vs. male dominated) \times 2 (actor: boy vs. self) mixed factorial ANOVA using only the data from the two Barbie conditions confirmed that there was no main effect of condition, $F(1, 21)=1.323, p=.263$, and no interaction between condition and actor, $F(1, 21)=.761, p=.393$. Therefore, given the smaller number of girls in the Fashion Barbie condition, we collapsed across the two Barbie conditions for the main analyses.

Data Analysis

To test our hypotheses, a 2 \times 2 \times 2 mixed factorial ANOVA was conducted on the number (range: 0–5) of positive endorsements of possible occupations from the career cognitions measure. There were two within-participant variables: occupation type (female dominated or male dominated) and actor in the career cognition question (“Could you do this job when you grow up?” vs. “Could a boy do this job when he grows up?”). Condition (Mrs. Potato Head vs. Barbie) was the between-participant variable. We expected to find that endorsement of occupations from the career cognitions measure would be lower in the Barbie condition compared to the Potato Head condition. Further, we expected interactions of occupation type with actor (self vs. boy) and of condition with actor (self vs. boy), along with the three-way interaction of all the independent variables.

Main Effects

This section reports the main effects of condition (Barbie vs. Mrs. Potato Head), actor (self vs. a boy), and occupation type (female- vs. male- dominated) on endorsements of careers from the career cognitions measure. Contrary to our expectation in H1, there was no significant main effect of condition alone (Mrs. Potato Head condition: $M=4.339, SE=.263$; Barbie condition: $M=4.033, SE=.205$; $F(1, 35)=.846, p=.364$). Our expectation that girls would endorse fewer occupations in the Barbie condition compared to the Mrs. Potato Head condition (averaged across actor [self or boy] and occupation type [male or female dominated]) was not supported. However, this lack of a significant main effect of condition must be interpreted in the context of statistically significant interactions, discussed below.

There was a significant main effect of actor, such that girls reported that boys ($M=4.648, SE=.104$) had significantly more possibilities for future occupations, than they themselves did ($M=3.724, SE=.278$), $F(1, 35)=13.179, p<.001$. Further, there was a significant main effect of occupation type, $F(1, 35)=4.320, p=.045$. Girls reported a higher number of female-dominated occupations ($M=4.266, SE=.166$) than male-dominated occupations ($M=4.106, SE=.176$) as possibilities. Because these are main effects, the analyses averaged across condition (Barbie and Mrs. Potato Head) as well as actor (self and boy). Both of these main effects must be interpreted in the context of the significant interactions reported below.

Interactions

This section reports all the possible two-way interactions, and the one three-way interaction, using the independent variables reported in the main effects section above and positive endorsement of careers using the career cognitions measure as the dependent variable. There was no statistically reliable interaction between condition (Barbie vs. Mrs. Potato Head) and occupation type (female-dominated vs. male-dominated), $F(1, 35)=2.599, p=.116$.

H2 posited an interaction between actor (self vs. boy) and occupation type (female-dominated vs. male dominated). We found a statistically significant interaction between actor and occupation type, such that the effect of actor was larger for male-dominated occupations, $F(1, 35)=16.989, p<.001$. In other words, averaged across condition, there was a bigger gap between girls’ expectations for themselves versus their expectations for boys when considering male-dominated careers than when considering female-dominated careers (see Fig. 2).

H3 posited an interaction between actor (self vs. boy) and condition (Barbie vs. Potato Head). We found a significant interaction supporting this hypothesis, $F(1, 35)=4.360, p=.044$. As shown in the last columns of Table 2 (and graphed

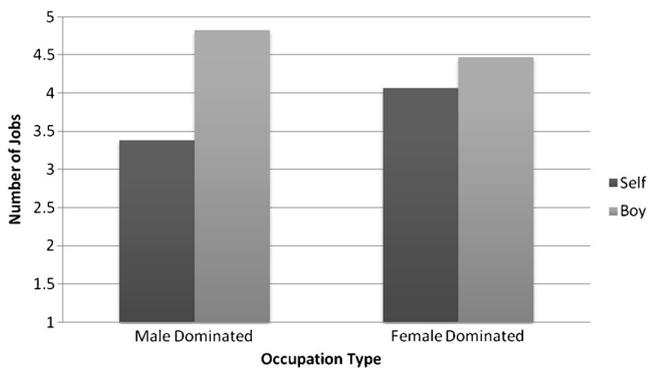


Fig. 2 Significant interaction between occupation type and actor on number of jobs endorsed

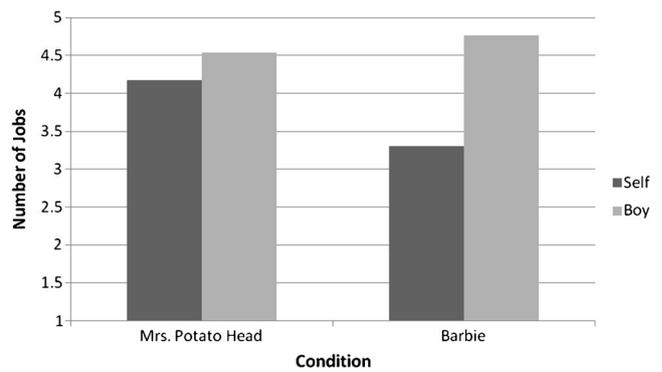


Fig. 3 Significant interaction between condition and actor on number of jobs endorsed

in Fig. 3), the difference in number of occupations seen as possible for the self vs. for a boy was greater in the Barbie condition than in the Mrs. Potato Head condition. Girls who played with Mrs. Potato Head reported relatively little difference in their cognitions regarding future careers (both male-dominated and female-dominated) for themselves, as compared to those they expected for boys. In contrast, there was a larger gap between these two career cognitions for girls who played with Barbie.

Finally, H4 posited a three-way interaction between doll type, actor, and occupation type. This interaction was not statistically reliable, $F(1, 35)=0.020$, $p=.888$. However, statistical power for this test was low, a point we return to in the discussion section. In summary, hypotheses 1 and 4 were not supported, but hypotheses 2 and 3 were supported by our data.

Discussion

In this experiment, girls who played with a Barbie doll (as compared to girls who played with the control doll, Mrs. Potato Head) reported fewer careers as future possibilities for themselves than they reported were possible for boys. Moreover, this was true whether the Barbie was dressed as a fashion model or as a doctor. Playing with either type of Barbie reduced the number of careers that girls saw as possibilities for themselves compared to the number they perceived as possible for boys.

This is one of the first experiments to look at the effect of fashion dolls on girls' career cognitions and the results are sobering. Naturalistic play exposure to a Barbie doll resulted in an overall reduction in the number of occupations that girls saw as possibilities for themselves, not just a reduction in the number of male-dominated occupations they saw as possibilities. And contrary to the advertising for Barbie, which stresses the aspirational nature of Barbie and the many possibilities related to real world work roles (Mattel 2009), play with a professional, "Doctor Barbie" was not better than play with a more traditional "fashion model" Barbie. The experimental design of our study supports our conclusion that something about the type of doll, not characteristics of the participants, causes the difference in career aspirations. Perhaps Barbie can "Be Anything," but girls who play with her may not apply these possibilities to themselves.

Interpretation of Analyses

Lack of Difference for the Two Barbie Types

Contrary to our expectation, there was no advantage to exposure to the Barbie dressed in the "Doctor Barbie" outfit. Since the two Barbie conditions were identical except for costuming, with unrealistic bodies, extremely youthful and attractive faces, and long full hair, it appears that the doll itself trumps the role suggested by the costuming. This may be because most girls of the age in our study have a well-developed

Table 2 Estimated marginal means and standard errors by condition, occupation type, and actor

Doll type	Female-dominated occupations		Male-dominated occupations		All occupations	
	I can do	A boy can do	I can do	A boy can do	I can do	A boy can do
Mrs. Potato Head	4.429 (.415)	4.286 (.231)	3.857 (.502)	4.786 (.119)	4.143 (.438)	4.536 (.164)
Barbie	3.696 (.324)	4.652 (.180)	2.913 (.392)	4.870 (.093)	3.304 (.342)	4.761 (.128)
Both Doll Types	4.062 (.263)	4.469 (.146)	3.385 (.318)	4.828 (.076)	3.724 (.278)	4.648 (.104)

Standard errors are in parentheses. Scores could range from 0 to 5, and represent the number of "yes" answers to the question "Could you do this job when you grow up?" or "Could a boy do this job when he grows up?" for five female-dominated and five male-dominated occupations

Barbie schema (Kuther and McDonald 2004). Rogers (1999) reports that 99 % of 3–10 year-old girls in the U.S. own at least one Barbie doll, and worldwide sales of Barbie are estimated at two dolls sold every second of every day (Schor 2004). Kuther and McDonald found that both girls and boys, as well as adults, in their study had accurate information about the appearance, clothing, and accessories of Barbie, and had well-developed understandings of the gender- and age-appropriateness of playing with Barbie. Thus, even though some parents in our study reported that their daughter did not own any Barbie dolls, we expect that our sample had at least some information about Barbie which includes a strong association with glamour and attractiveness (Dittmar et al. 2006; Pedersen and Markee 1991). This already deeply ingrained schema likely outweighs 5 min of playing with a professionalized version (i.e., Doctor Barbie).

In addition, the Doctor Barbie doll is sold wearing tight denim pants with pink glitter and a tight-fitting top. It is possible that adding a doctor coat and a stethoscope was not enough to override the sexualized cues embedded in the outfit; a more realistically outfitted Doctor Barbie, perhaps wearing plain medical scrubs, gloves and face mask might have affected participants differently (although this costume is not regularly sold for Barbie). Furthermore, the exposure was quite short; perhaps 5 min of play is not enough to allow the accessories and “story” of the Doctor Barbie to take effect. Future research using a longer play session in which actual medical scripts could be acted out (e.g., saving a patient, diagnosing an illness, administering medicine), could provide a more rigorous comparison of the two types of Barbie dolls. It is also possible that our small sample size failed to detect a small or moderate size difference between these two conditions that actually exists. We hope the present investigation sparks further research into these possibilities.

Main Effects

Girls in our experiment reported that, averaged across actor (self vs. boy) slightly more of the female-dominated occupations than the male-dominated occupations were future possibilities. The effect size was small (.2 occupations) and might be an artifact of the particular occupations selected. For example, the girls might have more day-to-day exposure with people employed in female-dominated occupations (e.g., librarian, teacher, nurse, day care worker) than people employed in male-dominated occupations (e.g., construction worker, police officer, pilot, firefighter). In addition, this main effect must be interpreted in the context of the significant actor by occupation type interaction, discussed below.

Averaged across condition and occupation type, girls perceived that more occupations were possibilities for boys than

were possibilities for themselves. This finding is not surprising, given the continued prevalence of gendered socialization (Bronstein 2006; Bussey and Bandura 2004; Lytton and Romney 1991) that provides more opportunities for agency to boys than to girls. However, it is discouraging to see this difference in reported career possibilities in such young girls. Moreover, even though the size of the effect was relatively small (a difference of about one occupation), the range of the dependent variable was 0–5. It is reasonable to speculate that, were girls to be asked about all possible occupations, they would indicate that about 20 % fewer were possibilities for themselves than were possibilities for boys, effectively shutting themselves out of many possibilities. Also, this is an overall decrement in reported possibilities, not just a decrement in reported possibilities for male-dominated occupations.

Interactions

If girls were to rely mostly on gender stereotypes to determine their responses, we would expect that they would report more female-dominated occupations as possibilities for themselves than were possible for boys (and vice versa for male-dominated occupations). Instead, girls reported that significantly more male-dominated *and* female-dominated occupations were possible for boys than were possible for themselves. However, the boy-self discrepancy was greater for male-dominated occupations than for female-dominated occupations. As can be seen in Fig. 2, this interaction is driven mostly by the reduced number of male-dominated occupations that girls see as possible for themselves.

Of greatest theoretical interest was the interaction between actor and condition. Shown in Fig. 3, girls who played with Mrs. Potato Head reported nearly as many occupations as possibilities for themselves as they reported were possibilities for boys. In contrast, the girls who played with one of the two Barbie dolls reported about 1.5 fewer occupations as possibilities for themselves than they reported as possibilities for boys. Playing with a Barbie doll appeared to modify our participants’ career cognitions such that they saw fewer future opportunities for themselves (but not for boys).

The three-way interaction was not significant. This is interesting because it suggests that, contrary to our hypothesis, the negative effect of playing with Barbie dolls was not specific to male-dominated careers, but extended to female-dominated careers as well. Because statistical power was low for this test, it is possible that a replication study with a larger sample size would find a statistically significant three-way interaction. Although it is not possible to draw strong conclusions from a null result, future work can build on the present results to provide a stronger test of the possible interaction of condition, career type, and gender.

Implications for Theory

Our study was designed to create control and experimental groups using types of dolls that were as similar as possible to each other, except for the sexualized attributes of the Barbie dolls. The Mrs. Potato Head doll is rounded rather than thin, and has feminine accessories (purse, hat), but not sexualized ones. In comparison, the clothing of the Barbie dolls used in this study, especially the Fashion Barbie, had clear markers of sexualization: black lace, plunging v-neckline, short skirt. These markers of sexualization emphasized the sexually mature body shape of Barbie. In addition, one of the Fashion Barbie accessories was related to maintenance of appearance: a hair brush, which provided a means of focusing on the doll's long blond hair during play. Even the Doctor Barbie condition had some markers of sexualization (tight-fitting jeans with glitter, same body and hair style). For all three dolls, then, there was an emphasis on appearance and accessories; however, only the Barbie dolls had cues of sexualized appearance.

Thus, we argue that the Barbie dolls we used in the present study represent links to an extensive appearance-based Barbie schema (Dittmar et al. 2006; Pedersen and Markee 1991) and an activation of sexualization similar in some ways to Fredrickson et al.'s (1998) swimsuit condition, which tested the impact of state self-objectification on college women's academic performance. We argue that Barbie is a sexualized toy, even when wearing the physician costume, and girls responded in ways that are consistent with objectification theory: with a restriction of their sense of what is possible. We place this argument in the context of the growing practical and theoretical concern about sexualization pressures in both childhood and adulthood. Coy (2009) has argued that sexualization results in the narrowing of girls' space for action, instead leaving room for only appearance concerns and how the self appears to others (a defining feature of sexualization noted by the APA Task Force Report 2007). In this sense, our results are consistent with a growing body of research showing that the possibility of being female and not sexy or objectified is becoming extremely difficult for adult women, an argument made by Hatton and Trautner (2011) in their longitudinal analysis of male and female artists featured on *Rolling Stone* covers. In the context of childhood, we suggest that Barbie and similar dolls are part of the burden of early and inappropriate sexuality placed on girls in the U.S. (APA 2007). Coy (2009) and Goodin et al. (2011) provide specific examples of such early sexualization, including Playboy bedding for children, sexualized slogans on children's clothing, fake high heeled booties for infants, and pole dancing lessons for young girls. In the current study, we have demonstrated that when very young girls (ages 4–7) are exposed to a sexualized play condition (instead of a non-sexualized play condition) it increases the gap between what they perceive as

career possibilities for themselves compared to the possibilities for boys. In the same way that temporary state self-objectification created an academic performance decline in college-age women (Fredrickson et al. 1998; Hebl et al. 2004), our results suggest that sexualization exposure may impose limits on young girls.

Limitations and Future Directions

Although the results of this study are intriguing, they must be considered in light of several limitations related to measurement, sample size, and representativeness of the sample. One aspect of our study that may limit the impact of the findings is our construction of endorsement of different occupations by actor. That is, we asked girls to report about themselves ("could you do this job when you grow up?") and for a hypothetical boy ("could a boy do this job when he grows up?"). This contrast in wording does not provide a direct test of possible differences in girls' beliefs about career possibilities for girls versus boys, because there might be (and likely were) other elements of the self in addition to gender that impacted girls' responses. For example, girls might have considered their level of interest in an occupation or their ability to learn the relevant skills when making a response about the self, and might have been less likely to do so when making a response about a generic "boy."

Future research could complement the present results by adding the question "could a girl do this job when she grows up?" in addition to the questions about the self and "a boy." However, it is important to note that the reported interaction results cannot be explained by this difference in wording. Even if girls felt more restricted in imagining possibilities for themselves because they were taking into account their abilities or interests (and did not think about individual preferences or abilities when answering about boys in general), this difference in response set would be present in both the experimental and control conditions.

Moreover, beliefs about the self are likely to have more practical impact on a girl's future than are beliefs about a generic girl. It would be of little use to believe that other girls can "do anything" if a girl simultaneously believed that she herself had much more restricted possibilities. Thus, it is important to ask girls directly about their perceived future selves, as was done in the present study.

The small sample size limited our ability to show moderate and small effect sizes. We found no statistically reliable differences in Barbie-related background variables by condition; however, such differences might actually be present, and would be detected in a study with a much larger sample. However, we tested for the influence of number of Barbie dolls in the home and frequency of play and found that their inclusion in our main statistical analyses did not substantially

change the pattern of results. A future study could systematically recruit girls with different experiences with Barbie to fully test for this variable. Such a study could cross manipulate Barbie play (inducing the state of self-objectification) with the more trait-like measure of past experience with Barbie (a proxy measure of trait self-objectification), thus allowing for a test of interactive effects. Similarly, future research could more fully test for differences between the two versions of Barbie and the hypothesized three-way interaction. We must use caution in terms of any conclusions that can be drawn from these reported null effects; therefore, we hope this first study will spark additional contributions in this area.

Future studies could expand our work by including a broader range of outcomes, including different measures of children's self-concept and well-being, as well as academic performance measures, because those outcomes are key for a more complete testing of objectification theory (Fredrickson et al. 1998). In addition, we relied on aspects of the experimental condition to represent sexualization exposure, because an age-appropriate self-report measure of state-sexualization does not currently exist (and such an abstract concept would be difficult to measure in young children). However, if such a measure were created, it would be important to include the child's own feelings and reactions to the condition as a window into the process of sexualization and attendant outcomes. Future research might also be able to create a neutral control condition that is better than our choice of Mrs. Potato Head. Although Mrs. Potato Head is a good foil for Barbie, due to her feminine but non-sexualized attributes, she is not a truly human figure, and girls might not have identified with her in the same way as they did with Barbie. Arguably, not identifying with Mrs. Potato Head might have created a better contrast to Barbie in this experiment, but we do not know this with certainty. Thus, if future researchers could locate a human-like doll that is similar to Barbie in age, size, and construction, but is also non-sexualized, that might sharpen the experimental manipulation.

Our paradigm is rich with possibility for testing the theoretical mechanisms underlying the effects of sexualization, including body surveillance, anxiety, and body shame (Moradi and Huang 2008). With the creation of child-appropriate measures of such constructs, the doll conditions could be compared and mechanisms further delineated. For example, the sexualized appearance focus of Barbie might be related to an increase in girls' interest in occupations that carry a high degree of appearance focus, such as fashion model, a possibility we did not investigate because we chose occupations that showed the highest level of gender discrepancy to clearly test female and male identified occupations. In addition, there are dolls that may have even stronger sexualized cues than does Barbie (e.g., the Bratz lines, noted by the APA Task Force as a highly sexualized line of dolls sold for girls 6

and older). An important expansion would be to investigate whether these more overtly and extensively sexualized dolls would create a stronger reaction in ways predicted by objectification theory (Fredrickson et al. 1998).

Finally, although internal validity in our experiment was high because of our use of random assignment, and aspects of external validity were also strong because of our use of a naturalistic play session with toys that were used exactly as marketed and sold, population generalizability is limited in two ways. First, we attracted primarily Caucasian families as participants. Future research could profit from including a more diverse sample and from conducting sensitive cross-cultural research to test whether Barbie play is related in the same way to career cognitions for children outside the U.S. Second, the proportion of children whose parent reported they had no Barbie dolls at home was higher than national survey data indicate is typical (Rogers 1999). While this was not a threat to internal validity because there is no evidence that condition was confounded with the number of reported Barbie dolls at home, it does mean our sample was less representative of all U.S. girls this age.

In conclusion, our efforts in this study respond directly to the imperative issued by the authors of the report from the APA Task Force on the Sexualization of Girls to document and understand the role of sexualized products, and especially sexualized dolls, in current girl culture, and to illuminate the possible influence on developmental outcomes of exposure to sexualization pressures via dolls. We demonstrated that, in addition to impacting body dissatisfaction (Dittmar et al. 2006), the reach of sexualization extends to cognitions about the possibility of future careers. Although the marketing slogan suggests that Barbie can "Be Anything," girls playing with Barbie appear to believe that there are more careers for boys than for themselves.

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