Does Barbie Make Girls Want to Be Thin? The Effect of Experimental Exposure to Images of Dolls on the Body Image of 5- to 8-Year-Old Girls

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The ubiquitous Barbie doll was examined in the present study as a possible cause for young girls' body dissatisfaction. A total of 162 girls, from age 5 to age 8, were exposed to images of either Barbie dolls, Emme dolls (U.S. size 16), or no dolls (baseline control) and then completed assessments of body image. Girls exposed to Barbie reported lower body esteem and greater desire for a thinner body shape than girls in the other exposure conditions. However, this immediate negative impact of Barbie doll was no longer evident in the oldest girls. These findings imply that, even if dolls cease to function as aspirational role models for older girls, early exposure to dolls epitomizing an unrealistically thin body ideal may damage girls' body image, which would contribute to an increased risk of disordered eating and weight cycling.

Keywords: body image, young girls, Barbie, actual-ideal figure discrepancies, body esteem

I looked at a Barbie doll when I was 6 and said, 'This is what I want to look like.' I think a lot of little 6-year-old girls or younger even now are looking at that doll and thinking, 'I want to be her.' (model Cindy Jackson on CBS News, 2004).

Barbie is the cultural icon of female beauty that provides an "aspirational role model" for young girls (Pedersen & Markee, 1991; Turkel, 1998), and 99% of 3- to 10-year-olds in the United States own at least one Barbie doll (Rogers, 1999). Yet, Barbie is so exceptionally thin that her weight and body proportions are not only unattainable but also unhealthy. The ultrathin female beauty ideal she embodies has been linked with the extraordinary prevalence of negative body image and unhealthy eating patterns among girls and women (Thompson, Heinberg, Altabe, & Tantleff-Dunn, 1999). For young children, fantasy and play are vital parts of socialization in which they internalize ideals and values (Sutton-Smith, 1997), and dolls provide a tangible image of the body that can be internalized as part of the child's developing self-concept and body image (Kuther & McDonald, 2004). Possible negative effects on young girls' body image of identifying with dolls like Barbie have been speculated about but not examined directly.

An exposure experiment was used in the present research to gauge the immediate psychological impact of Barbie on young girls' desired body shape and body esteem. We compared the effects of exposure to Barbie doll images not only with exposure to neutral images (which contained no body-relevant cues) but also with exposure to images of Emme, a new doll based on the full-figured eponymous American supermodel and endorsed by the American Dietetic Association for helping to promote a more positive body image for girls (A. Mendelsohn, 2003). Given the recent conclusion that "the desire for thinness emerges in girls around age 6" (Lowes & Tiggemann, 2003, p. 135), a sample of girls from age 5 to age 8 was selected. They were in Years 1, 2, and 3 of the U.K.'s National Curriculum school structure, and given that formal schooling starts 1 year earlier than in the United States, Year 1 is equivalent to U.S. kindergarten, Year 2 to first grade, and Year 3 to second grade.

This is the first study in which an experimental exposure paradigm has been used with such young children, thus offering a methodologically rigorous examination of Barbie as a cause of girls' feelings of unhappiness with their bodies and their desire to be thinner. Three main research questions were addressed: Do images of Barbie have an immediate negative impact on girls' body image? Does exposure to images of a doll with more realistic body proportions result in the same detrimental effects? Is the impact of exposure to Barbie images age related so that effects differ depending on school-year group (grade level)?

Barbie as the Embodiment of the Female Sociocultural Body Ideal

Barbie is the best-selling fashion doll in every major global market, with worldwide annual sales of about $1.5 billion (Mattel, 2003). This popular doll, launched 47 years ago, is very much present in every young girl's life, with 3- to 10-year-olds in the United States owning eight Barbie dolls on average, and only 1% not owning any (Rogers, 1999). "Every half-second, somewhere in

the world another Barbie is sold" (Schor, 2004, p. 22), with increasingly younger girls being targeted.

Barbie's body proportions, as a cultural icon of female beauty, have received much criticism (e.g., Brownell, 1991), and empirical studies confirm that her body proportions are unrealistic, unattainable, and unhealthy. When fashion dolls, including Barbie, were compared with the typical fashion model and the Greek ideal of beauty, standardized bust measurements of fashion dolls showed that adult women would assume heights of 6′2 in. (1.88 m) to 7′5 in. (2.26 m) (Pedersen & Markee, 1991). Using anthropometry (a branch of anthropology that deals with comparative measurements of human body parts on the basis of mathematical formulations), Norton, Olds, Olive, and Dank (1996) were able to scale Barbie's proportions to determine how they would be reflected in adult women's body size dimensions. After measuring the circumference of diverse body sites, deviations were calculated between Barbie and different groups of U.S. women and expressed as z scores that represent probabilities of occurrence. Fashion models were thinner ($z = -.76$) than a cross-section of 18- to 35-year-old women, and anorexic patients were thinner still ($z = -1.31$), with fewer than one in five women evidencing their body proportions. The average z score of Barbie was -4.17, representing a probability of fewer than 1 in 100,000 women having her body proportions. Z scores were even more extreme for particular body parts, scientifically emphasizing the sheer unreality of Barbie's body proportions. Were Barbie a flesh-and-blood woman, her waist would be 39% smaller than that of anorexic patients, and her body weight would be so low that she would not be able to menstruate (Rintala & Mustajoki, 1992).

Body Dissatisfaction in Girls

Body dissatisfaction, the experience of negative thoughts and esteem about one's body, is important to study because it results in a number of significant consequences, including negative self-perception, depressed mood, and disordered eating (Grogan, 1999; Thompson et al., 1999). Most research with children has been conducted during adolescence and late preadolescence (Ricciardelli & McCabe, 2001; Ricciardelli, McCabe, Holt, & Finemore, 2003), and there are few studies with very young children. A recent study on the link between weight status and self-concept among 5- to 7-year-old girls (Davison & Birch, 2002) demonstrated that higher weight was related to lower body esteem and a more negative self-concept but that these links were mediated by social influences: peer teasing and parent criticism. Increasing parental pressure was captured in a recent article on the fear of childhood obesity, leading parents to such extreme measures as putting babies on diets or hiring personal trainers for 5-year-olds (Bernard, 2004). These findings emphasize not only the importance of social pressures of thinness but also attitudes toward weight. Indeed, 6- to 13-year-olds showed evidence of body dissatisfaction, with all age groups wanting to be thinner (Gardner, Friedman, & Jackson, 1999). Children from age 4 to age 6 were shown to favor a thin body (Musher-Eizenman, Holub, Edwards-Leeper, Persson, & Goldstein, 2003), and Cramer and Steinwert (1998) reported that 4- to 5-year-olds showed an aversion to "chubby" figures, whereas 3-year-olds did not.

This general "antifat" attitude is particularly pronounced in girls, who show higher levels of body dissatisfaction than boys and

a stronger desire to be thinner (Oliver & Thelen, 1996), which increases with age: 40% of girls from age 8 to age 9 wanted to be thinner, compared with 79% of girls from age 11 to age 12 (Maloney, McGuire, & Daniels, 1988). A recent study on 5- to 8-year-old girls concluded that girls' desire for thinness emerges around age 6. Using a figure silhouette rating task, Lowes and Tiggemann (2003) found that, on average, girls as young as 5 years already desired a thinner body than their current figure but that this discrepancy became more pronounced in 6- to 8-year-old girls. Thus, girls' body dissatisfaction starts to emerge at a very young age, possibly from 5 years onward.

One of the most established perspectives on the development of body dissatisfaction is sociocultural theory (Levine & Smolak, 1996; Thompson et al., 1999), which views the mass media and dolls as powerful transmitters and reinforcers of sociocultural body ideals (Levine & Harrison, 2004; Pope, Olivardia, Gruber, & Borowiecki, 1999). The thin beauty ideal for girls is, of course, present in many aspects of their sociocultural environment (i.e., advertising, TV, and peer groups), but dolls like Barbie—because of their iconic status—are likely to act as salient role models, at least for very young girls. Sociocultural theory provides a useful perspective for theorizing the influence of dolls (as an embodiment of the sociocultural beauty ideal) on girls' developing body image when integrated with some underlying processes posited in developmental theories concerned with social influences on children's self-evaluation (e.g., Bandura, 1989; Ruble, 1983).

The Impact of Exposure to Sociocultural Influences on Girls' Body Image

A host of correlational and experimental studies demonstrate that thin, ideal models of beauty, typically used in the mass media and advertising, lead to increased body dissatisfaction among adult women (Groesz, Levine, & Murnen, 2002; Levine & Harrison, 2004). Short-term exposure to the thin female ideal was generally found to worsen girls' and women's body image, and a recent meta-analysis of 25 experimental studies (Groesz et al., 2002) demonstrated that women felt worse after exposure to thin female models than other types of images. Thin models have a negative impact on young women's body image even if exposure takes place at low levels of attention (Brown & Dittmar, 2005), and negative exposure effects are more pronounced among adolescent girls (Groesz et al., 2002). Recent studies demonstrated that it is the ultrathinness of ideal models that increases women's body dissatisfaction, given that equally attractive models with an average body size had no negative effect, or even produced a *relief effect* of increasing body satisfaction in some women (Dittmar & Howard, 2004). However, among 11- to 16-year-old girls, average-size models were found to raise body concerns (Clay, Vignoles, & Dittmar, 2005).

Body image is highly salient also for preadolescent children's self-concept, particularly for girls (Harter, 1999), and sociocultural icons, such as Barbie dolls, are important because they can be aspirational role models for young children or even imaginary companions (Gleason, Sebanc, & Hartup, 2000). A developmental account of how dolls, such as Barbie, influence girls' self-concept and body image should begin by considering them as role models from a symbolic interactionist perspective (Mead, 1934), through which the thin beauty ideal signified by Barbie is gradually inter-

nalized through fantasy and play. The central Meadian concept of *taking the perspective of the other* can help explain how material objects like dolls can function as socialization agents, whose essential qualities—such as thinness—are desired and eventually internalized as aspects of one's ideal self (Dittmar, 1992). Dolls like Barbie can serve as an imaginary point of view from which to see one's own bodily self, through which young girls come to understand the meaning of beauty and perfection by pretending to be her dolls, which are embodiments of the cultural ideal of the female body. Thus, the primary meaning of the term *role model* for Mead is a cultural representation that becomes internalized to form part of the child's emerging identity. Applied to the concern of the present article, this process involves different phases of play, in which young children initially imitate, and identify with, "beautiful" Barbie in a direct, nonreflexive manner but then, gradually, come to internalize thinness as a salient feature of what it means to be beautiful. Although engaging with Barbie is only one transmission route of the ultrathin ideal among many, it is a particularly salient way in which girls interact with a sociocultural environment that proclaims thinness as an essential feature not only of beauty but also of success more generally (Thompson et al., 1999). Once internalization is completed, and the thinness ideal has become part of girls' self-concept, they may become able to take a more reflexive stance toward Barbie by being able to consider her from multiple perspectives, including their own younger self. This may mean that Barbie "has done her work" as a thinness role model and may therefore no longer act as a direct, negative influence on girls' body image. This proposal—that exposure to Barbie dolls may no longer exert a direct effect on older girls' body image—is strengthened by considering developmental theories, which converge in identifying a transition in the relationship between the sociocultural environment and children's self-concept that impacts self-evaluation.

According to Bandura's social–cognitive theory (e.g., Bandura, 1986, 1989), "in the course of development, the regulation of behavior shifts from predominantly external sanctions and mandates to gradual substitution of self-sanctions and self-direction *grounded in personal standards* [italics added]" (Bussey & Bandura, 1999, p. 690). This emphasis on personal standards posits a greater involvement of the child's self-concept in evaluative self-reactions as a key developmental shift. For young girls, the thin body ideal appears to be an important personal standard that becomes internalized as part of their developing self-concept, and, drawing a parallel between overt behavior and children's thoughts and feelings regarding their bodies, it would be expected that the sociocultural environment, as exemplified by thin Barbie dolls, exerts a direct influence on younger girls so that they would express a desire to be thinner as a consequence of exposure to Barbie doll stimuli. In contrast, older girls may no longer react to Barbie doll stimuli in this direct way because they have already internalized the thinness ideal as a personal standard, and their desire to be thin has become more of a function of this internal, cognitive self-concept structure rather than a reaction to environmental thinness stimuli. Vygotsky's (e.g., 1991) account of self-development shifting from the interpersonal to the intrapersonal plane makes a similar argument. Furthermore, there is evidence that dramatic changes occur between kindergarten and second grade in the nature of children's social comparisons (Ruble, 1983). For example, whereas first graders' judgments (of their ability)

were influenced by simple environmental feedback (of success or failure), second graders' judgments were affected not only by direct feedback but also by normative information (about social standards of ability) (Ruble, Boggiano, Feldman, & Loebl, 1980). Thus, from around age 7, social comparisons assume a greater importance for children's self-evaluation, although young children are interested in, and do make, social comparisons. This evidence suggests that second graders' social comparison processes become more complex and less direct because of the greater involvement of the child's self-concept in their response to sociocultural information and its impact on self-evaluation. Putting these specific arguments together with more general developmental processes identified by social–cognitive theory in the context of the present research, it would be expected that younger girls' response to thin-bodied dolls like Barbie would be the desire to be thinner themselves, which should not occur in response to full-bodied dolls, such as Emme. In contrast, older girls' (already internalized) desire to be thin may be unaffected by short-term exposure to Barbie dolls, which may have ceased to function as an aspirational role model. This raises the interesting question of how they would respond to dolls with a full-bodied figure, given that Emme would clash with their internalized thinness ideal.

Suggestive support for this proposed developmental change in reactions to Barbie comes from qualitative research, which elicited 10- to 14-year-old U.S. girls' retrospective accounts of their experiences with Barbie dolls (Kuther & McDonald, 2004). All girls reported periods of intensive identification when they were very young, and Barbie's role as an aspirational role model was highlighted, "She is like the perfect person when you are little that everyone wants to be like" (p. 48). However, this phase of identification was later supplanted by anger, in which all girls reported some aggression, "I cut off all of Barbie's hair and burned the clothes" (p. 46). Thus, Barbie ceased to function as an aspirational role model much before the age of 10 years, and some girls voiced concerns over her negative impact, "I think she is too thin and does not show the best example for young kids . . . when they [my friends] were younger, they wanted to be like her because she was thin. Now, they would die" (p. 48). Thus, identification with Barbie appears to occur early but is then followed by a distancing process. Barbie may therefore impact on very young girls' body image.

On the basis of the considerations in this and the preceding sections, two hypotheses were formulated for this exposure experiment. First, we expected that girls' body image would be affected negatively by exposure to Barbie doll stimuli, as compared with exposure to full-bodied Emme dolls and neutral, control stimuli that were not body related. Second, we hypothesized that this overall effect would be moderated by the underlying developmental processes described, such that the negative Barbie exposure effect would occur for younger girls up to the age of 7 years but that it may no longer be evident for girls older than 7 years.

The Present Study

To date, there are no experimental exposure studies that assess the impact of the sociocultural thinness ideal on very young girls, and we address this research gap in the present article. Such studies are important because they help to clarify cause–effect relationships. Controlled experimental exposure is best suited to gauging

the immediate psychological impact of dolls as a possible cause of girls' body dissatisfaction. For young girls, Barbie dolls can serve as ultrathin body ideals, and there is now an attractive doll with a larger body size, Emme (launched in 2002), that provides an alternative to Barbie dolls that can be used in an exposure experiment in addition to a control condition without any body-related stimuli. This new fashion doll is based on the full-figured American supermodel Emme, whose body proportions represent a U.S. dress size 16, whereas Barbie would represent a U.S. size 2 (ABC News, 2002). Therefore, the Emme doll presents a realistic body that is backed by the American Dietetic Association as an aid in promoting a more positive body image for young girls (A. Mendelsohn, 2003).

In addition to exposure stimuli, a further methodological issue for the present study was the selection of outcome measures that could be used to assess body image in such young girls. The Revised Body Esteem Scale (R-BES; B. K. Mendelson, White, & Mendelson, 1996) is an evaluative measure of body image, suitable for use with young children. It assesses children's thoughts and feelings about their body, including general appearance, beliefs about how others evaluate their looks, and also specifically their weight. B. K. Mendelson et al. (1996) reported good split-half reliability, $r(95) = .85$, and Gardner et al. (1999) used it with 6-year-old children. In addition, we decided to complement this evaluative questionnaire measure with pictorial measures of body size dissatisfaction, on which girls indicate both their actual body size and their ideal body size. Collins (1991) developed a figure-rating scale for children from the original version of the Figure Rating Scale for adults (Stunkard, Sorensen, & Schulsinger, 1983), which shows a series of seven line drawings of female figures, ranging from extremely thin to obese. From two lines of young girls' figures, girls pick the figure that best reflects their actual body size and the figure that shows their ideal body size. Then, from a series of line drawings of adult women, they pick the figure that best represents their ideal body size when they are an adult. These pictorial measures have been used successfully with children from age 4 to age 6 (Musher-Eizenman et al., 2003), and Collins (1991) reported good test–retest reliability with 6- to 9-year-old children: actual size (.71), ideal size (.59), and ideal adult (.55).

The present research assessed effects on girls' body image in an experiment in which three exposure conditions were used: Barbie doll images, Emme doll images, and neutral control images. Girls were exposed to one set of these stimuli in the form of a picture book that each girl looked through while being read an appropriate story. Two comparisons between the three image-exposure conditions are of central interest: first, the effects of exposure to Barbie dolls compared with other images, and, second, exposure to Emme dolls compared with neutral stimuli that contain no information about bodies. On the basis of the developmental processes proposed to underlie girls' reactions to stimuli epitomizing the thin sociocultural ideal of female beauty, it was hypothesized that young girls would report lower body esteem and greater body shape dissatisfaction—a stronger desire to be thinner—after viewing Barbie doll images compared with the Emme doll or neutral images. We expected that the thinness of Barbie dolls would have a direct negative impact on girls' body image, and therefore, images of Emme dolls should not increase girls' body dissatisfac-
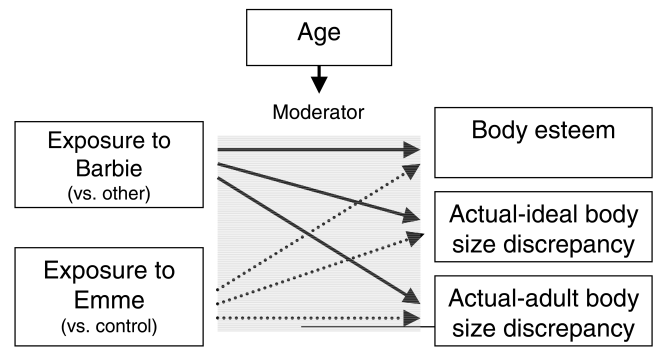

Figure 1. Model of the impact of exposure to different dolls on girls' body image. Dashed lines indicate nonsignificant paths.

tion, compared with neutral control images. However, a developmental change was anticipated so that girls older than 7 years may no longer show this direct negative effect because they no longer see Barbie dolls as aspirational role models and because they are likely to react to sociocultural beauty stimuli through a more reflective process, having already internalized the thinness ideal as a cognitive structure that forms part of their self-concept. These hypotheses can be summarized in the form of a single model (see Figure 1), which can be tested through multisample structural equation modeling (SEM), with the three year groups constituting different samples.

Method

Participants

The final sample consisted of 162 girls, from age 5 to age 8, from six primary schools in the East Sussex county of Southern England. The schools' catchment areas were predominantly White (over 90%) and middle class. The girls were in classes according to U.K. National Curriculum Year Groups 1, 2, and 3, which are equivalent to U.S. kindergarten, Grade 1, and Grade 2 levels. Data collection took place mostly during February 2004, and given the schools' admission cutoff date of children having their birthday on or after September 1, girls were from age 5½ to age 6½ ($n = 57$) in Year 1, from age 6½ to age 7½ ($n = 49$) in Year 2, and from age 7½ to age 8½ ($n = 56$) in Year 3.[1] In each year group, roughly one third of the girls were in the Barbie doll-exposure condition, Emme doll-exposure condition, and control condition (Year 1: $n = 17$, $n = 20$, $n = 20$; Year 2: $n = 18$, $n = 16$, $n = 15$; Year 3: $n = 20$, $n = 19$, $n = 17$).

Stimulus Materials and Measures

In order to expose girls to different images—of Barbie dolls, Emme dolls, or neutral (control) images—three different types of picture books were created. The images were selected so that they would fit with the central themes of a story that was written to be read aloud so that the girls would have a plausible reason for looking at the images for a reasonable length of time (a more detailed description is in the *Image stimuli* section).

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[1] Of the Year 1 girls, 31 were between 5½ and 6 years old, and 26 were between 6 and 6½ years old. In Year 2, 31 were from 6½ to 7 years old, and 18 were between 7 and 7½ years old. Finally, in Year 3, 33 were from 7½ to 8 years old, and 23 were between 8 and 8½ years old.

After exposure to the images in the picture books, body image concerns were assessed through an evaluative measure of body esteem and pictorial measures of body shape, from which girls picked figures that represented their actual body shape, the body shape they ideally desired to be, and their ideal body shape as an adult woman.

Image stimuli. Six images were selected for each type of picture book so they would fit with the story about "Mira," which consisted of six happy scenes around the themes of shopping for clothes and getting ready to go to a birthday party. These themes, and accompanying images, were chosen to make the picture books relevant to girls' experience and engage their interest, given Mattel's (2003) production of at least seven Barbie play sets that featured a shopping theme, such as "Shop & Style Fashion Barbie." Three types of picture books were created in order to expose girls to different image stimuli in the three conditions. Each picture book contained six images, laminated and bound, which showed either Barbie dolls, or Emme dolls, or neutral pictures without any depictions of bodies. The six images were matched to the six story scenes, as shown below (see Table 1), and great care was taken to make the images in the different exposure conditions as equivalent as possible.

Body esteem. In order to keep the questionnaire brief, nine items were selected from the R-BES (B. K. Mendelson et al., 1996). This shortened scale measured body esteem through nonspecific items (e.g., "I'm pretty happy about the way I look"), items on perceived appearance by others (e.g., "Children my own age like my looks"), and items that focus specifically on weight (e.g., "I really like what I weigh"). Given that many of the children, especially the Year 1 group, were in the early stages of reading, a very simple response format was created in which girls expressed their agreement or disagreement by picking from three pictures of smiley faces, with no = 1, in between = 2, or yes = 3, and circling it:

The body esteem items were embedded in diverse statements about likes and dislikes for TV programs, sports, and leisure activities (e.g., "I love watching the Teletubbies," "Children my own age like Harry Potter"), so that the focus was not solely on body image.

Internal reliability analysis of the nine body esteem items revealed that the youngest girls experienced difficulties with three negatively worded statements (e.g., "Most people have a nicer body than I do" or "Other people make fun of the way I look"). Removal of these items produced good internal consistency coefficients, both overall ($\alpha = .71$) and per year group—Year 1 ($\alpha = .75$), Year 2 ($\alpha = .64$), Year 3 ($\alpha = .71$)—

comparable to those reported by Davison and Birch (2002) at age 5 ($\alpha = .73$) and age 7 ($\alpha = .84$) for the 24-item version of the original scale. Responses for the six items were summed to create a total body esteem score, which ranged from 6 to 18, with higher scores indicating higher body esteem.

Body shape dissatisfaction. Using the Child Figure Rating Scale (Collins, 1991) as pictorial measures of discrepancies between girls' actual and ideal body sizes, Suzanne Ive asked each girl to color in the figure whose body looks most like her own body now, imagining she is looking in a mirror (actual body shape). Then, on a second line of the same figures, each girl was asked to color in the figure that shows the way she wants to look like the most (ideal body shape). A body shape dissatisfaction score was computed by subtracting the girl's ideal from her actual body size. A score of zero indicates no body shape dissatisfaction, whereas a negative score signifies that she wants to be thinner, and a positive score indicates that she wants to be bigger. Finally, a similar series of seven drawings of adult women was presented, and each girl was asked to color in the figure that shows the way she would like to look when she is grown up (adult ideal body shape). A body dissatisfaction score of actual-adult ideal figure discrepancy was computed in the same way as for the actual-ideal figure discrepancy.

Procedure

This study was administered during normal school hours within school buildings, and girls were seen in small groups of no more than three at a time, each session lasting approximately 15 min. The study was introduced as one that looked at girls' likes and dislikes, and the girls were told they would be looking through the picture book that was placed face down in front of each of them, while listening to a story read to them about shopping and going to a birthday party. As described above, the picture books in each group of girls showed images of either Barbie dolls, Emme dolls, or no dolls. When the girls were seated and ready, they were asked to turn the picture book over. The experimenter then read the story aloud, telling the girls when to turn to the next page so that they were looking at the particular image that matched each story scene. A number of girls commented on the nice dresses worn by the dolls, which confirms their engagement and interest. At the end of the story, the picture books were collected. Thus, all the girls had the same amount of time to look at individual images and the picture book as a whole. This procedure, while tailored to young girls, ensured standardization in their exposure to the picture books. After the picture book collection, the girls completed the questionnaire that contained the body image measures. It was emphasized that this was not a test, so there were no right or wrong answers, and the answer formats (picking and circling smiley faces; coloring in figures)

Table 1
Story Scenes and Images in Picture Books by Exposure Condition

Scene	Exposure condition		
	Images of Barbie	Images of Emme	Control images
"Mira" wakes up, sunny morning	Barbie getting dressed by bed	Emme in pajamas	Sunny meadow with flowers
Shopping for party outfit	Barbie in top and jeans	Emme in top and jeans	Windows of clothes shops
Trying on clothes in shops	Barbie in skirt and top	Emme in skirt and top	Clothes on hangers
New clothes and matching shoes	Barbie with trousers, top, and matching shoes	Emme with trousers, top, and matching shoes	Collection of shopping bags
Supermarket on way home	Barbie in supermarket	Emme in different dress[a]	Supermarket shelves
Getting ready for party	Barbie in long pink dress	Emme in long pink dress	Colorful balloon collection

[a] There was no available image of Emme in a supermarket.

were explained carefully for each section.[2] Confidentiality was also stressed, and the girls were asked to answer the questions independently. Each question was read aloud by the experimenter, and responses were checked to ensure that they were complete. Finally, girls were thanked, given a short verbal debriefing, and offered a chance to ask questions or comment.

After the study was approved by the institutional ethics committee of the associated local university, head teachers of all participating schools gave full approval, and written parental consent was obtained for each participating girl. Verbal consent was also obtained from each girl at the beginning of each session when they were also told that they could leave at any time should they wish to do so.

Results

We first examined the associations between the evaluative and pictorial measures[3] of body image, both overall and per year group. As one would expect, the two pictorial measures showed positive associations, with correlation coefficients ranging from .65 to .69 ($p < .001$), which demonstrates that the extent to which girls desired a different, usually thinner, body shape was similar, but not identical, when they were asked about right now and when they were asked about their ideal body shape as an adult. Neither of these body shape discrepancies was significantly related to overall body esteem, the evaluative measure of body image, with correlation coefficients ranging from .05 to .18 (nonsignificant), demonstrating that body shape dissatisfaction was independent of evaluative body dissatisfaction.

Next, we checked for year group differences in body dissatisfaction through a three-way multivariate analysis of variance (MANOVA), including trend analysis. The only significant finding was a linear trend tendency for older girls to report more extreme discrepancies between their actual and ideal body size ($CE = -.39$; $p = .07$). The means (see bottom of Table 2) indicate that girls desired a thinner body than they had and that this desire was more extreme in older girls, with mean differences increasing from $-.23$ in Year 1 to $-.63$ in Year 2 and reaching $-.79$ in Year 3, which represents almost a full body size on the scale used. Thus, the wish for a thinner body was more pronounced the higher the girls' year group. Cross-sectional data do not allow for direct developmental inferences, but these findings are consistent with increasing thin-ideal internalization.

To assess the overall impact of exposure condition on girls' body image, we analyzed the three dependent variables by using a 3 (exposure condition) × 3 (year group) × 3 (measure) MANOVA, with repeated measures on the last factor. The exposure condition factor had been partitioned a priori into two contrasts, representing the two comparisons of central interest: The first contrast compared effects of exposure to Barbie doll images with exposure to other images (both Emme dolls and neutral), and the second contrast compared responses to Emme doll images with neutral images. The neutral, no-dolls control can be viewed as a baseline condition for girls' body image because they report how they feel about their body generally and how different they would like their ideal body shape to be from their current figure in the absence of any body- or appearance-related stimuli. Means of the three body image measures in the three exposure conditions are shown in Table 2, overall and separately for year group.

At the multivariate level, averaging across the three body image measures, a significant main effect emerged for the first exposure

Table 2

Measures of Girls' Body Image in Three Exposure Conditions

| Exposure condition | Body esteem | | Body size dissatisfaction | | | |
| | | | Actual ideal figure | | Actual adult ideal | |
	M	SD	M	SD	M	SD
Barbie dolls (overall)	14.45	3.05	−0.85	1.52	−1.13	1.26
Year 1 (n = 17)	14.12	3.69	−0.76	1.56	−0.82	1.24
Year 2 (n = 18)	13.78	2.96	−1.33	1.71	−1.78	1.11
Year 3 (n = 20)	15.35	2.39	−0.50	1.24	−0.80	1.24
Emme dolls (overall)	15.62	2.23	−0.45	1.84	−1.00	1.75
Year 1 (n = 20)	16.20	1.88	0.00	1.72	−0.85	1.46
Year 2 (n = 16)	16.25	1.56	−0.44	2.22	−0.63	2.22
Year 3 (n = 19)	14.47	2.67	−0.94	1.58	−1.47	1.58
Control (overall)	14.96	2.63	−0.31	1.53	−0.44	1.00
Year 1 (n = 20)	15.10	2.77	0.00	1.75	−0.35	0.99
Year 2 (n = 15)	14.80	2.51	0.00	1.31	−0.27	0.96
Year 3 (n = 17)	14.94	2.73	−0.94	1.30	−0.71	1.05
Overall	15.01	2.69	−0.54	1.65	−0.86	1.40
Year 1 (n = 57)	15.19	2.90	−0.23	1.69	−0.94	1.64
Year 2 (n = 49)	14.90	2.60	−0.63	1.84	−1.00	1.33
Year 3 (n = 56)	14.93	2.57	−0.79	1.37	−0.86	1.40

contrast, as predicted: Body dissatisfaction was significantly higher after girls had seen the Barbie doll images, compared with other images, $F(1, 153) = 7.53$, $p < .01$, $\eta^2 = .05$. The means (see Table 2) show that body esteem was lower and that body size dissatisfaction was greater, both in terms of wanting a thinner body now and a thinner body as an adult woman. In contrast to this detrimental effect of Barbie doll images, there was no difference in body dissatisfaction reported by the girls after exposure to Emme doll compared with neutral images, $F(1, 153) = 0.99$, ns, $\eta^2 = .00$. Thus, girls can be exposed to dolls with a female body without this having any effect on their body image. Finally, as expected, the detrimental effect of Barbie doll exposure on body dissatisfaction interacted significantly with year group; that is, there were age-related differences in girls' responses, $F(2, 153) = 6.61$, $p < .01$, $\eta^2 = .08$. The overall pattern of means appears to suggest that Barbie doll exposure had a detrimental impact on the two younger year groups, girls from age 5½ to age 7½, but not on the oldest year group of girls, from age 7½ to age 8½.

These findings provide support for the first hypothesis: that exposure to Barbie dolls causes an increase in girls' body dissatisfaction and that this negative effect is specific to Barbie and not observed after exposure to dolls with a body size that resembles the average U.S. woman. In addition, the findings also demonstrated that the Barbie doll effect is age related.

In order to examine year group differences in more detail and to assess exposure effects on specific aspects of body image, we carried out a multisample SEM, using EQS 6.1 (Bentler, 1995),

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[2] Girls were told that they could pick any of the figures, and it was made explicit that this could be the same figure for both actual and ideal.

[3] After checking, through a multivariate analysis of variance, that there were no overall significant differences between the six different schools in the three dependent variables, all Fs(4, 157) < 1.54, ns, data were pooled for all subsequent analyses.

with the two exposure contrasts—Barbie versus other and Emme versus control—as predictors of body esteem, actual-ideal body size discrepancy, and actual-adult ideal body size discrepancy. Multisample SEM has the triple advantages of being able to model all interrelationships between variables simultaneously, while simultaneously testing a sequential path model for goodness of fit, as well as offering a tool for assessing sample differences in specific paths (Bollen & Long, 1993). Thus, we can examine the model proposed earlier (see Figure 1) in each of the three year groups. Body esteem was modeled as a latent variable, with the six scale items as indicators,[4] and the two body size dissatisfaction measures were treated as observed variables.[5] Initially, all six possible paths from exposure to body dissatisfaction were modeled, but two paths were nonsignificant in all three year groups: the impact of exposure to Emme doll compared with neutral images on body esteem and on actual-ideal body size discrepancy. Therefore, these paths were deleted, supporting the proposal that exposure to Emme doll images has no impact—either negative or positive—on these two aspects of girls' body image.

The resulting SEM model had excellent fit indices, $\chi^2(96) = 84.81$, ns, comparative fit index (CFI) = 1.00, root-mean-square error of approximation (RMSEA) = .00, which demonstrate that there is no appreciable difference between the model and the actual associations between variables in the data set. Figure 2 shows the standardized path coefficients (akin to regression coefficients) for the resulting models, separately by year group, with dashed lines indicating nonsignificant paths.

For the youngest year group, girls from age 5½ to age 6½ years old, the two main findings were that Barbie doll exposure significantly depresses overall body esteem ($\beta = -.29$; $p < .05$) and increases discrepancies between girls' actual and ideal body size ($\beta = -.21$; $p = .05$), such that girls desire more extreme thinness after seeing Barbie doll images than after seeing other images. Discrepancies between actual and adult ideal body size were unaffected ($\beta = -.08$; ns). Emme doll images had no significant impact on any body image measure, including actual-adult ideal body size discrepancy ($\beta = -.17$; ns).

The pattern of findings was similar for the Year 2 girls, who are from age 6½ to age 7½ years old, but it was amplified. The negative effects of Barbie doll images were stronger, both in terms of decreasing body esteem ($\beta = -.41$; $p < .05$) and increasing actual-ideal body size dissatisfaction in the direction of girls wanting to be thinner ($\beta = -.29$; $p < .05$). In addition, there was now also a significant effect of Barbie exposure on girls' discrepancies between their actual body size and their ideal body size as an adult woman ($\beta = -.40$; $p < .01$) such that girls desire more extreme thinness when grown up. As for the younger girls, Emme doll images had no impact, including actual-adult body size dissatisfaction ($\beta = -.03$; ns). Thus, the detrimental impact of Barbie doll images on girls' body image was more pronounced at this age and also included their aspirations for an adult woman's body size.

For the oldest year group, girls from age 7½ to age 8½ years old, findings were radically different. Barbie doll images no longer had any direct negative effect on girls' body image—all paths to body dissatisfaction outcomes were nonsignificant (all βs ≤ .16; ns). The only significant finding for these girls was a negative effect of Emme doll images ($\beta = -.23$; $p < .05$), which increased the discrepancy between actual body size and ideal adult body size such that girls desired more extreme thinness when grown up after
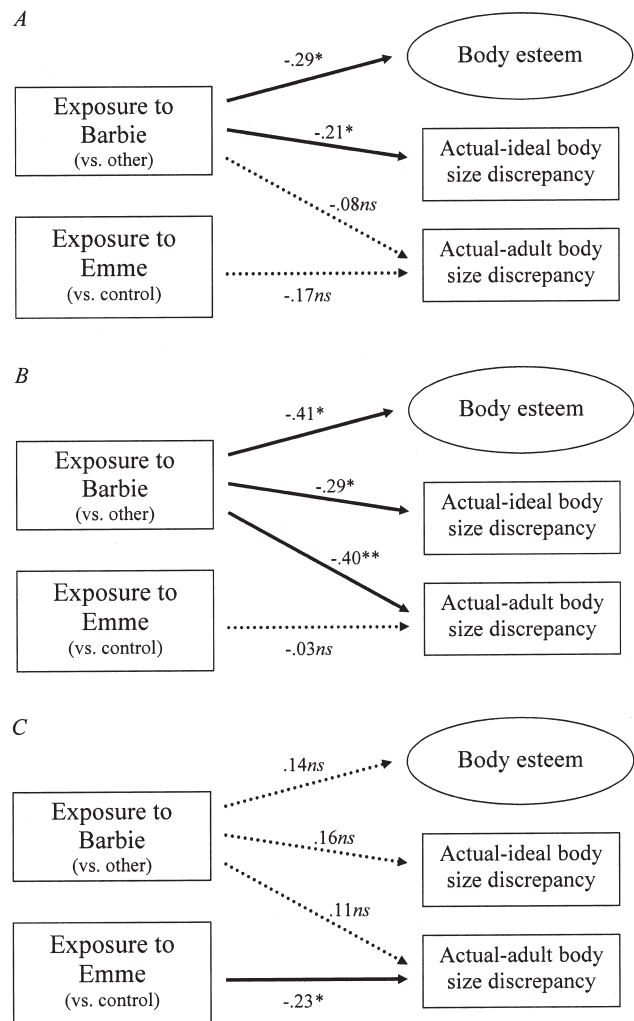

Figure 2. Structural equation models of exposure to different dolls on girls' body esteem and desired body shape, separately by year group. For visual clarity, factor loadings for body esteem items and error terms are not shown. A: Year 1 (5½ to 6½ years old). B: Year 2 (6½ to 7½ years old). C: Year 3 (7½ to 8½ years old). Dashed lines indicate nonsignificant paths. $^*p < .05$, one-tailed. $^{**}p < .01$, one-tailed.

seeing the fully-bodied Emme dolls. This very different set of results is considered further in the Discussion and Conclusion section.

Inspection of Figure 2 suggests that two effects appear unique for a particular age group: the negative Barbie effect on actual-ideal adult body size discrepancy for Year 2 and the negative Emme effect on ideal adult body size for Year 3. In terms of commonalities across age groups, the findings in Figure 2 propose that the negative effects of Barbie doll exposure on body esteem and actual-ideal body size discrepancy are similar for girls in

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[4] The error terms between two pairs of items were allowed to covary: "My weight makes me happy" with both "Children my own age like my looks" and "I think I have a good body."

[5] The error terms of the two pictorial measures were allowed to covary.

Years 1 and 2 but different for girls in Year 3. Year group differences can be tested statistically through imposing equality constraints concerning the strength of particular paths and observing the effect of the constraints on model fit. A statistically significant difference in path strength is confirmed when the equality constraint produces a significant deterioration in model fit.

There was no difference between girls in Years 1 and 3 in terms of Barbie doll images not affecting discrepancies between actual body size and adult ideal because constraining this path to be equal in Years 1 and 3 did not affect model fit, $\Delta\chi^2(1) = 1.03$, ns. In contrast, the inclusion of Year 2 in this equality constraint produced a significant deterioration in model fit, $\Delta\chi^2(1) = 6.69$, $p < .01$, which confirms a statistically significant difference in path strength. Thus, this particular negative Barbie effect was year specific: Only Year 2 girls desired a more extremely thin adult body after exposure. A similar analysis was carried out for Emme doll exposure but failed to confirm a unique Year 3 effect, $\Delta\chi^2(1) = 0.97$, ns.

Moving on to commonalities between year groups, there was no difference in Barbie doll images depressing body esteem in the two younger groups of girls, $\Delta\chi^2(1) = 0.11$, ns. In contrast, the inclusion of Year 3 in this equality constraint produced a significant deterioration in model fit, $\Delta\chi^2(1) = 9.96$, $p < .001$, which confirms that the negative Barbie effect on body esteem occurred for girls in the two younger groups, from age 5½ to age 7½, but not for the oldest group, from age 7½ to age 8½. The same year group differences were confirmed for actual-ideal body size discrepancies, in which the negative Barbie effect was again similar in Years 1 and 2, $\Delta\chi^2(1) = 0.23$, ns, but different from Year 3, $\Delta\chi^2(1) = 6.78$, $p < .01$. These findings support the second hypothesis that exposure to Barbie does have a direct negative effect on girls' body dissatisfaction, making them want to be thinner, but only between the ages of 5½ and 7½ and not in Year 3, when girls are 7½ to 8½ years old.

Discussion and Conclusion

The main findings of this experiment are twofold. First, they showed that very young girls experience heightened body dissatisfaction after exposure to Barbie doll images but not after exposure to Emme doll (or neutral control) images. This demonstrates that it is not body-related information conveyed by dolls per se that has a direct impact on young girls' body image, but by Barbie dolls specifically, which represent a distortedly thin body ideal. These ultrathin images not only lowered young girls' body esteem but also decreased their satisfaction with their actual body size, making them desire a thinner body. This detrimental effect was evident already for girls from age 5½ to age 6½ but was more pronounced among 6½- to 7½-year-olds. Both lowered body esteem and wanting a thinner body are indicators of body dissatisfaction, which can lead to serious consequences such as depressed affect and unhealthy eating behaviors, particularly dieting, which, in turn, is a precursor of eating disorders (e.g., Grogan, 1999; Ricciardelli & McCabe, 2001; Ricciardelli et al., 2003). Previous research on girls' body dissatisfaction has focused on adolescents or preadolescent children from age 8 onward, but this study highlights the need to begin earlier in the quest for body image disturbance, the onset of which appears to be at a younger age than

previously thought. The present findings suggest that Barbie dolls' ultrathin body proportions provide an aspirational role model for very young girls that causes body dissatisfaction. Girls today are swamped by ultrathin ideals not only in the form of dolls but also in comics, cartoons, TV, and advertising along with all the associated merchandising, but Barbie appears to occupy a strong and special role in girls' developing body image (Kuther & McDonald, 2004), so that exposure to images of Barbie doll leads to detrimental effects, at least when girls are young enough to identify with Barbie doll. As argued in the introduction, developmentally, the influence of Barbie as a sociocultural embodiment of the thin beauty ideal on very young girls' self-concept and self-evaluation appears to be direct and not yet mediated by internalized cognitive self-concept structures, such as the thinness ideal.

It seems likely that developmental changes in self-processes (e.g., Bussey & Bandura, 1999; Ruble, 1983; Vygotsky, 1991), in which responses to sociocultural stimuli become more reflexive because of the greater involvement of children's self-concept, can help explain why exposure to Barbie doll images did not result in negative effects on the body image of the oldest group of girls, from age 7½ to age 8½. It seems likely that there is a sensitive phase when girls use Barbie dolls as aspirational role models, which may end around age 7 to age 8 because girls have internalized the thin beauty ideal by then, and their desire to be thinner is more a reflection of that internalized standard than a direct response to environmental stimuli. If this account is accurate, then concern about Barbie as a powerful socialization agent of an unhealthy, ultrathin, and unachievable body ideal cannot be dismissed easily on the grounds that her influence may be short-lived, "it's something they grow out of" (model Cindy Jackson on CBS News, 2004). Although possibly true at a surface level, the damage has already been done if it is the case that Barbie is a highly significant, if not the only, vehicle through which very young girls internalize an unhealthily thin ideal. Moreover, it also seems likely that they move on from Barbie dolls to other sociocultural sources of ideal body information such as magazines or computer games. For example, in the immensely successful Tomb Raider series played by older children, Lara Croft's body proportions are similar to Barbie's.

The unanticipated finding that older girls reported a greater desire to be thin when adults after exposure to Emme dolls (compared with neutral control images) deserves comment because this suggests that more realistically sized dolls may not only fail to prevent body dissatisfaction in girls aged over 7 but also have the undesirable, opposite effect of increasing it. For these older girls, if they have already internalized the thinness ideal, then the depiction of a full body could represent a possible, but feared, future self (Markus & Nurius, 1986; Ogilvie, 1987; Ogilvie & Clark, 1992). This interpretation, that thinness-internalized girls see full-bodied Emme as implying a threat that they, too, may end up not thin when they are older, is supported by the finding that the negative impact of exposure to Emme dolls manifested itself only in an increased desire to have a thinner adult body, not a thinner body right now.

The present study is the first of its kind, and before addressing its theoretical and applied implications, its limitations need to be considered, particularly with respect to identifying useful avenues for future research. First, although the size of the present sample was a methodological strength, its main findings are generalizable

only to sociocultural contexts that are characterized by an extreme thinness ideal and that market dolls embodying this ideal to very young girls. However, given the increasing globalization of Barbie, as well as the thinness ideal in the mass media, the present findings may well generalize beyond Northern America and Europe. An interesting example is Fiji, a culture with a traditionally full-bodied female beauty ideal until the arrival of Western mass media. *The New York Times* described the introduction of American TV in Fiji as leading to elevated body image concerns with thinness: "TV trims Fiji girls' body image."[6] Second, like most other experimental exposure studies in this area, the effects of short-term exposure on body image were investigated in the present research. However, if negative effects can be demonstrated after a single exposure to images of Barbie dolls, then repeated exposure is likely to be more damaging. Future research may wish to assess whether these effects are stronger when dolls are used as exposure material, compared with images. Third, although it is highly probable that virtually all the girls in the present research own Barbie dolls, it would be informative to know how many they own and how engaged they are with them. Such data would not only assess possible individual differences in the significance of Barbie as an aspirational role model but also help to pinpoint when, developmentally, she no longer fulfils this function. Furthermore, a factor that may moderate girls' responses to ideal sociocultural models, and that should be examined in future research, is their level of body dissatisfaction prior to exposure because it is likely that girls with high body dissatisfaction would be more vulnerable to negative exposure effects than girls with low body dissatisfaction. However, it should be noted that this limitation of the present study probably lessened the likelihood of finding significant exposure effects, and the fact that the negative impact of Barbie dolls was nevertheless demonstrated—across girls whose initial levels of body dissatisfaction varied—adds further import to the present results. Finally, the data were cross-sectional, not allowing for direct developmental inferences. However, the age-related differences in exposure effects found are consistent with a developmental model in which there is a sensitive period for girls' identification with Barbie doll and internalization of the thin ideal. These issues can be addressed fruitfully in future research that is longitudinal and that examines thin-ideal internalization directly, given that we found an age-related increase in the desire for a thinner body, independent of exposure effects.

The present findings support a direct influence phase of dolls as aspirational role models and therefore have theoretical implications for understanding how sociocultural influences impact children's self-evaluation and, consequently, their developing self-concept. The qualitative change in girls' responses to being exposed to ultrathin and full-bodied dolls at around age 7 is consistent with both social–cognitive theory (e.g., Bandura, 1986, 1989) and developmental work on the changing nature of children's social comparisons (e.g., Ruble, 1983), lending further support to greater involvement of self-concept structures. It also suggests that internalization of appearance-related standards plays a central role for self-evaluation and self-esteem, at least for girls. The present findings also have applied implications for intervention at both the social and individual level. The negative effect of Barbie dolls on young girls highlights the need for different dolls. Unfortunately, Barbie has been joined recently by the even more disturbing "Bratz" dolls, marketed at girls age 6 onward, which feature not only an unnaturally thin body but also oversized heads with heavily made-up faces and bee-stung/collagen induced lips. These dolls highlight the need to encourage dolls such as Emme, currently only available as a collector's item, to be mass marketed to young girls in order to allow for a diversity of doll body types and more realistic, healthy body ideals for young girls. Health authorities, educators, and parents, who are concerned about the increasingly young age of girls developing disordered eating behaviors, should question the unhealthy body ideals relentlessly churned out by toy manufacturers. At the same time, the present findings also suggest intervention at the level of the individual, that is, educational work with girls. Present educational programs tend to target older girls, often during adolescence (e.g., Levine & Niva, 2004), but this research demonstrates the need to target such programs at much younger girls, using materials (or dolls) appropriate for 5- to 7-year-olds. In order to make an attempt at preventing the internalization of an ultrathin ideal before it occurs, such programs need to make girls aware that the thin beauty ideal is both unattainable and unhealthy, encourage a more realistic body ideal, and emphasize nonappearance-related sources of self-esteem.

We hope that the present findings help emphasize the need for further longitudinal research on the impact of fashion dolls and other sociocultural sources of body ideals on girls, both to advance the understanding of how body image develops as part of the self-concept generally and how girls' body dissatisfaction develops specifically, and to inform early interventions that can help protect young girls' body image.

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[6] Please see library.uchc.edu/bhn/cite/nyt/1731tele.html for the full text.

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Correction to Dittmar, Halliwell, and Ive (2006)

In the article "Does Barbie Make Girls Want to Be Thin? The Effect of Experimental Exposure to Images of Dolls on the Body Image of 5- to 8-Year-Old Girls" by Helga Dittmar, Emma Halliwell, and Suzanne Ive (*Developmental Psychology*, 2006, Vol. 42, No. 2, 283–292), a substantive error occurs in the *Body shape dissatisfaction* section on page 287. The sentence describing the calculation of body shape dissatisfaction scores from girls' responses to the Child Figure Rating Scale should instead read as follows: "A body shape dissatisfaction score was computed by subtracting the girl's actual from her ideal body size."

We are grateful to Sherry Liu for bringing this error to our attention.