Effects of the “Beauty Is Good” Stereotype on Children’s Information Processing

Jennifer L. Ramsey and Judith H. Langlois

University of Texas at Austin

The authors tested schematic information processing as a function of attractiveness stereotyping in two studies. An adult experimenter read children (ages 3 to 7 years) eight different stories in which a child narrator encountered two characters who varied in level of attractiveness and displayed positive or negative traits that were either consistent or inconsistent with the “beauty is good” stereotype. Following the story, the experimenter showed each child a photograph of the two characters’ faces and asked the child to point to the character who displayed the positive trait. In Experiment 1, children made more errors in identifying female characters with stereotype inconsistent traits but did just the opposite with male characters. Experiment 2 replicated the findings with female characters but found no difference in errors with male characters. The findings have implications for how attractiveness and gender stereotypes affect children’s information processing, how attractiveness schemata may be organized, and why physical attractiveness stereotypes are maintained. © 2002 Elsevier Science (USA)

Key Words: facial attractiveness; information processing; stereotyping; sex differences; social cognition; preschoolers; early childhood.

Children’s knowledge and use of the physical attractiveness stereotype has been well-documented in the developmental literature (for reviews, see Langlois et al., 2000, and Langlois & Stephan, 1981). Children are more likely to attribute positive social behaviors and traits to attractive children and to attribute negative social behaviors and traits to unattractive children (Dion, 1973; Langlois et al., 2000; Langlois & Stephan, 1977). For example, in a seminal study, Dion (1973) found that 3- to 6-year-olds believe that attractive children are friendly, do not like to fight or shout, and will not hit another child even if that child hits first. Conversely, children believe that unattractive children scare other children and...
will hit and hurt other children without good reason. In addition, young children prefer attractive children as friends, like them more, and consider them to be smarter, more prosocial, and less antisocial relative to unattractive children (Dion, 1973; Langlois & Stephan, 1977).

Most studies, including those mentioned above, have assessed children’s attributions toward unacquainted children. Do similar findings emerge in ecologically valid situations where children know each other? A recent meta-analysis found that the answer is yes; regardless of level of familiarity, both children and adults judge and treat attractive children more positively than they do unattractive children (Langlois et al., 2000). Dion, Berscheid, and Walster (1972) dubbed the ubiquitous preference for attractive people over unattractive people the “beauty is good” stereotype, and both individual studies and quantitative meta-analytic reviews have demonstrated the extensiveness of this stereotype (e.g., Dion, 1973; Eagly, Ashmore, Makhijani, & Longo, 1991; Langlois et al., 2000; Langlois & Stephan, 1977).

Although the origin of the “beauty is good” stereotype is not yet completely understood, a summary of the developmental research in this area suggests a series of possible steps in the formation of this particular stereotype. First, infants show visual preferences for attractive faces within the first 3 to 6 months of life (Langlois, Ritter, Roggman, & Vaughn, 1991; Langlois et al., 1987; Samuels & Ewy, 1985; Slater et al., 1998, 2000). Second, by 6 months of age, infants categorize faces into two groups: attractive and unattractive (Ramsey, Langlois, Hoss, & Rubenstein, 2000). Many stereotype theorists believe that the ability to categorize is a necessary prerequisite of stereotyping and that categorization, in and of itself, may cause members of a particular category to be perceived as having similar traits and behaviors that are different from the traits and behaviors of members from the other category (i.e., assimilation and contrast effects) (e.g., Tajfel, Billig, Bundy, & Flament, 1971; Zebrowitz-McArthur, 1982). Third, although we are unclear as to the exact mechanism that causes attractiveness categories to become linked with specific attributes, evaluative associations related to the stereotype begin to form by the end of the first year of life (Langlois, Roggman, & Rieser-Danner, 1990; Rubenstein & Langlois, 2001). For example, 12-month-olds will approach and play more with an attractive female stranger than with an unattractive one (Langlois et al., 1990). Infants at this age also associate pleasant voices with attractive faces and associate unpleasant voices with unattractive faces (Rubenstein & Langlois, 2000).

Fourth, by toddlerhood, young children show nearly adult-like stereotypes in that they attribute positive behaviors and traits to attractive children and select them as playmates more than they do unattractive children (Hoss & Langlois, 2000). Over the next few years, the stereotype develops further and children begin to attribute negative traits and behaviors to unattractive individuals (Dion, 1973; Langlois & Stephen, 1977). The “beauty is good” stereotype continues to be maintained and elaborated throughout adulthood (Eagly et al., 1991; Langlois et al., 2000).
The question we address in this article concerns how the “beauty is good” stereotype is maintained once it is developed. Certainly, not all attractive people possess only positive qualities, and not all unattractive people possess only negative qualities. Thus, children are often witness to information disconfirming the stereotype. Yet it is clear that children and adults frequently use the “beauty is good” stereotype in everyday life with both acquainted and unacquainted people (Eagly et al., 1991; Langlois et al., 2000).

Many researchers suggest that stereotypes exist as cognitive structures known as schemata (e.g., Bem, 1983; Hamilton & Trolier, 1986; Liben & Signorella, 1980; Martin, 1991; Martin & Halverson, 1981; Ruble & Stangor, 1986; Signorella, 1999; Signorella & Liben, 1984). Schemata include organized knowledge or understanding of the stereotype and also beliefs or expectancies about individuals who belong to the group being stereotyped (e.g., Hamilton & Trolier, 1986; Nisbett & Ross, 1980). Because of the expectations and beliefs associated with stereotypes, schemata can affect attention and perception; the processing, encoding, organizing, and storing of information; behavioral responses to the stereotyped target; and retrieval of information (e.g., Bem, 1983; Hamilton & Trolier, 1986; Liben & Signorella, 1980; Martin, 1991; Nisbett & Ross, 1980; Ruble & Stangor, 1986; Signorella & Liben, 1984). Therefore, the “beauty is good” stereotype, via corresponding cognitive schemata, may affect processing of information related to attractive and unattractive individuals.

It is not yet entirely clear how schemata bias information processing. Some models of schematic processing predict that information consistent with a stereotype is more accurately processed than information inconsistent with the stereotype, whereas other models predict that information inconsistent with the stereotype is more accurately processed than information consistent with the stereotype (for a review, see Stangor & McMillan, 1992). Empirical research with young children, however, suggests that the bias favors processing of stereotype consistent information. Studies assessing children’s schemata of gender (Bigler & Liben, 1992; Koblinsky & Cruse, 1981; Liben & Signorella, 1980; Signorella & Liben, 1984), race (Bigler & Liben, 1993; Levy, 2000), and age (Davidson, Cameron, & Jergovic, 1995) have found that children are biased toward information consistent with the relevant stereotype. For example, gender-stereotyped children process a character’s gender more accurately when they hear a story about a male, rather than a female, in a typically male occupation such as firefighting (e.g., Bigler & Liben, 1992). Meta-analytic reviews also have found that information consistent with stereotypical expectations is better processed by children than is inconsistent information (Fyock & Stangor, 1994; Stangor & McMillan, 1992).

To our knowledge, no one has investigated how the “beauty is good” stereotype affects children’s information processing. If children incorrectly encode, process, or recall information so that it conforms to their knowledge about this stereotype, then presenting them with counterstereotypical information will do little to change these stereotypes. Consequently, schematic information processing may contribute to maintenance of stereotypes. Because the majority of research with
children suggests a bias for more accurate processing of schema consistent information, we predict that children will also more accurately process information consistent with the “beauty is good” stereotype than they will information inconsistent with the stereotype.

EXPERIMENT 1

Method

Participants. We recruited 104 children (57 males and 47 females) ranging in age from 3 years 6 months to 7 years ($M = 5$ years 2 months, $SD = 9$ months) from 11 private schools, day care centers, and summer camps in Austin, Texas. Most participants were Caucasian (70%), but Hispanic (8%), Asian (8%), African American (5%), and Native American (1%) children also participated. The parents of 7% of the children indicated “other” for the children’s racial background, and 2% did not indicate race. We obtained written consent to perform the study from the principal or director of the institution, each child’s teacher, and the child’s parent, and we obtained verbal assent from the child. We received parental consent for 121 children, but we did not test 17 children because of absenteeism or the children’s decision not to participate. Proportional comparisons of the children who participated and those who did not showed no significant demographic differences between the two groups.

Materials. Following Bigler and Liben (1992, 1993), we created eight age-appropriate stories, approximately 600 words in length. Each story portrayed a child narrator encountering two target characters, one attractive and one unattractive, who had similar facial expressions and were of the same gender, age, and race as each other to avoid confounding physical attractiveness stereotypes with other stereotypes. Two stories each portrayed one of the following pairs of target characters: female adults, female children, male adults, or male children. During the encounter, one of the target characters displayed a positive trait and the other target character displayed the opposite negative trait. We adapted traits from Dion (1973) and Langlois and Stephan (1977). Positive traits were likable, smart, friendly, and prosocial, and negative traits were not likable, not smart, not friendly, and aggressive. See Table 1 for a brief description of how the target characters portrayed these traits in each of the stories, and see the Appendix for a full version of one of the stories.

We created two photographs, each $8.5 \times 11$ in., to accompany each story. The photographs depicted the target activity of the story; one version portrayed the target characters in a stereotypical manner (e.g., friendly attractive girl and unfriendly unattractive girl), and the other displayed the target characters in a counterstereotypical manner (e.g., unfriendly attractive girl and friendly unattractive girl). To assess schematic processing of the characters in each story, we created a third picture that contained $3 \times 3$ in. photographs of the faces of the two target characters. Figure 1 shows illustrations of the stereotype consistent and inconsistent story pictures and the corresponding faces used to
assess schematic processing for one particular story. Figure 2 shows illustrations of the stereotype consistent and inconsistent story pictures from three other stories.

To create the story photographs, we photographed two adults or two children engaged in each target activity. We scanned the photographs and imported them into Adobe Photoshop. Using Photoshop, we superimposed previously rated faces of attractive and unattractive Caucasian children or adults over the faces of the individuals in the original photographs. By creating the story pictures using this method, we held all aspects of the stereotype consistent and stereotype inconsistent versions of the story photographs constant except for facial attractiveness.

Before we superimposed the faces, at least 40 adult judges (20 males and 20 females) rated the faces, along with other faces, for attractiveness using a 5-point Likert scale (1 to 5). Interrater agreement about the attractiveness of the faces was highly reliable (alphas = .90 or greater). The mean ratings for the attractive faces

<table>
<thead>
<tr>
<th>Characters</th>
<th>Positive trait/behavior</th>
<th>Negative trait/behavior</th>
</tr>
</thead>
<tbody>
<tr>
<td>Female adults</td>
<td>Camp counselor who is liked because she makes the children laugh and plays guitar for them</td>
<td>Camp counselor who is disliked because she always makes the children go to bed early</td>
</tr>
<tr>
<td>Female adults</td>
<td>Friendly neighbor who buys lemonade at the narrator’s lemonade stand and gives her extra money</td>
<td>Unfriendly neighbor who says she does not like lemonade and does not want any of it</td>
</tr>
<tr>
<td>Female children</td>
<td>Classmate who is liked and gets valentines from everyone in the class</td>
<td>Classmate who is not liked and gets only one valentine</td>
</tr>
<tr>
<td>Female children</td>
<td>Friendly classmate who shares her picture and engages in conversation with the girl narrator</td>
<td>Unfriendly classmate who will not show her picture and will not talk with the girl narrator</td>
</tr>
<tr>
<td>Male adults</td>
<td>Man at the ski lodge who is smart and can help the boy narrator read a note that he has found</td>
<td>Man at the ski lodge who is not smart and cannot read, so he is unable to help the boy narrator</td>
</tr>
<tr>
<td>Male adults</td>
<td>Prosocial neighbor who helps the boy narrator find his dog and stops another man from pushing the boy</td>
<td>Aggressive neighbor who threatens to call the dog catcher if he sees the boy narrator’s dog and then attempts to push the boy out of the way</td>
</tr>
<tr>
<td>Male children</td>
<td>Student who is smart and can answer the teacher’s questions because he is paying attention</td>
<td>Student who is not smart and cannot answer the teacher’s questions because he is not paying attention</td>
</tr>
<tr>
<td>Male children</td>
<td>Prosocial boy who plays fair and helps the boy narrator get back up after he is pushed down by another boy during a game of tag</td>
<td>Aggressive boy who pushes the boy narrator down during a game of tag because he does not want to be “it” and play fair</td>
</tr>
</tbody>
</table>
FIG. 1. Illustrations of the photographs used for the story, “Dinosaur.” The first is an illustration of the stereotype consistent version of the target activity photograph, and the second is an illustration of the stereotype inconsistent version of the target activity photograph. The third is an illustration of the faces used during the memory testing.
ranged from 3.77 to 4.29 (\( M = 4.12, SD = 0.24 \)) for females and from 3.72 to 4.02 (\( M = 3.85, SD = 0.13 \)) for males. The mean ratings for the unattractive faces ranged from 1.16 to 1.48 (\( M = 1.38, SD = 0.15 \)) for females and from 1.23 to 1.56 (\( M = 1.44, SD = 0.14 \)) for males. The attractive and unattractive faces were significantly different in attractiveness for females, \( t(3) = 53.52, \text{ one-tailed } p < .001 \), and for males, \( t(3) = 20.82, \text{ one-tailed } p < .001 \), and there were no significant differences in attractiveness among the attractive male and female faces or among the unattractive male and female faces.

Fitting the faces onto the bodies in the photographs so that they looked natural required slight alterations in the angle of the faces. Therefore, we asked a new set

FIG. 2. Illustrations of other story pictures. The stereotype consistent versions are on the left, and the stereotype inconsistent versions are on the right.
of six adults to rate the attractiveness of the faces within the context of the story pictures. The faces retained their level of attractiveness despite the superimposition onto the bodies; the difference between the ratings of the attractive faces and those of the unattractive faces remained significant for characters in both versions of the eight stories, \( t(7) = 9.33 \), one-tailed \( p < .001 \) for females, and \( t(7) = 11.91 \), one-tailed \( p < .001 \) for males.

Procedure. Following Bigler and Liben (1992, 1993), over the course of 4 to 8 days, an experimenter read one or two stories per day to groups of children in one classroom. Prior to reading the stories to the children, the experimenter stressed the importance of listening and told the children that they would be tested on the stories. The experimenter showed one version of the target activity photograph during the middle of the story when the target activity occurred and also pointed to and labeled each of the characters at this time. Before continuing with the story, the experimenter asked the children whether they all saw the picture and did not put the photograph away until all of the children acknowledged that they had seen it.

To counterbalance the presentation of stereotype consistent versus stereotype inconsistent versions of the story, children from another classroom heard the same stories in the same order but saw the photograph with the target characters in the opposite role. For example, the story “Dinosaur” portrayed two male children as the target characters, one who is smart and knows all about dinosaurs because he pays attention to the teacher and one who is not smart because he does not pay attention to the teacher. The children in one classroom saw the stereotype inconsistent photograph portraying the unattractive boy as smart and the attractive boy as not smart, and the children in the other classroom saw the stereotype consistent photograph portraying the same characters but in reverse roles. We randomly selected the order of the eight stories read to each classroom. Likewise, we randomly determined the photograph shown along with the story, with the only constraint being that we presented each classroom with an equal number of stereotype consistent and stereotype inconsistent photographs.

Within 1 to 15 min of each storytelling session, the experimenter tested each child individually by asking three questions about the story. Most children were tested within 5 to 10 min of finishing the story, except for one class in which more than 20 children participated in the study. Pilot testing and analysis of the final data revealed that slightly longer delays between children hearing the story and being questioned about it did not significantly affect children’s accuracy. To ensure that the children accurately processed and understood the trait being portrayed, the first question assessed children’s general processing of the story and the second question assessed their processing of the specific target activity. For example, to assess whether children accurately processed that the characters were learning about dinosaurs in the “Dinosaur” story, the first question was “What did Josh learn about in his class?” Then the experimenter asked “Why couldn’t one of the boys in Josh’s class answer the teacher’s questions?” to assess whether the children accurately processed that one boy was not smart because he was not pay-
ing attention. The third question assessed the major dependent variable; the experimenter showed the picture containing the 3 × 3 in. facial images of the two target characters and asked the children to point to the character who had displayed the positive target behavior: “What boy was smart and knew all about the dinosaurs?” The experimenter asked about the positive target behavior because technically we were testing for effects of the “beauty is good” stereotype and not “unattractive is bad.”

Data Analysis

We did not analyze the data from children who provided incorrect responses to either of the first two questions, based on the assumption that these children made errors because they were not paying attention to the story rather than because they made schematic processing errors. Overall, there were 721 instances in which we had an opportunity to question the children after reading a story. We received an incorrect response for one of the first two questions in 38 (5%) of these instances, so we deleted the corresponding third question responses from the analysis.

Because some children were not present for all eight stories, we could not simply compare their total number of correct and incorrect responses for each story type to evaluate how the “beauty is good” stereotype affected children’s schematic processing. In addition, the data were not normally distributed. The best statistical solution for dealing with these problems of missing data and skewed distributions, particularly when dealing with a binary variable (i.e., correct or incorrect responses), is a logistic regression analysis (Cleary & Angel, 1984). Therefore, we compared each child’s total number of correct and incorrect responses for each of the story types according to character gender—stereotype consistent with female characters (CF), stereotype inconsistent with female characters (IF), stereotype consistent with male characters (CM), and stereotype inconsistent with male characters (IM)—and assigned children a score of 0 for each of the four story types on which they made any incorrect responses and a score of 1 for each of the four story types on which they made all correct responses. For example, we assigned one child a 0 for CM and a 0 for IF because she made at least one incorrect response during testing of those stories. We also assigned this child a 1 for CF and a 1 for IM because she made no incorrect responses during testing of those stories.

To test the hypothesis that children are more likely to accurately identify characters from stereotype consistent stories than they are characters from stereotype inconsistent stories, we conducted a one-tailed, exact, binary, logistic regression analysis. Exact logistic regression guarantees exact confidence intervals and p values, particularly when the sample size is small or not normally distributed. This type of analysis reduces Type II error because it is more sensitive to finding an effect when it exists (Cytel Software Corporation, 1995). We conditioned the data on each participant’s overall response rate using the “stratification” option in LogXact 2.1. Stratification assesses the effects of the different conditions around
each individual child’s own base response rate (Cytel Software Corporation, 1995). This analysis is similar to conducting a repeated measures analysis of variance (ANOVA), where the effect of each within-participants variable is measured in relation to how far it pushes each participant away from the participant’s own mean. We entered participant gender, race (Caucasian/non-Caucasian), and age as between-participants factors and entered story type and character gender as within-participants factors. Because the stories contained photographs of Caucasian children and adults, we examined race as a between-participants variable to investigate whether it interacted with story type. To convert the age data to binary variables, we used median splits. The dependent variable was children’s accuracy in responding to the third question.

**Results and Discussion**

The logistic regression model that best fit the data had the following main effects and interactions: story type ($\beta = 0.87, p = .02$), character gender ($\beta = -0.99, p = .04$), Story Type $\times$ Character Gender ($\beta = -1.56, p = .003$), and Character Gender $\times$ Participant Gender ($\beta = 1.41, p = .01$), with an overall chi-square of 26.35 ($df = 4$). Because interactions supersede main effects, only the significant interactions are discussed further.

The Story Type $\times$ Character Gender interaction showed that, as predicted, children made significantly more mistakes when the story was stereotype inconsistent (25%) than when it was stereotype consistent (14%), but only when the characters in the story were female, $t(87) = 1.99, p < .05$. By contrast, when the characters in the story were male, children made more errors when the story was stereotype consistent (40%) than when it was stereotype inconsistent (26%), $t(94) = -2.01, p < .05$.

To decompose the interaction between participant gender and character gender, we conducted two one-way ANOVAs with gender as the between-participants variable and children’s accuracy for stories with either female or male characters as the dependent variables, and we used Bonferroni’s correction because this was not a predicted outcome (Hays, 1994). This analysis revealed that girls made significantly fewer errors than boys when the stories were about female characters (8% and 27%, respectively), $F(1, 186) = 11.11, p < .001$, whereas both girls and boys made approximately the same number of errors when the stories were about male characters (31% and 36%, respectively).

These results partially supported our predictions about how children process information that is consistent or inconsistent with physical attractiveness stereotypes. Children were more likely to accurately identify female characters when their traits were consistent with the “beauty is good” stereotype, whereas children were more likely to accurately identify male characters when their traits were inconsistent with the “beauty is good” stereotype. Because we originally predicted that the physical attractiveness stereotype would affect children’s information processing regardless of the characters’ gender, we reviewed the results in relation to particular stories, our stimuli, and the literature to better understand why
the characters’ gender made a difference in how children processed story information.

On closer examination of children’s errors for particular stories, one of the stories was particularly prominent because the error rates were very different from our predictions. Children made a disproportionate number of errors on the stereotype consistent version of the story depicting adult males who displayed the traits of smart and not smart relative to the stereotype inconsistent version of the story. Specifically, 50% of the children who saw the stereotype consistent story picture, as compared to only 14% in the stereotype inconsistent condition, made an error identifying the adult male who was smart and could read. Although the literature demonstrates that children associate greater intellectual competence (i.e., being smarter) with more attractive children (Langlois et al., 2000; Langlois & Stephan, 1977), to our knowledge there has not been research showing that children also associate smartness with attractive adults. The results from this particular story suggest that perhaps children do not associate intelligence with attractive adult males. If we eliminate this story from the main analysis, all main effects and interactions remain significant. But when we decompose the interaction between story type and character gender, the error rates for the CM and IM stories become approximately the same (27% and 23%, respectively) and the difference in errors between CM and IM stories becomes nonsignificant.

Regardless of whether the atypical story is kept in the analysis, our results suggest that there could be differences in how children process attractiveness information about females versus how they process attractiveness information about males. Children show a bias toward more accurate processing of females whose traits are stereotype consistent, whereas they do not for males. Before exploring possible reasons for this difference in processing, however, we wanted to ensure that the finding was replicable and control for any possible stimulus differences between the female and male character story pictures.

In reviewing our stimuli, we discovered that there were hair color differences between the attractive and unattractive characters in both the male and female story pictures. The attractive character had blonde hair and the unattractive character had dark hair in three of the four stories containing female characters. By contrast, only one of the stories about males had characters with differences in hair color; the unattractive character had blonde hair and the attractive character had dark hair. It is possible, therefore, that we obtained these results because of hair color differences rather than attractiveness differences. Thus, we conducted a second study to explore whether children’s differential processing of attractiveness information for female and male faces was a replicable phenomenon or whether it was due to stimuli differences.

**EXPERIMENT 2**

To determine whether or not hair color differences produced the results of Experiment 1, we replicated the study by holding constant the hair color of the characters.
Method

Participants. A total of 47 children (30 males and 17 females) ranging in age from 3 years 3 months to 7 years ($M = 4$ years 11 months, $SD = 10$ months) participated. We recruited children from seven private schools and day care centers in the Austin area and from the Children’s Research Lab (CRL) database at the University of Texas at Austin. The CRL database contains names of children from the Austin area originally obtained from birth announcements in the local newspaper. Again, most participants were Caucasian (68%), but Hispanic (19%), Native American (4%), and African American (2%) children also participated. The parents of 4% of the children indicated “other” for the children’s racial background, and 2% did not indicate race. For each child, we obtained signed consent from at least one parent and verbal assent from the child. For each child from a school or day care center, we also obtained written consent from either the principal or the director of the institution as well as from the child’s teacher. We received permission to test 50 children, but 3 children were absent and were not tested. Proportional comparisons of the children who participated in the study with those who did not showed no demographic differences between the two groups.

Materials. All stimuli were identical to those used in Experiment 1 except for the story photographs that we changed to control for hair color. We changed story photographs for three of the stories containing female characters and for one of the stories containing male characters. For three of the four stories whose photographs we changed, we kept the attractive character’s face the same as in Experiment 1, but we replaced the unattractive character’s face with another face that was unattractive and matched the attractive character in hair color. For the remaining story (a story containing female children as target characters), we were unable to find a new unattractive female child whose hair color matched the attractive female child’s blonde hair precisely. Therefore, we chose an unattractive female child with light brown hair and used the tools in Photoshop to lighten her hair. These changes enabled us to hold hair color constant between the characters in each story, so that the only difference in their appearance was their level of attractiveness. The new unattractive faces were chosen based on adults’ ratings of their attractiveness, and interrater agreement about the attractiveness of the faces was highly reliable (alphas = .90 or greater). The mean ratings of the attractive female and male faces remained the same as in Experiment 1, and the mean ratings of the unattractive faces ranged from 1.44 to 2.54 ($M = 2.02$, $SD = 0.53$) for females and from 1.28 to 1.80 ($M = 1.50$, $SD = 0.23$) for males. The attractive and unattractive faces were significantly different in attractiveness for females, $t(3) = 9.43$, one-tailed $p < .002$, and for males, $t(3) = 15.02$, one-tailed $p < .001$. There were no significant differences in attractiveness between the attractive male and female faces or between the unattractive male and female faces.

Procedure. The design and procedure were identical to those used in Experiment 1.
Results and Discussion

We analyzed the data using the same procedures as those used in Experiment 1. Overall, there were 306 instances in which we had an opportunity to question the children after reading a story. We received an incorrect response for one of the first two questions in 31 (10%) of these instances, so we deleted the children’s data for those particular stories from the analysis. We applied a one-tailed, exact, binary, logistic regression analysis with participant gender, race, and age as the between-participants factors and with story type and character gender as the within-participants factors. The dependent variable was children’s accuracy in responding to the third question. The logistic regression equation model that best fit the data had the following main effects and interactions: story type ($\beta = 1.06$, $p = .02$) and Story Type $\times$ Character Gender interaction ($\beta = -1.04$, $p = .05$), with an overall chi-square of 5.41 (2 df). Because the interaction supersedes the main effect, we do not discuss the main effect. The interaction revealed that when the characters in the story were female, children were more likely to make mistakes when the story was inconsistent with the “beauty is good” stereotype (53%) than when the story was consistent with the stereotype (24%), $t(33) = 2.54$, $p < .01$. There were no differences in errors between stereotype consistent and stereotype inconsistent stories when the characters in the story were male (41% and 32%, respectively), $t(36) = -0.77$, ns.

Even when hair color was held constant, we replicated the same general pattern of results that we found in Experiment 1: Children made more errors in identifying characters from stereotype inconsistent stories than in identifying characters from stereotype consistent stories, but only when the characters were female. In fact, the error rate in Experiment 2 nearly doubled that in Experiment 1, suggesting that the effects of females’ attractiveness may be stronger when other cues, such as hair color, are unavailable to differentiate the characters and aid children’s information processing.

Looking at the data from both studies, it seems that the “beauty is good” stereotype does not affect how children process information about male characters in the same way as it affects their processing of female characters. If we examine the data separately for the story containing adult males who displayed the traits of smart and not smart as we did in Experiment 1, we find that children made more errors on the stereotype consistent version than on the stereotype inconsistent version (40% and 21%, respectively), again suggesting that children might not associate intelligence with attractive adult males. If we eliminate this story from the main analysis, then the Story Type $\times$ Character Gender interaction is no longer significant, but the main effect of story type remains significant, suggesting that the stereotype consistency or inconsistency has more of an effect on children’s information processing than does the character’s gender. Interestingly, however, when we compare the errors for the stories containing male characters without the data from this atypical story, the error rate difference between the stereotype consistent and stereotype inconsistent male stories is in the predicted direction for evidence of schematic processing (27% and 32%, respectively), but
the difference is not significant. Therefore, the findings from the overall analysis and the analysis without the atypical story errors suggest that, as in Experiment 1, attractiveness affects the processing of information about females more than males.

**GENERAL DISCUSSION**

Previous research has shown that when children process information about people, they make errors consistent with a schematic processing view of stereotyping; children distort information based on gender, racial, or age stereotypes (Bigler & Liben, 1992, 1993; Davidson et al., 1995; Koblinsky & Cruse, 1981; Liben & Signorella, 1980; Signorella & Liben, 1984). Our studies show that schematic processing also seems to cause children to bias information about both adult and child female targets based on attractiveness. When children made errors, they were more likely to select attractive females as displaying positive traits when in fact the unattractive females had displayed the positive traits.

Surprisingly, we did not find the same results for male characters, nor did we find cohesive results for the male characters across the two studies. Although Experiment 1 found that children made more errors in identifying male characters from stories consistent with the “beauty is good” stereotype than from stories inconsistent with the stereotype, once we controlled for hair color in Experiment 2, we found no differences. Because we used exact logistic regression to evaluate the data, it is unlikely that the smaller sample size of Experiment 2 was responsible for producing this null effect given that this type of analysis enables detection of the existence of real effects even when sample size is small. However, should we conclude that attractiveness stereotypes differentially influence information processing about females but not about males?

One of the stories containing adult male characters may have affected our results in both Experiments 1 and 2. For the story about adult males portraying the traits of smart or not smart, children made a disproportionately larger number of errors when asked to identify the smart male following the stereotype consistent version of the story relative to children who experienced the stereotype inconsistent version. Because the errors are in the opposite direction of what we predicted based on the “beauty is good” stereotype, it may be that children do not associate attractive faces with smartness for adult males. We selected this trait because it is clear that children make attributions about intelligence based on attractiveness for other children (Langlois & Stephan, 1977) and that adults make attributions about intelligence based on attractiveness for other adults and children (Langlois et al., 2000). It is also clear that adults use the “beauty is good” stereotype when making judgments about targets, regardless of the age of the targets (targets have ranged from infants to children to adults [e.g., Dion, 1972; Dion et al., 1972; Ritter, Casey, & Langlois, 1991]), but studies with child participants have been limited to assessments of similar-aged child targets (e.g., Dion, 1973; Langlois & Stephan, 1977; Langlois & Styczynski, 1979; Styczynski & Langlois, 1977; but for an exception for television characters, see Hoffner & Cantor, 1985).
Thus, it is possible that some of the traits children attribute to their attractive and unattractive peers do not generalize to the traits they attribute to attractive and unattractive adults, particularly adult males.

One other possible reason why the smart/not smart story with adult male characters may have been problematic is that the story pictures did not appropriately convey the characters’ attractiveness levels. This is unlikely, however, given that we had the characters’ faces rated by a large number of adults and obtained extremely reliable ratings. Furthermore, we reevaluated the attractiveness level of the faces superimposed onto the story pictures with another sample of adults, and this reassessment confirmed the original ratings. Thus, it is more likely that there is something about the smart trait that produced the unusual findings, although it is important to replicate this finding with another set of adult male stimulus faces.

Because the one story might not have accurately portrayed a trait relevant to children’s “beauty is good” stereotype for male adults, we limit further general discussion of the findings from the two studies without the data from this story. Without this story, the results from Experiment 1 suggest that children make an equal number of errors about males regardless of whether they display stereotype consistent or stereotype inconsistent traits. The corresponding results from Experiment 2 suggest related findings. Therefore, why does schematic information processing seem to consistently influence accuracy for female but not male target faces?

If we revisit the definition of a schema, it includes knowledge, beliefs, and expectancies about a group of individuals that subsequently affect attention, information processing, and behavioral responses. As has been well-documented in the gender stereotyping literature, children clearly have different knowledge and beliefs about males and females in relation to objects, traits, and occupations beginning early in development (e.g., Fagot & Leinbach, 1989; Serbin, Poulin-Dubois, Colburne, Sen, & Eichstedt, 2001; Signorella, Bigler, & Liben, 1993). In addition to this knowledge, children may have the belief that attractiveness is more important for females than for males. Not only is this belief widespread among adults (Feingold, 1990, 1991; Hatfield & Sprecher, 1986; Jackson, 1992; Scheibe, 1979; Zebrowski, 1997), it is supported by both mate selection and socialization theories (Buss & Barnes, 1986; Hatfield & Sprecher, 1986; Jackson, 1992; Symons, 1979; Townsend & Wasserman, 1997, 1998; Wiederman & Dubois, 1998; Zebrowski, 1997) and is reflected by women expressing more concern about their physical appearance than do men (Franzoi, 1995; Franzoi & Koehler, 1998; Gutierrez, Kenrick, & Partch, 1999; Jackson, Sullivan, & Rostker, 1988; Pliner, Chaiken, & Flett, 1990). Children, like those in our study, may acquire this belief at a relatively young age as they witness adult behavior. Television commercials aimed at young children that stress this difference in the importance of appearance for females and males may also contribute to children’s beliefs (Ogletree, Williams, Raffeld, & Mason, 1991; Sobieraj, 1997). Thus, there is evidence to suggest that, early in development, young children may be exposed
to the belief that physical attractiveness is more important for females than for males.

If children do indeed believe that attractiveness is more important for females than for males, then they may attend more to a female’s than a male’s physical appearance in general. This increased attention to appearance may facilitate activation of the “beauty is good” stereotype when children are processing information about attractive and unattractive females. We cannot posit whether differential attention caused encoding, organizing, or retrieving errors because we designed these two studies to investigate if the “beauty is good” stereotype biases children’s information processing, not to assess the level of processing at which the bias occurs. Future research should investigate whether our interpretation that children are more likely to activate the “beauty is good” stereotype when processing information about females than about males because of greater attention toward females’ physical appearance is credible. If it is, then future research should proceed to identify what particular stage of information processing—encoding, organizing, or retrieval—is affected by differential attention. Identifying when the bias occurs would enable comparisons between information processing of attractiveness stereotypes and other stereotypes such as gender (see Liben & Signorella, 1993).

Is physical attractiveness really more important for females than for males? Two different meta-analyses of physical attractiveness research have shown that, contrary to common assumption, attractiveness is equally important for males and females (Eagly et al., 1991; Langlois et al., 2000), and one other meta-analysis found relatively few sex differences (Feingold, 1992). With very minor exceptions (see Feingold, 1992), regardless of the person’s sex, (a) there is high agreement among people about who is and is not attractive (Langlois et al., 2000); (b) attractiveness affects evaluation, perception, and treatment of familiar and unfamiliar people (Eagly et al., 1991; Feingold, 1992; Langlois et al., 2000); and (c) attractiveness affects people’s behavior and self-perceptions (Feingold, 1992; Langlois et al., 2000). Thus, despite beliefs that attractiveness is more important for females than for males, the current literature suggests that there are relatively few sex differences in the effects of attractiveness on males and females. Indeed, the belief that attractiveness is more important for females than for males has the characteristics of a stereotype that is more inaccurate than accurate. The variables investigated in these meta-analyses, however, reflected the effects of physical attractiveness on affective preferences and evaluative judgment and treatment and not on information processing (Eagly et al., 1991; Langlois et al., 2000).

Information processing is substantially different from affective preferences and evaluative judgment or treatment because it generally involves some component of either encoding or retrieval of an event, whereas preferences, evaluations, and treatment occur nearly instantaneously and do not necessarily require encoding or recall processes (Locher, Unger, Sociedade, & Wahl, 1993). Although schemata do contain evaluative components, they also contain knowledge of the stereotype, cognitive components, and multiple dimensions of meaning (Fagot & Leinbach,
1993; Signorella, 1999). Thus, we would expect schemata to affect information processing but not evaluative judgments.

Although the belief that attractiveness is more important for females than for males (e.g., Feingold, 1990, 1991; Hatfield & Sprecher, 1986; Jackson, 1992; Scheibe, 1979; Zebrowitz, 1997) might not be completely accurate, the belief itself has likely become incorporated into physical attractiveness schemata. In turn, this schematic belief biases information processing, and this results in maintenance of the physical attractiveness stereotype and reinforcement of this belief. Thus, the impact of physical attractiveness on immediate situations appears to be similar for both sexes but may affect females more when that information is processed and recalled at a later time. Given that the few studies that have investigated information processing of physical attractiveness stereotypes have been limited to adults or have used only males or females as targets (e.g., DeBono, 1992; DeBono & Harnish, 1988; Miller, 1988), this difference in children’s schematic processing of physical attractiveness information for males and females requires further investigation. To follow up on these ideas, we propose that future research should (a) assess children’s beliefs about the importance of physical attractiveness for males and females and (b) conduct studies that compare how the “beauty is good” stereotype affects immediate, face-to-face interactions as compared to interactions that involve processing and recall of information about female and male targets.

CONCLUSIONS

Distortion of stereotype inconsistent information during information processing could be one reason why children and adults maintain the “beauty is good” stereotype for females even in the face of counterexamples (Dion et al., 1972; Langlois et al., 2000). Exposure to attractive and unattractive females who behave in counterstereotypical ways will do little to alter the “beauty is good” stereotype about females if children do not accurately encode or retrieve information because of schematic information processing. Likewise, exposure to differential behavior and treatment of attractive and unattractive males will do little to alter the stereotype that beauty matters only for females if children process this information schematically. Thus, schematic information processing may consistently strengthen and maintain the “beauty is good” stereotype for females but not as steadfastly for males.

APPENDIX

Sample Story

Hi, my name is Lucy and I want to tell you about the time last summer that I had a lemonade stand. One day it was really hot out and I said to my mom, “Boy, it sure is hot. When it’s this hot, it makes me thirsty.” My mom told me that hot weather made her really thirsty too and suggested that we make some lemonade so we wouldn’t be so thirsty. After we drank our lemonade, I asked my mom if I
could make some more lemonade and bring it outside to sell to other people who might be thirsty. She said that would be okay and set up a table and chair for me to sit at. A few minutes later, our neighbor, Wanda, walked by and I said, “Hi Wanda. Would you like some lemonade?” Wanda responded, “Hi Lucy. Boy, that lemonade sure looks good. I would love to have some of the lemonade.” I told Wanda I was selling the lemonade for a quarter, but Wanda gave me a whole dollar and told me to keep the change. Just then, another neighbor, Linda, walked by. I said, “Hey Linda, would you like some lemonade?” Linda looked at me and said, “I don’t like lemonade, Lucy, and I certainly don’t want to pay for something I don’t like.” [SHOW PICTURE.] Before I could say anything else, Linda walked away. Wanda said to me, “Oh, don’t worry about her. She’s just a sour-puss. I think your lemonade’s great. As a matter of fact, I think it’s so good that I’m going to buy another glass of it.” Wanda gave me another whole dollar and let me keep the change again. I thanked her very much. Over the next few hours, I sold all my lemonade. I was so excited about the money I made because I was saving up for a toy I wanted. My mom told me that I had worked real hard selling my lemonade and that she would take me to the toy store tomorrow to get my new toy and would help me pay for the rest of it. I couldn’t wait to go and pick out my new toy.

REFERENCES


Received May 29, 2001; revised December 17, 2001