DEPARTMENT OF PSYCHOLOGY

ADULTS’ SENSITIVITY TO TRAITS EXHIBITED BY MALE AND FEMALE CHARACTER ILLUSTRATIONS

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Abstract

This study investigated whether the extent to which individuals are gender stereotyped influences their sensitivity to traits portrayed in images when the gender of the character enacting the trait in the image is manipulated. The main hypothesis was that high gender stereotyped individuals would rate congruent trait illustrations (e.g., feminine trait demonstrated by female character) significantly higher than incongruent trait illustrations, whereas low gender stereotyped individuals would provide comparable ratings for both congruent and incongruent trait illustrations. The sample included 130 undergraduate students ($M = 19.6$ years). The meanings of trait stimuli were validated: participants interpreted them as illustrating the traits they were intended to portray. Ratings on congruent versus incongruent trait illustrations did not differ in high gender stereotyped participants and low gender stereotyped participants. Female participants gave significantly more egalitarian responses than male participants on the Activities OAT-AM scale. Applications of this research pertaining to the assessment of children’s ability to identify traits in images and the development of educational materials to assist children with trait identification are discussed.
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Liben and Bigler (2002) developed attitudinal and personal measures to assess adults’ sex typing of others and sex typing of the self, respectively. The attitudinal measures (OAT-AM) and personal measures (OAT-PM) assess sex-typed attitudes toward others and oneself in the following domains: Occupations, Activities, and Traits. The reliability and validity of these measures has been demonstrated by a series of studies across both adult (OAT) and middle childhood samples (COAT). Further, Liben and Bigler’s (2002) findings indicate that both adults and children are more likely to hold attitudes that discriminate between the sexes for masculine/feminine occupations and activities than they are to discriminate between the sexes for masculine/feminine personality traits.

The OAT-AM scale was designed to assess attitudes and beliefs toward others with regard to gender stereotypes about occupations, activities, and traits. Including a “both men and women” option on a scale designed to assess beliefs about gender stereotypes, as opposed to knowledge of cultural gender stereotypes, was shown to be effective in a meta-analytic review conducted by Signorella, Bigler, and Liben (1993); in this regard, the “both men and women” option included on the OAT-AM scale serves the purpose of getting to the root of participants’ beliefs about gender stereotypes and not merely their knowledge of societal norms and gender stereotypes. In addition, when an individual selects the “both” option they are providing an egalitarian response (Liben & Bigler, 2002; Signorella et al., 1993).

Williams and Best (1977) investigated sex stereotypes and trait favorability by employing the Adjective Check List, and the results of their research provide evidence of sex stereotypes among young adults; however, a difference was not found for the overall favorability ratings for
male and female stereotypes. Liben and Bigler’s (2002) research further substantiates the existence of sex stereotypes among adults, particularly with regard to activities and occupations. More specifically, evidence suggests that adults do not deem certain occupations and activities as equally appropriate for both sexes and thus hold gender stereotypes (Liben & Bigler, 2002); Liben and Bigler (2002) found that adult attitudes about the appropriateness of occupations and activities for the sexes were notably less egalitarian than were their attitudes toward traits.

Liben, Bigler, and Krogh (2001) investigated the influence of the sex of a worker and cultural stereotypes on children’s judgments of different occupations; the researchers used character illustrations whereby an occupation was depicted by workers [characters] performing a specified role or job. For each novel job, two comparable images [counterbalanced across participants] were created where the only variable manipulated in the image was the sex of the worker. Although the current study explored traits instead of occupations, the same principle applies such that for each trait depicted the sex of the character illustrating the trait was manipulated; the methodology behind the trait illustrations used in the present study will be further discussed in the upcoming paragraphs as well as in the methods section of this report.

Overall, the premise of this research was to investigate individual’s sensitivity to the way males’ and females’ traits are portrayed. The current study was an extension of Liben and Bigler’s (2002) research delineated in Monographs of the SRCD. Young adults were surveyed about their gender attitudes and beliefs to determine the degree to which they were gender stereotyped. The current study further expanded upon research pertaining to traits, and, therefore, the traits under scrutiny in Liben and Bigler’s (2002) research provided a framework for which traits to explore in the current study. We validated our trait stimuli to test whether the
characters in the trait illustrations were effectively portraying the intended trait. We investigated whether the extent to which individuals are gender stereotyped influenced their sensitivity to traits portrayed in images when the gender of the character enacting the trait in the image was manipulated.

The term gender stereotyped is defined as the degree to which individuals hold gender stereotypical beliefs or attitudes. Congruent trait stimuli are trait illustrations that depict stereotypically feminine traits (e.g., shy) portrayed by female characters or trait illustrations that depict stereotypically masculine traits (e.g., rough) portrayed by male characters. Incongruent trait stimuli are trait illustrations that depict stereotypically masculine traits portrayed by female characters or trait illustrations that depict stereotypically feminine traits portrayed by male characters.

We administered a pilot study before administering the main study to identify the highest rated stereotypically masculine, feminine, and neutral traits according to the mean ratings on a scale that was administered to participants: we needed to identify which traits are considered to be stereotypically masculine, feminine, and neutral according to society. Further the trait illustrations that received the highest mean ratings in the pilot study—participants interpreted them as effectively illustrating the traits they were intended to portray—were selected for use in the main study and served as the primary foundation for the main study. For instance, if the character illustration for graceful received a high mean rating from participants, then this served as validation that the character illustration was accurately depicting the trait it was intended to portray.
For the main study, we hypothesized that high gender stereotyped individuals would rate congruent trait illustrations significantly higher than incongruent trait illustrations, and that low gender stereotyped individuals would show a significantly smaller difference between their ratings of congruent and incongruent trait illustrations; that is, we predicted that high gender stereotyped individuals would consider trait illustrations that were congruent with cultural norms (e.g., feminine trait depicted by female character) to be more effective at depicting a specified trait than trait illustrations that were incongruent with cultural norms (e.g., feminine trait depicted by male character). Thus, we predicted that with rating scores as the dependent variable we would find a significant interaction between factors of congruency and degree of gender stereotyping. The main study employed the Activities (OAT-AM) scale to determine the extent to which the participants were gender stereotyped—hold gender stereotypical beliefs about others—so that high versus low gender stereotyped participants could be identified (Liben & Bigler, 2002).
Method

“Pilot” Study

Participants

The participants were undergraduate students from the Pennsylvania State University who were recruited from the Psychology Department Subject Pool and received extra credit from their respective psychology course for their participation. The sample of participants was comprised of 139 undergraduate students (83 males, 56 females; $M_{age} = 19.32$ years, $SD = 1.16$ years) where self-reported race was 70% White with a remaining 30% that included various groups (largest: African American, 11%; Latino, 5%).

Procedural Overview & Measures

The pilot study was comprised of two parts. For the first portion of the study, participants were shown slides so that everyone would work at the same pace. The participants marked response sheets containing 42 items as they viewed the slides. For the second portion of the study, participants were asked to complete a survey.

For the first portion of the study, participants were shown a series of trait illustrations on the screen one by one. For each trait illustration, the participant was asked to use a 7-point scale to rate how much the character looked like the named trait. They were told that the researchers were developing measures to test with children and needed adult ratings before administering these measures to children.

The participants were shown a number of projected trait illustrations to familiarize themselves with the images that would be used throughout the first portion of the study. The
participants then saw a series of projected trait illustrations paired with a named trait. The numbered slides on the screen corresponded with the numbered items on the participant response sheet. As shown in Figure B, for each trait illustration, the participant was asked to rate how much the character looked like the named trait by using the scale for approximately 8 seconds: e.g., “How much does this character illustrate GRACEFUL?”…(1) not at all to (7) very much. The premise of this portion of the study was to identify which trait illustrations received high mean ratings, which would serve to validate their effectiveness as illustrating a specified trait. The trait illustrations portrayed a combination of stereotypically feminine, stereotypically masculine, and neutral traits.

“Intended,” “similar,” and “unintended” pairs between the named traits and the trait illustrations were included on the survey. An intended pair constitutes a named trait (e.g., cheerful) paired with a trait illustration whereby the character is enacting the named trait (e.g., cheerful). A similar pair is a named trait (e.g., helpful) paired with a trait illustration whereby the character is enacting a trait similar to the named trait (e.g., cheerful). An unintended pair is a named trait (e.g., gloomy) paired with a trait illustration whereby the character is enacting a trait that is not similar to the named trait (e.g., cheerful). Figure C shows examples of intended, similar, and unintended pairs.

We used intended, similar, and unintended pairs between the named traits and the trait illustrations so that 1) participants would employ the full spectrum of the 7-point scale and 2) we could validate the effectiveness of the trait stimuli, that is, test whether the characters portrayed the intended trait effectively. In actuality, there were fourteen intended pairs: cheerful, competitive, fussy, generous, kind, mean, messy, polite, rough, rude, show-off, shy, tidy, and
timid. The masculinity and femininity of each trait included in the study as supported by the mean ratings of the participants will be given in the results section—the second portion of the survey served as a measure to underscore this issue. For each trait under scrutiny, there were comparable male and female character illustrations that were counterbalanced across participants.

For the second portion of the pilot study, participants were asked to complete a survey. The results from the survey were used to identify the strongest stereotypically masculine, stereotypically feminine, and neutral traits according to our sample. The survey contains 37 items and uses a 7-point scale: e.g., “Most people believe that (this trait):” (1) Only Men/Boys; (2) Mostly Men/Boys (3) Some Men/Boys; (4) Both Men/Boys and Women/Girls; (5) Some Women/Girls; (6) Mostly Women/Girls; (7) Only Women/Girls. The researchers sought to identify which traits were rated as high masculine and feminine.

“Main” Study

Participants

The participants were 130 undergraduate students (43 males, 83 females; \( M_{\text{age}} = 19.6 \) years, \( SD = 2.7 \) years) from the Pennsylvania State University recruited from the Psychology Department Subject Pool and received extra credit for their participation from their respective psychology course. Self-reported race was 82% White with a remaining 18% that included various groups (largest: African American, 9%).

Procedural Overview & Measures

The participants were shown a number of projected trait illustrations to familiarize themselves with the images that would be used throughout the first portion of the study. Each
trait illustration portrayed a trait (e.g., cheerful). As shown in Figure A1-A3, for each trait under exploration, there were two comparable images with the exception of sex—one image with a male exemplifying the trait and another comparable image of a female enacting the same trait. The sex of the character enacting the trait in the image was counterbalanced across participants.

Participants were given response sheets containing 45 items, whereby they provided ratings for a series of trait illustrations paired with named traits. For each named trait included on the survey, the participant had to rate how much the trait illustration depicted the named trait (e.g., graceful) by using a trait identification scale ranging from 1 to 7: “How well does this character illustrate ‘Named Trait (e.g., graceful)?’”…(1) not at all to (7) very much; Refer to Figure B. As shown in Figure A1-A3, the character illustrations portrayed a combination of stereotypically feminine, stereotypically masculine, and neutral traits.

“Intended,” “similar,” and “unintended” pairs between the named traits and the character illustrations were included on the survey. An intended pair constitutes a named trait (e.g., cheerful) paired with a trait illustration whereby the character is enacting the named trait (e.g., cheerful). A similar pair is a named trait (e.g., helpful) paired with a trait illustration whereby the character is enacting a trait similar to the named trait (e.g., cheerful). An unintended pair is a named trait (e.g., gloomy) paired with a trait illustration whereby the character is enacting a trait that is not similar to the named trait (e.g., cheerful). Figure C shows examples of intended, similar, and unintended pairs.

We used intended, similar, and unintended pairs between the named traits and the character illustrations so that 1) participants would employ the full spectrum of the 7-point scale and 2) we could validate the effectiveness of the trait stimuli, that is, test whether the characters
portrayed the intended trait effectively. In actuality, the intended pairs included on the survey were the 5 best stereotypically feminine, 5 best stereotypically masculine, and 5 best neutral traits illustrated by comparable male and female characters counterbalanced across participants. The stereotypically feminine intended traits were cheerful, fussy, tidy, gentle, and graceful. The stereotypically masculine intended traits were rough, competitive, messy, show-off, and rude. The neutral intended traits employed were calm, clumsy, gloomy, silly, and smart.

**Activities OAT-AM Scale**

For the second portion of the study, participants were asked to complete a survey that assessed their sex-typed attitudes and beliefs. The survey employs the Activities OAT-AM Scale and contains 25 questions: e.g., “Who should grocery shop?” (1) Only Men; (2) Mostly Men, Some Women; (3) Both Men and Women; (4) Mostly Women, Some Men; (5) Only Women (Liben & Bigler, 2002); refer to Figure D to see the Activities Scale of the OAT-AM. The Activities OAT-AM Scale, an attitude measure, was employed because we were assessing the participant’s sex-typed attitudes toward others (Liben & Bigler, 2002). Further, the main study used the Activities OAT-AM Scale as a gender stereotyping measure to identify high gender-stereotyped participants versus low gender stereotyped participants.
Results

Pilot Study

The trait illustrations that received the highest mean ratings in conjunction with the strongest ratings for stereotypically masculine, stereotypically feminine, and neutral traits were used in the main study. The trait illustrations that depicted cheerful are an example of a trait illustration that effectively depicted the intended trait—the mean ratings by participants for both the male and female trait illustrations depicting cheerful validated the effectiveness of this image. For instance, the mean rating for the trait illustration for cheerful depicted by a male character was \( M = 6.75 \); the mean rating for the trait illustration for cheerful depicted by a female character was \( M = 6.79 \). Overall, the comparable male and female character illustrations depicting the same intended trait received comparable ratings, which provided support that the images were equally effective regardless of the sex of the character depicting the intended trait. Refer to Table 1 to see the mean ratings for each trait illustration paired with an intended trait portrayed by comparable male and female characters.

The scale that was used in the second portion of the pilot study served to identify which traits were deemed stereotypically masculine, stereotypically feminine, and neutral by society according to the participants. The traits that received the strongest mean ratings in terms of their masculinity/femininity were used to further identify which trait illustrations/intended named traits would be used in the main study (additional trait illustrations were created for the main study for traits that received strong ratings that were not represented in character illustrations in the pilot study). Examples of traits that received strong ratings for their femininity include: graceful \( M = 5.83 \), gentle \( M = 5.61 \), tidy \( M = 5.24 \). Examples of traits that received strong...
ratings for their masculinity include: rough ($M = 1.97$), aggressive ($M = 2.19$), brave ($M = 2.46$).
Examples of traits that received strong ratings for being neutral include: Silly ($M = 3.94$), Smart ($M = 4.01$), Calm ($M = 4.45$).

Main Study

_High Stereotyped/Low Stereotyped Ratings for Congruent vs. Incongruent Items_

Ratings served as the dependent variable in analyses of variance (ANOVA) in which the between-subjects variable was participant’s stereotyping (high vs. low) and the within-subjects variable was gender congruency (congruent vs. incongruent trait-gender pairs). The Activities Scale of the OAT-AM was used to identify whether participants were high gender stereotyped or low gender stereotyped; we used a “median split” based upon the number of “both” responses participants chose on the Activities Scale of the OAT-AM to categorize participants as either low gender stereotyped or high gender stereotyped. If participants were above the median for the number of “both” responses chosen on the Activities OAT-AM scale, then they were classified as low gender stereotyped; if participants were below the median for the number of “both” responses chosen on the Activities OAT-AM scale, then they were classified as high gender stereotyped.

It was hypothesized that high gender stereotyped participants would provide ratings that were significantly lower for incongruent trait illustrations than congruent trait illustrations, whereas low gender stereotyped participants were not expected to show this difference in mean ratings. Contrary to predictions, however, ratings did not vary by congruency in either participant group. The results indicate that the low gender stereotyped participants ($n = 67$) provided the following mean ratings for congruent and incongruent trait illustrations
respectively, \((M = 5.72, SD = 0.76; M = 5.89, SD = 0.71)\); the results indicate that the high
gender stereotyped participants \((n = 63)\) provided the following mean ratings for congruent and
incongruent trait illustrations respectively, \((M = 5.97, SD = 0.68; M = 5.92, SD = 0.65)\). The
results do not provide support for either of the hypotheses, \(p > .05\).

**Activities OAT-AM Participant “Both” Responses**

As shown in Table 4 and Figure F, female participants gave significantly more egalitarian
responses (“both”) than male participants on the Activities OAT-AM scale. On the Activities
OAT-AM scale, \(t (128) = 2.62, p < .05\). “Both” responses on the Activities Scale of the OAT-
AM are the egalitarian response; namely, an individual providing an egalitarian response would
pick the option that says, “Both Men and Women [should do a specified activity]” on the
Activities OAT-AM scale. Female participants \((n = 83)\) had a higher mean rating for “both”
responses on the Activities OAT-AM scale \((M = 10.83, SD = 5.34)\). Male participants \((n = 47)\)
had a lower mean rating for “both” responses on the Activities OAT-AM scale \((M = 8.32, SD =
5.08)\).

**Mean Ratings for Intended, Similar, and Unintended Pairs**

Further, the data showed that the trait stimuli were interpreted as illustrating the traits
they were intended to portray. The intended pairs (correct) received the highest ratings
\((M = 5.92, SD = 0.58)\). Similar pairs received ratings \((M = 3.90, SD = 0.73)\). As expected,
unintended pairs (wrong) received the lowest ratings \((M = 1.60, SD = 0.43)\). Refer to Table 2
and Figure E.
The purpose of this research is to contribute to our knowledge of how individuals perceive and understand traits depicted in images. In the pilot study, the trait illustrations that received the highest mean ratings for effectively illustrating the traits they were intended to portray in conjunction with the strongest ratings for stereotypically masculine, stereotypically feminine, and neutral traits were used in the main study. Overall, the results for the pilot study supported the effectiveness and comparability of the male and female trait illustrations—the images were equally effective regardless of the sex of the character depicting the intended trait. The scale employed in the second portion of the pilot study served to underscore which traits were characterized as stereotypically masculine, stereotypically feminine, and neutral by society according to our sample of participants.

In the main study, we did not find support for our overarching hypothesis: a significant interaction between type of participant (high vs. low gender stereotyped) and type of illustration (congruent or incongruent with cultural norms) was not found. Rather, we did not find significant differences between high gender stereotyped and low gender stereotyped individuals’ ratings for congruent and incongruent trait illustrations. The findings provide no evidence that the extent to which individuals are gender stereotyped influences their sensitivity to traits portrayed in images.

The findings of the main study are contrary to what previous research and theory would lead us to believe (Liben & Bigler, 2002). Perhaps the “median split” method inadequately identified high gender stereotyped and low gender stereotyped participants; for instance, a difference of one “both” response on the Activities OAT-AM scale could change whether a
participant was classified as high gender stereotyped or low gender stereotyped. It should be noted that the characters in the illustrations resembled elves, whereby both male and female characters wore comparable elf-like clothing—most often, the characters wore leaves at their waists that somewhat resembled skirts with shorts underneath; refer to Figure A1-A3. The characters wore elf-like clothing because we strove to make the male and female characters in the trait illustrations as comparable as possible with the exception of sex; therefore, elf-like attire enabled the illustrator to clothe both male and female characters in comparable attire. However, the elf-like skirts that the characters wore may potentially have influenced the results.

In addition, there was some variability in the age of the characters in the illustrations; for instance, some of the characters appeared to be young adults, while other resembled teenagers or children. Potentially, the variability in age of the characters could have influenced results. In future studies, it might be more effective to have more consistency in the age of characters across illustrations. Age is a potential factor that may influence individuals’ perception of traits; for example, for the portrayal of “smart,” would an elderly character wearing glasses and reading a book be given the same rating by an individual as a young character wearing glasses and reading a book?

Further, in some of the character illustrations the characters engaged in an activity to portray a trait; for example, to illustrate graceful the male and female characters depicting the trait were ballerinas and to illustrate tidy the male and female characters were cleaning a mirror. Does the stereotypical masculinity/femininity of the activity influence the perception of a trait displayed by both of the sexes? For instance, to illustrate tidy, would character illustrations of characters organizing their tools in a garage be rated comparably to characters cleaning dishes?
When creating trait illustrations whereby characters are engaging in an activity to depict a trait, the masculinity/femininity of the activity itself should also be taken into consideration.

The main study found that female participants gave significantly more egalitarian ("both men and women") responses than male participants on the Activities OAT-AM scale. More specifically, female participants gave a higher mean number of "both" responses on the Activities OAT-AM scale than male participants. Therefore, the results suggest that women held more egalitarian attitudes about activities than men. These results are consistent with past findings and research (Liben & Bigler, 2002). It should also be noted that there were almost twice as many females participating in the study as males; this may or may not have influenced the overall results.

The trait illustrations were validated such that the characters in the images effectively illustrate the traits they are intended to portray. The trait illustrations could be utilized in future studies and may potentially be useful educational materials for children. Best et al. (1977) used brief stories and human figure silhouettes as materials to investigate knowledge of sex-trait stereotypes in children. Best et al. (1977) found that children had knowledge of stereotypically masculine traits earlier than knowledge of stereotypically feminine traits and found evidence that children’s knowledge of stereotypically feminine traits increased between 5-8 years in age. The trait illustrations in the present study could potentially be employed or expanded upon in future research to further investigate children’s knowledge of stereotypically masculine and feminine traits.

In addition, investigators could explore whether there are gender differences among children with regard to the perception of traits depicted in images and the influence of gender
stereotypes on such perceptions in order to better understand how children process the images that are shown to them. More specifically, the present study could be extended to a child sample whereby the study would explore three main issues: 1) children’s ability to identify traits in images overall; 2) the manipulation of the sex of the character in the illustration and its impact (if any) on a child’s ability to identify traits in images; 3) the degree to which a child is gender stereotyped and whether it affects a child’s ability to identify traits in images.

Further investigations could employ the trait illustrations to assess the ability of children to identify traits in images and whether a child’s ability to identify traits in images is affected by the gender of the character enacting the trait in the image. For instance, can a child identify the trait of shyness equally well in both an image of a shy boy and in an image of a shy girl or do they identify the trait of shyness with more accuracy in the image of a shy girl because it is a stereotypically feminine trait? Another question that could be explored is whether the extent to which a child is gender stereotyped, namely the degree of a child’s sex typing of others, affects the accuracy with which he or she can identify traits in images. For instance, is a child who has high sex typing of others more readily able to recognize a stereotypically feminine trait, such as shyness, in an image in which a female is exemplifying the trait as opposed to a male?

In addition, investigators could examine whether children are more easily able to identify some traits better than others (e.g., positive traits vs. negative traits). Further, the trait illustrations utilized in the current study highlight an important question: Are children more easily able to identify the traits that are based upon one individual character's expression versus a character’s actions? For instance, potentially cheerful is easier to identify because it is more visual in the sense that it is an expression on a character's face; on the other hand, trait
illustrations with two or more characters or with characters performing a certain action (e.g. cleaning, pushing) may require a higher level of cognitive ability.

In fact, Hoffner and Cantor (1985) conducted a study where the appearance and behavior of the character were manipulated to determine the influence that these variables exerted on predictions for a given scenario [the sample was comprised of participants between the ages of 3-10]. The results indicated that as participant age increased, children’s sensitivity to the character’s appearance decreased and their sensitivity to the character’s behavior increased (Hoffner & Cantor, 1985). Research has provided evidence that younger children are more sensitive to highly salient features in a scenario or image, which can be characterized by the term “perceptible boundedness” or “perceptual dependency”—a character’s appearance is an example of an attribute that fits under the umbrella of perceptual dependency (Hoffner & Cantor, 1985; Nabi & Oliver, 2009).

Further, Hoffner and Badzinski (1989) investigated the influence of facial expressions and situational cues on children’s interpretation of the emotion being portrayed in a series of pictures; the researchers found that as the age of the child participants increased so did the influence of situational cues on their judgments of the characters’ emotional state in the pictures. The converse is true of their reliance on facial expressions. The tendency for children to integrate both facial expressions and situational cues increased with age [the researchers identified this in participants who were at least 8-9 years of age].

This research provides another piece of the puzzle that will contribute to our understanding of how individuals perceive and understand materials. On a larger scale, future research could explore individuals’ (adults and children alike) sensitivity to traits portrayed in
media-influenced images. Research has shown that children’s beliefs about what boys and girls “can” and “should” do exerts an influence on what children actually do (e.g., which educational and occupational pathways they pursue) (Liben & Bigler, 2002; Liben et al., 2001). Therefore, future research that investigates children’s sensitivity to the way males’ and females’ traits are portrayed in the media, coupled with measures that assess sex typing of the self and sex typing of others with regard to traits, will shed more light on how children’s beliefs about which traits boys and girls can and should demonstrate influence their developmental trajectory.
References


Male/Female Trait Illustrations paired with “Intended” Named Trait
FIGURE A1-A3.

FIGURE A1.
Stereotypically Feminine Traits

GRACEFUL

FUSSY
FIGURE A1. Continued

Stereotypically Feminine Traits

GENTLE

TIDY
FIGURE A1. Continued

Stereotypically Feminine Traits

CHEERFUL
FIGURE A2.
Stereotypically Masculine Traits

SHOW-OFF

RUDE
FIGURE A2. Continued

Stereotypically Masculine Traits

ROUGH

MESSY
FIGURE A2. Continued

Stereotypically Masculine Traits

COMPETITIVE
FIGURE A3.
Neutral Traits

CALM

SILLY
FIGURE A3. Continued

Neutral Traits

CLUMSY

GLOOMY
FIGURE A3. Continued

Neutral Traits

SMART
FIGURE B.

Trait Identification Scale

<table>
<thead>
<tr>
<th>How well does this character illustrate ______?</th>
<th>Not at all</th>
<th>Some</th>
<th>Very much</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
<td>3</td>
<td>5</td>
</tr>
</tbody>
</table>
FIGURE C.

E.g., Intended, Similar and Unintended Pairs
FIGURE D.
Activities Scale of OAT-AM (Liben & Bigler, 2002)

WHO SHOULD DO THESE ACTIVITIES?

Here is a list of activities. We want you to tell us if you think each activity should be done by men, by women, or by both men and women. There are no right or wrong answers. We just want to know who you think should do these activities. If you think it should be done by only men, circle 1; if you think it should be done by mostly men, some women, circle 2; if you think it should be done by both men and women, circle 3; if you think it should be done by mostly women, some men, circle 4; and if you think it should be done by only women, circle 5.

<table>
<thead>
<tr>
<th>WHO SHOULD:</th>
<th>Only Men</th>
<th>Mostly Men, Some Women</th>
<th>Both Men And Women</th>
<th>Mostly Women, Some Men</th>
<th>Only Women</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. fly a model plane</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>2. knit a sweater</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>3. sew from a pattern</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>4. go to the beach</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>5. wash clothes</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>6. fix a car</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>7. build with tools</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>8. play cards</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>9. shoot pool</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>10. ride a motorcycle</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>11. fix bicycles</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>12. do gymnastics</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>13. practice a musical instrument</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>14. read romance novels</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>15. practice martial arts</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>16. watch soap operas</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>17. babysit</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>18. shoot a bow and arrow</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>19. bake cookies</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>20. sketch (or design) clothes</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>21. grocery shop</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>22. draw (or design) cars</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>23. build model airplanes</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>24. sing in a choir</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>25. participate in political</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>activities</td>
<td></td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>
### TABLE 1.

Pilot Study Results: Validation of Trait Illustrations

<table>
<thead>
<tr>
<th>Description</th>
<th>N</th>
<th>Minimum</th>
<th>Maximum</th>
<th>Mean</th>
<th>Std. Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Illustrated Trait: Competitive</td>
<td>42</td>
<td>3</td>
<td>7</td>
<td>6.00</td>
<td>1.169</td>
</tr>
<tr>
<td>Illustrated Trait: Fussy</td>
<td>65</td>
<td>1</td>
<td>7</td>
<td>6.12</td>
<td>1.097</td>
</tr>
<tr>
<td>Illustrated Trait: Showoff</td>
<td>43</td>
<td>1</td>
<td>7</td>
<td>5.15</td>
<td>1.344</td>
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<tr>
<td>Illustrated Trait: Kind</td>
<td>65</td>
<td>1</td>
<td>7</td>
<td>6.11</td>
<td>1.611</td>
</tr>
<tr>
<td>Illustrated Trait: Generous</td>
<td>43</td>
<td>3</td>
<td>7</td>
<td>6.42</td>
<td>0.731</td>
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<tr>
<td>Illustrated Trait: Messy</td>
<td>65</td>
<td>3</td>
<td>7</td>
<td>6.43</td>
<td>0.665</td>
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<tr>
<td>Illustrated Trait: Tidy</td>
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<td>3</td>
<td>7</td>
<td>6.40</td>
<td>0.701</td>
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</table>

Mean ratings given by participants for male/female trait illustrations paired with intended trait.
TABLE 2.
Main Study Results: Mean Ratings for Intended (Correct), Similar, and Unintended (Wrong) pairs

<table>
<thead>
<tr>
<th>Descriptive Statistics</th>
<th>N</th>
<th>Minimum</th>
<th>Maximum</th>
<th>Mean</th>
<th>Std. Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>mean_correct</td>
<td>130</td>
<td>3.13</td>
<td>7.00</td>
<td>5.9242</td>
<td>.58093</td>
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<td>mean_wrong</td>
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<td>1.00</td>
<td>3.47</td>
<td>1.5981</td>
<td>.43079</td>
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<tr>
<td>mean_similar</td>
<td>130</td>
<td>2.15</td>
<td>6.07</td>
<td>3.0987</td>
<td>.73028</td>
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<tr>
<td>Valid N (listwise)</td>
<td>130</td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

(Refer to Figure E. for bar graph of descriptive statistics)
Validation of trait illustrations: intended pairs received higher ratings.
TABLE 3.
Results for High Stereotyped/Low Stereotyped Ratings for Congruent (Matched) vs. Incongruent (Mismatched) Items

<table>
<thead>
<tr>
<th>Value Label</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>percente of both responses masc fem</td>
<td>2</td>
</tr>
<tr>
<td>high stereotype</td>
<td>63</td>
</tr>
<tr>
<td>low stereotype</td>
<td>57</td>
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</tbody>
</table>

Descriptive Statistics

<table>
<thead>
<tr>
<th>Percente Group of...</th>
<th>Standard Deviation</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>matched_trait masc fem</td>
<td>high stereotype</td>
<td>5.9712</td>
</tr>
<tr>
<td></td>
<td>low stereotype</td>
<td>5.7164</td>
</tr>
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<td></td>
<td>Total</td>
<td>5.8389</td>
</tr>
<tr>
<td>mismatched_trait masc fem</td>
<td>high stereotype</td>
<td>5.9161</td>
</tr>
<tr>
<td></td>
<td>low stereotype</td>
<td>5.8605</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>5.9029</td>
</tr>
</tbody>
</table>

Multivariate Tests b

<table>
<thead>
<tr>
<th>Effect</th>
<th>Value</th>
<th>F</th>
<th>Hypothesis df</th>
<th>Error df</th>
<th>Sig.</th>
</tr>
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<tr>
<td>match</td>
<td>Pillai's Trace</td>
<td>.006</td>
<td>.788*</td>
<td>1.000</td>
<td>128.000</td>
</tr>
<tr>
<td></td>
<td>Wilks' Lambda</td>
<td>.994</td>
<td>.788*</td>
<td>1.000</td>
<td>128.000</td>
</tr>
<tr>
<td></td>
<td>Hotelling's Trace</td>
<td>.006</td>
<td>.788*</td>
<td>1.000</td>
<td>128.000</td>
</tr>
<tr>
<td></td>
<td>Roy's Largest Root</td>
<td>.006</td>
<td>.788*</td>
<td>1.000</td>
<td>128.000</td>
</tr>
<tr>
<td>match* Nboth re STEREOTYPE_ GROUP</td>
<td>Pillai's Trace</td>
<td>.022</td>
<td>2.918*</td>
<td>1.000</td>
<td>128.000</td>
</tr>
<tr>
<td></td>
<td>Wilks' Lambda</td>
<td>.978</td>
<td>2.918*</td>
<td>1.000</td>
<td>128.000</td>
</tr>
<tr>
<td></td>
<td>Hotelling's Trace</td>
<td>.023</td>
<td>2.918*</td>
<td>1.000</td>
<td>128.000</td>
</tr>
<tr>
<td></td>
<td>Roy's Largest Root</td>
<td>.023</td>
<td>2.918*</td>
<td>1.000</td>
<td>128.000</td>
</tr>
</tbody>
</table>

* Exact statistic
TABLE 4.
OAT-AM Participant “Both” Responses

T-Test

(Refer to Figure F. for chart for bar graph)
Female participants gave significantly more egalitarian responses than male participants on the Activities OAT-AM scale.
ACADEMIC VITA of Gena L. Robinson
genar22@aol.com

Education:
The Pennsylvania State University, Schreyer Honors College, Spring 2011
Bachelor of Science Degree in Psychology with Honors
Minor in Business and the Liberal Arts
Thesis Title: Adults’ Sensitivity to Traits Exhibited by Male and Female Character Illustrations
Thesis Supervisor: Lynn S. Liben

Related Experience:
Research Assistant/Thesis Researcher at the Cognitive and Social Development Laboratory
Supervisor: Lynn S. Liben
Fall 2008- Spring 2011

Presented Thesis Research at Penn State’s 2010 Undergraduate Exhibition

Honors/Awards:
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Phi Beta Kappa
Charles N. Cofer Memorial Award in Psychology
Penn State Alumni Association Scholarship, Bucks County Chapter
College of the Liberal Arts Enrichment Award
Evan Pugh Scholar Award, Senior; Evan Pugh Scholar Award, Junior; President Sparks Award; President’s Freshmen Award
Phi Beta Kappa Thesis Research Grant for the College of the Liberal Arts
Costello Family Scholarship in Psychology
Schreyer Honors College Research Scholarship
The College of the Liberal Arts - Certificate in Recognition of Superior Academic Achievement