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SPONTANEOUS GENDER-STEREOTYPICAL CATEGORIZATION OF TRAIT LABELS AND JOB LABELS

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ABSTRACT

Do people spontaneously categorize stereotypically masculine and stereotypically feminine trait and job labels according to gender even when the task at hand has nothing to do with gender? The present experiment provided a methodologically stringent test of such spontaneous gender-stereotypical categorization using a modification of a semantic priming task. Participants made name/no name judgments for targets that included nonsensical letter strings as well as male and female first names. Half of the first names in each gender category were selected to indicate members of participants' own generation (Younger Generation names) and the other half were

selected to indicate members of an older generation (Older Generation names). Each target was preceded by a prime (trait label or a job label) that was either stereotypically masculine, stereotypically feminine, or neutral. Participants' processing goals were manipulated by adding a secondary task that either did or did not require semantic processing of primes. The results provided evidence of spontaneous gender-stereotypical categorization of trait labels and job labels, particularly when Older Generation names were used as targets. The effects occurred regardless of the processing goals.

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INTRODUCTION

A central aspect of gender stereotyping is that perceivers learn to associate various person attributes such as personality characteristics, roles, or job titles with being either a male or a female. Of course, some characteristics are gender-related by definition (e.g., being a mother or a father). More interestingly, other characteristics that perceivers associate with gender are not definitionally related and thus their relationship with gender is not inevitable but rather is probabilistic at best. Thus perceivers may associate assertiveness, competitiveness, or working as a physician with the male gender and nurturance, flirtatiousness, or working as a nurse with the female gender even though no logical contradiction exist between assertiveness, competitiveness or working as a physician and being a female or between nurturance, flirtatiousness, or working as a nurse and being a male.

It is often assumed that social stereotypes, including gender stereotypes, can be activated spontaneously (automatically), regardless of intentions and goals of the perceiver, simply as a result of coming into contact with a stereotype-related concept, person, or object (cf., Bargh 1989, 1999). Considerable empirical evidence for the spontaneous activation of social stereotypes, including stereotypes that are gender-related, has been accumulated during the last decade (see, Bodenhausen & Macrae 1998; Fiske 1998; Hilton & von Hippel 1996; Kunda 1999, for recent reviews). However such evidence, is limited almost entirely to instances when the process is triggered by exposure to stimuli that are related to gender definitionally and unequivocally such as unambiguous photographs of a male or of a female targets or gender-specific first names. Research on the spontaneous gender- stereotypical categorization by Banaji and her associates (Banaji & Hardin 1996; Blair & Banaji 1996), in which not all stimuli were definitionally related, constitutes a notable exception.

In their research on gender- stereotypical categorization Banaji & Hardin, (1996) and Blair & Banaji, (1996) utilized a modification of the semantic priming paradigm (Meyer & Schvaneveldt 1971; Neely 1976). The paradigm is based on the notion that when two words are presented in close succession, judgments regarding the second word (target) are facilitated if the first word (prime) share membership in the same semantic category. Banaji and associates (Banaji & Hardin 1996; Blair & Banaji 1996) found that participants who were exposed to gender-related primes were faster at making subsequent judgments about gender-specific targets (first names and personal pronouns) when prime and target were gender-congruent. In particular, after being presented with feminine primes, (e.g., mother, nurse, or gentle) participants responded relatively faster to feminine targets, (e.g., she, her, or Mary) than to masculine targets, (e.g., he, him, or

John). Conversely, participants responded relatively faster to masculine targets, after being exposed to masculine primes (e.g., father, farmer, or decisive).

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It should be noted that the experimental task employed in all but one of these experiments involved repeated, explicit references to gender categorization. Specifically, the experimental task called for judgments of whether the target word (a personal pronoun or a first name) was masculine or feminine. In essence, the task repeatedly primed categorization based on gender. In the only experiment that did not explicitly call for such categorization (Banaji and Hardin 1996, Experiment 2), participants were simply asked whether the target word was a pronoun. This more stringent test of the spontaneous gender-stereotypical categorization hypothesis produced unequivocal results when primes were related to gender by definition (e.g., mother, waiter). However, for stereotypical primes that were not related to gender by definition (e.g., mechanic, nurse, assertive, nurturant), the results of the stringent test were inconclusive. This pattern of results limits theoretical and practical relevance of the findings presented leaving open the possibility that the effect occurs only for stimuli that are gender-related by definition or under conditions involving repeated and explicit references to gender.

Another potential limitation of these experiments (Banaji & Hardin 1996; Blair & Banaji 1996) was that participants were simply told to ignore the "irrelevant" initial (priming) stimulus. Such instructions might have made participants' behavior susceptible to demand characteristics although, to be fair, the authors did find that participants who acknowledged that they noticed the nature of the relationship between primes and targets (about two-thirds of participants did), performed similarly to those who did not. This finding lessens the concern about demand characteristics but it does not eliminate it completely. Given the highly transparent nature of the priming manipulation, it is possible that participants who denied their awareness of the relationship were simply reluctant to deliver the bad news to the experimenter.

The present experiment was designed to offer a stringent test of the spontaneous gender-stereotypical categorization hypothesis. In our procedure, none of the primes were definitionally related to gender, the experimental procedure involved no explicit references to gender-based categorization, and no obvious demand characteristics were present. Instead of de-emphasizing the importance of the priming stimulus by asking participants to ignore it, our experimental procedure encouraged respondents to pay close attention to the prime by adding a prime judgment task. The prime judgment task provided a convenient cover story and a disguise for the connection between prime and target, thus eliminating (or reducing) demand characteristics. In addition, varying the nature of this task provided an opportunity to manipulate the Participants' processing goals. In the present experiment, this was done by requiring subjects to answer prime-related questions that either did or did not call for the semantic processing of the priming stimuli. Because gender-stereotypical categorization is a semantic process, an experimental task requiring semantic processing of information could be more conducive to gender-stereotypical categorization than a structural (non-semantic) judgment task. By the same token, structural judgment task provides an even more stringent test of the spontaneous gender-stereotypical categorization hypothesis.

An additional goal of the present experiment was to explore the possibility that spontaneous gender-stereotypical categorization occurs within a context that is generation-specific. Specifically, we wanted to test the prediction that evidence of gender-stereotypical categorization will be less strong for experimental targets consisting of male and female first names that participants associate with members of their own generation than for experimental targets consisting of names that they associate with members of an older generation. This prediction is consistent with findings that in activating stereotypes perceivers often distinguish between subtypes within the broader categories determined by gender (Clifton, McGrath & Wick 1976; Coats & Smith 1999; Deaux, Winton, Crowley & Lewis 1985; Eckes 1994) and that, in general, stereotypes are applied more readily to members of out-groups (cf., Fiske 1998). Furthermore it is suggested by previous research on perceived (if not always real) cross-generation differences in sex-typing. For instance, college students tend to perceive their parents as more stereotypically sex-typed compared to both students' self-perceptions and parents' self-perceptions (Karylowski & Bergeron 1989; see also Morgan 1998; Shebloski & Gibbons 1998 for similar results).

METHOD

Participants

Thirty-one undergraduates (12 men and 19 women) participated in the study in exchange for extra-credit.

Procedure

Participants were tested in individual rooms. They were informed that the experiment concerned short-term memory for social stimuli and that "we wanted to create a situation that required people to do two things at once."

The experiment consisted of 312 total trials, the first 24 of which were practice trials. For each trial, the initial stimulus was a "+" fixation mark lasting 1000 ms, immediately followed by a prime (trait or job) displayed for 200 ms. Next, an "*" fixation mark appeared for 2000 ms, immediately followed by the target (first name or a meaningless letter array) with the question, "Is this a name?" simultaneously appearing above the target. Thus, the interval between prime onset and target onset (SOA) was 2200 ms¹. Participants responded by pressing the YES button or the NO button on a response box. If the appropriate button was pressed, a "Correct Response" message flashed on the screen. If the wrong button was pressed or if the participant failed to respond within 1500 ms of target presentation, an "Incorrect Response" message flashed, accompanied by a tone². Next, a question about the priming stimulus was presented. Participants in the structural task condition (N=16) were asked whether a particular letter appeared in the prime (e.g., "Did the initial word have the letter 'p'?"). Participants in the semantic task condition (N=15) were asked whether the prime was semantically related to a different word (e.g., "Was the initial word related to 'happy'?"). Once again, if the appropriate button was pressed, a "Correct Response" message flashed. If the wrong button was pressed, an "Incorrect Response" message flashed, accompanied by a tone (note that questions about primes were asked simply to provide justification for the presentation of primes and as means of manipulating processing goals). The initial fixation stimulus, the prime, and the question about the prime all

appeared in white against a black background. The second fixation stimulus and the target appeared in yellow against a black background.

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Forty-eight primes (24 trait labels and 24 job labels) and 48 targets (24 first names and 24 meaningless letter strings) were used. The primes were evenly divided between stereotypically masculine, stereotypically feminine, and gender-neutral traits and professions (8 primes in each of the six categories)². Twenty-four first names that served as diagnostic targets were evenly divided into four categories based on gender (male or female names) and on generation (younger-generation names and older-generation names)³. Twenty-four nonsensical, pronounceable letter arrays that structurally resembled English words served as distracter targets. (Each of the distracters was assembled by scrambling letters from a different name-target). The words used in the semantic prime judgment questions were similes of the traits used as primes and objects commonly used in the professions used as primes. The letters used in the structural prime judgment questions were systematically selected so that the letter might appear anywhere in the priming word.

The 288 diagnostic trials were divided into 6 blocks with 48 trials in each block. An additional set of primes and targets was used in the practice trials. Each diagnostic block included all 48 combinations of the within-subject design. Furthermore, each prime and each target appeared in each block only once and any given target appeared in each block with a different type of prime. The prime/target pairings used in each block and the order of the blocks was the same for each subject. The order of trials within each block was randomized separately for each participant.

RESULTS

None of the participants revealed an awareness of experimental hypotheses during debriefing. This suggests that our cover story was effective in disguising any connection between primes and targets. One participant was replaced because of a chance-level accuracy of the name/no name judgments.

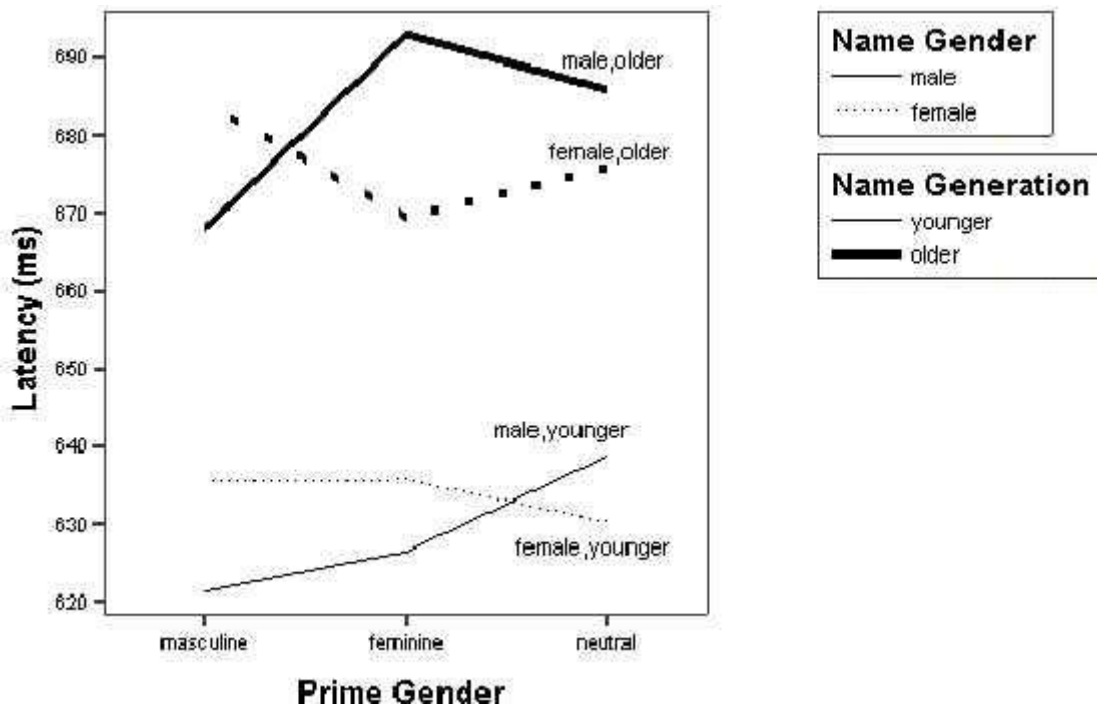
Latencies of the name/no-name judgments for trials in which actual names were presented constituted the measure of interest. On average, participants failed to respond within the prescribed time limit of 1500 ms in 1.7% of such trials. In addition, latencies shorter than 350 ms (.8%) were considered invalid and were excluded from the analysis. Finally, latencies associated with incorrect name/no name judgments (4.2%) were also excluded. To increase stability, the remaining reaction times were averaged within each participant and within the 24 combinations of the Prime Type (job or trait) x Prime Gender (stereotypically masculine, stereotypically feminine, or neutral primes) x Name Gender (male or female names) x Name Generation (names indicating younger generation and names indicating older generation) portion of the design.

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A 2 (Prime Type) x 3 (Prime Gender) x 2 (Name Gender) x 2 (Name Generation) x 2 (Task) x 2 (Sex of the Participant) Analysis of Variance with the first four variables as within-subject revealed a significant two-way interaction between gender of prime and gender of name, $F(2, 26) = 3.59, p < .05$. Furthermore, the specific interaction between masculine prime versus feminine prime contrast on one hand and name gender on the other was also significant, $F(1, 27) = 6.17, p < .02$. The pattern of results underlying this interaction was consistent with the gender-categorization hypothesis. Specifically, male names were recognized marginally faster when preceded by masculine primes (stereotypically masculine job or trait labels), $M = 647$ ms, than when preceded by feminine primes, $M = 661$ ms, $F(1, 27) = 2.90, p < .1$. On the other hand, female names were recognized somewhat faster when preceded by feminine primes (stereotypically feminine job or trait labels), $M = 655$ ms, than when preceded by masculine primes, $M = 669$ ms, $F(1, 27) = 2.86, p < .11$.

Figure 1. Latencies on Name/No Name Judgments Depending on Prime Gender, Name Gender, and Name Generation



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The omnibus Prime Gender x Name Gender interaction was not modified by any higher order interaction, except for the predicted Prime Gender x Name Gender x Name Generation interaction which was marginally significant, $F(2, 26) = 2.68, p < .09$. Consistent with our predictions, the two-way simple interaction between prime gender and name gender was significant in the case of older-generation names, $F(2, 26) = 4.39, p < .05$. but not in the case of younger-generation names, $F(2, 26) = 2.17, n.s.$ Similarly, the interaction between masculine prime versus feminine prime contrast, on one hand, and name gender, on the other, was

significant in the case of older-generation names, $F(1, 27) = 5.67, p < .05$, but not in the case of younger-generation names, $F(1, 27) < 1, n.s.$

As presented in Figure 1, the pattern of means for the older-generation names was consistent with the hypothesis of spontaneous gender-stereotypical categorization. Specifically, male names were recognized significantly faster when preceded by masculine primes, than when preceded by feminine primes, $F(1, 27) = 5.32, p < .05$, whereas female names were recognized marginally faster when preceded by feminine primes, than when preceded by masculine primes, $F(1, 27) = 3.87, p < .06$. In both cases, gender-neutral primes resulted in mean latencies that were somewhere between mean latencies associated with stereotypically masculine primes and those associated with stereotypically feminine primes.

Another effect revealed in Figure 1 is that, overall, participants reacted faster to younger-generation names than to older-generation names, $F(1, 27) = 81.60, p < .001$. Interpretation of this effect is difficult because the distinction between younger-generation and older-generation names is inherently confounded (names in the two sets might have differed with respect to a number of other characteristics, e.g., familiarity). Nevertheless, it should be noted that, because the younger-generation names were selected to denote membership in the participants' own generation, the effect is consistent with the notion that processing social information associated with ingroup members is more efficient than processing such information associated with outgroup members (Brigham & Berkowitz 1978; Zarate & Smith 1990). Another finding consistent with that notion (and less susceptible to alternative interpretations) is a significant two-way interaction between participant's sex and name gender, $F(1, 27) = 19.88, p < .001$. Overall, male participants reacted faster to male names, $M = 657$ ms than to female names, $M = 680$ ms, $F(1, 10) = 12.96, p < .005$; however, female participants reacted faster to female names, $M = 642$ ms, than to male names, $M = 657$ ms, $F(1, 17) = 7.88, p < .02$.

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DISCUSSION

As predicted, participants were faster at identifying male and female names when the names were preceded by matched stereotypical stimuli than by mismatched stereotypical stimuli. This effect was not dependent upon whether the priming stimuli were occupations or traits, and occurred regardless of whether the processing goals did or did not require semantic processing. The results also show that, as hypothesized, faster identification of male and female names following matched stereotypical primes occurred primarily when the names were more typical of a person from an older generation.

Our finding that gender-stereotypical categorization occurs also for stimuli that are not gender-related by definition constitutes an important extension of research by Banaji and her associates (Banaji & Hardin 1996; Blair & Banaji 1996). Because associations between stimuli that are related by definition (e.g., associating being a mother with being a female) are always accurate, activating such associations will not, by itself, lead to biased perceptions. It is when we activate

associations between characteristics that are not related by definition (e.g., associating being emotional with being a female) that such stereotypically biased perceptions will occur.

We believe that by using an experimental task not involving explicit references to gender categorization, by excluding primes related to gender by definition, and by providing subjects with a believable cover story, the present experiment offers a more stringent test of the spontaneous gender stereotyping hypothesis than was possible in previous research. However, one potential weakness of the present experiment is that the findings were obtained using presentations of primes and targets that were separated by a relatively long time interval (SOA = 2200 ms). In contrast, Banaji and her associates (Banaji & Hardin 1996; Blair & Banaji 1996) used SOA intervals as short as 250 ms⁴. Even though, in general, semantic priming effects obtained using shorter intervals provide a more unequivocal indication of the automaticity of such effects (Neely 1976), recent research in cognitive neuropsychology in which event-related potentials associated with automatic semantic priming were measured indicates that such effects remain for periods longer than two seconds (Deacon, D, Uhm, T., Ritter, W., Hewitt, S. & Dynowska, A. 1999). In addition, because the experimental task had ostensibly nothing to do with gender-categorization or gender stereotypes, it is highly unlikely that the effects obtained in the present experiment might have been due to subjects' strategic efforts (cf., Bargh 1989, 1994).

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Overall, our findings support the notion of spontaneous gender-stereotypical categorization of traditionally feminine and traditionally masculine trait labels and job labels (cf., Banaji & Hardin 1996; Blair & Banaji 1996) and are consistent with a broader idea of gender as a basis for social categorization (Brewer & Lui 1988; Karylowski, Konarzewski & Motes 2000; Zarate & Smith 1992). However they also suggest that spontaneous gender-stereotypical categorization is sensitive to a generational context, specifically, that it occurs primarily for targets associated with members of an older generation. This last finding is consistent both with the notion that perceivers often distinguish sub-types within more general social categories, including gender (Clifton, McGrath & Wick 1976; Coats & Smith 1999; Deaux, Winton, Crowley & Lewis 1985; Eckes 1994) and with the notion that stereotypes are more readily applied to members of out-groups than to members of our own group (cf., Fiske 1998).

FOOTNOTES

1. The reason for providing Participants with feedback was to increase their motivation to avoid errors.
2. The primes were selected from a larger pool of trait labels and job labels based on results of a preliminary study conducted on a separate undergraduate sample (N=60). Participants in that study made judgments of conditional probabilities that a person characterized by a particular trait or employed a in particular job is a male or a female. The Bem Sex Role Inventory (Bem 1974) was used as a primary source of trait labels that were included in the initial pool.

3. The names were selected from a larger pool based on results of another preliminary study in which undergraduates (N=21) judged first names in terms of each name's association with either current the college-age generation or with the generation of their grandparents. The authors wish to thank Tony Greenwald for providing us with many names included in the initial pool.

4. In an earlier experiment Karylowski, Wallace, Motes, Eicher & Van Liempd (1997, 1999), failed to find gender-stereotypical categorization effects for SOA=400 ms, even though the effects occurred for SOA=2200 ms.

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APPENDIX A

Trait labels, job labels, and first names used in the experiment:

Masculine Trait Labels:	aggressive, athletic, competitive, daring, dominant, forceful, powerful, strong
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Feminine Trait Labels:	affectionate, compassionate, emotional, flatterable, gentle, nurturing, sympathetic, tender
Gender-Neutral Trait Labels:	adaptable, conventional, jealous, likable, secretive, tactful, theatrical, truthful
Masculine Job Labels:	blacksmith, carpenter, clergy, electrician, engineer, farmer, mechanic, soldier
Feminine Job Labels:	florist, homemaker, maid, model, nurse, receptionist, secretary, typist
Gender-Neutral Job Labels:	accountant, administrator, advertiser, artist, cook, editor, realtor, salesperson
Younger Generation Male Names:	Brad, Brandon, Eric, Jason, Kevin, Travis
Younger Generation Female Names:	Cindy, Jasmine, Jennifer, Jessica, Kristy, Lisa
Older Generation Male Names:	Edgar, Elmer, Eugene, Irvin, Vernon, Wilbert
Older Generation Female Names:	Agnes, Emma, Ethel, Gladys, Lucille, Ruth

AUTHORS' NOTE

This research was originally presented at the 108th Annual Convention of the American Psychological Association, Washington, DC, August 2000. Send correspondence to Jerzy J. Karylowski, Department of Psychology, University of North Florida, 4567 St. Johns Bluff Road, South, Jacksonville, FL 32224-2645; electronic mail: jurek@unf.edu.

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Heather A. Harckom, Eric M. Hewlett, Stacy L. Maclean, John L. Parretta, and Cherin L. Vaswani were enrolled in Dr. Karylowski's undergraduate Computer Applications in Psychological Research class at the University of North Florida in the Spring of 1999.

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