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# The complex interplay between semantics and grammar in impression formation ☆

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ABSTRACT

We sought to bridge findings showing that (a) describing a person's behavior with the perfective verb aspect (*did*), compared to the imperfective aspect (*was doing*), increases processing of semantic knowledge unrelated to the target's action such as stereotypes and (b) an increased recognition of stereotypical thoughts often promotes a judgment correction for the stereotypes. We hypothesized an interplay between grammar (verb conjugation) and semantic information (gender) in impression-formation. Participants read a resume, attributed to a male or female, for a traditionally masculine job. When the resume was written in the imperfective, people rated a male (vs. female) more positively. When the resume was in the perfective, this pattern reversed. Only these latter effects of gender were influenced by cognitive load. Further, people more quickly indicated the applicant's gender in the perfective condition, suggesting an enhanced focus on gender during processing.

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## 1. Introduction

People's impressions of others can be influenced by the language used to describe others' behavior. For example, semantic features of verbal descriptions, such as information on a person's gender, can activate stereotypes that shape impressions (Bargh, 1999; Duncan, 1976). Also, grammatical features of verbal descriptions, such as verb conjugation, can highlight different features of an event to influence impressions (Fausey & Matlock, 2011; Hart & Albarracin, 2011). Research in impression formation has generally focused on the independent effects of semantic and grammatical features, neglecting their interdependence. As semantic and grammatical cues are presumed to operate interdependently in language comprehension (Au, 1986; Corrigan, 1988; Johnson-Laird, 1983; Zwaan & Radvansky, 1998), it is reasonable to test for their interdependence in impression formation. The current research tests how semantic (gender-category labels) and grammatical (verb conjugation) features of descriptions interact to affect impression formation.

Verb aspect is one type of verb-conjugation device. Linguists and psychologists typically distinguish between the imperfective and perfective verb aspects (Comrie, 1976). The *imperfective* ("Anna *was supervising* employees") represents a behavior as unfolding, whereas the *perfective* ("Anna *supervised* employees") represents a behavior as completed (Magliano & Schleich, 2000). In one study (Madden & Zwaan, 2003), participants read actions conveyed in an imperfective or perfective aspect and then

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selected pictures showing ongoing or completed actions. After reading imperfective descriptions, participants were more likely to choose pictures showing ongoing than completed actions.

Other research suggests that using the perfective aspect reduces focus on the action in the event, allowing for enhanced focus on other types of goal-relevant information (Salomon, Magliano, & Radvansky, 2013). In one study (Salomon et al., 2013), participants were asked to solve riddles written in either the perfective or imperfective aspect. When solutions required considering gender stereotypes, perfective (vs. imperfective) descriptions of the riddle enhanced solution rates, because participants' focus was shifted away from ongoing actions in the riddle and toward other information (e.g., gender stereotypes) that facilitated solving the riddle.

These effects are intriguing in the context of impression-formation tasks. Consider the following scenario involving Carl. Carl is hiring for a corporate leadership position. Carl reviews resumes containing an applicant's gendered name (e.g., "John" vs. "Jane") alongside work-related experiences/accomplishments. Although Carl intends to be fair, he could fail to consider gender stereotypes as a source of bias (Wilson & Brekke, 1994) and show a stereotypical preference for males (Eagly & Karau, 2002). However, if Carl considers gender stereotypes during processing, he is in a position to indicate an egalitarian judgment. Research shows that people will "correct" their judgments for presumed biases, such as stereotypes, when these biases are considered during processing (Martin, 1986). Judgment correction requires cognitive capacity and can reduce or reverse the implications of a bias (Martin, 1986). In one study (Higgins & King, 1981), participants' descriptions of women and men were less stereotypical when they were led to consider gender stereotypes.

For Carl's task, gender *could* be considered as a source of bias. The verb aspect applied to work-related behaviors may influence whether gender is considered. If work-related behaviors are written in the imperfective aspect, Carl's attention should be drawn to the action-relevant details in the resume, reducing his likelihood of considering other information pertinent to his goal to be fair, such as gender bias. If work-related behaviors are written in the perfective aspect, Carl's attention could be more freely directed to other sorts of knowledge pertinent to the task, such as gender stereotypes as a potential bias. As a result, Carl should be more likely to engage in judgment correction for gender bias.

In Experiment 1, participants were introduced to a task on accuracy and fairness in hiring decisions. Participants reviewed a resume for a leadership position and evaluated the applicant's employability. The resumes varied along two features: the applicant's gender and aspect used to describe employment behaviors. Because research shows that men are perceived as more suitable for leadership positions (Eagly & Karau, 2002; Guadagno & Cialdini, 2007), we predicted that resumes attributed to men would be rated more favorably. However, we expected that this gender bias would be *less* apparent in the perfective condition. Experiment 2 assessed two additional hypotheses. First, it assessed whether participants would be faster to indicate applicant gender in the perfective (vs. imperfective) condition, suggesting enhanced focus on gender information during processing. Second, it examined whether the effect of applicant gender in the perfective condition was dependent on cognitive capacity – a prerequisite for judgment correction.[1]

## 2. Experiment 1

### 2.1. Method

One hundred sixty-nine undergraduates (141 women) completed the study via computer. Participants were introduced to a study on fairness in hiring. They took the perspective of an executive hiring for a managerial position. Participants read an applicant's resume (Fig. 1) that portrayed the applicant as qualified. Participants were randomly assigned to one of four conditions, created by crossing aspect (perfective vs. imperfective) with the applicant's gender (male vs. female). To manipulate gender, the resumes were attributed to "John" (male) or "Jane" (female). To manipulate aspect, work behaviors were described in the perfective or imperfective.

Next, participants rated the applicant's employability by responding to six questions on appropriately labeled 1–7 scales (e.g., "How qualified do you think the applicant is for the manager position?"). Responses were averaged into an employability index (alpha = 0.88). Next, participants reported the gender of the applicant; 14 participants[2] replied incorrectly. To maintain validity, these participants were excluded from the analysis. Participants then completed demographics and a funnel debriefing. No participant expressed awareness of the experiment's purpose for either experiment.

### 2.2. Results

The employability index was submitted to a 2 (applicant gender) × 2 (verb aspect) ANOVA. This analysis

[1] Central to our proposal is (a) participants are aware that gender is a source of employment bias and (b) when motivated by fairness, participants will try to avoid gender bias. Fifty-three undergraduates were given a six-item survey. Participants used 1 (*Completely Disagree*) to 9 (*Completely Agree*) scales to respond to four prompts assessing their beliefs about gender bias (e.g., *"There is a stereotype that males make better corporate leaders than females."*). Responses were averaged into a "gender-bias awareness" index (alpha = 0.75). Participants used a 1 (*Not at All*) to 9 (*Completely*) in response to two prompts about whether they would try to avoid gender bias (e.g., "*If I were in charge of making hiring decisions, I would try to avoid letting gender bias influence my decision.*"). The items were related ($r = 0.49$, $p < .00$) and were averaged into a "desire to avoid gender bias" index.The indices were individually submitted to a one-sample *t*-test with the midpoint of the scale (*5*) serving as the test value. For the awareness index, responses fell significantly higher than the midpoint suggesting participants believe gender bias exists ($M = 7.32$, $SD = 1.20$), $t(53) = 14.10$, $p < .01$. For the "desire to avoid gender bias" index, responses fell significantly higher than the midpoint suggesting a desire to avoid gender bias ($M = 7.67$, $SD = 1.52$), $t(53) = 12.80$, $p < .001$. Participants were aware of gender bias and expressed a desire to avoid this bias.

[2] Of these participants, seven were from the male-applicant and seven were from the female-applicant conditions; seven were removed from the imperfective and seven were removed from the perfective conditions.

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