When a product takes on characteristics of the person who created it: Sometimes it sounds sweeter

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Abstract

We investigated when consumers’ judgments about a product reflect information about its product source (the person who creates the product). Three experiments manipulated congruence between the source’s gender and the gender-typing of the source’s product. When congruent with expectations (a male conductor played male-typed music), pre-trial source information had the same effect on post-trial product judgments as when source information was absent. Incongruence (a female conductor played male-typed music) distorted product attribute judgments when the source’s competence was questioned. Her music was judged to be more delicate, less powerful and worse quality than his. This process of product experience being assimilated into incompetence stereotypes required minimal cognitive resources. When the incongruent source was undoubtedly competent, the amount of experiential evidence about an attribute influenced distortion. Consumers judged powerful music as powerful regardless of conductor gender, but, lacking much evidence about its delicacy, judged hers as more delicate than his. The selective effect of source gender information reflects consumers’ cognitively effortful hypothesis testing of beliefs that gender expresses itself in a person’s output against experiential evidence.

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Introduction

Consumer research has often investigated effects of information about a message source on consumers’ attitudes toward products. Less thoroughly examined is the effect of information about a product source on consumers’ judgments about products. By a product source, we mean a person who makes, designs, produces or creates a product (e.g., a musician whose performance sells tickets, a fashion designer whose drawings translate into apparel, a director who creates a film for a mass audience). Marketing messages often emphasize a product source’s characteristics to encourage product trial (e.g., describe a director’s competence and personal traits to encourage film-goers to see the director’s new film). Despite the pervasiveness of product source information in the marketplace, we know little about when even ordinary information about a source, such as the source’s gender, is so powerful that it influences product judgments after trial. When does source information override firsthand experience in influencing product judgments and when is source information ignored in favor of firsthand experience?

Social psychology research on attribution theory suggests that source effects on product judgments are quite powerful. People tend to make attributions for a person’s behavior to stable personality dispositions and to use those inferences to predict and describe subsequent behavior (Hamilton & Sherman, 1996). Even simple social category information, like a person’s gender, can lead a perceiver to infer a host of traits that can guide the prediction and interpretation of behavior (e.g., De Lisi & Soundranayagam, 1990). Whereas a man’s action is interpreted as demonstrating stereotypically masculine traits, a
woman’s action is interpreted as demonstrating stereotypically feminine traits (Eagly & Karau, 2002). Such person perception tendencies should be reflected in descriptions of the person’s behavior when that behavior is embodied in a product. Consumers should describe a male source’s product using more stereotypically male attributes than they do for her product, and describe a woman source’s product using more female-typed attributes than they do for his product.

Nevertheless, this literature may create a misleading impression about the importance of source information as compared to firsthand experience when judging products. Stereotyping studies almost always measure impressions of stimulus persons rather than of stimulus objects. In contrast, consumer psychology is more concerned with evaluations of the product than of the person who created the product. Judgments of a product can generally be made without knowing anything about the source. Information gained from firsthand product experience is particularly valued in product judgments, especially for products whose attributes are subjectively experienced (e.g., a candy bar’s crunchiness) (Wright & Lynch, 1995). It takes a highly credible message source to persuade someone to incorporate even explicit claims about experiential attributes into their product judgments (Jain & Posavac, 2001). If product source information can be shown to influence consumers’ post-trial judgments of sensory products, like music, then product source information would seem to be an important type of information for consumer psychologists to understand.

Although research has shown that many types of information, such as a product’s price and the firm’s profitability, can serve as cues for subsequent product evaluations (Cronley, Posavac, Meyer, Kardes, & Kellaris, 2005; Posavac, Herzenstein, Kardes, & Sundaram, 2010), consumer psychology has not addressed when and to what extent stereotypes about a product source influence post-trial judgments. Our research investigates when information about a product source’s gender affects a consumer’s post-trial judgments of a sensory product’s gender-typed attributes and perceptions of product quality. We identify conditions that lead source information (1) to be so potent as to override firsthand product experience, or (2) to have no effect on product judgments, meaning that judgments are the same as when consumers receive no source information at all. Further, we identify a third and novel effect. Source information will serve as a framework for making inferences about a particular source and for developing hypotheses about the kinds of attributes that will surface during trial of the source’s product.

Our theorizing identifies when information about a source influences consumers’ post-trial judgments of a product and the kinds of product attributes it influences. We focus on information about a source’s gender because many studies show the profound effect of social category information on person perception (Dunning & Sherman, 1997; Hilton & von Hippel, 1996). Compared to other social categories, gender is particularly powerful because of its visibility and its binary classification system (Brewer & Lui, 1989). A source’s gender can be communicated even when little other information about the source is offered (e.g., through a photo or a person’s name).

Further, more than many other human categories, people believe that deep, underlying properties account for gender differences. That is, people have a lay theory about an immutable, shared “essence” within each gender, which limits what a man or woman is like but also what he or she can become (Prentice & Miller, 2007). These beliefs about gender can serve as a framework for making inferences about a particular source and for developing hypotheses about the kinds of attributes that will surface during trial of the source’s product.

Consumers’ initial theories about product attributes can override firsthand evidence (Cronley et al., 2005; Hoch & Ha, 1986). Yet, consumers may sometimes focus on experiential evidence and dismiss their preconceptions. We advance the novel proposal that a consumer’s use of gender-based beliefs in post-trial product judgments varies depending on whether competency stereotypes seem applicable to a source. Differences in evidence for attributes (a product variable), as well as the cognitive resources involved in scrutinizing evidence (a consumer variable) moderate the source gender influence on judgments of the product’s gender-linked attributes.

**Gender-typed source characteristics expressed in product attributes**

People have strong beliefs about how men and women differ, which can influence their judgments about the kinds of product that a source will create. Merely knowing an actor’s gender can activate a rich cognitive network of traits associated with that gender (e.g., a perceiver associates being powerful with men more than women but associates being gentle with...
women more than men (De Lisi & Soundranayagam, 1990). Moreover, people seem to believe that these differences in traits are fundamental distinctions between the genders that act as causal forces shaping how a person behaves (Prentice & Miller, 2007). For example, because men are thought to be more powerful, they have the potential to express that powerfulness in their behavior more than women do. Consequently, consumers should expect a male source’s product to be more powerful than a woman’s product. Because women are thought to be more delicate, they have the potential to express that delicacy in their behavior more than men do. Consequently, consumers should expect a female source’s product to be more delicate than a male source’s product. In short, people expect that a male source’s product has attributes that are associated stereotypically with masculinity more than a woman source’s product, and that a woman source’s product has attributes that are associated more stereotypically with femininity than a male source’s product.

Source information that is generally consistent with expectations does not attract attention as much as firsthand product experience. For example, if a female musician plays male-typed music and is described as competent, consumers are unlikely to focus on source information while listening. Their judgments of her music are unlikely to differ from judgments of the same music when source information is absent. In contrast, expectancy inconsistent information attracts attention and is potentially more diagnostic for judgment (Feldman & Lynch, 1988). Further, expectancy inconsistent information prompts people to explain it and resolve the inconsistencies (Pyszczynski & Greenberg, 1981). The explanation a consumer generates provides the basis for the consumer’s expectations about the nature of the product experience.

Explaining incongruencies via inferences about incompetence

Consumers may explain the surprising fact that a male source created a product characterized by female-typed attributes or a female source created a product characterized by male-typed attributes fairly easily by inferring source incompetence. Gender-typed traits are thought to make a person more competent at some types of activities than others (Eagly & Karau, 2002). Men are thought to be more competent in a role that requires male-typed traits whereas women are thought to be more competent in a role that requires female-typed traits. Hence, a perceiver might explain a female source’s creation of a male-typed product by assuming that her product has fewer masculine and more feminine attributes, as well as being inferior in quality.

Previous research provides some support for this conjecture. When information about a person’s competence in a male-typed role is mixed (both positive and negative), people infer that a woman is less competent than a man (Brown & Geis, 1984). Presumably, people infer that she performs that role without the male-typed traits that would lead to competence and is hindered in her performance by her female-typed traits (Cejka & Eagly, 1999). When anticipating product trial, mixed valence information about a source’s competence should lead to expectations that her male-typed product is weaker in male-typed attributes than his, as well as that hers has more female-typed attributes than his.

These expectations should shape post-trial product judgments. Perceivers assimilate new information in a way that is consistent with strongly held stereotypes (Manis, Nelson, & Shedler, 1988). Such stereotypes increase encoding and retrieval of stereotype consistent information (Perdue & Gurtman, 1990). Assimilating information from product experience so that the product’s attributes are consistent with gender stereotypes helps the consumer maintain a unified and coherent impression of the person. Hence, incongruence between the source’s gender and the product’s gender-typing should lead to post-trial judgments that are distorted so that they are consistent with gender stereotypes about competencies. For example, a woman symphony conductor’s music that is characterized by male-typed attributes will be judged as weaker in male-typed attributes compared to his music and stronger in female-typed attributes, as well as inferior in quality.

Because these incompetence inferences derive from widely shared and well learned stereotypes that are likely to be implicitly held, they should require little effort to be activated and to be used to evaluate a product (Macrae, Milne, & Bodenhausen, 1994). Further, assimilation requires minimal cognitive resources (Martin, Seta, & Crelia, 1990). Even when cognitive resources are diverted to another task, post-trial product evaluations should reveal gender biases. A man’s product will be described using attributes associated with men more than for a woman’s product, and a woman’s product will be described using attributes associated with women more than for a man’s product, even if the consumer’s cognitive resources are constrained during trial.

**Hypothesis 1.** Mixed valence information about a source’s competency in a gender-typed domain leads to gender-typed inferences about the source’s product. When a product is characterized by stereotypically masculine attributes, consumers judge a woman’s product as being more deficient in masculine attributes than the man’s product and as having more feminine attributes than his product, as well as being inferior in quality. These effects occur regardless of constraints on the consumer’s cognitive resources.

**Difficulty in resolving incongruent information**

When information about a particular source is incongruent with the product’s gender typing and cannot be explained by incompetence stereotypes, the process underlying judgments and the judgments themselves are likely to be different. Mixed valence information about the source’s competence helps the consumer resolve incongruence between a source’s gender and a gender-typed product. In contrast, uniformly positive information about competency rules out that stereotype about incompetence and requires a different explanation. For example, when a woman in a male-dominated profession is described in glowing terms, stereotypes of incompetence do not apply to her. This kind of expectancy inconsistent information
is not as easily resolved and requires more elaboration by the consumer (Matta & Folkes, 2005).

Some theorists suggest that making salient diagnostic information about her competence leads the perceiver to abandon category-based inferences (Fiske & Neuberg, 1990). Once “decategorization” has occurred, the target is defined as an individual, which removes category-based biases in judgment. Studies examining inferences about person traits support this prediction (Hall & Crisp, 2005). Nevertheless, these studies may not have delved deeply enough to detect gender stereotype effects.

A wholesale abandonment of beliefs about gender-linked behavior may not occur. Perhaps incongruence between source gender and product type that cannot be explained with incompetence stereotype leads to the kind of active hypothesis testing during trial described by Hoch and Ha (1986). Rather than being an unbiased examination of information, such hypothesis testing involves searching for confirmatory evidence during product experience. Hence, consumers expect to find a male source creating a product with male-typed attributes and a female source creating a product with female-typed attributes. Nevertheless, an active hypothesis testing orientation should lead consumers to weigh experiential evidence heavily.

This means that the nature of the evidence increases in importance for judgment. Evidence ambiguity moderates confirmatory hypothesis testing. Unambiguous evidence against a hypothesis leads consumers to discard their initial beliefs (Hoch & Ha, 1986). Therefore, source gender information will fail to influence post-trial product judgments of obvious product attributes. For example, a woman symphony conductor’s music will be perceived as similarly powerful as a man’s music when the music itself is primarily powerful because its powerfulness is the predominant and obvious feature of the music.

However, disconfirming gender effects for one attribute does not mean that consumers abandon beliefs that the source’s gender influences the person’s output. Beliefs that gender distinctively influences behavior are fundamental (Prentice & Miller, 2007). The source’s gender will influence judgments of less obvious attributes because evidence about them is more ambiguous. For example, a woman symphony conductor’s music will be perceived as more delicate compared to a man’s music when the music itself is characterized as powerful because delicacy is both consistent with female stereotypes and evidence of it is less abundant. Hence, consumers retain their hypotheses about source effects, with the source’s gender affecting post-trial judgments of secondary (more ambiguous and less obvious) attributes but not of primary (less ambiguous and more obvious) product attributes.

An additional implication of consumers’ active hypothesis testing against product experience is that constraints on cognitive resources will reduce the effect of source information. Scrutinizing evidence while suppressing incompetency stereotypes consumes cognitive resources. If consumers have minimal cognitive resources during product trial, they are likely to simplify the judgment task by using less information. Simplification is more likely to involve ignoring complex source inferences than ignoring actual experience with the product. An active hypothesis testing orientation should place value on experience. Additionally, people prefer to use experiential evidence to evaluate subjective attributes (Wright & Lynch, 1995). Further, people are often reluctant to admit that stereotypes influence their judgments. This means that gender-typed inferences about secondary attributes that occur when cognitive resources are unconstrained should be reduced when cognitive resources are constrained. For example, a woman musician’s male-typed music will seem more delicate when resources are unconstrained than when constrained.

**Hypothesis 2.** When the source’s gender is incongruent with the product’s gender typing, consumers judge a product’s secondary attributes in gender-typed ways. They judge a female source’s product as having more of a female-typed attribute when the product’s dominant attribute is associated with men; they describe a male source’s product having more of a male-typed attribute when the product’s dominant attribute is associated with women. The source’s gender does not have a differential effect on judgments of the dominant attribute when the source’s competence is described in a uniformly positive way.

**Hypothesis 3.** Effects of source gender on the product’s secondary attributes are reduced when cognitive resources are constrained.

**Overview of the experiments**

We conducted three experiments to test our ideas about source effects on product judgments. All experiments presented participants with information about a male or female stimulus person (a symphony conductor) and collected post trial judgments about a sensory product (judgments about a piece of music’s attributes). The music was either male-typed (the dominant attributes were stereotypically male) or female-typed (the dominant attributes were stereotypically female). Nevertheless, the source’s occupation was stereotypically male-typed.

We chose to test our hypotheses about gender effects for gender-typed products in the context of a male-typed occupation to check for the possibility that effects due to gender-typing of an occupation override effects due to gender-typing of the product. Far more study has been directed toward investigating gender-typing in occupations as contrasted with gender-typing of products, and those studies do find strong gender stereotypes (e.g., Cejka & Eagly, 1999). Further, many of the occupations that consumers associate with being product sources (e.g., company CEO’s and founders) are the kinds of high status positions of leadership where people expect to find men and where they expect men to be more competent than women (Eagly & Karau, 2002).

Nevertheless, consumer psychology has found mixed evidence that consumers evaluate others differently depending on whether the person’s gender is consistent with occupational norms. On the one hand, Mohr and Henson (1996) found only mixed evidence that consumers evaluate service differently
depending on whether the service provider’s gender is congruent with the occupation’s gender-typing. On the other hand, Matta and Folkes (2005) found that service providers that were counter stereotypical for their occupation were evaluated more extremely (i.e., either more positively or more negatively) than those whose gender was stereotypical. Yet, when a product’s gender-typing and a role’s gender-typing conflict, consumers seem to weigh gender-typing of products more heavily so that these override their gender stereotypes for a role (Dholakia & Chiang, 2003). For example, even though the role of shopper is female-typed, consumers consider shopping for a technical product to be a male-typed activity. Hence, we varied the product’s gender-typing.

Study 1 tested Hypotheses 1–3 in a laboratory setting using students. Study 2 used a different product to test Hypotheses 2 and 3. Both studies used symphony music as the product experience, but the symphony music had different dominant or obvious attributes. The product in study 1 was characterized by male-typed attributes (e.g., was primarily powerful rather than delicate) and in study 2 was characterized by female-typed attributes (e.g., was primarily delicate rather than powerful). Study 3 was conducted in a field setting with a nonstudent sample and tested Hypothesis 2. This replication provides evidence of our findings’ robustness. Study 3 also investigated consumers’ judgments of the product’s traits, whereas studies 1 and 2 investigated consumers’ judgments of only the product’s attributes.

Study 1: source effects on judgments of a product when the valence of source competence information varies

Study 1 tested Hypotheses 1–3 when the product was characterized by attributes stereotypically associated with men rather than women. We manipulated source information by varying the source’s gender and the source’s competence. Additionally, some conditions constrained cognitive resources. Conditions that limit cognitive processes should change the effect of source information on secondary product attributes, but should do so only when the source information supports the woman’s competence (is uniformly positive) (Hypotheses 2 and 3). More specifically, limiting cognitive resources should reduce perceptions that her powerful music is delicate. Limiting cognitive resources should not reduce the broader effects of source gender on dominant and secondary attributes when information about the source’s competence is mixed in valence (Hypothesis 1).

Previous research shows that high competence that disconfirms expectancies for gender roles leads to a contrast effect in consumers’ evaluations of an employee. People contrast their expectations for incompetence against information that a woman in a stereotypically male role is competent so that they expect her to be even more competent than a man (Matta & Folkes, 2005). These superior competence inferences are important for product quality judgments. Consumers use inferences about others’ ability to predict performance (Johnson & Folkes, 2007). Hence, we expected higher quality ratings for a woman’s product compared to a man’s product when both are highly praised. This proposition is not central to Hypotheses 2 and 3, but is important to test so that we can track the effects of source information on product judgments.

Method

Participants were 413 business undergraduates who received course credit. The study had a $2 \times 2 \times 3$ between subjects design, manipulating source gender (female conductor vs. male conductor), positivity of information about the person’s qualifications (uniformly positive information vs. mixed valence information), and cognitive resources during trial (unconstrained resources vs. cognitive resources allocated to a competing, irrelevant task vs. cognitive resources allocated to a music recall task). In addition, 33 student participants were assigned to a product information control condition where they were given no information about the source and their cognitive resources were unconstrained.

Procedure

Participants read a short paragraph that praised the appointment of a new conductor, Alsop, to the Baltimore Symphony Orchestra (BSO), who was replacing the out-going music director, Yuri Temirkanov. All conditions included information about the conductor’s selection that was highly positive, stating that Philip English, chair of the BSO board, said that Alsop’s “artistic mastery, recording success and highly regarded reputation world-wide will shape an exciting future for the BSO.” Alsop was described as “a 48-year old New Yorker.”

This concrete information about the conductor’s name and characteristics was provided both to engender realism and to prompt individuating (decategorizing) processes. Previous research indicates that as long as information is not clearly irrelevant for forming an impression about a person, detailed information about a person is used to make “bottom-up,” differentiated inferences and this overrides social stereotypes or “top-down” processes (Hilton & Fein, 1989). Hence, the information provided to participants works against our finding any effects of gender stereotypes on judgments of male and female-typed product attributes. The article’s praise for her qualifications should have removed ambiguity about the person’s competence in the occupation and so reduced any propensity to stereotype the woman (Dunning & Sherman, 1997).

After reading this information, participants completed a manipulation check of perceived gender prevalence for this profession. As expected, participants’ estimates indicated that the occupation was perceived as male dominated (a mean of 77.20% of the conductors of major orchestras were estimated to be male, and 22.80% were estimated to be female). Mean estimates did not differ across conditions. The next page in the questionnaire told participants to stop, and wait for further instructions. The experimenter informed the group that they would now listen to an audio excerpt from a very recent performance of the BSO led by its new conductor. Though they were given no other information about the clip, the clip selected was, in fact, from an Alsop music CD.

Our experiments exposed consumers to an experiential product (music) to provide a strong test of source effects on product
judgments. People prefer to verify sensory attributes with their own personal experience, as contrasted with search products or more objective attributes (Wright & Lynch, 1995). We selected a symphony orchestra conductor as the context because information about a conductor is commonly available to potential recording and concert customers. Hence, providing it to participants would not be considered unusual in itself. Further, classical music can be evaluated without knowledge of the conductor’s identity, as contrasted with some music genres for which composers and performers are often inextricably linked (e.g., rock music). The male-typed product consisted of 150 s of a track of Brahms’ Symphony No.1, which pretests indicated was perceived as having more powerful and stirring passages than delicate and graceful passages.

Independent variables

The person’s gender was manipulated by varying the conductor’s name. About half the participants read that the new conductor was Marjn Alsop (the real name of BSO’s new female conductor) and referred to her using female pronouns. The other half read that the new conductor was Maron Alsop, described as a male by using male pronouns (the only factually inaccurate information given to participants).

Our manipulation of information about the person’s competency was guided by previous research that varied consensus in evaluations of a leader. When fellow group members consensually endorse her performance, a female leader is evaluated more positively than when opinion is divided (Brown & Geis, 1984). In our uniformly positive information condition, both the Chair and the orchestra members endorsed the conductor’s selection. In the mixed valence information condition, they disagreed. Whereas the Chair endorsed the conductor’s selection, a statement released by orchestra members who served on the selection committee expressed disappointment “over the premature and unsatisfying conclusion of the new conductor search process.”

Cognitive resources are typically manipulated by assigning a secondary task to the participants while they are engaged in the “primary” or main task. Study 1 and study 2 employed this technique of shifting the participants’ attention away from the main task (listening to the music) to a secondary task (remembering a 9 digit number prior to listening to the audio clip, a number that they were told would be asked to recall later). We manipulated cognitive resources during product trial (not while reading information about the person) because our interest is not in hindering participants’ ability to make inferences about the person’s characteristics but rather in factors influencing the application of those inferences to product evaluations during trial.

As a baseline to assess the effects of devoting resources to trial information, we included a third condition intended to encourage participants to pay attention to firsthand product experience. The instructions shifted attention to product experience information by telling participants that they would later be tested on the music. Hence, either a distraction task or a music recall task should reduce cognitive resources allocated to source information. Participants were told the following:

In this study, we are interested in understanding how well consumers remember different kinds of music. For this task, you will be required to pay very close attention to the audio clip that will be played shortly. Please concentrate on the music and remember as much of the music as you can. At the end of this survey, we will play a music clip and ask you to identify whether it was the music you heard. So please pay very close attention to the music, with the goal of remembering as much as you can about the music.

In only this music recall condition, the experimenter played a 10 second excerpt from the same audio clip used in the study after participants completed the post-trial questionnaire. Participants were asked whether this excerpt was part of the music clip they heard earlier (yes/no). All of the participants correctly indicated that they had heard the music previously.

Measures

Participants answered questions using 9-point ratings scales anchored by “not at all” and “extremely”. Four items (α=.74) measured the music’s male-typed attributes (powerful, stirring, compelling, potent), four items (α=.71) measured the music’s female-typed attributes (delicate, elegant, graceful, charming), and two items measured the music’s quality (α=.82) (1=not good at all, 9=very good; 1=very poor, 9=excellent).

Pretest of expectations for music attributes

We conducted a pretest to assess students’ expectations or theories about symphony music attributes. Participants were 81 business undergraduate students who received course credit for taking the survey. The pretest had a simple three-cell design, manipulating source information (a female conductor vs. a male conductor vs. no conductor information). After reading about the BSO and, in some conditions, about the conductor’s gender, the students provided their expectations of the music played by the BSO, using the same attributes as in the main study. Additionally, they rated their expectations of the music’s femininity and masculinity on two 9-point scale items (1=“not at all”, 9=“extremely”).

They also indicated whether they thought information about a conductor’s gender and information about a conductor’s reputation “would influence your evaluation of the conductor’s music,” anchored by 1=“not at all” and 9=“very much.” The mean responses to these items did not differ across conditions. The low means (M=2.57 for the effect of gender and M=3.42 for the effect of competence information) indicated that the pretest participants thought neither would have much impact. Finally, they were asked “how many minutes of a classical music piece would you need to listen to so that you would be able to evaluate it?” They indicated that a mean of 1.86 min (112 s) would be sufficient, with no differences across conditions. Note that the pretest did not involve actually listening to music.

Participants expected the music conducted by a woman to have lesser male-typed attributes (M=5.62 vs. 7.10, t(52)=6.05, p<.001), and have greater female-typed attributes (M=6.20 vs. 5.17, t(52)=3.59, p<.005) compared to his music. Further, her music was explicitly described as more
feminine (M=6.11 vs. 5.25, t(52)=4.87, p<.001), which was highly correlated with the female-typed attributes (r=.72, p<.01). Her music also was explicitly described as less masculine (M=5.81 vs. 7.02, t(52)=6.32, p<.001), which was highly correlated with the male-typed attributes (r=.73, p<.01). Moreover, the pretest participants expected her music quality to be inferior (M=5.68 vs. 7.10, t(52)=6.73, p<.001), when compared to the music conducted by a man. As anticipated, participants who were given no conductor information did not differ in their expectations for music attributes from those in the male conductor condition (Table 1).

**Results**

Our results showed no difference between the two cognitive constraint conditions (constrained cognitive resources due to a competing irrelevant task, and resources allocated to a music recall task) for any of the dependent measures. We therefore collapsed these two conditions into a single condition, labeled “constrained cognitive resources.” Table 2 shows the mean ratings of product quality, the dominant attributes and the secondary attributes, organized by positivity of information about the person’s qualifications. Because the overall results are complex, our report of the results focuses on those that pertain to each of the three hypotheses.

**Test of Hypothesis 1**

The test of Hypothesis 1 deals with differences among the mixed valence information conditions. We conducted a 2×2 MANOVA with the source’s gender and cognitive resources as the two independent variables. For all three of our dependent measures, the MANOVA revealed only a main effect of the source’s gender. As predicted in Hypothesis 1, when the information about the source was mixed in valence, participants judged the woman’s product as having more of female-typed attributes compared to the man’s product (M=5.68 vs. 4.60, F(1, 212)=27.12, p<.001), and less of male-typed attributes than the man’s product (M=5.83 vs. 6.54, F(1, 212)=10.56, p<.001). They also evaluated her product quality as inferior when compared to the man’s product (M=5.31 vs. 6.02, F(1, 212)=8.23, p<.001). Consistent with Hypothesis 1, constraints on cognitive resources had no impact on product judgments.

**Test of Hypothesis 2**

To test Hypotheses 2 and 3, we examined only the uniformly positive source information conditions. We conducted a 2×2 MANOVA with the source’s gender and cognitive resources as the two independent variables, and the music’s secondary and dominant attributes as the dependent variables. For the music’s secondary attributes (i.e., the female-typed attributes), the MANOVA revealed main effects of gender (F(1, 199)=12.74, p<.001) and cognitive resources (F(1, 199)=6.48, p<.05), and an interaction (F(1, 199)=6.36, p<.05). When cognitive resources were unconstrained, the woman conductor’s music was perceived as having more of female-typed attributes than the man’s music (M=6.14 vs. 5.09, t(97)=4.27, p<.001), supporting Hypothesis 2.

Further, the source’s gender did not have a differential effect on all attribute judgments (unlike the pattern found when competence information was mixed). The music was rated similarly on the dominant (male-typed) attributes, regardless of the conductor’s gender (M=7.16 vs. 7.01, t(97)=0.52, ns) when resources were unconstrained. This null effect also supports Hypothesis 2. In short, participants showed a greater focus on attributes than the man’s product (M=5.83 vs. 6.54, F(1, 212)=10.56, p<.001). They also evaluated her product quality as inferior when compared to the man’s product (M=5.31 vs. 6.02, F(1, 212)=8.23, p<.001). Consistent with Hypothesis 1, constraints on cognitive resources had no impact on product judgments.

### Table 2

Mean ratings for a male-typed product when the source’s gender, the valence of information about the source’s competence and the participant’s cognitive resources vary in study 1.

<table>
<thead>
<tr>
<th>Dependent measure</th>
<th>Female source</th>
<th>Male source</th>
</tr>
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<tbody>
<tr>
<td></td>
<td>Unconstrained cognitive resources</td>
<td>Constrained cognitive resources</td>
</tr>
<tr>
<td><strong>Mixed valence information:</strong></td>
<td></td>
<td></td>
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<td>Male-typed attributes</td>
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<td>5.78&lt;sup&gt;b&lt;/sup&gt;</td>
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<td>5.59&lt;sup&gt;b&lt;/sup&gt;</td>
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<tr>
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<td>5.23&lt;sup&gt;b&lt;/sup&gt;</td>
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<td><strong>Positive information:</strong></td>
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<tr>
<td>Male-typed attributes</td>
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<td>6.87</td>
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<tr>
<td>Female-typed attributes&lt;sup&gt;2&lt;/sup&gt;</td>
<td>6.14&lt;sup&gt;a&lt;/sup&gt;</td>
<td>5.40&lt;sup&gt;b&lt;/sup&gt;</td>
</tr>
<tr>
<td>Product quality</td>
<td>7.75&lt;sup&gt;a&lt;/sup&gt;</td>
<td>6.70&lt;sup&gt;b&lt;/sup&gt;</td>
</tr>
<tr>
<td>N</td>
<td>36</td>
<td>71</td>
</tr>
</tbody>
</table>

<sup>a</sup>Means across the rows for a given dependent variable with different superscripts are different at p<.05.
<sup>1</sup>No source information condition means are 7.25 for the product’s male-typed attributes, 5.21 for the product’s female-typed attributes and 6.71 for product quality. These means are no different from those in the male source-unconstrained resources condition when only positive information is given.
<sup>2</sup>Female-typed attributes were secondary. The shaded means are pertinent to testing Hypothesis 2.
experiential evidence when the source’s gender and the product’s gender-typing were incongruous.

**Test of Hypothesis 3**

When cognitive resources were constrained, the effects of source’s gender on the product’s secondary (i.e., female-typed) attributes were reduced, supporting Hypothesis 3. The woman’s music was evaluated as having less of female-typed attributes when participants’ cognitive resources were constrained than when they were unconstrained (M = 5.40 vs. 6.14, t(97) = 3.35, p < .005) (see Table 1). Also consistent with Hypothesis 3, the woman’s music was rated similarly in the dominant (male-typed) attributes, regardless of constraints on cognitive resources (M = 7.16 vs. 6.87, t(97) = 1.22, ns). Hence, constrained resources are a boundary condition for some source effects.

**Product quality judgments when source information was uniformly positive**

Product quality, especially for a sensory product like music, is often considered an attribute for which experiential evidence is limited and vague (Shapiro & Spence, 2002). Hence, one might expect the same results for quality ratings as for the secondary attribute, which is what we found. When information about the woman was uniformly positive, a 2 × 2 ANOVA of the product quality ratings revealed main effects for the source’s gender (F(1, 199) = 12.42, p < .001) and cognitive resources (F(1, 199) = 9.60, p < .005), and an interaction (F(1, 199) = 4.95, p < .05). Her music was superior to his only when resources were unconstrained, M = 7.75 vs. 6.90, t(64) = 3.62, p < .005. Further, the woman’s music was perceived as higher in quality when participants’ cognitive resources were unconstrained than when they were constrained (M = 7.75 vs. 6.70, t(97) = 4.38, p < .001).

**Discussion**

Information about the source sometimes broadly influenced product judgments (both dominant and secondary attributes), sometimes influenced the secondary attributes but not the dominant attributes, and sometimes had the same effect as when no source information was given. Some effects were eliminated when cognitive resources were constrained but some were not. Hence, source information had previously undiscovered, complex effects on product judgments, despite the fact that pretest participants reported that information about the source’s gender and the source’s reputation would have little effect on their evaluations.

**Mixed valence source information**

Consistent with what previous stereotyping research would predict (Eagly & Karau, 2002), participants described her product as lower in male-typed attributes and higher in female-typed attributes than his when information about competence was mixed. For example, listeners thought her powerful music was less powerful and more delicate than his (as well as being of poorer quality). Further, constraining cognitive resources had no effect on judgments of her product’s attributes when source information was mixed in valence, which is consistent with the many studies emphasizing the automaticity of stereotypes (Macrae, Milne et al., 1994) and the ease of assimilation (Martin et al., 1990). These results and predictions seem relatively uncontroversial. Stereotypes about incompetence at gender-typed tasks can lead people to distort new information (in this case, firsthand product experience) so that it is assimilated into their expectations. The strong impact of the source’s gender is suggested by its effect on product evaluations even when listeners were instructed to pay attention to the product (i.e., the music recall condition).

**Uniformly positive source information**

More interestingly, when information about her competence was uniformly positive, the source’s gender influenced judgments of the secondary attribute, but not the dominant attribute. This novel finding for the stereotyping literature supports our proposition about greater focus on experiential evidence to confirm the presence of gender-typed attributes when inconsistency between source gender and the product’s gender-typing cannot be explained away by incompetency stereotypes. The fact that the product was characterized by male-typed attributes (e.g., powerfulness) was evidence less likely to be ignored because of its lack of ambiguity. Listeners’ experiential evidence for the secondary attributes was more limited compared to the dominant attributes and so revealed a source’s gender effect.

Nevertheless, when she was uniformly praised, constraints on cognitive resources eliminated all source gender effects. The type of constraint did not matter. Constrained listeners evaluated the product the same way when they were distracted from the music by a competing irrelevant task as when they were explicitly told to focus on product experience. This finding points to the effortfulness of source information-derived hypothesis testing during product trial when listeners could not merely use source incompetence stereotypes to guide their judgments and required more scrutiny of evidence. When participants lacked ample cognitive resources to think about their source-derived hypotheses, they seem to have disregarded social category information. Perhaps suppressing gender stereotypes as well as hypothesis testing were too effortful when combined with either the distraction task or instructions to memorize the music. Either constraint on cognitive resources led to a greater focus on the music. Our findings contrast with the more typical finding in the stereotyping literature, that decreasing cognitive resources increases a perceiver’s reliance on stereotypes when judging a person’s behavior (e.g., Macrae, Milne et al., 1994).

**Alternative explanations**

Study 1 results rule out an alternative explanation for gender-typed secondary attribute judgments—stereotype rebound. Suppression of stereotypes can lead to the expression of even more extreme stereotyped inferences relative to those who do not suppress their stereotypes (Macrae, Bodenhausen, Milne, & Jetten, 1994). Study 1 results for the dominant attributes might be interpreted as suggesting that participants suppressed their gender stereotypes when the woman was
uniformly praised. According to stereotype rebound, suppression in ratings of the dominant attributes should lead to gender-typed ratings of the secondary attributes that are even more extreme than when stereotypes are not suppressed. However, the results are inconsistent with stereotype rebound predictions. Ratings of the uniformly praised woman’s product on the female-typed attributes do not differ from those for the woman who was described in mixed valence terms. Stereotype rebound predicts more extreme female-typed attribute ratings when she was uniformly praised compared to the mixed valence condition.

Another way of explaining the results might be to assume that listeners’ goals changed depending on whether the source information confirmed expectancies. Perhaps participants who read about mixed endorsement of the woman adopted a goal of validating their gender incompetency stereotypes during trial (Hart et al., 2009). In contrast, participants who read uniform praise of the woman might have adopted a goal of being correct about product judgments during trial, and so judged the dominant attributes without bias. Evidence against this “goal adoption” explanation comes from comparing the music memory condition results to the unconstrained resource condition. The music memory results should have made accuracy in judging the product a salient goal. Yet, the music memory condition results were the same for the mixed valence information condition as when no goal was specified (see Table 2). In contrast to the mixed valence condition means, the uniformly positive information condition showed that the music memory manipulation results followed a different pattern when no goal was specified.

Despite the support for our hypotheses, the interpretation of study 1 results is somewhat clouded by the finding that the uniformly praised woman’s product was perceived as both superior in quality and superior in feminine attributes (e.g., delicacy) to his product. Perhaps the positively endorsed woman’s extremely high product quality ratings account for her music’s higher ratings on the secondary (female-typed) attributes. Listeners may have scrutinized the music for a way to justify their superior quality evaluations and so emphasized her music’s superiority on a second dimension in addition to the dominant dimension (i.e., inferred an augmenting cause). Alternatively, her superior product quality ratings may have led to a simple halo effect in regard to other attributes for which evidence was not clear-cut and obvious. Either way, the possibility that superior judgments of her product’s quality account for the elevated ratings of her product’s secondary attributes can be ruled out by replicating the effects for a male source on secondary attributes when a product is characterized by feminine attributes.

Another question arising from study 1 results is in regard to the product information control condition, where we obtained baseline measures of product judgments absent source information. We interpret those results as indicating that listeners were able to judge the product on its own merits. The no source information condition ratings were no different from when the male source was uniformly praised (see footnote in Table 2). These results are not surprising since the pretest showed that expectations for a male conductor’s music were no different from expectations about the music when no conductor information was provided.

However, this similarity raises another issue. It is possible that participants did not use product experience information to make their judgments (e.g., because they found product trial to be uninformative or because they lacked interest in the product). Perhaps they merely relied on their assumptions about the typical symphony orchestra’s music when no source information was provided. Presenting participants with music that is characterized by different attributes from “typical symphony orchestra music” would help confirm that expectancy inconsistent information affects different product judgments. On the one hand, expectancy inconsistent information about the source’s competence in the gender-typed occupation influences product quality judgments. On the other hand, expectancy inconsistent information about the product’s attributes encountered during trial influences judgments of gender-typed product attributes.

### Study 2: source effects on product judgments for a product characterized by stereotypically feminine attributes

Study 2 tested Hypotheses 2 and 3 because study 1 raised questions about the interpretation of results supporting these novel findings whereas the interpretation of support for Hypothesis 1 was fairly clear and very consistent with previous stereotyping research. Hence, study 2 did not include study 1’s mixed valence competency information condition. Study 2 tested Hypotheses 2 and 3 for a female-typed product (music characterized by its delicacy). A female source would be congruent with a product that is characterized by stereotypically feminine attributes (it would be the kind of product expected from a woman), but a male source would be incongruent with this kind of product. In such a case, Hypothesis 2 predicts that perceivers will judge his product to have more male-typed secondary attributes compared to her product (his music will be perceived as more powerful), but judgments of the dominant attributes (e.g., delicacy) will not differ. Hypothesis 3 predicts that ratings of his product’s secondary attributes (e.g., powerfullness) will decrease when cognitive resources are constrained compared to when unconstrained.

### Method

Participants were 104 business undergraduates who received course credit. The study design was a 2 (source gender: male vs. female) × 2 (cognitive constraints: unconstrained vs. constrained due to a number recall task) factorial. We omitted the constraint condition involving recall of the music because those results were the same as in the number recall constraint condition. Similar to study 1, an additional 34 students were assigned to a control condition where no source information was given. The same procedures and measures were used as in study 1’s uniformly positive source information condition, but the product was different. The female-typed product consisted of 150 s of a track of Brahms’ Academic Festival
Overture, an excerpt that pretests indicated was perceived as primarily soft and delicate but included stirring and powerful passages.

Results

The ratings were analyzed with MANOVA and support Hypotheses 2 and 3. Incongruity between the gender-typing of source and product shows that product experience can override source information, especially when cognitive resources are constrained.

Test of Hypothesis 2

We conducted a $2 \times 2$ MANOVA of the music’s secondary (i.e., the male-typed) and primary (i.e., the female-typed) attributes with the conductor’s gender and cognitive resources as the two independent variables. The MANOVA revealed main effects of gender ($F(1, 103)=9.67, p<.001$) and cognitive resources ($F(1, 103)=3.75, p<.05$), and an interaction ($F(1, 103)=4.23, p<.05$) for the music’s secondary (the male-typed) attributes. When cognitive resources were unconstrained, the woman conductor’s music was perceived as having less of the secondary (male-typed) attributes than the man’s music ($M=5.20$ vs. 6.19, $t(51)=3.86, p<.001$), supporting Hypothesis 2. Further, the conductor’s gender did not have a differential effect on all attribute judgments. The music was rated similarly on the dominant (female-typed) attributes regardless of the conductor’s gender ($M=7.64$ vs. 7.33, $t(51)=0.52$, ns), also supporting Hypothesis 2 (Table 3).

Test of Hypothesis 3

When cognitive resources were constrained, the effects of source gender on the product’s secondary (male-typed) attributes were reduced, supporting Hypothesis 3. The man’s music was evaluated as having less of male-typed attributes when participants’ cognitive resources were constrained than when they were unconstrained ($M=5.29$ vs. 6.19, $t(50)=3.21, p<.005$) (see Table 3). Also consistent with Hypothesis 3, the man’s music was rated similarly on the dominant (female-typed) attributes, regardless of constraints on cognitive resources ($M=7.33$ vs. 7.45, $t(50)=0.84$, ns).

Cognitive constraints influenced product quality judgments the same way as in study 1. Hence, occupational gender-typing influenced product quality judgments. A $2 \times 2$ ANOVA of product quality ratings revealed an interaction ($F(1, 103)=5.16, p<.05$). As in study 1, her product was superior to his only when resources were unconstrained ($M=7.37$ vs. 6.32, $t(52)=5.93, p<.001$). Further, her product was higher in quality when participants’ cognitive resources were unconstrained than when they were constrained ($M=7.37$ vs. 6.53, $t(52)=3.61, p<.005$).

Discussion

Study 2 results support H2 and H3, and clarify study 1 findings. Like study 1’s results for the uniformly positive source information condition, listeners thought her music was superior to his music. These results are consistent with beliefs that a person who is counterstereotypical for an occupation is more competent than a stereotypical person when perceivers have only uniformly positive information about him or her (Matta & Folkes, 2005). Hence, participants appear to have made inferences about her superior competence that led to beliefs about her product’s likely superior quality. Further, confirmatory hypothesis testing of higher quality during trial was sufficiently effortful that quality judgments diminished considerably when listeners’ cognitive resources were constrained. This effect of resource constraints on evaluations of her product quality is the same as found in study 1.

What is different from study 1 is that study 2 shows that product quality ratings and secondary product attribute ratings follow different patterns. In contrast to product quality ratings, judgments about the product’s gender-typed attributes appear to depend on the product’s gender-typing (rather than the occupation’s gender-typing). Listeners judged her female-typed music the same when given uniformly positive information about her as when they were given no source information at all (see footnote in Table 3). Recall that study 1 listeners judged his male-typed music the same when given uniformly positive information about him as when they were given no source information at all (see footnote in Table 2). In short, the source’s gender appears to have no effect on judgments of a gender-typed product’s attributes when the source’s gender is congruent with the product’s gender-typing.

Moreover, the source’s gender appears to have no effect on judgments of a gender-typed product’s dominant attributes when the source’s gender is incongruent with the product’s gender-typing. This is consistent with our suggestion that these consumers focus on experiential evidence. As in study 1, incongruency influenced judgments of the secondary attributes (see shaded means in Table 3). Consistent with our suggestion...
that the source-product gender-typing incongruency requires cognitively effortful hypothesis testing, the effect diminishes when cognitions are constrained. Participants apparently discarded source information as a framework for judging the product.

Although the results mirror study 1 and support Hypotheses 2 and 3, some questions remain. The relevance of these findings is somewhat questionable due to our participants’ general lack of interest in the product. Despite the fact that knowledge and interest in symphony music were not significant covariates, we cannot lightly dismiss the possibility that low levels of interest in the product may account for our novel findings. Perhaps source gender effects emerged for the secondary attributes and for product quality judgments because being forced to listen to disliked music created a bad mood that increased stereotyping in some cases but decreased it in others (Huntsinger, Sinclair, Dunn, & Clore, 2010). If study 1 and 2 findings cannot be replicated in a population that is interested in the product and is in a more positive frame of mind, this suggests limited utility for our research.

Another concern is in regard to inferences about the source. Studies 1 and 2 measured only product judgments. Hence, we merely can conjecture about the inferences participants made about the source. Clarification about participants’ source trait inferences is important because a major theory of impression formation predicts different stereotyping effects than our research shows. Fiske’s dual processing theory (Fiske, Neuberg, Beattie, & Milberg, 1987) suggests that stereotype inconsistent information about the person leads the perceiver to abandon category-based processing of information about her traits and instead to adopt a more effortful, individuated processing style (i.e., decategorization; Hall & Crisp, 2005). Yet, studies 1 and 2 suggest that consumers do not abandon gender-typed inferences about the product’s secondary attributes (Hypothesis 2; see shaded means in Tables 2 and 3).

An alternative explanation is that we found stereotyping because participants did not make individuated inferences. Perhaps if we primed listeners about the source’s gender-typed traits prior to trial (e.g., by asking them to rate the source on gender-linked traits), their individuated inferences about the source would overcome their gender-typed product inferences and eliminate the source gender effect on the secondary product attribute. Study 3 examines this possibility.

**Study 3: comparing source trait inferences and product judgments**

Study 3 provides evidence of the robustness of our results by exposing the same stimulus materials as in studies 1 and 2 to a population that is more interested in the product class. We tested only Hypothesis 2 (the different effect on ambiguous and unambiguous attribute judgments of source gender when source information about competence is uniformly positive) because that is our most novel hypothesis and the one that benefits more from robust support. Study 3 also differed from studies 1 and 2 by collecting consumers’ pre-trial inferences about the source’s traits, as well as the post-trial product attribute judgments.

In regard to trait inferences, Fiske’s dual processing theory (Fiske et al., 1987) suggests that consumers will make individuated inferences about a counterstereotypical yet competent source (i.e., about the uniformly praised woman conductor), abandoning category based processing. Previous research does provide evidence of individuated inferences in consumers’ ratings of a person’s traits. When a female is successful as a leader in a male-dominated occupation, people infer that her success in this role is because she has agentic traits similar to him (e.g., she is similarly assertive and independent), traits that are generally associated with men (Matta & Folkes, 2005). Nevertheless, people also believe she is more communal than him (e.g., more sensitive and caring), traits that are generally associated with women (Conway, Pizzamiglio, & Mount, 1996). We expect that our participants will show this same individuated trait inference pattern for the uniformly praised woman.

However, we do not expect participants to abandon gender stereotypes when judging the product’s gender-typed attributes. The essentialist perspective (the belief that gender differences are immutable and deep seated, acting as a causal force in shaping how a person behaves) suggests that perceivers may make non-stereotypical person trait inferences to account for specific anomalies in behavior while still making stereotypical product attribute inferences. The perception of essentialism for a social category is stronger for gender than for occupations (Prentice & Miller, 2007). That is, a perceiver might make individuated inferences that narrowly apply to a particular behavior within an occupation, but this might not prevent the perceiver from searching for evidence of other gender-typed behavior.

Consistent with our findings from studies 1 and 2, we do not expect consumers’ inferences about the source’s agentic and communal traits to follow the same pattern as their inferences about the product’s secondary traits. That is, even if we prime consumers to think about the source’s gender-typed traits by asking about those traits and even if consumers infer that the person’s traits are role-incongruent (i.e., the woman is agentic), consumers’ product attribute ratings will replicate study 1 and study 2 findings. Consumers’ active hypothesis testing about source effects will still influence inferences about the secondary attributes but not primary attributes, as suggested in Hypothesis 2.

We are not proposing that a consumer’s individuated trait inferences are never used to infer product attributes. A consumer’s individuated inferences about a source’s traits can narrowly apply to a specific product attribute when they correspond to consumers’ lay theories. Inferences about a source’s competence are relevant to product quality inferences because consumers use the producer’s ability as a cue to judge product quality (Johnson & Folkes, 2007). Specifically, participants’ assessments of the source’s competence taken pre-trial should be very accessible and provide a strong basis for generating hypotheses about product quality. Hence, source competence measures should be strongly related to measures of the
product’s quality post-trial. Study 3 examines this correlation to
confirm this relationship.

Method

Participants were 112 members (68 female and 44 male; $M_{\text{Age}} = 52.3$ years) of an audience attending a classical music concert performed by a mid-sized American city’s symphony orchestra. The study was conducted prior to the symphony orchestra’s performance, at the performance venue. The study’s design was a $2 \times 2$ factorial, manipulating source gender (a female conductor vs. a male conductor) and the type of product (powerful music vs. delicate music).

Procedure

Attendees at the concert venue were informed by an event organizer that they could volunteer as participants in a study. They were told that those in charge of the survey would donate $3 per participant to the charitable foundation that was organizing the concert. The experimenter and a research assistant then distributed study questionnaires and pencils to those who volunteered to participate.

The type of product (male-typed vs. female-typed) was manipulated by varying the music participants heard. Participants listened to one of two clips, either the primarily powerful clip from study 1 or the primarily delicate clip from study 2. The experiment was run in two sessions. The 55 concert attendees who participated in the first session (and heard the powerful music) did not participate in the other session, where 57 attendees heard the delicate music. None of the male conductor condition participants indicated that they knew Alsop is a woman.

Measures

Participants answered questions using 9-point ratings scales anchored by “not at all”, and “very”. In the pre-trial questionnaire, participants evaluated the person’s competence (i.e., the conductor’s) on two items ($\alpha = .79$): how competent is the conductor? (1 = not competent at all, 9 = very competent), and how good is the conductor at their job? (1 = not good at all, 9 = very good). They also rated the conductor on agentic and communal traits (Conway et al., 1996; Eagly & Karau, 2002). Specifically, we measured four agentic traits ($\alpha = .77$) (assertive, independent, goal-oriented and decisive) and four communal traits ($\alpha = .74$) (intuitive, sensitive, caring and communicative). Additionally, they answered manipulation checks for gender stereotypes about this profession. As in study 1, participants estimated the percent of all major orchestras that have male and female conductors. Consistent with study 1, participants perceived the role to be male-typed (i.e., a conductor is a male-dominated occupation). Participants estimated that a mean of 82.16% of the conductors of major orchestras are male and that a mean of 18.39% are female, with no significant differences across conditions.

The post-trial questionnaire included the same rating scales for quality, male-typed attributes (e.g., music powerfulness) and female-typed attributes (e.g., music delicacy) as in the previous studies. We also asked participants to indicate their age and gender. Our analyses showed no effects for participants’ gender, for age, or for familiarity with classical orchestra music or the BSO, so these variables are not discussed further.

Pretest of expectations for music attributes

We conducted a pretest to assess a nonstudent sample’s expectations about symphony music attributes. Participants were 74 members (41 female and 33 male; $M_{\text{Age}} = 49.4$ years) of an audience attending a classical music concert. Like the main study, attendees at the concert venue were informed by an event organizer that they could volunteer to participate in the study prior to the concert. Like study 1’s pretest, this pretest had a simple three-cell design, manipulating source information (a female conductor, a male conductor, no conductor information). Participants described their expectations of the music played by the BSO, using the same measures as in study 1’s pretest. Results replicate study 1’s pretest (Table 1).

Results

Study 3 results replicate study 2’s support for Hypothesis 2 and reveal differences between ratings of a product’s attributes and the source’s traits.

Test of Hypothesis 2

Hypothesis 2 predicts that source gender interacts with the product’s gender-typing to differentially affect secondary attributes, but not dominant attributes (the ambiguity of evidence effect). To facilitate comparisons with the previous studies’ results, study 3 results analyzed product attribute ratings the same way, in terms of whether they were male-typed or female-typed, rather than whether they were dominant for a particular product (see Table 4). Hence, support for Hypothesis 2 is suggested by interactions in a MANOVA with the two key dependent variables, i.e., male-typed attribute ratings and female-typed attribute ratings.

The MANOVA’s ratings of the product’s male-typed attributes (e.g., powerfulness) and female-typed attributes (e.g., the product’s delicacy) support Hypothesis 2 and replicate studies 1 and 2 (see shaded means in Tables 2–4). These evaluations depend on whether they involve the music’s more obvious or dominant attributes or the music’s more subtle or secondary attributes. We report the analysis for the male-typed attributes first, and then the female-typed attributes.

The MANOVA revealed a product type main effect ($F (1, 111) = 15.62, p < .001$) and a gender by type of product interaction ($F (1, 111) = 4.77, p < .05$) for the extent to which the music was perceived as male-typed (e.g., powerful). The male-typed music was rated as more male-typed than the female-typed music ($M = 6.96$ vs. $5.82$). More importantly, male-typed (powerful) music was perceived as similarly male-typed, regardless of the conductor’s gender. The conductor’s gender influenced ratings of male-typed attributes only when these were secondary attributes (i.e., influenced only the perceived powerfulness of the delicate music). The woman conductor’s female-typed (delicate) music was perceived as less male-typed (e.g.,

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The analysis of ratings for the female-typed attributes followed the same pattern, revealing a product type main effect (F (1, 111) = 19.78, p < .001) and a gender by type of product interaction (F (1, 111) = 4.50, p < .05). The female-typed music was rated as more female-typed than the male-typed music (M = 7.31 vs. 5.42). Female-typed (delicate) music was perceived as similarly female-typed (delicate) regardless of the conductor’s gender. However, the woman conductor’s male-typed (powerful) music was perceived as more female-typed (delicate) than the man’s music (M = 5.77 vs. 5.05, t(54) = 2.92, p < .05). In short, the source’s gender influenced post-trial product judgments for only the secondary attributes (Hypothesis 2). Fig. 1 depicts these effects on the secondary attributes.

**Product quality ratings**

Product quality ratings replicate study 1 and 2 findings. A 2×2 ANOVA showed only a gender main effect (F (1, 111) = 13.64, p < .001). The audience rated the female conductor’s music more favorably than the male conductor (M = 7.58 vs. 6.61). Not surprisingly, the measure of the source’s competence taken pre-trial was highly correlated with the measure of the product’s quality taken post-trial (r = .77, p < .01).

Participants’ inferences about the source’s agenticness followed a different pattern from the product’s gender-typed attributes. As to male-typed (agentic) source traits, conductors were described as similarly agentic regardless of gender (see Table 4), presumably because success in this male dominated occupation requires agentic characteristics. This pattern does not correspond to ratings of the product’s male-typed attributes and the correlation between the two measures is only .29 (n.s.).

Further, a 2×2 ANOVA of the conductor’s female-typed (communal) traits revealed a gender main effect (F (1, 111) = 19.85, p < .001). The audience described the female conductor as more communal than the male conductor (M = 7.13 vs. 6.21). Ratings of the source’s communality followed a different pattern from inferences about the product’s female-typed attributes and the correlation is only .32 (n.s.).

Overall, the results suggest that participants did individuate the woman, failing to evaluate her as less competent and as less masculine (less agentic) than the man. Within-subjects comparisons are also consistent with individuation of the woman. Comparing ratings of the man’s agentic and communal traits within subjects reveals that the man was described as more agentic than he was communal (M_{agentic} = 7.67 vs. M_{communal} = 6.21, t(55) = 14.86, p < .001), consistent with male stereotypes. In contrast, the woman was described as similarly agentic and communal (M_{agentic} = 7.45, and M_{communal} = 7.13, respectively, t(55) = .63, n.s.). Yet, individuation of her failed to eliminate gender stereotyping when judging her male-typed product’s secondary attributes. Nevertheless, similarity between the product quality ratings and the source competence ratings suggest that a consumer’s individuated inferences about a source’s traits can narrowly apply to a directly related product attribute (i.e., a creator’s competence directly maps on to the quality of his or her output).

### Table 4

Mean ratings of source and product in study 3 when the product was characterized by either stereotypically male attributes or female attributes.

<table>
<thead>
<tr>
<th>Dependent measure</th>
<th>Male-typed product</th>
<th>Female-typed product</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Female source</td>
<td>Male source</td>
</tr>
<tr>
<td>Male-typed attributes(^1)</td>
<td>6.85(^a)</td>
<td>7.07(^a)</td>
</tr>
<tr>
<td>Female-typed attributes(^2)</td>
<td>5.27(^b)</td>
<td>6.05(^b)</td>
</tr>
<tr>
<td>Product quality</td>
<td>7.70(^a)</td>
<td>6.68(^b)</td>
</tr>
<tr>
<td>Source's agentic traits</td>
<td>7.38</td>
<td>7.75</td>
</tr>
<tr>
<td>Source's communal traits</td>
<td>7.21(^a)</td>
<td>6.18(^b)</td>
</tr>
<tr>
<td>Source's competence</td>
<td>7.51(^a)</td>
<td>6.69(^b)</td>
</tr>
</tbody>
</table>

\(^{a,b}\)Means across the rows for a given dependent variable with different superscripts are different at p < .05.

\(^1\)Male-typed attributes were dominant for the male-typed product and were secondary for the female-typed product. Shaded means depict effects on the secondary, female-typed attributes predicted by Hypothesis 2.

\(^2\)Female-typed attributes were dominant for the female-typed product and were secondary for the male-typed product. Shaded means depict effects on the secondary, male-typed attributes predicted by Hypothesis 2.

judged the female conductor more favorably than the male conductor (M = 7.58 vs. 6.61). Not surprisingly, the measure of the source’s competence taken pre-trial was highly correlated with the measure of the product’s quality taken post-trial (r = .77, p < .01).

Participants’ inferences about the source’s agenticness followed a different pattern from the product’s gender-typed attributes. As to male-typed (agentic) source traits, conductors were described as similarly agentic regardless of gender (see Table 4), presumably because success in this male dominated occupation requires agentic characteristics. This pattern does not correspond to ratings of the product’s male-typed attributes and the correlation between the two measures is only .29 (n.s.).

Further, a 2×2 ANOVA of the conductor’s female-typed (communal) traits revealed a gender main effect (F (1, 111) = 19.85, p < .001). The audience described the female conductor as more communal than the male conductor (M = 7.13 vs. 6.21). Ratings of the source’s communality followed a different pattern from inferences about the product’s female-typed attributes and the correlation is only .32 (n.s.).

Overall, the results suggest that participants did individuate the woman, failing to evaluate her as less competent and as less masculine (less agentic) than the man. Within-subjects comparisons are also consistent with individuation of the woman. Comparing ratings of the man’s agentic and communal traits within subjects reveals that the man was described as more agentic than he was communal (M_{agentic} = 7.67 vs. M_{communal} = 6.21, t(55) = 14.86, p < .001), consistent with male stereotypes. In contrast, the woman was described as similarly agentic and communal (M_{agentic} = 7.45, and M_{communal} = 7.13, respectively, t(55) = .63, n.s.). Yet, individuation of her failed to eliminate gender stereotyping when judging her male-typed product’s secondary attributes. Nevertheless, similarity between the product quality ratings and the source competence ratings suggest that a consumer’s individuated inferences about a source’s traits can narrowly apply to a directly related product attribute (i.e., a creator’s competence directly maps on to the quality of his or her output).

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**Fig. 1.** Mean ratings of the secondary attributes in study 3 when product type and source gender vary.

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Author’s personal copy
Discussion

Study 3 results support Hypothesis 2, revealing the same pattern of results for the product ratings as for studies 1 and 2. The fact that source trait inferences preceded the product ratings appears to have had no effect on them. Moreover, inferences about the source’s masculine traits (agentic traits) and feminine traits (communal traits) followed a different pattern from ratings of the product’s male-typed attributes (e.g., powerfulness) and female-typed attributes (e.g., delicacy). This divergence suggests that individuation of the source does not eliminate stereotyped product judgments.

Ratings of the source replicate previous research by Matta and Folkes (2005). People made competence inferences about a counter stereotypical person that are inconsistent with the occupational stereotypes. They believed that a female conductor was more competent than a male conductor when both were highly praised. Not surprisingly, inferences about competence predicted ratings of product quality. A consumer’s individuated inferences about a source’s traits can narrowly apply to a specific product attribute when they correspond to consumers’ lay theories. Inferences about a source’s competence are relevant to product quality inferences because people predict a person’s performance from attributions of ability. This person trait corresponds well to the object attribute. Yet, judgments of her son indicate a pre-trial individuated processing style fail to eliminate gender-typed product descriptions (see Fig. 1). Her male-typed product is seen as having more female-typed (e.g., delicate) attributes than his male-typed product.

An alternative explanation for the source ratings is that the audience engaged in categorical processing, with the category being “career woman,” a common subtype of the “woman” category. The career woman subtype is associated with competency traits, agentic traits and power traits (e.g., ambitious, determined, goal oriented, independent, dominant, strong minded) (Altermatt, DeWall, & Leskinen, 2003; Nathan, Altermatt, & Thompson, 2005). Yet, subtyping her as a career woman is unlikely to explain the results because her product was sometimes judged to be less powerful than his (see shaded means in Table 2). Further, the effect of constraining cognitive resources on judgments provides additional evidence against this alternative subtyping explanation (see Table 2). The effects of categorizing her as a career woman and the consequent effects on product judgments should be impervious to limits on cognitive resources since such categorization processes require minimal cognitive resources.

General discussion

Our research suggests that merely knowing the source’s gender can lead a consumer to experience a product quite differently from when no source information is given. Distortion in product judgments occurred when the source’s gender was incongruent with the product’s gender-typing (e.g., when a female created a male-typed product) (Table 2). Finding source-based distortion is somewhat surprising since consumers value information gained from firsthand product experience, especially for products whose attributes are subjectively experienced (Wright & Lynch, 1995), and because people claimed gender would have little impact on their evaluations (study 1’s pretest). Gender-based distortion occurred not only for judgments of the product’s gender-typed attributes but also for the product’s quality.

Although person perceptions can influence post-trial judgments in profound ways, merely giving information about a source did not always influence judgments of all attributes. Consumers seemed to have thought more explicitly about their stereotypes and beliefs to be tested and given more weight to experiential evidence when the source’s gender was incongruent with the product’s gender-typing and incompetency stereotypes could not easily explain away the incongruency. This had consequences for product judgment. The source’s gender failed to influence judgments of the dominant attributes but did influence judgments of the less obvious, secondary attributes for which there was less experiential evidence (see shaded means in Tables 2–4). However, when consumers’ cognitive resources were constrained, they appear to have ignored source gender when judging the product.

Participants seem to have paid little attention to information about the stereotypical source when judging the product. Compared to when no conductor information was given, source information failed to influence either the dominant or secondary attributes when it was congruent with the product’s gender-typing and the source information was uniformly positive (e.g., when a male source created a product characterized by male-typed attributes). Hence, information that was consistent with expectancies (whether expectancies about competence in an occupation or expectancies about the source’s gender-typed product) had no impact on consumers’ product judgments.

Individualizing sources as a means of stereotype reduction

Our findings suggest important limits on giving detailed information about a person as a means to reduce stereotyping (Hilton & Fein, 1989). The notion that such distinctiveness leads to differentiation of the individual and eliminates stereotyping (i.e., leads to “decategorization”) derives from dual processing models (Hall & Crisp, 2005). These models distinguish between a cognitively effortful, bottom–up, individuating, person perception process and a less effortful, top–down, category based, person perception process (Fiske et al., 1987). Yet, study 3 shows that making nonstereotypical, differentiated inferences about a source failed to prevent product judgments from exhibiting stereotyped judgments.

Our novel findings may not have been uncovered previously because many studies about individuation and stereotyping use a rather artificial procedure that might have encouraged a repetitive style of judgment. For example, a common social psychological method of investigating stereotypes is to ask participants to read a series of simple sentences, each describing a different hypothetical person or to ask participants to engage in a sentence completion task (e.g., Dunning & Sherman, 1997; Fiske et al., 1987; Hilton & Fein, 1989). Our studies provided richer information about both person and product. Of course, some more
naturalistic laboratory studies have examined effects of information about a stereotype incongruent person, but these are generally more limited in scope than ours is. Those studies typically measure effects on only the few, most directly pertinent person traits. Our experiments go beyond those studies in examining inferences about another entity (a product) and showing a complex pattern of inferences not specified in previous theories. More research is needed to understand the consequences of marketers’ attempts to individuate sources for product judgments considering how commonly marketing communications attempt to do this.

The scope of the product source concept

The value of the product source concept lies not only in its ability to encompass many seemingly disparate lines of research but also in its distinctiveness from related constructs. The product source construct incorporates a variety of roles besides the one we examined here, both artistic (e.g., film actors as in Lan, Chen, Han, & Park, 2010) and not (e.g., service providers). Further, the product source construct extends beyond trait inferences to other inferences about the person, such as the effort exerted by the source when creating the product (e.g., Morales, 2005).

A product source is conceptually distinct from a major consumer psychology construct dealing with perceptions of people, the message source construct. Nevertheless, some variables may be important in understanding the effects of both. Some message source cues that the persuasion literature has identified as particularly influential, such as liking for the source (Wood & Kallgren, 1988), may also be influential for product source effects. Like the competence information manipulated in our study, persuasion studies sometimes manipulate source expertise (e.g., Jain & Posavac, 2001). Similar to the product information we gave participants, persuasion studies provide message information to their participants. Persuasion research suggests that message scrutiny is higher given an expectancy-incongruent source as compared to a message congruent source (Ziegler, 2002), a prediction similar to ours. Incongruency leads to surprise, which theoretically increases the persuasiveness of strong message arguments as contrasted with weak message arguments. If we also consider the dominant product attributes to be a “strong” message about the product, then judging those attributes without using source information replicates the message source literature in this new context. If we consider the secondary product attributes to be a “weak” message about the product, then the product source effect we found also is consistent with the message source literature.

Nevertheless, our findings seem inconsistent with some of those in the message source literature (e.g., Study 1’s mixed valence condition findings in Table 2 versus the message source predictions about incongruency). Certainly, the notion that message source information is a heuristic that affects persuasion more under low cognitive resources or when messages are ambiguous (Chaiken, 1980) diverges from our findings about product sources. In no condition did product source information affect product judgments more when cognitive resources were constrained. In some conditions source information was ignored. Perhaps consumers feel comfortable evaluating products without source information because they often lack source information. Yet, at times product source effects may be more powerful than message source effects because the origins of objects are inferred to reveal more about their true essence (Bloom, 1996). Differences between product source and message source effects are a fruitful area for research.

Product source as an input when judging products

Our research also contributes to the literature by adding to our knowledge of the types of information that influence consumers’ judgments of products (e.g., Cronley et al., 2005; Posavac et al., 2010). Source information may differ from many other types of information in its potential for complexity because consumers have elaborate theories about people, about how traits are interrelated and about what motivates a person to create products. More than many other types of information, inferences from source to product may imbue a product with human traits and so anthropomorphize a product. Further, social stimuli typically attract more attention and interest than objects, so often may be a more compelling type of information for consumers. Additionally, stereotypes may be a type of information that consumers do not want to admit to using more than some types of marketplace information (e.g., the use of price information when judging quality might seem more justifiable).

Limitations

Our research identifies a critical informational cue that consumers use to evaluate products. Although we replicated our major findings across different subject populations, our conclusions are tempered by certain methodological limitations. Our studies’ findings may be limited to a particular social category (gender) or to social categories that are salient and have competence stereotypes associated with them (e.g., race, age). Gender may have more powerful effects than many social categories because it is a salient, inherent property of sources (Brewer & Lui, 1989).

We should also point out another caveat in regard to the generality of our findings. Consumers’ expectations that the source’s gender influences product attributes may be greater for contexts such as the one we examined here, where personal expression via one’s output is expected. Perhaps ironically, we found that a widely shared characteristic (gender) influences judgments of supposedly idiosyncratic output. Further, it seems likely that source information needs to be salient for it to influence post-trial product judgments. For example, source effects when consumers listen to recorded music may diminish as contrasted to when consumers listen to a live symphony performance because the conductor is more salient during a performance.

Another potential limitation is that our results tested effects of product source information after only a brief product trial. Perhaps more experiential evidence gained from longer
exposure to the secondary attributes would overwhelm source information effects. More experiential evidence may eliminate even source effects derived from strongly held incompetence stereotypes (as found in study 1). At some point, evidence may be simply too clear and too obvious. Yet, it is also possible that exposure to more of a complex product (like classical music) would increase processing difficulty (Cronley et al., 2005), leading to effects similar to those observed in our cognitive constraint condition. Although the amount of product exposure was brief in our studies, it was more than what study 1 pretest participants estimated to be sufficient for music evaluation. If it had been insufficient, perhaps experience would have been ignored even when the competent source was incongruent with the product’s gender-typing.

**Implications**

Our results suggest that source information needs to be managed carefully. On the one hand, consumers have more extreme reactions when judging the product quality of a counter stereotypical source than for a stereotypical source. This might suggest that firms are safer providing only source information that confirms expectancies. Yet, expectancy congruent information had no differential impact compared to giving no source information. The implication of this boundary condition is that when firms invest resources in providing information about a product source who fits expectancies they may reap little benefit from doing so.

One way that firms can distinguish their products in consumers’ minds is to promote the competence of a source when the creator’s gender is different from expectations. Gender provides an opportunity for differentiation not only because many domains are gender-typed but also because it is associated with many product attributes. Often those product attributes have very different associations for each sex. These differences offer a way to expand the nature of consumers’ product experience so that it incorporates quite different attributes (e.g., experience a product as being both powerful and delicate; experience a product as being both soft and tough). For example, a female source whose gender is incongruent with the product’s gender typing might bring to the fore an action film’s romantic subplot, might make a hearty meal’s sweet sauce stand out, might lead a rugged apparel’s lining to seem softer, and might suggest a cleaning product’s toughness on stains to be at the same time gentle on surfaces to be cleaned.

One might argue that because sometimes the source information influenced only secondary attributes and then only when cognitive resources were unconstrained, our results have minimal practical consequences. Admittedly, consumers often choose brands based on mere satisficing of the major attribute. Nevertheless, consumers also base preferences on even trivial attributes (Broniarczyk & Gershoff, 2003), which suggests that effects on the secondary product attribute evaluations could be important in the marketplace. Hence, our results suggest that information about a counter stereotypical source can create a singular product experience and one that could tip the balance when a consumer is faced with an array of options that, without source information, are perceived as identical.

**References**


