

Interpreting Uncertainty Terms

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Uncertainty terms (e.g., *some*, *possible*, *good*, etc.) are words that do not have a fixed referent and hence are relatively ambiguous. A model is proposed that specifies how, from the hearer's perspective, recognition of facework as a potential motive for the use of an uncertainty term results in a calibration of the intended meaning of that term. Four experiments are reported that examine the impact of face threat, and the variables that affect it (e.g., power), on the manner in which a variety of uncertainty terms (probability terms, quantifiers, frequency terms, etc.) are interpreted. Overall, the results demonstrate that increased face threat in a situation will result in a more negative interpretation of an utterance containing an uncertainty term. That the interpretation of so many different types of uncertainty terms is affected in the same way suggests the operation of a fundamental principle of language use, one with important implications for the communication of risk, subjective experience, and so on.

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Words can vary in terms of their ambiguity. Some words—for example, terms of definite reference (*my car*, *your house*, etc.)—are often relatively unambiguous.¹ Other words, such as quantifiers (e.g., *Some people liked your presentation*), possess a high degree of ambiguity. Quantifiers are an example of what are referred to in this research as *uncertainty terms*. Uncertainty terms are not fixed and include probability words (*possible*), quantifiers (*some*), frequency terms (*often*), preference terms (*like*), terms of evaluation (*good*), and so on. Because they are not fixed, these types of words can admit a range of interpretations and hence are likely to be a prime source of misunderstanding.

Uncertainty terms are ubiquitous and they appear frequently in communications with important and far-reaching consequences. For example, they play a critical role in feedback given to employees or students (e.g., “Your performance last quarter was *good*”; “We’d like to see *some* improvement next time”). They also play an important role in the description of subjective experience, as, for example, in the assessment of pain in a medical setting (e.g., “It *often* hurts”). And of course, probability terms are central for conveying estimates of risk in financial (e.g., “It’s *possible* that you will lose all of your investment”) and environmental contexts (e.g., “*Most* scientists believe that global climate change is the result of human activity”). Understanding how these

terms are calibrated, by both speakers and recipients, is critical for understanding these important communication processes.

There is a substantial literature examining the interpretation of a small subset of uncertainty terms, in particular probability terms, and how these interpretations are influenced by various aspects of the context (e.g., Harris & Comer, 2011; Moxey & Sanford, 1993; Theil, 2002; Wallsten, Fillenbaum, & Cox, 1986; Weber & Hilton, 1990). In contrast, the present research is concerned with exploring some of the ways in which the *interpersonal* context influences the interpretation of a wide variety of uncertainty terms. An overarching assumption underlying the present approach is the notion that interpersonal variables that influence how something is said will play a parallel role in how something is interpreted (Holtgraves, 1998). Politeness and face management theory (Brown & Levinson, 1987; Goffman, 1967; Holtgraves, 1992) have been shown to influence language production, and hence are used here as an overarching framework for considering the role that interpersonal variables play in the interpretation of uncertainty terms.

Face Management and Language Production

The interpersonal influences on language choice are many and varied. Speakers speak differently as a function of their (and their recipients’) gender, age, occupation, personality, and so on (see Pennebaker, Mehl, & Niederhoffer, 2003, for a review). Face management, via politeness theory, is an interpersonal process that captures much of this variability. In general, *face* refers to a person’s public identity, and *face management* refers to those activities designed to support, protect, and ratify that identity (Goffman, 1967). Much facework is accomplished with language

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¹ This is not to downplay the potential that exists for referential ambiguity (Keysar et al., 1998).

by saying things in a certain way so as to avoid threatening one another's face. Brown and Levinson (1987) referred to this as politeness, and its occurrence (albeit in different forms) appears to be universal. One of the primary linguistic means of managing face is to be less than completely direct or explicit. Hence, when making a request, rather than being direct and using the imperative (e.g., "Shut the door"), people are more likely to be polite and make their request in an implicit, indirect, and hence polite manner (e.g., "Could you shut the door?" for reviews, see Holtgraves, 2001, 2002, 2010).

Brown and Levinson's (1987) theory is particularly useful because it includes high-level interpersonal variables that influence concerns with face, and hence a speaker's level of politeness and directness. Specifically, three variables together determine act weightiness—(a) the perceived degree of the speaker's power relative to the hearer, (b) the psychological distance between the speaker and the hearer, and (c) how much of an imposition the act is—and the greater the weightiness of the act, the greater the need for politeness. Hence, people are usually more polite to a higher power recipient, to someone relatively unfamiliar, and when the imposition is relatively large. Importantly, these are high-level variables that can subsume more specific variables such as gender, occupation, and the like. Research has provided support for the power and imposition variables, and, to a lesser extent, the distance variable (Ambady, Koo, Lee, & Rosenthal, 1996; Holtgraves & Yang, 1990, 1992). More recently, Stephan, Liberman, and Trope (2010) interpreted politeness in terms of construal level theory and demonstrated that higher levels of politeness are associated with higher level construal as well as temporal and spatial distance.

In contrast to research on language production, there has been much less research on the role of face management in language comprehension. One exception is research demonstrating that face management can play a role in the interpretation of relevance violations (Holtgraves, 1998, 1999, 2000). More recently, researchers have begun to examine the role of face/politeness in the interpretation of single words, in this case, probability terms. Probability terms are sometimes used to convey a speaker's lack of certainty. For example, a speaker who says "It's possible I'll attend the conference" may be intentionally communicating a degree of uncertainty about attending an upcoming conference. However, the use of *possible* is often multidetermined and could have been chosen for other reasons. Probability terms figure prominently in linguistic strategies for managing face and being polite (Brown & Levinson, 1987). For example, probability terms can function as hedges on assertions that might be face threatening. Rather than saying "You'll never finish it in time," a speaker can hedge his or her opinion with "It's possible you won't finish it in time." Because probability terms can be used in this way, they sometimes may be interpreted as serving a politeness (i.e., face management) function rather than as a marker of uncertainty. As a result, the perceived likelihood expressed by a probability term will be increased in a face-threatening situation because the use of the word may be attributed to face management rather than uncertainty.

An experiment conducted by Bonnefon and Villejoubert (2006) provided evidence for this process. Participants were asked to imagine that their family doctor told them they would "possibly" develop either deafness or insomnia during the coming year, after which they were asked to judge the doctor's estimate of that

probability. Participants judged the probability of the more severe disease (deafness) to be significantly higher than the estimate of the less severe disease (insomnia). Hence, the same probability word (possibly) was judged to communicate a higher probability when it involved a more severe, and hence more face-threatening, situation.

A conceptually similar finding was reported by Bonnefon, Feeney, and Villejoubert (2009), who examined the role of face management in the interpretation of the scalar quantifier *some*. *Some* is ambiguous in the sense that it is not logically inconsistent with the quantifier *all*. However, it is the scalar implicature (some but not all) that typically prevails (though there is disagreement regarding how and why this occurs; e.g., Carston, 1998; Levinson, 2000). Bonnefon et al. (2009) demonstrated that when a situation is face threatening, people are less likely to draw a scalar implicature for *some* (i.e., assume some but not all) and instead assume that *some* is being used as a hedge and is actually a polite way of indicating *all*. Hence, estimates of *some* in "Some people hated your party" were higher than estimates of *some* in "Some people enjoyed your party."

The Present Model

The purpose of the present research was to develop and test a model specifying basic principles for interpreting a wide swath of uncertainty terms. Specifically, the model explains the role that face management plays in the production and interpretation of the following uncertainty terms: probability terms (e.g., *possible*), quantity terms (e.g., *some*), preference terms (e.g., *like*), frequency terms (e.g., *sometimes*), and evaluation terms (e.g., *good*). Note that these terms vary on multiple dimensions; for example, evaluation and preference terms reference ambiguity in subjective judgments, whereas the other terms reference ambiguity or uncertainty in terms of event likelihood (probability expressions), quantity, and frequency. However, I assume that each of these five types of uncertainty terms can serve a face-management function by lessening the degree of face threat conveyed by the propositional content of an utterance. Probability, frequency, and quantity terms generally function as hedges on the likelihood, frequency, and amount, respectively, of something that is potentially face threatening. For example, "It's *possible* you flunked the exam" is less threatening than "You flunked the exam"; "*Some* people didn't like your presentation" is less threatening than "No one liked your presentation"; and "*Sometimes* you have bad breath" is less threatening than "You always have bad breath." Evaluation and preference terms work differently and are either face supportive or face threatening depending on their valence. Positive preference and evaluation terms serve a positive politeness function, and their use indicates a positive evaluation of an event or entity associated with the other (e.g., "I *liked* your presentation"; "I thought your dinner was *good*").

I assume that the use of uncertainty terms will vary as a function of the degree of face threat in a situation. Because probability, frequency, and quantity terms can function as polite hedges, the likelihood of their use should increase as a function of increasing face threat. Because positive evaluation and preference terms can serve a positive politeness function, their use should increase as a function of increasing face threat. Now, when an uncertainty term is used in a situation that is potentially face threatening for either

the recipient or the speaker, face management may be recognized as a potential reason for the use of that term. And if a recipient recognizes this possibility, there should be a corresponding tendency to adjust the other meaning (uncertainty, amount of a quantity, etc.) associated with that term.

The general interpretive principle, then, is that when face management is viewed as a potential reason for the use of an uncertainty term, a more face-threatening interpretation of the meaning of the utterance containing that term will be generated. For evaluation and preference terms, perceptions of increasing face threat will result in a lowering of the perceived actual evaluation. Specifically, if a situation is potentially face threatening, then a recipient should be more likely to believe that a positive preference or evaluation term is motivated by face management. As a result, the estimated numerical value of *like* should be less when a situation is potentially face threatening. For example, if Sam cooks a meal for his wife, Nancy, and then asks her for her opinion, a potentially face-threatening situation has been created. If Nancy says "I liked it," it is possible that she is engaging in face management. In contrast, if a friend of Nancy asks her what she thought of the meal her husband cooked, the situation is less face threatening. When Nancy says "I liked it" in response to her friend's question, face management is less likely to be operative. As a result, observers should be more likely to estimate Nancy's actual liking of the meal to be higher in the latter situation than in the former situation. A similar effect is predicted for evaluation terms.

For probability terms, negative events described as being "possible" should be judged to be more likely (i.e., less uncertain) when the situation is face threatening than when it is not face threatening. For quantity and frequency terms, the presence of face threat will increase the amount or frequency of whatever is face threatening. Hence, the perceived quantity expressed by "some" will be greater when the situation is perceived to be face threatening relative to when it is not perceived as face threatening. Similarly, the perceived frequency of "sometimes" will be greater if the situation is face-threatening than when it is less face threatening.

Speaker Power and Interpretation

I expect variables influencing the degree of perceived face threat in a situation to have a corresponding effect on the interpretation of uncertainty terms in that situation. Relative power has been demonstrated to have reliable and consistent effects on language production (Holtgraves, 2010). Specifically, as the recipient's power increases (relative to the speaker), any act that is potentially face threatening for the recipient becomes more face threatening. As a result, as a recipient's power increases, speakers will opt for a less threatening utterance in performing a face-threatening act (Holtgraves & Yang, 1992). Extending this to the present concern, I assume that as the recipient's relative power is increased, perceived face threat is increased, and this will result in more face-threatening interpretations of utterances containing uncertainty terms. For example, imagine that Sam eats a meal that was cooked either by his boss (hence Sam is lower in power than the cook) or by someone who he supervises (hence Sam is higher in power than the cook). If participants are asked to indicate their perceptions of the extent to which Sam liked the meal when he says "I liked the meal," the numerical value for *like* should be less when Sam is

lower in power than the questioner (i.e., boss) than when he is higher in power than his questioner (i.e., supervisee).

Overview of Experiments

Experiments 1 and 3 examined the role of face threat in the interpretation of uncertainty terms when the hearer's face was threatened. Experiment 2 extended this by examining the role of the speaker's relative power in the interpretation of uncertainty terms in these situations. Experiment 4 examined the role of face threat in the interpretation of uncertainty terms when it was the speaker's face that was threatened. In all experiments, face threat was manipulated by varying the referent of the critical utterance (which was the same in all conditions). Following Goffman (1967), I assume that it is interactional participants (relative to nonpresent others) who are most concerned with face management. Hence, conveying a negative opinion about someone who is not present (e.g., I didn't like his presentation) should be less face threatening than conveying a negative opinion pertaining to someone who is present (e.g., I didn't like your presentation). In addition, there are multiple tokens of different classes of uncertainty terms that vary in their extremity or scalar position. For example, with terms of evaluation, *excellent* is more extreme than *good*; for frequency terms, *often* is more extreme than *sometimes*, and so on. In order to test whether the effects of face threat and power varied over extremity, two instances of each class of uncertainty term (one more extreme than the other) were examined in these experiments.

Experiment 1

The goal of the first experiment was to examine the role of face threat in the interpretation of two, previously unexamined, classes of uncertainty terms. The two classes examined, each with an extreme and moderate version, were preference (*liked*, *loved*) and evaluation (*good*, *excellent*).

Method

Participants. Participants ($N = 120$; 115 women) were undergraduate students enrolled in Introductory Psychology courses who participated for partial course credit. All participants spoke English as their first language.

Materials. Experimental materials consisted of scenarios describing interactions between two people. Face threat was manipulated within each scenario by having the behavior in the situation description pertain either to one of the interactants (face threatening) or to a nonpresent third person (non-face threatening). This type of face-threat manipulation has been used successfully in the past (e.g., Holtgraves, 1998, 1999). Examples of the face-threat manipulation for all uncertainty terms used in Experiments 1–3 are presented in Appendix A (see the Supplementary Material for all stimuli used in this research). A pretest was conducted in order to select scenarios for which the face-threat manipulation was significant in terms of the perceived threat for asking the question. In all experiments reported in this article, the questions asked by the scenario interactants in the face-threatening versions were rated by pretest participants as being significantly (all $ps < .01$) more

threatening than the same questions asked in the non-face-threatening versions.

There were four different situations for each of the two classes (preference and evaluation) of uncertainty terms resulting in eight different scenarios. Four versions were created for each of these eight scenarios by crossing face threat (two) and extremity (two). Four different booklets were created. Participants saw four preference (two threatening and two non-threatening) and four evaluation (two threatening and two non-threatening) scenarios. Extremity was a between-subjects variable, and participants saw either all moderate (*good, love*) or all extreme (*excellent, loved*) uncertainty terms. Scenario order was randomized for each participant.

Procedure. Data were collected online with the SurveyMonkey platform. Participants first read detailed instructions for performing the task and then proceeded to complete the task at their own pace. For each scenario/utterance, participants were asked to indicate, on a 9-point scale (from 1 = *Extremely Negative* to 9 = *Extremely Positive*), what they believed to be the speaker's opinion. All participants followed instructions (as evidenced by their time spent on task), and no participants were excluded (in all experiments reported in this article). All participants completed the task in less than 15 min.

Results and Discussion

Preliminary analyses that included participant gender as a factor indicated no significant effects involving this variable, and it was dropped from all subsequent analyses. Opinions were analyzed with a $2 \times 2 \times 2$ Face Threat \times Class \times Extremity analysis of variance (ANOVA), with repeated measures on the first two variables. There were significant main effects for face threat, $F(1, 118) = 23.69, p < .01$; class, $F(1, 118) = 8.21, p < .01$; and extremity, $F(1, 118) = 68.94, p < .01$. The data are presented in Table 1.

As expected, the interpretation of the speaker's real opinion was significantly lower when the situation was face threatening ($M = 6.43$; $SE = .12$) than when it was not threatening ($M = 6.83$; $SE = .11$), and this occurred regardless of extremity; the Face Threat \times Extremity interaction was not significant, $F(1, 118) = 1.32, p > .10$.

These results, then, provide an initial demonstration that the meaning of uncertainty terms can vary as a function of the interpersonal context, specifically, as a function of the degree of face threat in the situation. So, when Nancy says "I like it" in response to her husband's query about the meal he cooked, the conveyed opinion is less positive than when Nancy provides the exact same

answer in response to a query from her friend. This effect occurred for both preference and evaluation terms, and it was not moderated by extremity.

Experiment 2

The purpose of Experiment 2 was to extend the analysis by examining the effects of a speaker's relative power on the interpretation of uncertainty terms. As a speaker's relative power is reduced, the face threat to the recipient increases (for acts that are threatening to the recipient). And as face threat increases, the interpretation of uncertainty terms should become more negative (i.e., more likely to convey face-threatening information), as was demonstrated in Experiment 1. In order to test this proposition, the materials used in Experiment 1 were modified by replacing the face-threat manipulation with a power manipulation. The speaker was described as being either lower in power than the other interactant (e.g., a boss) or equal in status to the other interactant (e.g., coworkers). This type of manipulation has been successfully used in the past (Holtgraves, 1994; Holtgraves & McNamara, 2010). In all other respects, this experiment was the same as Experiment 1. I expected interpretations of utterances containing uncertainty words to be more negative when the recipient was higher in power than the speaker (due to the increased probability of face management as a motive for its use).

Method

Participants. Participants ($N = 114$; 83 women) were undergraduate students enrolled in Introductory Psychology courses who participated for partial course credit. All participants spoke English as their first language.

Materials. The experimental materials used in Experiment 1 were modified in the following way. First, the face-threat manipulation was removed and only the face-threatening version of the scenarios was retained. Second, two versions of each scenario were created by manipulating the speaker's power in relation to the speaker. Specifically, in the high-power version, the speaker's power, relative to the hearer, was greater than in the low-power version. Note that the power manipulation was not absolute but relative.

Procedure. The procedure was identical to that used in Experiment 1.

Results and Discussion

Preliminary analyses indicated no significant effects involving participant gender, and this variable was dropped from all subsequent analyses. Opinions were analyzed with a $2 \times 2 \times 2$ Power \times Class \times Extremity ANOVA, with repeated measures on the first two variables. There was a significant main effect for power, $F(1, 112) = 5.03, p < .05$. The means are presented in Table 2. As expected, when the speaker was lower in power than the recipient, participants judged the speaker's opinion to be significantly less favorable ($M = 6.62$; $SE = .12$) than when the speaker was higher in power than the recipient ($M = 6.77$; $SE = .11$). The Power \times Extremity interaction was not significant, $F(1, 112) = 1.64, p = .20$.

In this experiment, then, the interpretation of both evaluation terms (*good, excellent*) and preference terms (*liked, loved*) varied

Table 1
Perceived Opinions as a Function of Face Threat, Extremity, and Class: Experiment 1

Variable	Face threat					
	Face threatening: Extremity			Non-face-threatening: Extremity		
	Extreme	Moderate	<i>M</i>	Extreme	Moderate	<i>M</i>
Loved/Liked	7.12	5.35	6.23	7.60	5.95	6.78
Excellent/Good	7.58	5.69	6.63	7.70	6.08	6.89
Overall	7.35	5.52	6.43	7.65	6.01	6.83

Table 2
Perceived Opinions as a Function of Power, Extremity, and Class: Experiment 2

Variable	Speaker power					
	Higher speaker power: Extremity			Lower speaker power: Extremity		
	Extreme	Moderate	<i>M</i>	Extreme	Moderate	<i>M</i>
Loved/Liked	7.47	5.57	6.52	7.74	5.53	6.63
Excellent/Good	7.61	5.86	6.74	7.79	6.03	6.91
Overall	7.54	5.71	6.62	7.77	5.78	6.77

as a function of the speaker's relative power as predicted. Hence, "I liked it," "I loved it," "It was good," and "It was excellent" were all seen as conveying a more positive opinion if uttered by a high-status speaker than if uttered by a lower status speaker.

Experiment 3

The purpose of Experiment 3 was to attempt to replicate the findings of Experiment 1 as well as to examine the effects of face threat on other uncertainty terms. Regarding the latter, this experiment included quantifiers (*some*; *many*) and frequency terms (*sometimes*; *often*) in addition to the preference and evaluation terms examined in Experiments 1 and 2. I expected utterances containing quantifiers and frequency terms, as well as preference and evaluation terms, to be interpreted more negatively when the situation was face threatening than when it was non-face threatening.

Method

Participants. Participants ($N = 88$; 70 women) were undergraduate students enrolled in Introductory Psychology courses who participated for partial course credit. All participants spoke English as their first language.

Materials. The scenarios containing the evaluation and preference uncertainty terms were identical to those used in Experiment 1. In addition, eight scenarios containing quantifiers (*some*, *many*) and frequency terms (*sometimes*, *often*) were included as well. Examples are presented in Appendix A. Four different booklets were created, and participants saw two face-threatening and two non-face-threatening scenarios for each of the four types of uncertainty terms. Extremity was treated as a between-subjects variable. Across the experiment, an approximately equal number of participants saw each version of each scenario. Scenario order was randomized for each participant.

Procedure. Data were collected online using SurveyMonkey. The rating scale for the preference and evaluation scenario/utterances were the same as in Experiment 1 (i.e., from 1 = *Extremely Negative* to 9 = *Extremely Positive*). For the quantity scenarios/utterances, participants indicated, on a 9-point scale (from 1 = *Very Few* to 9 = *Very Many*), their estimate of the meaning of the quantity term. And for the frequency scenarios/utterances, participants indicated, on a 9-point scale (from 1 = *Very Infrequently* to 9 = *Very Frequently*), their estimate of the meaning of the frequency term. Note that for the quantity and frequency scenarios,

higher scores indicate a more negative interpretation, the reverse of the preference and evaluation scenarios.

Results and Discussion

Preliminary analyses indicated no significant effects involving participant gender, and this variable was dropped from all subsequent analyses. Separate analyses were conducted for the evaluation/preference items and the frequency/quantity items because they were keyed in opposite directions. Both sets of items were analyzed with a $2 \times 2 \times 2$ Face Threat \times Class \times Extremity ANOVA, with repeated measures on the first two variables. The data are presented in Table 3.

Evaluation. As in Experiment 1, there was a significant main effect for face threat, $F(1, 86) = 17.38$, $p < .01$, and again, opinions were significantly lower in the face-threat version ($M = 6.35$; $SE = .15$) than in the nonthreat version ($M = 6.70$; $SE = .14$). Also, as in Experiment 1, there were significant main effects for class, $F(1, 86) = 11.66$, $p < .01$, and extremity, $F(1, 86) = 46.16$, $p < .01$. Unlike Experiment 1, there were significant Class \times Threat, $F(1, 86) = 6.64$, $p < .05$, and Class \times Threat \times Extremity interactions, $F(1, 86) = 4.32$, $p < .05$. As can be seen in Table 3, the effect of face threat occurred only for the weaker evaluation term (*good*; 6.99 vs. 5.67) and not for the stronger term (*excellent*; 7.6 vs. 7.64). However, for preference terms, the threat effect was equally strong for the terms *liked* and *loved*.

Quantity/frequency. As with evaluation terms, there was a significant main effect for threat, $F(1, 86) = 7.21$, $p < .01$. Overall, judgments regarding the likelihood that the quantity or frequency term conveyed face-threatening information were higher in the face-threatening versions ($M = 5.91$; $SE = .14$) than in the nonthreatening versions ($M = 5.70$; $SE = .14$). Other significant effects include a class main effect, $F(1, 86) = 4.71$, $p < .05$, and a Class \times Extremity interaction, $F(1, 86) = 8.91$, $p < .05$. The Threat \times Extremity interaction was not significant, $F(1, 86) < 1$.

The results of this experiment replicate the Experiment 1 findings for evaluation and preference uncertainty terms. Equally important, the results extend support for the model by demonstrating similar effects for quantity and frequency terms. In addition,

Table 3
Perceived Opinions as a Function of Face Threat, Extremity, and Class: Experiment 3

Variable	Face threat					
	Face threatening: Extremity			Non-face threatening: Extremity		
	Extreme	Moderate	<i>M</i>	Extreme	Moderate	<i>M</i>
Loved/Liked	6.91	5.17	6.04	7.64	5.57	6.61
Excellent/Good	7.64	5.67	6.66	7.60	6.99	6.79
Evaluation						
Overall	7.28	5.42	6.35	7.62	5.78	6.70
Many/Some	7.03	4.43	5.73	6.72	4.35	5.56
Often/Sometime	6.92	5.24	6.08	6.57	5.01	5.83
Quant/Freq						
Overall	6.98	4.84	5.91	6.72	4.68	5.70

Note. For the quantity/frequency (Quan/Freq) terms, higher values indicate a more negative interpretation.

there was partial support for extremity as a potential moderator variable. For evaluation terms, the effects of face threat occurred only for the more ambiguous, less extreme term.

Experiment 4

Experiments 1–3 examined the interpretation of uncertainty terms when the term referenced the recipient. Hence, lower evaluations could be attributed to the speaker attempting to manage the face of the recipient. But what about the speaker's face? Would uncertainty terms referencing the speaker be interpreted differently as a function of face threat? Standard theories of politeness (Brown & Levinson, 1987) assume that individuals attempt to simultaneously manage their own face as well as that of their interlocutor (although the emphasis has been on the recipient's face). The purpose of Experiment 4 was to examine the role that face threat might play in the interpretation of uncertainty terms when the uncertainty term references the speaker rather than the recipient.

In this study, participants read situation descriptions in which face threat was manipulated (similar to Experiments 1 and 3) except that the utterances referenced the speaker rather than the hearer. Following each description was an utterance containing a probability term said by one of the scenario interactants to the other interactant. I expected the probability term to be interpreted as conveying a higher probability of a negative event when the situation was face threatening than when it was not face threatening. So, when Sam is asked about the scratch on his mom's car and he replies "It's possible I scratched your car," the estimated probability is expected to be higher than when Sam says "It's possible Jack scratched your car."

Method

Participants. Participants ($N = 86$; 70 women) were undergraduate students enrolled in Introductory Psychology courses who participated for partial course credit. All participants spoke English as their first language.

Materials. There were four critical scenarios and four versions of each that resulted from crossing face threat (two) and extremity (two). All versions of all scenarios are presented in Appendix B. Four booklets were created, and participants were randomly assigned to one of the booklets. Each booklet contained the four critical scenarios, each in a different version. Across the experiment, an equal number of participants saw each of the four versions of each scenario.

Procedure. Data were collected using the SurveyMonkey platform. Participants read a scenario and remark and provided probability ratings (e.g., Please indicate your judgment of the probability that Sam/Jack scratched the car) on a 9-point scale (from 1 = *Extremely Improbable* to 9 = *Extremely Probable*). Scenario order was randomized for each participant.

Results

Preliminary analyses indicated no significant effects involving participant gender, and this variable was dropped from all subsequent analyses. Probability ratings were analyzed with a 2×2 Face Threat \times Extremity ANOVA. As expected, probability ratings were significantly higher in the face-threatening version ($M =$

7.07; $SE = .19$) than in the non-face-threatening version ($M = 5.58$; $SE = .16$), $F(1, 84) = 56.47$, $p < .001$. The effect was roughly the same for both probability terms (*possible*: 7.09 vs. 5.78; *likely*: 7.05 vs. 5.38), and the Threat \times Extremity interaction was not significant, $F(1, 84) = 1.41$, $p > .23$.

These results, then, provide support for the model in terms of probability expressions, as well as utterances referencing the speaker rather than the recipient. This makes sense, of course, as interactants are assumed to be concerned with managing their own face as well as that of their interlocutor. The general principle demonstrated in this study, then, is that the interpreted probability conveyed with *possible* will be higher when it references something negative associated with the speaker than when it references something negative associated with someone else.

General Discussion

Language plays a critical role in a wide variety of social psychology processes. Attribution, persuasion, social reasoning, prejudice, person perception, and others are mediated by language in a variety of ways (see Holtgraves, 2010, for a review). At its core, though, language is about the communication of meaning, about understanding and being understood. Yet the ambiguity inherent in language makes it an imperfect medium for communication, and communicative misunderstandings often occur. Prior research has investigated linguistic ambiguity primarily in terms of referent identification (e.g., Savitsky, Keysar, Epley, Carter, & Swanson, 2011) and indirect sentence (e.g., metaphor) meaning (e.g., Lee & Pinker, 2010). In contrast, the present research contributes to the development of a new line of research by examining the ambiguity inherent in uncertainty terms.

Uncertainty terms are inherently ambiguous because there is no "gold standard" for their interpretation. It is possible to make comparative judgments of course—*many* is more than *some*, for example—but there is no absolute reference point for these terms. In this research, a relatively simple principle (facework) was used to explain the interpretation of a relatively wide swath of uncertainty terms, including terms of evaluation, "I think it's good," and preference, "I like it," as well as terms of quantity, "Many of them were bored"; frequency, "I think you are sometimes lazy"; and probability, "It's possible that I scratched your car." That so many different types of expressions follow the same principle suggests the operation of a fundamental principle of language use.

Importantly, the degree of face threat in a situation can be affected by interpersonal variables such as a speaker's power, and hence a speaker's power can influence how an uncertainty term is interpreted. As a result, "I liked it" when said by a boss conveys a more positive opinion than the same utterance said by a coworker. Such an effect seems intuitively reasonable; the present study demonstrates why this occurs. Note also that this effect is consistent with prior research demonstrating that certain indirect request forms made by a high-power speaker will be comprehended more quickly than the same request made by a lower power speaker (Holtgraves, 1994) and that remarks uttered by a higher status speaker will be recalled as being more direct and assertive than the exact same remarks uttered by a lower status speaker (Holtgraves, Srull, & Socall, 1989). Politeness and face management encompass many other interpersonal variables for which interesting predictions could be derived. In fact, any variable that influences face

threat should have predictable effects on the interpretation of uncertainty terms.

What, exactly, is the process involved in the interpretation of these uncertainty terms? For quantifiers, a dominant approach in experimental pragmatics has been to contrast the interpretation of quantifiers against the backdrop of the rules of formal logic. Consider the quantifier *some*. Although *some* is not logically inconsistent with *all*, comprehenders typically infer that *some* means some but not all. This is referred to as a *scalar implicature*, and it is based on the assumption that the speaker would have used the more extreme term (*all*) if that is what was intended. In this view, then, the interpretation of quantifiers such as *some* often represents the endpoint of an inference process; that is, the full meaning of *some* is cancelled in favor of the reduced meaning (i.e., some but not all). The present results suggest that this process may be relatively broad and relevant for other uncertainty terms as well. Hence, the scalar implicature for *like* in “I liked it” would be that I liked it but did not love it. Similarly, the use of *good* implicates not excellent, and so on. At the same time, whether or not a scalar implicature occurs is not fixed and is dependent on the context, as the present studies suggest. Moreover, the exact nature of this inference process, when it occurs, remains unclear. It seems unlikely that a relatively time-consuming inference process is involved each time an uncertainty term is encountered. Just as the intended nonliteral meaning of utterances may be sometimes recognized automatically (e.g., Gibbs, 1980; Keysar, 1994), so too might scalar implicatures sometime be recognized without need of an inference process. The approach favored here is that comprehenders form a rough snapshot (or an hypothesis) about a speaker’s intended meaning, adjusting those interpretations as a function of the subsequent recognition of possible motives for their use. When and how such processes operate is unclear, although evidence for the processing of *some* suggests that contextual variables play a role very early in the comprehension process (Breheny, Katsos, & Williams, 2006; see also Panizza, Chierchia, & Clifton, 2009; but see Hartshorne & Snedeker, 2013).

More generally, I assume that language users should be viewed as active interpreters, actively constructing some understanding of the speaker’s meaning based on their utterance as well as relevant and available contextual information. Many times this search for meaning will involve an attempt to understand “why” a speaker is saying what he or she is saying. And this reasoning process, although sometimes short-circuited and subjected to numerous situational constraints, is influenced by the recognition of possible motives (i.e., face management, uncertainty) for the use of a particular term. If multiple motives are discerned, then adjustment processes are instigated. Note how this process is consistent with the discounting principle (Hansen & Hall, 1985).

Although the present research focused on general principles, it seems likely that there will be personality and cultural variability in the effects demonstrated here. In other words, not everyone will interpret *some* in the same way, and some of those differences may be related to culture (Kashima, Kashima, & Kidd, in press), personality (Duffy & Feist, in press), and possibly gender differences (Leaper, in press) in communication.

There are several avenues for future research. First, the examination of the role of interpersonal processes in the interpretation of uncertainty terms in self-disclosures, as done in Experiment 4, has the potential for increasing our understanding of the role of

uncertainty terms in how people respond to self-report items. Prior research has demonstrated that face-management processes are active when people respond to self-report items (Holtgraves, 2004; Tourangeau et al., 2007), and there is some research indicating that face-supportive question wording can increase the extent to which socially undesirable (i.e., face-threatening) answers are given (Holtgraves, Eck, & Laskey, 1997). Self-report questions are essentially self-disclosures. If concerns with face management influence the interpretation of uncertainty terms in self-disclosures (as demonstrated in Experiment 4), then it seems reasonable that these concerns will play a similar role in the interpretation of uncertainty terms in self-report items. According to the present analysis, then, the subjective probability (or degree of certainty) required to endorse the item “I possibly didn’t report all of my income” will be different from the subjective probability required to endorse the item “I possibly forgot to turn off the lights this morning.” The present model predicts that the numerical probability threshold will be higher in the former (because it is more face threatening) than in the latter. Hence, the subjective probability required to endorse an item that contains a probability term will increase as a function of increasing face threat. Obviously, such effects would have important implications for the interpretation of responses to self-report items.

The present model assumes that speakers will be more likely to use uncertainty terms as face threat increases and that recipients will be more likely to give a face-threatening interpretation of uncertainty terms as face threat increases. This would suggest some coordination between interlocutors (i.e., speakers use uncertainty terms to manage face, and recipients are aware that uncertainty terms are used to manage face). However, miscommunication can occur in this situation if recipients fail to take into account the speaker’s perspective in choosing to use an uncertainty term. Research suggests that people tend to overestimate their communicative effectiveness (Keysar & Henley, 2002) and often fail to adjust their egocentric interpretations (Keysar, Barr, Balin, & Paek, 1998). Moreover, in certain domains, there appears to be a systematic divergence between speakers and recipients in terms of interpretation. Specifically, when a situation is potentially face threatening, recipients are more likely to interpret a relevance violation (topic change) as conveying face-threatening information (e.g., a negative opinion) than are speakers (Holtgraves, 2005). With uncertainty terms, the recipient may fail to realize that the speaker chose to use an uncertainty term in order to convey uncertainty. Hence, face threat may affect their interpretations above and beyond what the speaker intended. As a result, other things being equal, recipients should tend to give a more face-threatening interpretation of an utterance with an uncertainty term than what was intended by the speaker.

Finally, there is a substantial literature dealing with how humans process uncertainty in general, especially when uncertainty is conveyed with numerical probability expressions (Kahneman & Tversky, 1984; Kluger, Stephan, Ganzach, & Hershkovitz, 2004). In contrast, the present research examined the interpretation of verbal uncertainty terms, words rather than numbers. It is likely that the interpretation of verbal uncertainty terms will be influenced by some of the same factors influencing the processing of numerical expressions (e.g., underweighting high-probability expressions and overweighting low-probability expressions, especially under a prevention focus orientation). Because people often

use uncertainty words (e.g., “Some people liked your presentation”) rather than numbers (e.g., “Fifty-five percent of the audience liked your presentation”), this would appear to be an important avenue for subsequent research.

The methodology for the studies reported here all involved interpretations of others’ utterances. Participants were, in effect, role-playing. In general, the present results represent an attempt to uncover language-based reasoning schemes that are used in the interpretation of uncertainty terms. A natural question, then, is whether these findings would replicate with people who are actually involved in an interaction. This, of course, is an empirical question and another avenue for subsequent research, one that we are currently pursuing. It is not unreasonable, however, to expect these effects to be as strong, if not stronger, for people involved in an interaction. This is because actual interactants are probably more invested in facework than are third-party observers.

The present studies represent an initial attempt to identify some of the interpersonal variables that underlie the interpretation of a variety of uncertainty terms. These lexical items are ubiquitous and often involved in communications with important consequences. Understanding what people intend to convey when they use an uncertainty term, and how people interpret another’s use of an uncertainty term, is critical for developing sophisticated models of social interaction and communication.

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(Appendices follow)

Appendix A

Uncertainty Terms and Face-Threat Manipulation in Experiments 1 and 3

Experiments 1 and 3

Preference. Sam cooked a fancy meal for his wife, Carol. *Later, he asks her if she liked it.* (Later her friend asks her if she liked it), and she replies: Carol: I liked/loved the meal.

Please indicate what you believe to be Carol's opinion of the meal

Evaluation. *Megan* (Nicole) gave a history presentation in class. Later, Megan asks her friend Jane what she thought of *her* (Nicole's) presentation.

Jane: I thought the presentation was good/excellent.

Please indicate what you believe to be Jane's opinion of the presentation

Experiment 3

Frequency. Amy, Brenda, and Fran are good friends and roommates. One day, *Brenda* (Fran) asks Amy if she thinks *she* (Brenda) has bad breath:

Amy: I think *you* (she) sometimes/often have (has) bad breath.

Please indicate how often Amy thinks Brenda/Fran has bad breath.

Quantity. Nina was a graduate student and taught her first class. After the class was over, *Nina* (one of the students) asked one of the students named

James how many students were using their phone during class.

James: Some/Many students were using their phone.

Please indicate your estimate of how many students were using their phone.

Note. The non-face-threatening version was created by substituting the material in parentheses for the italicized material.

Appendix B

Uncertainty Terms and Face-Threat Manipulation in Experiment 4

Mrs. Taylor was cleaning the room of her two sons, Jon and Joe. While doing so, she discovered a pack of cigarettes. While Joe was at soccer practice, she asked Jon whether the cigarettes were *his* (Joe's).

Jon: It's possible/likely that the cigarettes are *mine* (Joe's).

Dr. Jones recently discovered that two of his students scored very similarly on a challenging exam, and he suspected that cheating had taken place.

But he was unsure who was guilty. So, he asked Ethan if *he* (James) was the one that had cheated:

Ethan: It's possible/likely *I* (James) cheated on the exam.

Allie's ice cream was missing from the freezer, and she suspected that one of her roommates had taken it without asking. But which one? That evening, she confronts Katie and asks her if *she* (Brianna) ate her ice cream.

Katie: It's possible/likely that *I* (Brianna) ate your ice cream.

Trevin, Caleb, and Aaron moved into a new apartment off campus. When they were finally all unpacked, Trevin discovered that his flat screen TV would no longer work. He suspected that one of his roommates dropped it on the way in. He decides to ask Caleb if *he* (Aaron) dropped the TV.

Caleb: It's possible/likely that *I* (Aaron) dropped your TV.

Note. The non-face-threatening version was created by substituting the material in parentheses for the italicized material.

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