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VERBAL EXPRESSIONS OF CONFIDENCE AND DOUBT[1]

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Summary.- The development of a taxonomy of expressions expressing the degree of confidence or certainty felt in the correctness of one's judgments, knowledge, or beliefs is reported. 30 phrases expressing confidence and doubt were rated by 96 British participants on a 7-point scale to indicate how much confidence or doubt they felt each phrase expressed. The expressions were rank ordered, based on their mean ratings, to produce a continuum of cues expressing confidence, ranging from high to low. 9 of the 30 expressions were rated as expressing lower confidence when phrased in the past tense than in the present tense. The expressions reported in this study form a useful tool for researchers who are investigating the communication of confidence and degrees of belief, especially in relation to giving advice, influence, and persuasion.

The word *confidence* is used to describe a person's strength of belief about the accuracy or quality of a prediction, judgment, or choice (Peterson & Pitz, 1988; Sniezek, 1992), and confidence can thus be described on a continuum ranging from total certainty to complete doubt. In recent years researchers have become interested in how the confidence that people generally express in specific pieces of information influences the recipient of that information (Zarnoth & Sniezek, 1997; Sniezek & Van Swol, 2001; Pulford, 2002; Pulford & Colman, 2005; Wesson & Pulford, 2006), especially in judge–advisor systems and group decision making, and have found expressed confidence to be an influential factor. Even children as young as four years old can understand words that express confidence and use them as a basis of their choices (Moore, Harris, & Patriquin, 1993).

The influence of a speaker's confidence, as a form of social influence in computer-mediated communication, has recently been investigated by Lee (2005). Lee found that men were persuaded by an anonymous on-line partner's high confidence when it was expressed in numbers (but not words), whereas women were more likely to conform to the high-confidence advice that was expressed in words and were less influenced by numbers. Lee used several cues to express the

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verbal confidence of the advisor, such as "I am slightly confident" and "I am somewhat confident" to express low confidence and "I am quite confident" and "I am very confident" to express high confidence. Lee used verbal cues to indicate how confident a speaker felt, and assessed the effect on the listener. In more true-to-life experiments where participants actually interact and discuss problems or scenarios with each other (Sniezek & Henry, 1989; Zarnoth & Sniezek, 1997), people are free to switch between numerical and verbal reports of confidence, or to limit themselves to one mode.

In a related field, researchers such as Paese and Kinnaly (1993) and Price and Stone (2004) have used numbers to represent the speaker's estimate of the probability of their chosen answer being correct. In the field of probability communication, which bears strong similarities to the area of confidence communication, the mapping of quantitative terms to qualitative terms has established the numerical values placed on different verbal expressions of probability (see Druzdzel, 1989; Clark, 1990, for reviews). Phrases such as "absolutely impossible," "rather likely," "very probable," and "almost certain" have been researched in detail and ratings of the values assigned to each phrase have been observed (Hamm, 1991). Kahneman and Tversky (1982) pointed out that there are different expressions in natural language reflecting the internal or external source of the uncertainty. For example, uncertainty can be either internal (epistemic) uncertainty, relating to a subjective state of incomplete knowledge, or external (aleatory) uncertainty, which is due to the chance nature of external factors. Teigen (1988) concludes "the term 'uncertainty' refers primarily to states of mind, whereas 'probabilities' have in the course of history increasingly been used to describe the occurrences of external events" (p. 33). In previous research, the authors have examined the phrases that people use to communicate an internal state of mind and how uncertain, or certain, they feel in their knowledge or beliefs. Researchers often use the terms *confidence* and *subjective probability* interchangeably, but here the word confidence is used to refer to the internal uncertainty that the person feels. Doubt—the opposite of confidence—fortunately is usually more clearly understood to refer to internal feelings of high uncertainty.

When communicating about probabilities, listeners tend to show a preference for numerical probabilities, but speakers often feel more comfortable communicating probabilities by using verbal expressions (Brun & Teigen, 1988; Hamm, 1991). Given this preference for communicating such information verbally, it is perhaps surprising that research has focused so heavily on numerical expressions, but understandable since they are clearly ordinal in nature. As Renooij and Witteman (1999) point out, "words are, in comparison, vaguer, they do not allow calculations and they are more variably interpretable" (p. 3). Renooij

and Witteman developed a probability scale that rank ordered verbal probability expressions such as "certain," "probable," "improbable," and "impossible," which express the likelihood of events occurring, and mapped those words to numerical values.

Previous studies have ranked verbal expressions of probabilities. In this study, instead, participants ranked examples of verbal expressions of confidence and doubt that are commonly used to indicate their strength of feeling or belief in the correctness of the information they are giving. Druzdzel's (1989) and Clark's (1990) reviews of the literature on expression of verbal uncertainty concluded that although there is a great deal of between-subject variability in the numerical values assigned to expressions of probability, the ordinal relations between these expressions are more or less consistent. It was expected that this would also be the case for verbal expressions of confidence. For example, people might assign different numerical values to expressions such as "I am certain" and "I think," but they should always tend to rank "I am certain" as indicating more confidence than "I think." Feezel (1974) suggests that terms of confidence lie along a continuum, and consistent results have been found for the positioning of words along this continuum, with terms such as *suppose*, *think*, *sure*, *certain*, and *positive* indicating increasing certainty (Foley, 1959; Berry, 1960; Fabre, 1991). These early studies, however, did not examine in depth how people express very low confidence, i.e., doubt. This study is an attempt to fill this gap.

When expressing uncertainty, people's speech is characterised by the more frequent use of tag questions and disclaimers (Bradley, 1981). However, Bradley points out that whilst there are many kinds of disclaimer, only two are associated with uncertainty: hedges and cognitive disclaimers. Hedging indicates that a given statement is tentative, and communicates uncertainty about how it will be received, whereas cognitive disclaimers may be used when people expect that their opinions may be questioned, or they have doubts about their understanding of a given issue. Hence, a lack of confidence may be expressed with the use of tag questions (*I think it's…, isn't it?*), hedges (*I could be wrong, but…*) and cognitive disclaimers (*I could be mistaken, but…*).

Making comparisons between studies may become problematic owing to the wealth of expressions people can, and do, use in everyday conversation to express degrees of belief (Astington & Olson, 1990). Therefore, it may be advantageous for researchers examining the influence of verbal expressions of confidence to have access to a taxonomy of verbal expressions of confidence, to ensure consistent usage of terms and to know in advance how these terms are likely to be interpreted. With this aim in mind, a list of confidence expressions

(interchangeable statements that are used either before or in conjunction with expressed judgments) was constructed using qualifiers and phrases identified in previous research as indicating different degrees of confidence, such as *I know* and *I think* (Foley, 1959; Berry, 1960; Feezel, 1974; Bradley, 1981; Westney, 1986; Furrow & Moore, 1990; Fabre, 1991; Pulford, 2002), akin to lists that have been created for verbal expressions of probabilities. The list incorporates hedges and disclaimers which occur in everyday language, covering the continuum from absolute certainty to complete doubt. The aim was not necessarily to be able to assign precise numbers (probabilities or ratings) to these expressions, but to demonstrate where the expressions fall on a confidence–doubt continuum. Of course, researchers who want to make numerical ratings of people's speech would be able to use this taxonomy to consistently code phrases expressing confidence, and it has already been successfully used this way in a recent study by Pulford and Evans (2006). This taxonomy should help researchers create more consistent experimental materials in future research.

METHOD

Participants

British undergraduate psychology students (N = 96; 17 men and 79 women), ranging in age from 18 to 49 years (M = 21.1, SD = 5.9), completed the study as a group in a lecture theatre, in return for course credit. All were native speakers of English. No attrition occurred; the sex imbalance was representative of the students in the course. Participants were blind to hypotheses.

Materials

A list of 30 confidence expressions was constructed. In addition to the expressions noted above, further expressions that are commonly used in natural language to express confidence and uncertainty were added to the list to create a broader and more naturalistic list (see Table 1). These were taken from various sources including conversations, television quiz shows, and court transcripts. Each expression was then modified to change the tense, so that two lists were produced, one phrased in the past tense (e.g., "I'm confident that it was…") and the other phrased in the present tense (e.g., "I'm confident that it is…"). This check was necessary because in earlier experimental research using confidence expressions (e.g., Wesson & Pulford, 2005), some sentences needed to be phrased in the past tense and some in the present, for variety and because of the context. Here, the tense of the expressions was investigated as an independent variable, to assess whether referring to confidence in the past or present tense influences the perceived confidence ratings. This would also allow for greater future flexibility in using the expressions.

TABLE 1

RATINGS OF EXPRESSIONS OF CONFIDENCE AND DOUBT, OVERALL AND FOR PAST AND PRESENT PHRASINGS

	Past		Present			
Expression	*M*	*SD*	*M*	*SD*	*t*	*d*
I'm not sure, it's kind of…	2.88	1.08	2.91	1.24	-0.104	0.03
Oh, I don't know, I suppose it's…	2.94	1.07	3.02	1.25	-0.339	0.07
I suppose it could be…	3.13	1.12	3.34	0.96	-2.149*	0.44
I'm guessing, but I would say it's…	2.92	1.06	3.39	1.04	-0.958	0.20
I think it's…. isn't it?	3.08	1.31	3.48	1.41	-1.442	0.29
I think, I think it's….	3.19	1.03	3.61	1.37	-1.719	0.35
I could be wrong, but I think it's…	3.67	1.32	3.68	1.38	-1.411	0.29
I guess it's…	3.56	1.13	3.75	1.14	-1.602	0.33
It's…. I think.	3.40	1.18	3.75	1.22	-0.827	0.17
I'm not sure, but it may be…	3.44	1.27	3.84	1.14	-0.032	0.01
I'm not certain, but it could be…	3.65	1.12	4.14	1.07	-2.668**	0.53
I think it's…. but I can't be sure.	3.48	1.16	4.16	1.33	-2.149*	0.44
I can't say for sure, but I think it's…	3.81	0.99	4.16	0.94	-1.773	0.36
I'm not completely confident, but I think it's	4.12	1.02	4.20	0.90	-0.449	0.08
I think it's…	4.06	1.06	4.66	0.99	-2.865**	0.57
I could be mistaken but I'm sure it's…	4.17	1.23	4.68	1.07	-2.137*	0.43
I suspect it's…	4.25	1.12	4.68	0.98	-1.992*	0.40
I would say it's…	4.29	1.05	4.70	1.02	-1.952*	0.39
I believe it's…	4.56	1.11	4.86	1.11	-1.344	0.27
I remember it's…	5.25	1.14	5.18	1.08	0.299	-0.06
I'm fairly confident it's…	5.25	1.10	5.32	0.80	-0.342	0.07
I have no doubt, I mean I'm sure it's…	5.40	1.71	5.95	1.03	-1.869	0.38
I'm sure it's…	5.52	1.16	6.02	1.02	-2.232*	0.45
I have no doubt it's…	5.88	1.32	6.30	1.05	-1.665	0.34
I'm confident that it's…	6.06	1.18	6.43	0.97	-2.420*	0.49
I know it's…	6.08	1.49	6.45	1.00	-1.676	0.34
I know for a fact that it's…	6.25	1.37	6.50	1.00	-2.339*	0.47
I'm certain it's…	5.90	1.61	6.55	0.76	-1.428	0.28
I'm positive it's…	5.96	1.53	6.57	0.85	-1.005	0.21
I'm absolutely certain it's…	6.33	1.45	6.61	0.97	-1.116	0.22

Note.— The cues listed here are in the present tense. *d* is Cohen's *d* measure of effect size. *df* = 94.

* $p < .05$, ** $p < .01$

Procedure

Participants were asked to "Read each of the following statements carefully and then decide how confident you think a speaker using these expressions would

be in their answer." Participants rated each of the 30 expressions on a 7-point scale, labelled with the following anchors: 1: Not at all confident, 4: Moderately confident, 7: Highly confident. Forty-four of the participants rated expressions presented in the present tense while 52 participants rated expressions presented in past tense. The unequal samples were not due to attrition, only an uneven distribution of materials in the large testing session. The expressions were presented in a random order, not the order shown in Table 1.

RESULTS

The mean rating of each confidence expression was calculated and cues were then rank ordered from low to high (see Table 1). A mixed-design ANOVA was computed with the expressions as the repeated measure and tense as the between–subjects variable. A main effect of expression was found, reflecting the fact that for some, confidence was rated significantly higher than for others ($F_{29, 2726}$ = 122.46, $p < .001$; $\eta^2 = .57$). A main effect of tense showed that when participants rated expressions stated in the past tense, they rated them to be expressing significantly less confidence ($M = 4.42$, $SE = .07$) than when they were phrased in the present tense ($M = 4.76$, $SE = .08$; $F_{1, 94} = 10.05$, $p = .002$; $\eta^2 = .097$). The ratings for the past tense expressions tended to be lower than the ratings for those in the present tense. This was the case for 29 of the 30 cues, although only significant for nine (see Table 1 for between-subjects *t* test results). There was no significant interaction between expression and tense.

To assess how well the assumed ordinal relation between verbal expressions held up, four cues were selected from the list, shown in Table 2, to represent expressions at different points along the continuum (with average ratings in Table

TABLE 2
PERCENTAGE OF PARTICIPANTS RATING EXAMPLE PHRASES IN PREDICTED DIRECTION

Lower confidence phrase	Higher confidence phrase	Rated in predicted direction	Rated equal	Rated in opposite direction
I suppose it could be…	I think it's…	68.75	25.00	6.25
I suppose it could be…	I'm fairly confident it's…	90.63	6.25	3.13
I suppose it could be…	I'm absolutely certain it's…	93.75	2.08	4.17
I think it's…	I'm fairly confident it's…	61.46	23.96	14.58
I think it's…	I'm absolutely certain it's…	87.50	7.29	5.21
I'm fairly confident it's…	I'm absolutely certain it's…	83.33	8.33	8.33

1 just above 3, 4, 5 and 6). Then, for each pair of expressions, the percentage of participants who rated one higher than the other in the predicted direction was calculated, along with the percentage who rated them equally, and finally the percentage who rated one higher than the other but in the order opposite that predicted. Table 2 shows that most participants' ratings rated the expressions in the predicted direction. When there was less clarity and some people rated the two cues as equal, the expressions compared were only one rating unit apart on the rating scale. One comparison, between "I think it's..." and "I'm fairly confident it's...", resulted in around 15% of people rating the expressions in the direction opposite to that predicted. These expressions are in the middle of the scale, and it appears that there may be more ambiguity there about the degree of confidence that they express.

Analyses for sex differences for each individual expression (past and present tense) were not performed because of the small number of men in the sample (n=5 men were in the present tense condition). An overall analysis examining sex differences, with expressions as the unit of analysis rather than participants, was performed and this showed that there were no significant sex differences between men (M = 4.39, SD = 1.42) and women (M = 4.42, SD = 1.11) in their ratings of the past tense expressions (t_{58} = -0.097, p = .92). A similar analysis also showed no significant sex differences in ratings of the present tense expressions (men: M = 5.10, SD = 1.09; women: M = 4.72, SD = 1.25; t_{58} = 1.255, p = .21.)

DISCUSSION

The rank ordering of the confidence expressions developed in this study support previous research finding that expressions of certainty fall along a continuum (Foley, 1959; Berry, 1960; Feezel, 1974; Fabre, 1991). The higher-ranked expressions convey greater confidence in a statement —what one knows to be true—and can be represented by expressions such as "I'm absolutely certain it's...." The more moderately-ranked confidence expressions convey less certainty in the accuracy of the statement, and are thus conveyed through expressions such as "I believe it's…." The lowest-ranked confidence expressions convey the most uncertainty in the accuracy of the statement; hence, expressions such as "I suppose it could be…" are used to communicate doubt or low confidence.

In addition to the expressions falling along a continuum of confidence, the ordering of the words *positive*, *certain*, *sure*, *think*, and *suppose*, in terms of the rated confidence, was consistent with other studies (Foley, 1959; Berry, 1960; Fabre, 1991). Finally, similarities in the ordering of the cues developed in the present study can be drawn with the smaller pool of cues used by Pulford (2002), who investigated their persuasiveness.

Overall, the confidence expressions developed in this study have been found

to cover a wide range of degrees of confidence and doubt, and the ratings are in agreement with previous findings that had used a much smaller set of phrases. When considering cues for use in research it should be noted that previous research has found there to be a great deal of overlap between terms of uncertainty (see Druzdzel, 1989; Clark, 1990). For this reason, if researchers are to investigate the influence of degrees of confidence, such as the relative influence of high, medium, and low confidence, expressions should be selected that are rated sufficiently far apart from each other to eliminate ambiguity.

In selecting expressions for use in future research, consideration should also be given to the past- or present-tense phrasing, as some expressions appear to convey slightly different degrees of certainty, depending on the tense. There are, however, many expressions which do not result in different ratings according to their tense and these could be selected for research if so desired. Whether the tense retains some influence when the expressions are attached to actual information remains to be studied. Findings indicate that speaking about confidence in the present tense usually conveys greater confidence and certainty than when using past tense, although the effect was weak. Examining Table 1 indicates that most of the significant differences in tense are in the middle of the range of confidence range, where there may be more ambiguity about the degree of confidence, as compared to the top and bottom of the scale where certainty or doubt is less mistakable. The present-tense phrase "it is" may sound more certain than the past-tense phrase "it was," perhaps because it implies a current judgment rather than a memory, which is possibly more fallible. The directionality of the expression may also be important, as research in the field of verbal probability expressions has shown that there are different effects of positive and negative expressions of uncertainty and how they are interpreted (Teigen & Brun, 1995, 1999). The parallel in confidence communication is worthy of future investigation.

Finally, whether these results remain consistent when translated into other languages, or even in other English-speaking cultures, is something worth investigating. The persuasive effect of confidence expressions on listeners also remains an intriguing question, and authors such as Blankenship and Craig (2006) have concluded that "it is clear that linguistic cues have distinct and important effects on message processing" (p. 126). It is hoped that this set of expressions will prove useful for researchers who are studying how people's expressions of confidence influence such things as impression formation, attitude change, and advice taking in experimental and applied settings.

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