

Edith Cowan University
Research Online

Theses: Doctorates and Masters

Theses

1-1-2000

Does a rising intonation at the end of a spoken statement affect a witness's credibility?

Genevieve L. Willis
Edith Cowan University

Follow this and additional works at: <https://ro.ecu.edu.au/theses>



Part of the [Other English Language and Literature Commons](#)

Recommended Citation

Willis, G. L. (2000). *Does a rising intonation at the end of a spoken statement affect a witness's credibility?* <https://ro.ecu.edu.au/theses/1381>

This Thesis is posted at Research Online.
<https://ro.ecu.edu.au/theses/1381>

Edith Cowan University

Copyright Warning

You may print or download ONE copy of this document for the purpose of your own research or study.

The University does not authorize you to copy, communicate or otherwise make available electronically to any other person any copyright material contained on this site.

You are reminded of the following:

- Copyright owners are entitled to take legal action against persons who infringe their copyright.
- A reproduction of material that is protected by copyright may be a copyright infringement. Where the reproduction of such material is done without attribution of authorship, with false attribution of authorship or the authorship is treated in a derogatory manner, this may be a breach of the author's moral rights contained in Part IX of the Copyright Act 1968 (Cth).
- Courts have the power to impose a wide range of civil and criminal sanctions for infringement of copyright, infringement of moral rights and other offences under the Copyright Act 1968 (Cth). Higher penalties may apply, and higher damages may be awarded, for offences and infringements involving the conversion of material into digital or electronic form.

USE OF THESIS

The Use of Thesis statement is not included in this version of the thesis.

**DOES A RISING INTONATION AT THE END OF A SPOKEN STATEMENT
AFFECT A WITNESS'S CREDIBILITY?**

**GENEVIEVE L. WILLIS
(B. PSYCHOLOGY)**

**A THESIS SUBMITTED IN PARTIAL FULFILMENT OF THE
REQUIREMENTS FOR THE AWARD OF MASTERS IN PSYCHOLOGY
(FORENSIC)**

**FACULTY OF COMMUNITY SERVICES, EDUCATION AND SOCIAL
SERVICES, EDITH COWAN UNIVERSITY**

13th NOVEMBER 2000

Abstract

Past research has shown that the speech style employed by a witness in a jury trial may affect their credibility (Erikson, Lind, Johnson, & O'Barr, 1978). One common linguistic device used by witnesses is a rising intonation, which is defined as the inflection of a speaker's tone that occurs at the end of a spoken passage. Past research has shown that the use of a rising intonation in speech can add a questioning tone to a passage, or signify that the speaker is unsure of what they are saying (Smith and Clark, 1993). If a witness uses a rising intonation they may sound less believable to a juror. The effect of rising intonation on the credibility of witness testimony was examined in the present study. Three independent variables were tested: the intonation contour at the end of a spoken witness statement (rising or nonrising); the gender of the witness; and the gender of the participant. Five dependent variables relating to how subjects judged the believability and credibility of the witness statements were measured. The primary finding was that rising intonation alone did not significantly affect perceptions of the speaker's credibility. However, the gender of the speaker was found to affect overall believability, with female speakers being rated as significantly less believable than male speakers. The results are interpreted from a sociocultural perspective, with the suggestion that rising intonation, given its frequency of use amongst Australian speakers, does not seem to indicate that the speaker is uncertain about their statements.

Declaration

I certify that this thesis does not, to the best of my knowledge and belief:

- (i) Incorporate without acknowledgement any material previously submitted for a degree or diploma in any institution of higher education;
- (ii) Contain any material previously published or written by another person except where due reference is made in the text; or
- (iii) Contain any defamatory material.

Signed by:

A large black rectangular redaction box covers the signature area, obscuring the name and any handwritten text.

Date: 8th Feb. 2001.

Acknowledgments

Firstly, I would like to thank my parents Aileen and Michael Willis who have provided tireless emotional, practical, and financial support over the lengthy duration of my studies, which has culminated in the production of this thesis. Secondly, I would like to thank Dr Paul Chang, my Masters thesis supervisor for all the assistance and direction he gave me over the duration of my research, which was also lengthy. Finally, I would like to thank my friends for their interest and support, particularly Emma Glasson, Lucy Robertson, and Dianne Thomson who gave advice and acted as sounding boards when I hit a wall!

Table of Contents

	Page
Title.....	1
Abstract.....	2
Declaration.....	3
Acknowledgements.....	4
Table of Contents.....	5
Introduction.....	6
Method.....	19
Research Design.....	19
Participants.....	19
Stimuli and Apparatus.....	19
Procedure.....	21
Results.....	23
Discussion.....	28
References.....	38
Appendix A.....	41

Introduction

The testimony of a witness is defined as an individual's verbal statement for the judiciary, which describes their perceptual experience of a specific incident. Witness testimony plays a crucial role in a courtroom setting because jurors are often required to make a decision about a defendant based on information that is presented verbally. Past research indicates that jurors place a great deal of weight on the spoken testimony of a witness when they make their decision about the guilt or innocence of a defendant (Whitley & Greenberg, 1986; Elliot, Farrington, & Manheimer, 1988; Goodman & Reed, 1986).

Quite often, the content of the witness's testimony may not be an accurate description of what actually occurred. Research suggests that there may be several factors that can affect the accuracy of spoken testimony. These factors affect the person's accuracy for describing events in two main ways, perception at time of the event and memory of the event later. These include factors such as the age of the witness, fatigue, intoxication, and stress at the time of the witnessed event (Penrod, Loftus, & Winkler, 1982; Goodman, Golding, Helgeson, Haith & Michelli, 1987). In addition, Thomson (1995) described several factors relating to the environment in which a person witnesses an event that may affect their memory of the event, and consequently, the accuracy of their description. These are known as "event factors", which include the duration of exposure to the witnessed event, the frequency of exposure to the witnessed event, and the interference of movement (e.g., confusion about the event may occur if the witnessed event happened quickly). Thomson also described "situational factors", such as lighting conditions and distance of the

witness from the observed event, which may also influence how accurately the witness remembers the event.

Apart from the witness, event, and situational factors described above which may affect the accuracy of a witness's testimony, there are other factors relating to the way that the witness describes the events, which can affect whether or not the witness is believed, or is seen as being credible. Impressions of people can be derived from many sources. An individual's style of communication is scrutinised by the listener, not only for its content, but also for the expressions and behaviours that accompany it. As people interact, they also try to understand the motives of others. These motives may be represented by speech as well as nonverbal cues such as facial expressions, eye contact, and body language (Baron & Byrne, 1991). Clearly, jurors notice various speech and nonverbal cues of the witness and past research suggests that people may be highly influenced by the way witnesses deliver their testimony (Whitley & Greenberg, 1986; Catano, 1980).

The focus of the present study was on the way that the witness delivers their descriptions of an event via their speech and how this may affect their credibility. To be credible means to be 'capable of being believed' (Krebs, 1989). Being believed is an important factor for a speaker in persuading a listener to endorse the speaker's point of view. Being believable suggests the speaker is knowledgeable regarding the topic of which they speak and increases the speaker's persuasive power (Miller, Maruyama, Beaver, & Valone, 1976).

The factors that occur alongside the spoken word that do not relate to the structure of the word are called paralinguistic aspects of speech (Scherer, London, & Wolf, 1973). Paralinguistic aspects of speech include voice characteristics (such as tone), speed of speech, and style of speech (e.g., combinations of words and types of

words used). The present study examined the effect of one paralinguistic aspect of speech, which has been ignored in the literature on witness credibility, namely the rising intonation that people sometimes use at the end of a spoken statement. Guy, Horvath, Vonwiller, Daisley, and Rogers, (1986) suggested that a rising intonation may be a cue for turn-taking in conversation. Their research also found that in Australian English, the rising intonation at the end of a sentence is used as a question to the listener, to ask whether or not the listener has understood what the speaker has said. Other research has shown that the use of a rising intonation in speech can add a questioning tone to a passage, or signify that the speaker is unsure of what they are saying (Smith and Clark, 1993). If a witness uses a rising intonation they may sound less believable to a juror. In the literature review that follows, the role of paralinguistic aspects of speech and nonverbal behaviour on speaker credibility, in several settings, will be examined. Second, the influence of speaker gender as a moderating factor will be considered. Finally, the implications of varying one's speech intonation will be discussed.

*The Role of Paralinguistic Aspects of Speech and Nonverbal Behaviour on
Speaker Credibility*

The human voice may be described on several characteristics: pitch, speed, and intensity (loudness). These attributes are thought to be at the disposal of a speaker when they try to influence a listener's impression (Eisensohn, 1938). There are many contexts in which a speaker uses speech to create an impression, such as in a courtroom. A courtroom setting relies on speech as its primary form of communication. A judge instructs, the legal representatives present arguments, and the witnesses and defendants are questioned and provide their verbal testimony.

Those present in the courtroom proceedings, including the jury, are expected to attend to the content of what is being stated. Whilst it is accepted that the content of speech is of primary importance in the courtroom setting, the paralinguistic (e.g., intonation) and nonverbal factors (e.g., demeanor) are also important with regard to impression formation (Pryor & Buchanan, 1984; London, 1973). The speaker's credibility may be diminished if paralinguistic and nonverbal factors are inconsistent with the content of their speech (Moscovici, 1976).

Powerful Versus Powerless Language Styles

A paralinguistic aspect of speech that may influence a person's credibility is their language style. One study (Erikson, Lind, Johnson, & O'Barr, 1978) investigated the effects of 'powerful' versus 'powerless' language style on witness credibility in a courtroom setting. Participants either listened to, or read, the testimony of male or female speakers who used either a powerful or powerless speech style; the content of the testimony was consistent throughout the various versions. The powerless speech style was characterised by the inclusion of features such as hedges (e.g., 'I think', 'I guess'); intensifiers (e.g., 'very', 'so'); as well as hesitations such as pauses, stutters, and 'uhs'. In addition, the powerless speech style included the frequent use of slang words and use of formal terms such as 'sir' which were used to address the legal representative. The powerful style of speech was characterised by the less frequent use of the features described above. Erikson et al. (1987) found that a witness who spoke with a powerful speech style was perceived as being significantly more credible than their counterpart who used the powerless speech style. In all conditions except for the male witness with the written version, the powerful speech style evoked a greater acceptance of the position endorsed by

the witness in their testimony. The researchers also found that when a person used a powerful style of speech, a higher rating of physical attractiveness was attributed to the speaker, independent of the gender of the speaker, the gender of the participant, or the mode of presentation of the information.

Speed of Speech

The speed of speech has also been found to have an important effect on persuading a listener. Miller and Beaber (cited in Miller et al., 1976) proposed that a faster rate of speaking projects the impression that a speaker is more knowledgeable and competent. In short they saw the faster rate of speech as a cue of high credibility and in turn an enhancer of the power to persuade the listener. In support of this proposal, Miller et al. (1976) found that use of faster than average speed of speech had a more persuasive effect than slower speech. Participants in Miller et al.'s study were asked to listen to a tape of a person speaking about the negative effects of caffeine in coffee. Participants listened to either one of two tape recordings, which only varied on the speed at which the speech was delivered. In the fast version, words were spoken at a rate of 195 words per minute, whereas in the slow version, the speech rate was 102 words per minute. After listening to the tape, participants were asked to describe the degree to which they agreed with several statements made by the speakers. Miller et al. found that the fast version was significantly more persuasive in eliciting agreement with statements made by the speaker, compared to the slow version.

Verbal Confidence and Paralinguistic Confidence

Whitley and Greenberg (1986) examined two ways in which the confidence of a speaker can be expressed – verbal confidence and paralinguistic confidence. Verbal confidence is characterised by the use of qualifications such as 'I'm [sure] that's him' (which indicates a high level of verbal confidence) versus 'I'm [pretty sure] that's him' (which indicates a low level of verbal confidence). By contrast, paralinguistic confidence is determined by the presence of features such as 'ah' or 'uh' in speech; low paralinguistic confidence is when a person uses these features quite often in their speech, which may indicate hesitancy or tentativeness, whereas a person with high paralinguistic confidence rarely uses these features. In a study that simulated a courtroom setting, Whitley and Greenberg manipulated the levels of verbal and paralinguistic confidence employed by the witness to demonstrate her level of confidence in her testimony. They found that high levels of verbal and paralinguistic confidence were associated with high ratings of witness credibility. These results were consistent with a study by Wells and Lindsay (1983) who found that in practice, legal representatives advise witnesses that it is of paramount importance that they appear confident of their courtroom testimony (cited in Whitley & Greenberg, 1986).

Interim Summary

The studies reviewed above show that factors such as language style, speed of speech, and verbal and paralinguistic confidence can create a certain impression about the witness and, in a courtroom setting, may influence the credibility of the witness. These results are consistent with general psychological theories relating to the perception of speaker credibility by a listener. For example, London (1973)

emphasised the importance of communicator confidence in the process of social influence and argued that communicator confidence was expressed via three primary modes: language, paralinguistics, and body language. He also stated that the most persuasive people were those who expressed confidence in their own view (i.e., those people who appeared very sure or definite about what they were saying), whereas people who were least persuasive were those who expressed doubt in their own view.

Influence of Nonverbal Behaviour on Witness Credibility

Research by Pryor and Buchanan (1984) examined the effect of a defendant's nonverbal behaviour (body language) on mock juror's impressions of the defendant's credibility and guilt. In this study, participants were asked to read a case scenario in which a person was charged with an offence. The participants then viewed a videotaped version of the defendant's testimony in which the defendant displayed behaviours, which according to Pryor and Buchanan were typically associated with lying. These were the frequency and duration of eye contact, the degree of fidgeting, and the number of speech errors. The intensity of the lying behaviour was varied in three conditions ('high', 'medium', or 'low' displays of lying behaviour).¹ The participants were then asked to rate the defendant on a credibility scale and also indicate whether or not they would find him guilty of the charges. The results showed that in the 'low' condition, the defendant was given the highest credibility ratings and the lowest percentage of guilty verdicts.

¹ This is not to say that people who are lying consistently exhibit these features, however the results suggest that when presented with the lying behaviours described by Pryor and Buchanan, observers tend to use them to make judgements about the person in terms of credibility.

If an individual acting as a witness is aware of the effects of the characteristics described thus far, (paralinguistics and non verbal behaviour), they can attempt to manipulate these factors to present themselves as a more credible witness. Whilst a factor such as gender of the speaker obviously cannot be manipulated, it is important for those involved in the courtroom process to gain an understanding of its effect on witness credibility. For example, if gender is a factor accepted to reduce credibility, it may be possible to manipulate others factors to increase credibility and counter that effect. A discussion follows describing research on gender and how this factor can influence credibility.

Gender of the Witness

Past research suggests that one's gender may affect the impressions that are formed of an individual in a wide range of contexts. For example, in social psychology research, it has been found that women and men have been consistently rated unequally on professional achievements, such as the authorship of academic articles, despite equivalent performance (Mischel, 1974). Goldberg (1968, cited in Hodgson & Pryor, 1984) investigated gender biases towards women. In this study, he asked female participants to read an academic text and then asked them to rate the articles in the text according to the intellectual and professional competencies of the authors. Goldberg found that the participants rated articles significantly more favourably when the author was believed to be male rather than female. Similarly, Mischel (1974) found that both male and female participants demonstrated a gender bias against female authors when asked to evaluate journal articles written by authors when the author's gender was considered inconsistent with the accepted gender

stereotype for that area of expertise. For example, a law article was rated more favourably when it was attributed to a male author rather than a female author.

Lakoff, (1975, cited in Newcombe & Arnkoff, 1976) described what she perceived as the existence of a difference between men and women's speech. Lakoff accepted that men and women speak differently, and argued that these differences may impact on the manner in which a person is perceived. She suggested that women and men use different speech styles, with men's speech being more assertive and less polite than women's speech. According to Lakoff, gender differences in speech styles may further contribute to an image of women as being vague and lacking in confidence, whereas men would be perceived as being assertive, self-confident, and definite. For example, Lakoff described three forms of speech which were more commonly used by women than men: 'tag questions', 'qualifiers', and 'compound requests'. Tag questions are used when a person makes a statement but is unsure of whether or not the statement is true. For example 'Jim is here, isn't he?' as compared to a standard question 'is Jim here?' Qualifiers are words or phrases that reduce the certainty of what has been said. Examples of qualifiers are, 'sort of', or 'maybe'. Compound requests are thought to be more polite questions which include words that are superfluous and reduce the power behind a request, for example, 'would you bring the book over here?' instead of 'bring the book over here'. Lakoff argued that these tag questions, qualifiers, and compound requests were used to varying degrees by an individual depending on their gender, which may contribute to the perceived differences between men and women in their speech styles, and how persuasive their language is.

Lakoff's arguments about the differences underlying the persuasiveness of males' and females' language styles have been supported by results from several

studies (Newcombe and Arnkoff, 1976; Bradley, 1981; & Hawkes, Edelman, & Dodd, 1996). For example, Newcombe and Arnkoff (1976) investigated the effects of these tag questions, qualifiers, and compound requests on listeners' perceptions when the speech was delivered in a noncourtroom setting. In this study, Newcombe and Arnkoff asked participants to rate male and female speakers who made statements which included or excluded these linguistic variables. The statements were rated on the degree of assertiveness, warmth, and politeness of the speakers. The results indicated that speakers who used tag questions, qualifiers, and compound requests were identified as less assertive, more polite and warmer by participants, regardless of the gender of the speaker. The results of Newcombe and Arnkoff's study support Lakoff's assertions that the use of these linguistic variables can affect how speakers are perceived when rated on desirable characteristics.

Hawkes et al. (1996) asked college students to evaluate the effect of a tentative versus assertive speech style when the speaker was female. In the manipulation of speech style, an assertive speaker spoke with fewer 'hedgies' and 'qualifiers' such as 'um', 'ah', and 'don't you think?', whereas the tentative speaker spoke with more of these features. Hawkes et al. found that both male and female participants evaluated the assertive speaker more favourably on scales of competency, reliability, and likeability, than the tentative speaker. A study by Bradley (1981) showed similar results in that a tentative style of speech included more qualifiers than assertive speech. In addition, Bradley found that men were generally perceived as more intelligent, knowledgeable and likeable than women regardless of the style of speech they used.

The question as to whether or not a gender bias may be accounted by differences in use of linguistic variables by men and women remains unresolved.

There appears to be a complex interaction between the use of different language styles, and perceptions of male and female speakers by listeners of both genders. However, the important implication here is that by modifying our speech style, we may influence how we are perceived by a listener. Therefore, it is important to investigate other ways in which speech style may vary.

The Effect of Rising versus Nonrising Intonation

The present study investigated an aspect of speech which may contribute to the evaluations of speakers' credibility, namely, the use of a rising intonation contour at the end of a spoken statement. There is evidence to suggest that intonation is a device which an individual can use to assert their confidence while they are speaking. In this way, certain types of intonation may reflect a questioning tone, which may indicate that the speaker is unsure of what they are saying. One form of intonation is the 'high rising terminal contour' indicated by a sharp rise in intonation in the last word or last syllable of the last word in a declarative statement. There are also some suggestions that a rising intonation may be a cue for turn-taking in conversation (Guy et al., 1986). For example, in Australian English, the rising intonation at the end of a sentence may be used as a query to ask whether or not the listener has understood what the speaker has said. This feature is known as the Australian Questioning Intonation (AQI) (Guy et al., 1986). In Standard English it is also thought to be used to transform a statement into a question (Lakoff, 1976; Allan, 1984). In this sense, it is comparable to a 'tag question' such as asking 'isn't it?' or 'right?' at the end of the statement. It is generally regarded that the use of a rising intonation in a spoken statement signifies a lack of confidence by the speaker for the answer they have given, or as Bolinger (1989) puts it, "In English a rising intonation

signals 'unfinished business'. For example, research carried out by Smith and Clark (1993) in a noncourtroom setting has found that a rising intonation at the end of a statement may often be used when a subject is not confident of their answer. In this study, Smith and Clark asked subjects a series of factual questions, such as "In which sport is the Stanley Cup awarded?" The subjects were asked how confident they were about the answers they gave to the questions. It was found that the less confident the participants felt about the answers they gave, the more often they used rising intonation in their response.

Another noncourtroom study also suggests that the presence of rising intonation at the end of a spoken statement may undermine speakers' effectiveness in terms of getting their message accepted by the listener. Sharf and Lehman (1984) recorded telephonists as they tried to conduct an interview with a listener using a standard script. The speech attributes of the interviewers were examined in terms of their intonation, loudness, and rate of speech. It was found that the interviewers who were most successful at persuading listeners to participate in the interview used a falling intonation contour at the end of their opening statement. By contrast, telephonists who were not as successful in convincing people to participate in the interview tended to use rising intonation contours. The implication of these findings is that acoustic cues may have a significant effect on listener reactions.

The results of the studies by Smith and Clark (1993) and Sharf and Lehman, (1984) support the notion that rising intonation may act as an indication of a speaker's uncertainty about what they are saying or a lack of confidence in what they are saying. It is not unreasonable to expect then, that listeners may pick up on the questioning tone of the speaker and regard them as being uncertain of what they are saying. To date, there have been no studies that have investigated the influence of

rising versus nonrising intonation on the credibility of a witness's testimony in an Australian context.

The Present Study

The aim of the present study was to examine the influence of a rising intonation tone used by a speaker who gives a witness statement. In this study, other factors including nonverbal cues (e.g., body language, attractiveness, and so on) and verbal cues (e.g., the speech rate, and the use of powerful or powerless language) are controlled, so that the effect of intonation is examined directly. The present design also permits a comparison between male and female speakers who use a rising intonation as well as a comparison between males and females who listen to the rising and nonrising intonation versions of the statement. Thus, three research questions were examined in the present study: (a) What is the relationship between intonation contour and impressions of witness credibility from the perspective of the listener?; (b) Are male and female speakers evaluated differently?; and (c) Are male and female speakers evaluated differently depending on the gender of the listener? It was predicted that the presence of a rising intonation at the end of the spoken statements would be identified with a high level of uncertainty in the speaker's statements, based on the results of previous studies which found that rising intonation signified a lack of confidence in what was being said (Sharf & Lehman, 1984; Smith & Clark, 1993).

Method

Research Design

This study employed a $2 \times 2 \times 2$ between-subjects design. The independent variables were the gender of the witness (male or female); the type of intonation at the end of a sentence (rising or nonrising); and the gender of the participant (male or female). Five dependent variables relating to the witness's account were measured: accuracy of describing the event, believability of the witness, confidence of the witness's testimony, accuracy of describing the defendant, and the weight given to the witness's testimony.

Participants

The participants were Australian citizens who were registered on the Australian Electoral Roll. The participants were aged 18 years and older and were recruited from the Perth metropolitan business community and university campuses to obtain a representative sample of people who may be called to serve on a jury. A total of 160 participants (80 males and 80 females) volunteered for the study. All participants provided informed consent to participate in the study, which had been previously approved by the ethics committee of the School of Psychology (Edith Cowan University).

Stimuli and Apparatus

Taped Witness Transcripts. Four audio taped versions of a mock court transcript were recorded. The recording comprised of a witness with an Australian

accent giving an account of an armed robbery that occurred while he or she was in a pharmacy. The variable of intonation (rising or nonrising) combined with the gender of the speaker (male or female) yielded four versions of the witness's account:

- 1) Male speaker using rising intonation;
- 2) Male speaker using nonrising intonation;
- 3) Female speaker using rising intonation;
- 4) Female speaker using nonrising intonation.

The intonation was manipulated so that the speaker either used or did not use a rising intonation on the final word for eleven of the statements in the transcript.² The transcript of the witness testimony is presented in Appendix A. Each recorded version was about two and a half minutes long.

One male and one female actor portrayed each of the witnesses, and another male actor portrayed the prosecuting lawyer. The actors who played the role of the witnesses were in their mid-twenties. This age was chosen in part because some research suggests that jurors may display biases against very young and very old witnesses compared to young adults in the courtroom (Brimacombe, Quinton, Nance, & Garrioch, 1997; Goodman et al., 1987)

The script was based on an account of a person who was a witness to an armed robbery and who relayed their experience to the researcher.³ The witness on the recording testified for the prosecution and underwent direct questioning. The use of audiotapes controlled for factors such as attractiveness and body language of the

² In a manipulation check, eleven listeners who were not part of the main study were asked to listen to the rising and nonrising intonation versions. When asked to identify the differences between the two versions, each member of the pilot group indicated that the versions differed on intonation only.

³ The script was edited by Associate Professor Alfred Allan, who as a lawyer, determined that the events and language described in the transcript were plausible.

witness which have been shown by previous research to influence participants' perceptions of credibility (Catano, 1980; Pryor & Buchanan, 1984).

The same script was used in all four versions of the audio tape. The construction of the taped versions controlled for the speed of speech, the number of 'powerful' and 'powerless' speech styles, and levels of 'verbal and paralinguistic confidence'. The speech rate was approximately 150 words per minute, which is regarded as average (Miller et al., 1976).

Procedure

Prior to their participation, potential subjects read an information sheet, which briefed them on the nature of the material used in the testimony. No one who participated in the experiment felt that they would be distressed upon hearing an account of an armed robbery. Participants were asked to listen to one of the four taped accounts, determined randomly. About half of the participants were tested individually, the other half participated in groups no larger than three people. Each participant answered the questionnaire individually. The task took approximately seven minutes to complete. They were instructed that they were free to use the entire scale and that they could mark their rating in between the numbers on the scale.

Participants were asked to rate their impressions of the witness and the witness's account of events on a 7-point Likert scale that measured five dependent variables. These were:

- 1) How likely do you think it is that the witness gave an accurate account of the incident? (where 1 was "Not at all Likely" and 7 was "Completely Likely");
- 2) How believable did you find the witness's testimony? (where 1 was "Not at all Believable" and 7 was "Completely Believable");

3) Do you think the witness sounded confident about their testimony? (where 1 was "Not at all Confident" and 7 was "Completely Confident");

4) How accurately do you think the witness described the defendant? (where 1 was "Not at all Accurately" and 7 was "Completely Accurately");

5) How much weight would you give to the witness's testimony if you were to make a decision about the guilt of the defendant? (where 1 was "Minimum Weight" and 7 was "Maximum Weight").

Results

The dependent variables were the five Likert-type rating scales that measured factors relating to credibility of the witness' testimony on a scale of one to seven. The means of the five dependent variables were determined by averaging the responses to each of the Likert-type scales across the participants. Preliminary analyses of variance (ANOVAs) were conducted to investigate the effects of the participant's gender (a between-subjects factor). The gender of the participant did not reach significance in any of the analyses, nor did this factor interact with any of the other factors. Hence, the ratings were combined over the factor of the gender of the participant in the analyses reported here. Thus, five 2×2 ANOVAs were carried out to investigate the effects of the two experimental variables (i.e., intonation and gender of the speaker) on the dependent variables.

Means and standard deviations of the dependent variables for the four conditions are presented in Table 1. The main effects of witness gender and intonation on the ratings are shown in Table 2.

Table 1

Means (and Standard Deviations) of Rating Scores for Witnesses as a Function of Intonation and Gender

Rating Scale	Rising Intonation		Nonrising Intonation	
	Male Speaker	Female Speaker	Male Speaker	Female Speaker
Accuracy of describing the Incident	5.11 (0.97)	4.74 (1.30)	5.10 (1.12)	4.95 (1.13)
Believability	5.60 (0.81)	4.64 (1.30)	5.23 (1.09)	4.84 (1.11)
Confidence of witness testimony	5.28 (1.33)	4.93 (1.46)	5.00 (1.30)	5.55 (1.28)
Accuracy of describing the Defendant	5.02 (1.14)	4.52 (1.24)	4.66 (1.17)	4.74 (1.06)
Weight placed on testimony	4.95 (1.31)	4.34 (1.26)	4.60 (1.09)	4.60 (1.01)

Note: Each column contained 40 participants.

Intonation

It was predicted that rising intonation used by both male and female speakers would result in significantly lower credibility ratings compared to the nonrising version. This was not found. No significant main effects were found for the intonation variable on any of the dependent variables (see Table 2.).

Table 2

Main Effects of Intonation and Speaker Gender on the Dependent Variables

Rating Scale	Intonation		Speaker Gender	
	ANOVA		ANOVA	
	<i>df</i>	<i>F</i>	<i>df</i>	<i>F</i>
Accuracy of describing the Incident	(1, 156)	0.31	(1, 156)	2.14
Believability	(1, 156)	0.26	(1, 156)	15.31*
Confidence of witness testimony	(1, 156)	0.68	(1, 156)	0.22
Accuracy of describing the Defendant	(1, 156)	0.17	(1, 156)	1.36
Weight placed on testimony	(1, 156)	0.06	(1, 156)	2.73

Note. * $p < .001$

Gender

Analysis of the believability scores indicated a significant main effect of gender. Male speakers were rated significantly higher for believability than were female speakers, $F(1, 156) = 15.31, p < .001$. The results were not significant for the effect of speaker gender on credibility ratings across the other scales (see Table 2).

Interactions

The interaction between intonation and speaker gender was significant, $F(1, 156) = 4.47, p < .05$ for the confidence ratings (see Figure 1.). Male speakers who used rising intonation ($m = 5.28$) were rated higher on confidence compared to female speakers who used rising intonation ($m = 4.92$). However, female speakers who used nonrising intonation ($m = 5.55$) were rated higher than males who used

nonrising intonation ($p = 5.00$). No other interactions of gender of the speaker by intonation condition were significant for any of the other dependent variables.

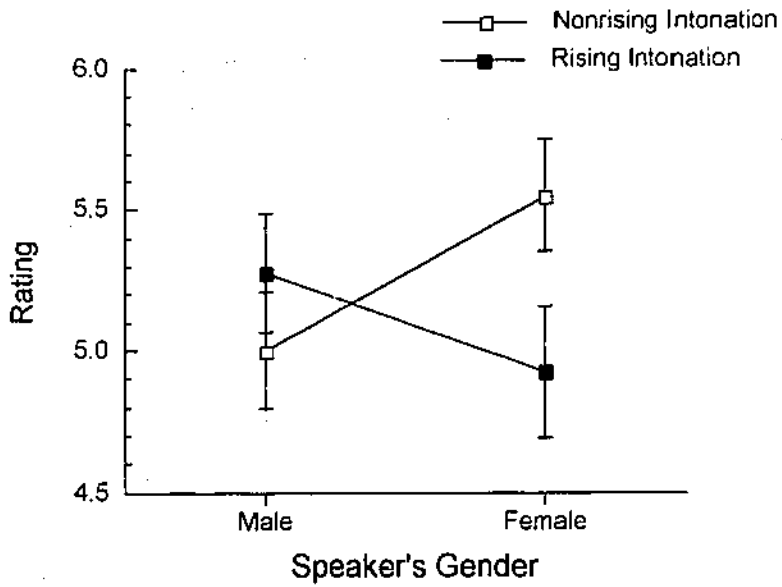


Figure 1. Interaction effect between witness gender and intonation for confidence. Error bars depict the standard error of the mean.

Discussion

The primary aim of this study was to examine the effect of rising versus nonrising intonation in speech on the impression of a witness in the eyes of mock jurors. In addition, the influence of the gender of the witness and the gender of the participant on credibility was examined. The results indicate that intonation alone did not significantly affect the participants' perceptions of the speaker on any of the five dependent variables measured. In general, the gender of the speaker was found to significantly influence believability: Male speakers were found to be more believable than female speakers. The gender of the participant did not significantly influence these results. The only interaction that was significant was an interaction between speaker gender and intonation; no other interactions were significant. The results of the present study are first summarised as they relate to the primary question of the effect of intonation, then to the gender of the witness, and finally as they relate to the interaction between intonation, gender, and confidence ratings.

Intonation

The manipulation of intonation did not seem to affect the observers' perceptions of the speaker, even though in a manipulation check, pilot participants singled out the intonation as the difference between the two male and female versions of the statements. A sociocultural explanation may be forwarded to explain the lack of an effect of intonation. The lack of influence of the intonation variable on perception of the speaker's credibility may be explained by the fact that rising intonation is a widely and commonly used linguistic feature in Australian society

(Guy et al., 1986), as opposed to other societies in which the effect of rising intonation has been studied. It may be that the frequent use of rising intonation by Australian speakers may have mitigated its impact in denoting a person's uncertainty about their statements. Guy et al. (1986) studied the social distribution of the use of rising intonation by speakers from Sydney, Australia. They carried out a meta-analysis of 'apparent-time' and 'real-time' data of speech samples taken from 1978-1982 and from Mitchell and Delbridge's (1965) sampling of speech taken from adolescents from the early 1960s. Guy et al. concluded from these meta-analyses that rising intonation was virtually nonexistent before the beginning of the 1970s, at least in Sydney. Women, teenagers, and working class speakers were found to have the highest rates of usage of a rising intonation. Guy et al. described this social distribution as 'a language change in progress', and by the mid-1980s, which is when their study was published, the use of rising intonation by Australian speakers was widespread (although still found less in male speakers than female speakers). It is not unreasonable to expect then, that with the frequent use of rising intonation over time it may have lost its effect as a linguistic device that conveys uncertainty.

In contrast, research conducted on American subjects has found significant effects of rising intonation on speaker credibility and on the persuasiveness of the spoken message (Sharf & Lehman, 1984; Smith & Clark, 1993). One explanation for the results of the American studies is that rising intonation may be far less commonly used in the United States compared to Australia and perhaps retains a specific purpose for American listeners, such as being a marker for uncertainty.⁴ Thus, for the studies involving American subjects, it may be proposed that rising intonation, when

⁴ A recent search of the literature has not yielded any data pertaining to the prevalence of the use of rising intonation in American speech, which may be compared to the investigations by Guy et al. (1986) on Australian speech.

used results in a reduction of credibility. Hence, the results of the American studies may not be generalisable to the population used in the present study which involved speakers (and listeners) of Australian English. This would suggest that Australians differ culturally in the way they use and perceive rising intonation in comparison to Americans.

Speaker Gender

In this study, it was found that female speakers were perceived as significantly less believable than their male counterparts. These results suggest a general stereotypic bias against female communicators. The theories of Lakoff (1976) support this notion. Lakoff has argued that language generally associated with women has the effect of being less credible than language associated with men (e.g., a powerless language style compared with a powerful language style, respectively), which results in the perception of a stereotype that women, in general, are less credible as communicators.

When reading the literature associated with application of a stereotype, it seems plausible that a stereotype has been applied to the speakers in the present study, at least in terms of how believable the speaker was. It has been suggested by Inkso and Schopler (1972) that stereotypes are most often applied in situations where there is little information about the target (cited in Erikson et al., 1977). The traditional view in stereotype research is that an inverse relationship exists between the amount and strength of information about a person and the reliance on category stereotyping in impression formation. Inkso and Schopler reported that if individuating information is weak or absent, category stereotypes provide the default alternative for impression formation. With greater levels of individuating information

there appears to be less need to rely on the stereotype. In the current study, the participants had little or no information about the speaker except for their gender. Therefore, subjects may have simply applied a stereotype in the absence of other information, such as facial/physical attractiveness, or nonverbal gestures, when making their decision about the speakers' believability.

As mentioned earlier, no other significant main effects were found for the effect of gender on any of the other dependent variables measured in the study. The believability scale was the most important scale due to the fact that it reflects most closely the essence of 'credibility' of the speaker. Thus, why the other dependent variables did not show the same pattern of a significant effect of gender is unclear. The questions 'How likely do you think it is that the witness gave an accurate account of the incident?' and 'How accurately do you think the witness described the defendant?' may have been ineffective at eliciting a strong effect, either positive or negative, for the same reasons. Given the methodology used in this study, where the experimenter asked the participant to listen to realistic description, perhaps the participants found that they had no reason to question the witness' accuracy when it came to describing the incident and defendant. They may have perceived the witness as simply giving a description of what they saw. As the participant had no knowledge of what the defendant looked like or what actually happened during the incident, they are not able to compare the witness' testimony to reality. Participants had some information to make judgements about the participant's ability to accurately describe the situation and the defendant, such as how far away the witness was standing from the defendant, but perhaps it was not enough. Ultimately, however, when it came to making a decision of believability, they believed the male speaker more than the

female speaker, even though there was no reason to doubt the accuracy of any of the events described.

As described by Thomson (1991, 1995), there are many factors that will effect a witness' ability to accurately describe a defendant or incident. These include event factors (e.g. duration of exposure), situation factors (e.g., lighting) and witness factors (e.g. eyesight). Participants could only imagine some of the conditions that were occurring on the day. Therefore they may have found it too difficult to make a positive or negative judgement about the accuracy of the witness in describing the incident and the defendant (accounting for why many participants assigned virtually the same average score to speakers across all conditions on these two scales).

The question 'How much weight would you give to the witness' testimony if you were to make a decision about the guilt of the defendant?' also failed to elicit significantly different results between the conditions. No single explanation for this result is favoured in this study. The exercise was conducted using a mock scenario, and perhaps this alone meant that a strong response was not provoked by the question, participants' responses clustering around the average score given on most scales.

Interaction between Intonation and Speaker Gender on Confidence

In the present study, the finding of a significant interaction between speaker gender and intonation condition for rating of confidence given to the speaker was unexpected. It was predicted that both male and female speakers who used rising intonation would obtain lower ratings than those using nonrising intonation on all the dependant variables. The interaction shows that higher confidence ratings were obtained for the male speaker who used rising intonation rather than nonrising

intonation, whereas higher confidence ratings were obtained when the female speaker used nonrising intonation rather than rising intonation. One possible explanation for this may relate to the idea that males, in general, use less variation in intonation in their everyday speech. For example, Guy et al. (1986) found that for Australian speakers, males do not use the rising intonation contour as commonly as female speakers. If this is true, then people who listen to a male speaker who uses a rising intonation may associate this tone with a different meaning. One possibility is that the listeners may have attended to the male speaker's varied intonation and found him to be more expressive, and in turn, they may have found him to be less 'wooden' and more confident as a result of this variation in his intonation. Alternatively, listeners may find that when a female speaker doesn't use a rising intonation, their speech is actually perceived as being more confident than when they do use a rising intonation, given that that a rising intonation is a linguistic device typically associated with female speech that is stereotypically less powerful and less assertive (Lakoff, 1976; Guy et al., 1986). If Australian male speakers use rising intonation less frequently than Australian females, then their rate of usage should be compatible to that of an American population. If this is the case, it would be expected that the less frequent use of rising intonation should be a marker for uncertainty in speech, and perhaps should have reduced perceptions of believability and confidence. However, this was not the case, which in a roundabout way, provides support for the notion that there is a different meaning associated with the use of rising intonation between American and Australian populations.

Another aspect of the significant interaction found for the confidence rating scale is that the female speaker who used nonrising intonation received the highest rating scores. Recall that one of the findings from this study was that, overall,

females were less believable than males. Past research has linked confidence, either expressed verbally or nonverbally, with high levels of credibility (Whitley & Greenberg, 1986). However, the present findings indicate that a high confidence level did not seem to be associated with a high level of believability. Anecdotally, several participants remarked to the researcher that the female speaker who used a nonstereotypical tone (i.e., a nonrising intonation) seemed to be over-confident, and, accordingly, they rated her down on the believability scale. London (1973) has described that the most persuasive people express greater confidence at the beginning of their argument and reduced the tone of their confidence towards the end of their argument. London attributed this strategy to the idea that people who display a high level of confidence for the duration of a discourse may actually arouse a negative emotion in the listener (e.g., suspicion), which may reduce the persuasiveness of the speaker. If so, then in this study, the female speaker's high level of confidence maintained throughout her testimony may have reduced her believability, even though she seemed confident in her description.

Alternative Explanations and Methodological Factors

An alternative explanation for the lack of significant effects from the rising intonation manipulation could be that participants were concentrating more carefully on the content of what was being said rather than the *way* it was said. Participants knew that they were going to be asked questions after listening to the recording, but had no knowledge of the nature of the questions. In other words, the manipulation of intonation may have been lost if participants were intent on trying to remember the details of what was being said. This study did not want to draw the attention of

participants specifically towards the speech style, as that would have confounded the manipulation.

As pointed out in the Method section, a manipulation check carried out on a pilot group showed that the difference between the versions of the testimony were clearly distinguished according to rising or nonrising intonation. Two aspects of the methodology used in this study may have affected the results. These are the speed of speech used on the recordings and the reality of the script. Miller et al. (1976) found that the rate of speech at which a person speaks may affect credibility. They found a correlation between slower speed of speech with lower ratings of credibility and faster speed of speech with higher ratings of credibility. Taking into account the findings reported by Miller et al., this study aimed to control for any effects of speech speed by using an 'average speaking rate'. However, Miller et al.'s study used American speakers, and it may be that Americans on average use faster speech rate than Australians. If true, the speed used in this experiment may have been slightly faster than the speed of speech used by the average Australian speaker, the implication being that any effects of a rising intonation may have been negated. It may be important for future studies of this type to first establish the Australian norms for speed of speech and to ascertain if the same increase of persuasion is associated with faster speech as found by Miller et al. with American participants.

It is also possible that the lack of an effect of intonation was related to an artefact of the type of material used. In their feedback, some participants reported that they were suspicious of the speakers due to the amount of detail given about the incident. This may be a flaw of the materials used in the research or may in fact reflect a general cynicism on the part of the listener. This cynicism may not necessarily be applicable to the real experience of a juror, but may be related to the

fact that the participants were taking part in an exercise and had a heightened sense of 'not wanting to be fooled'. The incident described in the script was based on an account provided by a person who experienced the incident in real life. The detail included in the script was reported by the individual in the way she remembered the incident. Therefore, it seems unlikely that the script was unreal, nor was there anything in the study to indicate to the participants that the witness had any reason to lie.

Limitations of the Study and Possible Future Directions

Several limitations of this study need to be discussed. First, only one male and one female actor were used for the tape recordings. This was done to try and maintain consistency. Without further replication of this study using different actors, the possibility exists that some of the findings were an artefact of the materials (i.e., the specific actors) used. Second, the mode of presentation for this study via an audiotape meant that many cues normally used by observers when making judgements about credibility were removed. This was of benefit because it controlled for factors such as facial attractiveness and body language, but it meant that some participants were left with the feeling that they did not have enough information on which to base their judgments of the witnesses. Future studies may be carried to address these issues.

It is known that by using mock scenarios in research that there will be certain limitations. In particular, mock scenarios limit how well the results can be generalized. In this study, concerns were centered on whether the voices on the recordings lacked realism. The people who made the recordings were amateur actors and may have sounded 'scripted' in their delivery, something that was noticed by a

few participants. If the participants perceived the recordings in this way, they would have had greater difficulty regarding the experiment seriously, and the results would have been affected. Only future research using more realistic methodology [different voices] can address this issue.

Conclusion

The first conclusion is that rising intonation did not effect the listeners' impression of the witness' credibility. This result is interpreted from a sociocultural perspective. It is thought that the use of rising intonation in speech, given its frequency of use amongst Australian speakers, does not act as a marker to indicate that a speaker is uncertain about their statements. The second conclusion is that female witnesses are perceived as being less believable than male witnesses. It may be that female witnesses need to pay particular attention to bolstering their credibility in ways that are known to be effective, for instance, by altering their speech style and demeanor.

References

- Allan, K. (1984). The component functions of the high rise terminal contour in Australian declarative sentences. *Australian Journal of Linguistics*, 4, 19-32.
- Baron, R. A., & Byrne, D. (1991). *Social psychology, understanding human interaction* (6th Ed.). Boston: Allyn and Bacon.
- Bradley, P. H. (1981). The folk-linguistics of women's speech: an empirical examination. *Communication Monographs*, 48, 73-90.
- Brimacombe, C. A. E., Quinton, N., Nance, N., & Garrioch, L. (1997). Is age irrelevant? Perceptions of young and old adult eyewitnesses. *Law and Human Behaviour*, 21, 619-634.
- Bolinger, D. L. (1989). *Intonation and It's Uses*. Stanford, California: Stanford University Press.
- Catano, V. M. (1980). Impact on simulated jurors of testimony as a function of non-evidential characteristics of witness and defendant. *Psychological Reports*, 46, 343-348.
- Eisenson, J. (1938). *The psychology of speech*. London: George, G Harrap & Co.
- Elliot, R., Farrington, B., Manheimer, H. (1988). Eyewitness credible and discredibile. *Journal of Applied Social Psychology*, 18, 1411-1422.
- Erikson, B., Lind, E. A., Johnson, B. C., & O'Barr, W. M. (1978). Speech style and impression formation in a court setting: The effects of 'powerful' and 'powerless' speech. *Journal of Experimental and Social Psychology*, 14, 266-279.
- Goodman, G. S., Golding, J. M., Helgeson, V. S., Haith, M. M., & Michelli, J. (1987). When a child takes the stand: Jurors' perceptions of children's eyewitness testimony. *Law and Human Behaviour*, 11, 27-40.
- Goodman, G. S., & Reed, R. S. (1986). Age Differences in Eyewitness Testimony. *Law and Human Behaviour*, 10, 317-332.
- Guy, G., Horvath, B., Vonwiller, J., Daisley, E., & Rogers, I. (1986). An intonational change in progress in Australian English. *Language in Society*, 15, 23-52.
- Hawkes, K. C., Edelman, H. S., & Dodd, D. K. (1996). Language style and evaluation of a female speaker. *Perceptual and Motor Skills*, 83, 80-82.

- Hodgson, S. & Pryor, B. (1984). Sex discrimination in the courtroom: Attorney's gender and credibility. *Psychological Reports*, 55, 483-486.
- Krebs, W. A. (Ed.). (1989). *Collins Australian Pocket Dictionary of the English Language*. Sydney, NSW: William, Collins, Sons, & Co. Ltd.
- Lakoff, R. (1976). Language and woman's place. *Language in Society*, 2, 45-80.
- London, H. (1973). *Psychology of the persuader*. New Jersey: General Learning Press.
- Miller, N., Maruyama, G., Beaber, R. J., & Valone, K. (1976). Speed of speech and persuasion. *Journal of Personality and Social Psychology*, 34, 615-624.
- Mischel, H. W. (1974). Sex bias in the evaluation of professional achievements. *Journal of Educational Psychology*, 66, 157-166.
- Moscovici, S. (1976). *Social influence and social change*. New York: Academic Press.
- Newcombe, N., & Arnkoff, D. B. (1979). Effects of speech style and sex of speaker on person perception. *Journal of Personality and Social Psychology*, 37, 1293-1303.
- Penrod, S., Loftus, E., & Winkler, J. (1982). The reliability of eyewitness testimony: A psychological perspective. In R. Bray & N. Kerr (Eds.), *The psychology of the courtroom*. New York: Academic Press.
- Pryor, B., & Buchanan, W. (1984). The effects of a defendant's demeanor on juror perceptions of credibility and guilt. *Journal of Communication*, 34, 92-99.
- Sharf, D. J., & Lehman, M. E. (1984). Relationship between the speech characteristics and effectiveness of telephone interviewers. *Journal of Phonetics*, 12, 219-228.
- Scherer, K. R., London, H., & Wolf, J. J. (1973). The voice of confidence: Paralinguistic cues and audience evaluation. *Journal of Research in Personality*, 7, 31-44.
- Smith, V. L., & Clark, H. H. (1993). On the course of answering questions. *Journal of Memory and Language*, 32, 25-38.
- Thomson, D. M. (1991). Reliability and credibility of children as witnesses. In: Vernon, J. (Ed.), (1991). *Children as Witnesses - Australian - Congress*. Canberra: Australian Institute of Criminology.
- Thomson, D. M. (1995). Eyewitness testimony and identification tests. In: Brewer, N., & Wilson, C. (1995). *Psychology and Policing*. New Jersey: Lawrence Erlbaum Associates.

Whitley, B. E., & Greenberg, M. S. (1986). The role of eyewitness in juror perceptions of credibility. *Journal of Applied Social Psychology, 16*, 387-409.

APPENDIX A
SCRIPT OF WITNESS TESTIMONY

(Bold script indicates the words that were spoken with rising intonation).

PL: What was the date and time of day of the event?

W: It was Thursday the 2nd of October 1997 and the time was **10pm**.

PL: Please describe what happened.

W: I had gone to the chemist to buy some throat **lozenges**. I was standing at a shelf off to the side of the cash register when a man entered the chemist. He ran up to the counter and said in a loud **aggressive** sort of voice 'this is a hold up, don't move and you won't get hurt'.

PL: Did the man have a weapon?

W: He had a big kitchen knife, which was about **20 centimetres long**. And he was also carrying a bag, which was **dark blue**.

PL: Were there any other customers in the chemist?

W: No I was the only **customer**.

PL: How many staff members were in the chemist?

W: Um, there were two staff members, one female and **one male**.

PL: How far away were you standing from the man holding up the chemist?

W: About 2 and a half metres.

PL: Could you describe what he looked like?

W: Yes, he was wearing blue denim jeans, a pale blue windcheater with the sleeves rolled up, white leather sneakers and a black balaclava. He was sort of 'trendy' looking. And I'm pretty sure he was **Caucasian**.

PL: Could you tell what age he was?

W: Yes, I think he was in his mid to late **twenties**.

PL: Do you recall seeing any identifying features on the man?

W: (pause)Um, **no**.

PL: What happened next?

W: He was waving the knife towards the girl and yelling to all of us the whole time 'don't move or try to call the police'. He then yelled to the salesgirl at the counter 'give me the money from the 'till''. She took all the money from the 'till' and put it in the bag **he was holding**.
Then he went to the drug counter where the salesman was standing and yelled at him to put all the drugs that were behind him in the bag. The salesman did that and then the man ran out of the chemist.