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ABSTRACT

This study compared deception detection accuracy and confidence levels for 72 blind and 71 sighted participants with only audible cues available. Participants from a community blind center and a small western university judged stimulus tapes, which consisted of deceptive and truthful audio messages. Deceptive messages were induced by implicating students in a cheating incident. Subjects rated several audible cues, including speech errors, pauses, vocal segregates, response duration, vocal certainty, vocal tension, and vocal pleasantness. Subjects also judged the veracity of the messages and indicated the confidence in their judgments. Results indicated that blind participants tended to be more accurate at detecting deceptive communication than sighted participants, findings that suggest that sensory compensation may occur in blind individuals. No intergroup differences were found for ratings of audible cues; this finding did not support the speculation that finer distinctions in hearing ability for blind participants would produce ratings for deceptive statements that were higher than ratings of sighted participants. Additional analysis found that males were more accurate at detecting deception than females, results that contradict those of previous studies. (Contains approximately 60 references.) (JDD)

"Do you hear what I hear?": Deception detection by the blind

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RUNNING HEAD: **Deception detection**

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Authors' Note

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"Do you hear what I hear?":
Deception detection by the blind

Abstract

The present study compared deception detection accuracy and confidence levels for blind and sighted participants with only audible cues available. Participants were recruited from a community blind center and a small western university to judge stimulus tapes, which consisted of deceptive and truthful audio messages. Deceptive messages were induced by implicating students in a cheating incident. Subjects rated several audible cues, including: speech errors, pauses, vocal segregates, response duration, vocal certainty, vocal tension, and vocal pleasantness. Subjects also judged the veracity of the messages and indicated the confidence in their judgments.

Results indicated that the blind tended to be more accurate at detecting deceptive communication than sighted participants. These findings suggest that sensory compensation may occur in blind individuals. No differences were found for ratings of audible cues. Additional analyses found males to be more accurate at detecting deception than females. These results contradict findings from previous studies on gender and deception detection.

For the past few decades, deceptive communication has been investigated in two areas. One area of research has aimed at identifying the behavioral cues associated with deception (e.g., Buller & Aune; 1987; Cody & O'Hair, 1983; deTurck & Miller, 1985; Feldman, 1976; Greene, O'Hair, Cody, & Yen, 1985; Hocking & Leathers, 1980; Knapp, Hart, & Dennis, 1974; Koper & Sahlman, 1991; Kraut, 1978; Zuckerman, DeFrank, Hall, Larrance, & Rosenthal, 1978; Zuckerman, Larrance, Spiegel, & Klorman, 1980). While specific behavioral correlates of deception have been identified (see DePaulo, Stone, & Lassiter, 1985), no single isolated cue exists which distinguishes deceptive from truthful behavior. In fact some researchers argue that a combination of different behaviors occur when an individual lies (e.g., Buller & Burgoon, in press; Hocking & Leathers, 1980; Koper & Sahlman, 1991). Nevertheless, numerous studies report many different visual and audible cues related to deception.

The second area has focused on deception detection, or the ability of perceivers to accurately attribute deceptive intent (e.g., Brandt, Miller & Hocking, 1982; 1980a; 1980b; DePaulo, Lanier, & Davis, 1983; DePaulo, Lassiter, & Stone, 1982; DePaulo, Zuckerman, & Rosenthal, 1980; deTurck & Goldhaber, 1988; deTurck & Steele, 1988; deTurck, Texter, & Harszlak, 1989; Feldman, Jenkins, & Popoola, 1979; Koper & Miller, 1991; O'Sullivan, Ekman, & Friesen, 1988; Zuckerman, Spiegel, DePaulo, & Rosenthal, 1982). Researchers in lie detection have been interested in individual differences (Brandt, et al., 1980a; Comadena, 1982; Feldman, et al., 1979), detector confidence (Brandt, et al., 1980b; deTurck & Miller, 1990; Hurd & Noller, 1988), and which cues are relied on most by detectors (Kraut, 1978; Zuckerman, Amidon, Bishop, & Pomerantz, 1982; Zuckerman, Koestner, & Driver, 1981).

Nonverbal Cues to Deception

Visual Cues

Burgoon, Buller, and Woodall (1989) state four reasons why visual cues are so important in deceptive communication, especially to receivers. First, visual cues are less ambiguous in meaning than audible cues. Examples of relatively unambiguous cues include most emblems and facial displays of affect. Second, visual cues tend to be more semantically distinctive and efficient. Emblems are, again, appropriate examples as they tend to convey meanings of one to two words. Third, visual channels have more impact than audible channels because they are not automatically alerting. Humans tend to focus their attention on visual channels, reducing attention to audible channels. And fourth, unlike the sequential cues delivered through the vocal channels people can quickly scan another person's face and then concentrate on what they believe to be the most informative facial cues.

Audible Cues

Although researchers have attempted to determine which visual cues are the most reliable indices of deceit, the extant literature suggests that the audible cues are the most reliable for detecting lies (Burgoon, et al., 1989). According to Ekman (1986):

> It is not a simple matter to catch lies. One problem is the barrage of information. There is too much to consider at once. Too many sources--words, pauses, sound of the voice, expressions, ...[but] not every source of information during a conversation is reliable. Some leak much more than others. Strangely enough, most people pay most attention to the least trustworthy sources--words and facial expressions--and so are easily misled. (pp. 80-81)

Studies on audible cues have found that deceivers exhibit: more speech errors (deTurck & Miller, 1985), faster speaking rate and greater overall vocal nervousness (Hocking & Leathers, 1980), greater verbal fluency (Riggio, Tucker, & Widaman, 1987), greater vocal tension, less verbal consistency and plausibility (Koper & Sahlman, 1991), less vocal certainty and directness (Koper & Sahlman, 1991), more denials (Koper & Sahlman, 1991), lower verbal directness (Kraut, 1978), and less vocal honesty, assertiveness, and dominance (Zuckerman, et al., 1979). Conflicting findings include: longer (deTurck & Miller, 1985; Greene, et al., 1985; Kraut, 1978), versus shorter response latencies (Cody & O'Hair, 1983), and longer (deTurck & Miller, 1985; Koper & Sahlman, 1991), versus shorter message duration (Kraut, 1978).

Summary of Behavioral Cues Associated with Deception

Cues occurring during deceptive communication can be classified into, essentially, two categories. First, deceivers express arousal cues (i.e., physiological reactions to generally unpleasant, guilty, or anxiety-producing experiences). This behavioral expression of arousal has been termed *leakage* (Ekman & Friesen, 1969). Leakage cues have been classified as being hierarchical (Ekman & Friesen, 1969), typically uncontrollable (Buller & Burgoon, in press; Hocking & Leathers, 1980), and cognitively taxing (Zuckerman & Driver, 1985). Second, deceivers attempt to compensate for leakage. This may be achieved by interpreting feedback (Ekman & Friesen, 1969), attempting to control behaviors that are stereotypically associated with deception (Hocking & Leathers, 1980; Zuckerman & Driver, 1985), and establishing message veracity (Buller & Burgoon, in press).

Deception Detection

Because deception may be an important feature of interpersonal communication, research has been conducted on its detection. DePaulo et al. (1980b) argue the following:

> Human lie detectors are interesting even when--or perhaps especially when--they cannot detect lies. That is, human lie detectors are of interest precisely because they are likely to make mistakes and to vary

> in their accuracy. Thus, we want to know not only whether humans can detect lies but also who is skilled and who is less skilled at such detection. Furthermore, we are interested not only in the accuracy or end product of human lie detection, but also in the process--how people actually detect lies, how they think they detect lies, and whether the actual and perceived processes of lie detection correspond to one another. (pp. 129-130)

For successful detection to occur "the identification of deception depends on whether the relevant cues are leaked by the deceiver and perceived by the lie detector" (Zuckerman, DePaulo, & Rosenthal, 1981, p. 22). In other words, the detector must attend to cues indicative of deception and consider them against all other possible interpretations (Burgoon, et al., 1989).

Audible Cues

Because of a strong *visual primacy bias* (i.e., the attention to visual over audible channels), visual cues are more relied on by detectors when attributing deception (Burgoon, et al., 1989; Zuckerman, et al., 1982), even though they are less consistently associated with deception than audible cues (Burgoon, et al., 1989).

Research indicates that the addition of audible cues to visual cues increases detection (e.g., DePaulo, et al., 1983; DePaulo, et al., 1982; DePaulo, Rosenthal, Eisenstat, Rogers, & Finkelstein, 1978; Stiff & Miller, 1990; 1985; 1986; Zuckerman, Koestner, & Colella, 1985; Zuckerman, et al., 1982). Specific audible cues which may be useful in detecting deception include: greater pause and response duration (Stiff & Miller, 1986), increased nonfluency and verbal implausibility (DePaulo, et al., 1980), and implausible or inconsistent message content (Koper & Sahlman, 1991; Zuckerman, Koestner, Colella, & Alton, 1984).

Accuracy

To date, most studies report that human deception detection is not much better than chance (Brandt, et al., 1982; DePaulo, et al., 1980; deTurck & Goldhaber, 1988; deTurck, et al., 1989; Hocking, Bauchner, Kaminski, & Miller, 1979; Hocking & Leathers, 1980; Hurd & Noller, 1988; Kraut, 1978; McCornack & Parks, 1985; O'Sullivan, et al., 1988). Accuracy seems to be greatest for detecting lies in younger subjects (Feldman, et al., 1979), with female detectors (Comadena, 1982; Hurd & Noller, 1988), with intimates of the detector (Comadena, 1982), by high self-monitors (Brandt, et al., 1980a; Geizer, Rarick, & Soldow, 1977), when detecting emotional rather than factual lies (Comadena, 1982), and when detectors are trained (deTurck & Miller, 1990; Zuckerman, et al., 1985; Zuckerman, Koestner, & Alton, 1984; Zuckerman, et al., 1982). Lower accuracy occurs when detectors use probes (Koper, 1986; Stiff & Miller, 1986) and when they are suspicious (Zuckerman, et al., 1982).

Confidence

Interestingly, there appears to be an inverse relationship between accuracy and confidence (Brandt, et al., 1980b; deTurck & Miller, 1990). Although males are less accurate detectors than females, they report higher confidence in their ability to accurately attribute deception (Hurd & Noller, 1988) even when females formulate more severe deceptive attributions (deTurck & Steele, 1988). Some studies indicate that confidence increases when using forced-choice scales (Hurd & Noller, 1988), when detectors are intimates with the individual under surveillance (McCornack & Parks, 1985), or when detectors are trained (deTurck, Harszlak, Bodhorn, & Texter, 1990).

Implications of Visual Primacy

Even though a number of kinesic, vocalic, and verbal behaviors are associated with deception, an increasing body of research findings suggest that the most reliable clues are audible. Interestingly enough, detectors do not focus attention on audible cues probably due to visual primacy. As Burgoon et al. (1989) contend, "subjects display a strong visual bias" (p. 261). Thus, visual cues appear to divert a detector's attention from an apparently more consistent and reliable channel.

The earlier discussion on the importance of visual cues during deception is relevant here. One could speculate that such a pronounced bias toward a single channel would distract attention away from other available channels (i.e., audible channels). Thus, distraction could reduce a receiver's ability to make the fine distinctions in audible cues necessary to detect lies.

Hearing Tests on the Blind

The blind have been a focus of attention in some studies to investigate whether the loss of one's vision enhances other sensory abilities. According to Shingledecker (1981), visual primacy among people makes blindness potentially one of the most handicapping conditions that can be experienced. Yet the loss of one's sight may strengthen the other senses relied on by the blind (e.g., hearing). While compensation seems to occur in blind individuals, the process does not appear to be automatic. Blind people are trained to rely on their remaining senses, where adjustment and recognition of other sensory stimuli occur (Rusalem, 1972). Veraart and Wanet-DeFalque (1987) argue that sensory compensation is more pronounced when blindness occurs earlier in one's life. Over a period of time, reliance on the non-visual senses aid the blind in adapting to their environment.

Many of the hearing tests on the blind have used tapping sounds to detect and locate objects (Schenkman & Jansson, 1986; Wanet & Veraart, 1985) or other auditory acuity tasks (Benedetti & Loeb, 1972; Bross & Borenstein, 1982; Curtis & Winer, 1969; Riley, Luterman, & Cohen, 1964; Yates, Johnson, & Starz, 1972). Blind subjects located objects more accurately and demonstrated finer distinctions in sound than sighted participants. These findings suggest that loss of one's sight may improve hearing ability.

One specific listening test conducted on the blind may be the closest that any study has come to investigating a related area of communication.[1] Niemeyer and Starlinger (1980) studied hearing acuity in blind and sighted individuals. Blind subjects demonstrated a greater ability to discriminate vowel sounds during sentence discrimination (i.e., identifying meaningful words and sounds during environmental stimulating noise) than sighted subjects. This suggests that sensory compensation occurs in blind individuals, increasing their ability to make finer distinctions in listening to the human voice.

The current study focuses on the relationship between loss of one's sight, detecting deceptive communication, and the confidence level of detection accuracy. Although some basis exists for hypothesized relationships, related work is atheoretical and sketchy. Thus, the following research questions were investigated:

> RQ_1: Is there a difference in accuracy of deception detection between blind and sighted subjects when only audible cues are available?
>
> RQ_2: Do blind subjects report greater confidence in detection accuracy than sighted subjects?

RQ_3: Do blind subjects rate deceptive messages higher in speech errors, pauses, vocal segregates, response durations, vocal uncertainty, vocal tension, and vocal pleasantness than sighted subjects?

Method

Overview

This experiment consisted of two phases. In Phase I, 40 participants engaged in truthful and deceptive interactions with an interviewer. Interviews were recorded on an audio cassette tape. These tapes served as the stimuli for Phase II. In Phase II, 143 participants listened to each of the interviews. Participants judged the veracity of each speaker's statements and indicated the confidence in these judgments. Judges also rated several audible cues.

Phase I

Participants. A total of 40 undergraduate students from a small private university volunteered to participate in a "small group task." Volunteers were enrolled in a lower division communication course. All volunteers received extra credit for their participation.

Procedure. Similar to the method pioneered by Exline, Thibaut, Hickey, and Gumpert (1970), participants performed a dot estimation task with a partner (see also deTurck, et al., 1990; deTurck & Miller, 1985; Stiff & Miller, 1986). Participants were randomly assigned to either a manipulation dyad (cheating induced) or a control dyad (no cheating). Upon arrival, each participant was paired with a partner and instructed to wait in a room. Half of the partners were confederates. The experimenter entered and greeted the dyad, and escorted them to a small lounge where they sat together on a couch. A table was set in front of the participants displaying some 3 X 5 cards and a briefcase. The 3 X 5 cards displayed several thousand dots. The experimenter held a separate 3 X 5 card with the actual number of dots for each of the ten cards.

Participants were asked to work with their partners and estimate the number of dots on each 3 X 5 card. The experimenter informed the dyad that one of the members would need to be designated a "spokesperson" in order to "avoid stating different answers." In the manipulation dyad, experimental participants were designated as the "spokespersons" in order to increase their perception of responsibility for the lie. As an added incentive, participants were informed that a $50 cash prize would be awarded to the team with the best scores.

After estimations had been made for five of the cards, the researcher abruptly left the room in search of "some forgotten papers." The card containing the answers was placed in the briefcase. During the experimenter's absence, the confederate took the answer card out of the briefcase to "check to see how they were doing." The confederate convinced the participant that memorizing the remaining answers on the card would ensure winning the cash prize. With virtually no further persuasion needed, all participants in the manipulation dyad agreed to cheat with their partners.

When the experimenter returned with the papers, the team continued their dot estimations on the remaining five cards. Upon completing the dot estimation task, the experimenter interviewed the participants. Designated spokespersons were requested to "speak on behalf of the team's strategy." Spokespersons (i.e., the experimental participants) were interviewed in front of their partners (i.e., the confederates) to decrease the likelihood of confession.

All experimental participants in the manipulation dyad lied about their strategies.

All interviews were taped on an audio cassette recorder. When the interview was completed, participants were debriefed about the nature of the study. A cash prize was not awarded in Phase I because the best estimates were the result of cheating on the task.

Phase II

Blind participants. Blind participants were 72 members from a community blind center. In order to be eligible for membership in the blind center, individuals must be legally blind (i.e., 20/200) or poorer as diagnosed by an ophthalmologist. Exactly 50% of the blind sample was female. Age was measured by categories; modal age for this sample was 51 to 60.

Sighted participants. Sighted subjects were 71 undergraduates enrolled in lower division courses at a small western university. This sample consisted of 59.2% female subjects. Modal age for this sample was 41 to 50.

Stimulus tapes. The 40 tapes (20 truthful and 20 deceptive) were reduced to 8 audio segments (4 truthful and 4 deceptive). Segments not meeting a preset message duration (1 minute) or which were considered inaudible were eliminated from the stimulus materials.

Procedure. Participants in Phase II sat in a room, individually, with a coder. The coder explained the dot estimation task and indicated that some of the research participants in Phase I had cheated on the task. The coder played the first of the audio tapes. After the first audio tape had finished, the coder interviewed the participant. The participant was asked to make a dichotomous judgment (i.e., told the truth or lied) about the individual's statement.

Audible cues. Using Likert-type scales, each participant identified his/her perception of several audible cues:

* Speech errors were defined as the perceived number of verbal mistakes by the speaker during statements.
* Pauses were defined as the perceived delays or gaps during the speaker's statements.
* *Vocal segregates* were defined as the perceived use of meaningless speech (e.g., um, uh, err, aah, ya know) during the speaker's statements.
* Response duration was defined as the perceived length of time the speaker was talking.
* *Vocal certainty* was defined as the perceived confidence in the speaker's voice while talking.
* *Vocal tension* was defined as the perceived anxiety in the speaker's voice while talking.
* *Vocal pleasantness* was defined as how pleasurable the speaker's voice sounded to the participant.

Confidence. The participant indicated his/her confidence level in judging the first speaker's statement. Another Likert-type scale was used.

Upon completion of the first interview, the coder repeated this procedure for each of the remaining audio tapes.

Analyses

Because the experimental design resulted in mean scores for two independent groups (i.e., blind and sighted), t-tests were performed to answer the research questions. Because directional predictions could not be made regarding each of the research questions, two-tailed tests were appropriate (Williams, 1979). An alpha level of $\alpha = .05$ was set for each of the *t*-tests.

Results

Research Questions

Accuracy and confidence. Research question one addressed whether a difference existed between blind and sighted groups in accuracy scores when only an audible channel was available. Blind participants were 76.5% accurate at detecting deception, while sighted participants performed at 64.9% accuracy. Accuracy scores were seen as significantly different for blind and sighted groups.

Research question two addressed whether a difference exists between blind and sighted groups' ratings of confidence levels in detecting deception. Confidence in attributing deceptive intent were not rated significantly different between groups. Table 1 summarizes the analyses for research questions one and two.

Insert Table 1 about here

Audible cues. The independent *t*-tests for research question three examined whether blind participants would rate deceptive statements higher than sighted participants in several audible dimensions. No significant differences in ratings were found for speech errors, $t(138) = -2.44$, $p < .113$, pauses, $t(139) = 2.58$, $p < .099$, vocal segregates, $t(139) = 2.16$, $p < .141$, response durations, $t(139) =.92$, $p < .323$, vocal certainty, $t(139)$, $p < .482$, vocal tension, $t(138) = 1.34$, $p < .254$, and vocal pleasantness, $t(138)$, $p < .065$.

Gender

Because the difference in accuracy scores existed for blind and sighted groups, it was speculated that other differences may also exist. DePaulo et al. (1980) reminded scholars that "we want to know not only whether humans can detect lies but also who is skilled and who is less skilled at such detection" (p. 130).

Previous research indicated that females are more accurate at detecting deception than males (e.g., Comadena, 1982; Hurd & Noller, 1988). An independent *t*-test was conducted to see if there was a gender difference in accuracy scores when only an audible channel was available. Results were surprising. In this sample, males were 75.4% accurate at detecting deception while females performed at 66.3% accuracy. The independent t-test indicates that accuracy scores are significantly greater for males than for females. Table 3 provides the results of this analysis.

Insert Table 2 about here

Discussion

The findings in this study are interesting because they represent a unique area of research for studies in both deception and sensory compensation for the blind.

Accuracy

Blind vs. sighted. Few studies report an accuracy in deception detection above chance. For this study, overall detection accuracy for blind participants was 76.5%. Statistical analyses indicate that blind subjects are more accurate in attributing deceptive intent with an audible channel only.

This would seem to support the previous research in sensory compensation by blind individuals. Such findings suggest that audible cues are indeed useful clues to deceptive intent.

Females vs. males. The analysis of detection accuracy between genders provided unexpected results. Males were found to be more accurate in detecting deception than females. These results challenge earlier research suggesting females are better detectors (Comadena, 1982; Hurd & Noller, 1988). Because this study focused on audible cues, perhaps the difference in detection accuracy is a result of male subjects' processing of sequential cues. Thus, males may have been distracted in previous studies because of a visual primacy bias.

Audible Cues

Literature on deception indicates that the audible cues are the most reliable for detectors when making veracity judgments. Given that studies indicate finer distinctions in hearing ability for the blind, one would expect that the audible cues would have had significantly different ratings by blind participants. Although such a speculation is intuitively appealing, these data did not support such reasoning. The blind subjects' ratings of all the audible cues did not differ significantly from the sighted participants' ratings.

While it is possible that a smaller effect size and/or greater measurement error might obscure real differences, inadequate power is only one explanation for these null findings. Others may be usefully considered. For example, individuals do not rate any of the audible cues differently than the sighted. Perhaps the blind do not associate individual cues with deceptive intent. Rather, subjects may have had a "gestaltist" perspective (i.e., a pattern so unified as a whole that its individual parts cannot be distinguished).

The data collection process may have also contributed to a *gestaltist* perspective. The ratings of each audible cue are, essentially, a self-report of perceptual attributions to each speaker's statement. While the blind may have distinguished more subtle differences in speech than sighted participants, they may have included such subtle differences "globally" and been unaware of them. For instance, a deceptive speaker's tense voice may not have been rated as highly tense by a blind subject, yet the participant may still have attributed deceptive intent. This would suggest that the blind may have a greater listening and evaluation skills then might currently be known **even to them.**

Another explanation for these findings might be that the audible cues being studied were not reflective of the actual cues indicating deception. For example, vocal pitch may be a useful indicator of deception for the blind, yet was not measured as a unique variable in the present study. Thus, instrumentation may have contributed to the data collection process.

Confidence

Previous research in deception detection has indicated an inverse relationship between confidence and accuracy of detecting deception. The current study did not support such a relationship. While accuracy in deception detection was greater for the blind than sighted subjects, confidence levels between the groups were not significantly different.

Generally, confidence levels for both groups in making veracity judgments were conservative (blind, $M = 14.59$; sighted, $M = 13.63$). This is surprising since perceived truthfulness was determined using a forced-choice scale (i.e., "lie" or "truth"). Previous research indicates greater confidence for subjects by using forced-choice scales when detecting deception (e.g., Hurd & Noller, 1988). These findings suggest that, perhaps, forced-choice scales may not provide subjects with greater confidence.

Limitations

Although the present study provided a new perspective on deceptive communication, these findings are not without limitations. First, stimulus tapes did not control for the gender of the student participants. While statistical analyses indicated that blind subjects and male subjects attributed deceptive intent more accurately than their counterparts, it is unknown if other variables may have influenced them (e.g., the gender of person speaking on the audio tape). Accuracy, therefore, may have been affected by a demeanor bias of the subject detecting deception.

Second, no control existed for environmentally distracting stimuli. Although blind subjects sat in a chair and listened to the stimulus tapes with no distraction from visual sensations, sighted subjects were potentially distracted by visual stimuli. Blindfolds were considered to avoid visual distraction by sighted subjects, but were not used because the discomfort of a foreign object on one's face was reasoned to be another distraction. To compensate for this, it would have been necessary to blindfold the blind participants, as has been done in other research (e.g., Schenkman & Jansson, 1986; Wanet & Veraart, 1985). However, this was rejected in order to preserve the dignity of the blind participants. Consequently, it was reasoned that no blindfolds would be used on any of the subjects.

Finally, all subjects were informed that some student volunteers had cheated while others had performed honestly on the dot estimation task. Informing participants that statements are either truthful or deceptive, arouses suspicion that may sensitize them to nonverbal information (Zuckerman, et al., 1982). For this reason, a Likert-type scale (truthful to deceptive) may have been more appropriate than the forced-choice scale used.

Implications for Future Study

Findings from this study suggest possibilities for future study. Accuracy appears to be greater for the blind than with sighted individuals. While there were no significant differences for the ratings of the audible cues to deceptive communication, previous research has suggested these cues are the most reliable. Thus, it is not clear what processes account for these results. Methods designed at creating better instruments to measure perceptual biases for specific cues are needed in future studies.

Additionally, detection accuracy was greater for males than for females in this sample. While previous research suggests that the opposite is true (Hurd & Noller, 1988), the results from this study contradict those findings. Whether sampling error explains these differences is yet to be determined. Nonetheless, with few studies addressing gender and detection accuracy, future research should confront this issue.

Footnotes

[1]An exception is a recent study by Sharkey and Stafford (1990) on the blind's turn-taking behavior.

[2]This *t*-test reflects the mean accuracy scores for 72 blind and 71 sighted participants.

[3]This *t*-test reflects the mean accuracy scores for 78 females and 65 males.

Table 1

Accuracy and confidence *t*-values, Degrees of Freedom, Two-tailed Probability, Means, and Standard Deviations.

	Group		t		2-tail
	Blind	Sighted	Value	*df*	prob
Accuracy					
Mean	6.41	5.31	3.43	139	.001*
SD	1.85	1.97			
Confidence					
Mean	14.59	13.63	2.74	139	.087
SD	4.19	4.15			

* Designates significance

Table 2

Gender Accuracy t-value, Degrees of Freedom, Two-tailed Probability, Means, and Standard Deviations.[1]

Accuracy	Gender: Females	Males	t Value	df	2-tail prob
Mean	5.36	6.46	-3.41	129	.001*
SD	1.79	2.02			

* Designates significance

References

Benedetti, J. B. & Loeb, M. (1972). A comparison of auditory monitoring performances in blind subjects with that of sighted subjects in light and dark. ***Perception and Psychophysics*, 11**, 10-16.

Brandt, D., Miller, G. R., & Hocking, J. (1982). Familiarity and lie detection: A replication and extension. ***Western Journal of Speech Communication*, 46**, 276-290.

Brandt, D., Miller, G. R., & Hocking, J. (1980a). Effects of self-monitoring and familiarity on deception detection. ***Communication Quarterly*, 28**, 3-10.

Brandt, D., Miller, G. R., & Hocking, J. (1980b). The truth-deception attribution: Effects of familiarity on the ability of observers to detect deception. ***Human Communication Research*, 6**, 99-110.

Bross, M. & Borenstein, M. (1982). Temporal auditory acuity in blind and sighted subjects: A signal detection analysis. ***Perceptual and Motor Skills*, 55**, 963-966.

Buller, D. & Aune, R. K. (1988). Nonverbal cues to deception among intimates, friends, and strangers. ***Journal of Nonverbal Behavior*, 11**, 269-290.

Buller. D. & Burgoon, J. K. (in press). Deception. In J. A. Daly and J. M. Wiemann (Eds.), ***Communicating strategically: Strategies in interpersonal communication.*** Hillsdale, NJ: Erlbaum.

Burgoon, J. K., Buller, D. B., & Woodall, W. G. (1989). ***Nonverbal communication: The unspoken dialogue*** (pp. 260-288). New York: Harper & Row.

Cody, M. J., & O'Hair, D. H. (1983). Nonverbal communication and deception: Differences in deception, cues due to gender, and communicator dominance. ***Communication Monographs*, 50**, 175-192.

Comadena, M. (1982). Accuracy in detecting deception: Intimate and friendship relationships. In M. Burgoon (Ed.), ***Communication Yearbook* 6** (pp. 446-472). Beverly Hills, CA: Sage.

Curtis, J. F. & Winer, D. M. (1969). The auditory abilities of the blind as compared with the sighted. ***Journal of Auditory Research*, 9**, 57-59.

DePaulo, B. M., Lanier, K., & Davis, T. (1983). Detecting the deceit of the motivated liar. ***Journal of Personality and Social Psychology*, 45**, 1096-1103.

DePaulo, B. M., Lassiter, G. D., & Stone, J. I. (1982). Attentional determinants of success at detecting deception and truth. **Personality and Social Psychology Bulletin, 8,** 273-279.

DePaulo, B. M., Rosenthal, R., Eisenstat, R., Rogers, P., & Finkelstein, S. (1978). Decoding discrepant nonverbal cues. **Journal of Personality and Social Psychology, 36,** 313-323.

DePaulo, B. M., Stone, J. I., & Lassiter, G. D. (1985). Deceiving and detecting deceit. In B. R. Schlenker (Ed.), **The Self and Social Life** (pp. 323-370). New York: McGraw-Hill.

DePaulo, B. M., Zuckerman, M., & Rosenthal, R. (1980). Humans as lie detectors. **Journal of Communication, 30,** 129-139.

deTurck, M. A., & Goldhaber, G. M. (1988). Perjury and deceptive judgments: How the timing and modality of witness deception affects juror's deceptive judgments. **Communication Quarterly, 36,** 276-289.

deTurck, M. A., Harszlak, J. J., Bodhorn, D. J., & Texter, L. A. (1990). The effects of training social perceivers to detect deception from behavioral cues. **Communication Quarterly, 38,** 1-11.

deTurck, M. A., & Miller, G. R. (1985). Deception and arousal: Isolating the behavioral correlates of deception. **Human Communication Research, 12,** 181-201.

deTurck, M. A. & Steele, M. E. (1988). Once a liar always a liar: Effects of individuating information on the utilization of base rates in deceptive attributions. **Communication Reports, 1,** 59-67.

deTurck, M. A., Texter, L. A., & Harszlak, J. J. (1989). Effects of information processing objectives on judgments of deception following perjury. **Communication Research, 16,** 434-452.

Ekman, P. (1986). **Telling lies: Clues to deceit in the marketplace, politics, and marriage.** New York: Berkley Books.

Ekman, P. & Friesen, W. V. (1969). Nonverbal leakage and clues to deception. **Psychiatry, 32,** 88-108.

Exline, R. V., Thibaut, J., Hickey, C. B., & Gumpert, P. (1970). Visual interaction in relation to Machiavellianism and an unethical act. In R. Christie and F. L. Geis (Eds.), **Studies in Machiavellianism** (pp. 53-75). New York: Academic Press.

Feldman. R. (1976). Nonverbal disclosure of teacher deception and interpersonal affect. **Journal of Educational Psychology, 68,** 807-816.

Feldman, R., Jenkins, L., & Popoola, O. (1979). Detection of deception in adults and children via facial expressions. **Child Development, 50,** 350-355.

Geizer, R. S., Rarick, D. L., & Soldow, G. F. (1977). Deception and judgment of accuracy: A study in person perception. **Personality and Social Psychology Bulletin, 3,** 446-449.

Greene, J. O., O'Hair, H. D., Cody, M. J., & Yen, C. (1985). Planning and control of behavior during deception. **Human Communication Research, 11,** 335-364.

Hocking, J. E., Bauchner, J., Kaminiski, E., & Miller, G. R. (1979). Detecting deceptive communication from verbal, visual, and paralinguistic cues. **Human Communication Research, 6,** 33-46.

Hocking, J. E. & Leathers, D. G. (1980). Nonverbal indicators of deception: A new theoretical perspective. **Communication Monographs, 47,** 119-131.

Hurd, K. & Noller, P. (1988). Decoding deception: A look at the process. **Journal of Nonverbal Behavior, 12,** 217-233.

Knapp, M. L., Hart, R. P., & Dennis, H. S. (1974). An exploration of deception as a communication construct. **Human Communication Research, 1,** 15-29.

Koper, R. J. (1986). The effects of motivation, probes, and Machiavellianism on nonverbal behavior and deception detection (Doctoral dissertation, Michigan State University, 1985). **Dissertation Abstracts International, 46,** 4453B.

Koper, R. J. & Miller, G. R. (1991). **Bluffing as deceptive communication.** Paper presented at the meeting of the Western States Communication Association, Phoenix, AZ.

Koper, R. J. & Sahlman, J. M. (1991). **The behavioral correlates of real-world deceptive communication.** Paper presented at the meeting of the International Communication Association, Chicago. IL.

Kraut, R. E. (1978). Verbal and nonverbal cues in the perception of lying. **Journal of Personality and Social Psychology, 36,** 380-391.

Kraut, R. E. (1980). Humans as lie detectors: Some second thoughts. **Journal of Communication, 30,** 784-798.

McCornack, S. & Parks, M. (1985). Deception detection and relationship development: The other side of trust. In M. L. McLaughlin (Ed.), **Communication Yearbook 9** (pp. 377-389). Beverly Hills, CA: Sage.

Niemeyer, W. & Starlinger, I. (1981). Do the blind hear better? Investigations on auditory processing in congenital or early acquired blindness. ***Audiology*, 20,** 510-515.

O'Sulllivan, M., Ekman, P., & Friesen, W. (1988). The effect of comparisons on detecting deceit. ***Journal of Nonverbal Behavior*, 12,** 203-215.

Riggio, R., Tucker, J., & Widaman, K. (1987). Verbal and nonverbal cues as mediators of deception ability. ***Journal of Nonverbal Behavior*, 11,** 126-145.

Riley, L. H., Luterman, D. M., & Cohen, M. F. (1964). Relationship between hearing ability and mobility in a blinded adult population. ***New outlook for the Blind*, 58,** 139-141.

Rusalem, H. (1972). ***Coping With The Unseen Environment.*** New York: Teachers College Press.

Schenkman, B. N. & Jansson, G. (1986). The detection and localization of objects by the blind with the aid of long-cane tapping sounds. ***Human Factors*, 28,** 607-618.

Sharkey, W. F. & Stafford, L. (1990). Turn-taking resources employed by congenitally blind conversers. ***Communication Studies*, 41,** 161-182.

Shingledecker, C. A. (1981). Handicap and human skill. In D. H. Holding (Ed.), ***Human Skills.*** New York: John Wiley & Sons.

Stiff, J. B., & Miller, G. R. (1986). "Come to think of it"...: Interrogative probes, deceptive communication, and deception detection. ***Human Communication Research*, 12,** 339-357.

Veraart, C. & Wanet-DeFalque, M. C. (1987). Representation of locomotor space by the blind. ***Perception and Psychophysics*, 42,** 132-139.

Wanet, M. C. & Veraart, C. (1985). Processing of auditory information by the blind in spatial localization tasks. ***Perception and Psychophysics*, 38,** 91-96.

Williams, F. (1979). ***Reasoning with statistics*** (2nd ed.). New York: Holt, Rinehart, and Winston.

Yates, J. T. Johnson, R. M., & Starz, W. J. (1972). Loudness perception of the blind. ***Audiology*, 11,** 368-376.

Zuckerman, M., Amidon, M., Bishop, S., & Pomerantz, S. (1982). Face and tone of voice in the communication of deception. ***Journal of Personality and Social Psychology*, 43,** 347-357.

Zuckerman, M., DeFrank, R., Hall, J., Larrance, D., & Rosenthal, R. (1979). Facial and vocal cues of deception and honesty. *Journal of Experimental Social Psychology, 15,* 378-396.

Zuckerman, M., DePaulo, B., & Rosenthal, R. (1981). Verbal and nonverbal communication of deception. In L. Berkowitz (Ed.), *Advances in experimental social psychology,* Vol. 14 (pp. 1-59). New York: Academic Press.

Zuckerman, M. & Driver, R. E. (1985). Telling lies: Verbal and nonverbal correlates of deception. In A. W. Siegman & S. Feldstein (Eds.), *Multichannel integrations of nonverbal behavior* (pp. 129-147). Hillsdale, NJ: Erlbaum.

Zuckerman, M., Koestner, R., & Alton, A. O. (1984). Learning to detect deception. *Journal of Personality and Social Psychology, 46,* 519-528.

Zuckerman, M., Koestner, R., & Colella, M. J. (1985). Learning to detect deception from three communication channels. *Journal of Nonverbal Behavior, 9,* 188-194.

Zuckerman, M., Koestner, R., Colella, M. J., & Alton, A. (1984). Anchoring in the detection of deception and leakage. *Journal of Personality and Social Psychology, 47,* 301-311.

Zuckerman, M., Koestner, R., & Driver, R. (1981). Beliefs about cues associated with deception. *Journal of Nonverbal Behavior, 6,* 105-114.

Zuckerman, M., Larrance, D. T., Spiegel, N. H., & Klorman, R. (1981). Controlling nonverbal displays: Facial expressions and tone of voice. *Journal of Experimental Social Psychology, 17,* 506-524.

Zuckerman, M., Spiegel, N. H., DePaulo, B., & Rosenthal, R. (1982). Nonverbal strategies for decoding deception. *Journal of Nonverbal Behavior, 6,* 171-187.