

# Who Can Best Catch a Liar?

A Meta-Analysis of Individual Differences in Detecting Deception







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**Key Words:** deception, meta-analysis, lying, individual differences

### **Abstract**

A meta-analysis was conducted to determine if there were individual differences in the ability to detect deception. On the basis of 108 studies covering 16,537 subjects, the results indicated that confidence ( $r = .05$ ,  $K = 58$ ,  $N = 6,315$ ), age ( $r = -.03$ ,  $K = 72$ ,  $N = 2,025$ ), experience ( $r = -.08$ ,  $K = 13$ ,  $N = 1,163$ ), education ( $r = .03$ ,  $K = 4$ ,  $N = 522$ ), and sex ( $d = -.03$ ,  $K = 53$ ,  $N = 6,023$ ) were not significantly related to accuracy in detecting deception. The study also found that "professional lie catchers" such as police officers, detectives, judges, and psychologists ( $M = 55.51\%$ ,  $N = 2,685$ ) were no more accurate at detecting deception than were students and other citizens ( $M = 54.22\%$ ,  $N = 11,647$ ). There were not enough available studies to investigate the relationship between personality dimensions and accuracy in detecting deception.

There are many forensic contexts in which detecting deception is important. For example, detectives interview suspects, accusers, and witnesses; psychologists interview defendants pleading not guilty by reason of insanity (NGRI), applicants applying for law enforcement positions, and employees thought to pose a danger through workplace violence; jurors and judges listen to witness testimony; and parole board members interview inmates. Even though electronic methods such as the polygraph, brain fingerprinting, and brain mapping detect deception at well above chance levels, most forensic decisions about deception are not made using these methods. Instead, most decisions are made by subjectively analyzing the verbal content of a message and the paralanguage and body language of the person communicating the message.

Unfortunately, the research literature suggests that, in general, people are not highly skilled at using communication cues to detect deception and only slightly exceed chance levels in detecting deception (Vrij, 2000). Research is also fairly clear that success at detecting deception can be improved somewhat through training, using patterns of cues rather than single cues, comparing communication behaviors to a baseline of behavior, and listening rather than participating in the interrogation or interview (Vrij). What is not clear from the literature is if there are individual differences (e.g., sex, experience, personality) in the ability to detect deception. That is, are certain types of people better than others at detecting deception? It is the purpose of this study to conduct a quantitative review of the literature (a meta-analysis) to determine if there are individual differences in the ability to detect deception.

### Meta-Analysis

Meta-analysis is a statistical method for combining research results. Since Gene Glass published the first meta-analysis in 1976, the number of published meta-analyses has increased tremendously, and the methodology has become increasingly complex. In the forensic psychology arena meta-analyses have been conducted on a wide variety of topics, including the validity of techniques used to select law

enforcement personnel (Aamodt, 2004), the communication cues related to deception (DePaulo et al., 2003), and the relationship between the confidence of eyewitnesses and the accuracy of their statements (Sporer, Penrod, Read, & Cutler, 1995).

The most influential meta-analysts have been Frank Schmidt and the late John Hunter. Almost every meta-analysis uses the methods suggested in their 1990 book *Methods of Meta-Analysis* and clarified in the book *Conducting Meta-Analysis Using SAS* by Winfred Arthur, Winston Bennett, and Allen Huffcutt (2001). Though meta-analyses vary somewhat in their methods and purpose, most try to answer two main questions:

- 1) What is the mean correlation found in the literature between two variables? In the current meta-analysis, we are interested in the mean correlations between accuracy in detecting deception and a variety of individual difference variables (e.g., education, confidence, sex, and experience).
- 2) Can we generalize the meta-analysis results to every situation, or are individual difference variables better predictors in some situations than in others?

### Our Meta-Analysis

**Finding Studies.** The first step in our meta-analysis was to locate studies correlating an individual difference variable with accuracy in detecting deception. The active search for such studies was concentrated on journal articles, theses, and dissertations published between 1970 and 2004. Studies published prior to 1970 and more recently than 2004 were included when found, but inclusion outside of the years 1970-2004 would not be considered exhaustive. To find relevant studies, the following sources were used:

- *Dissertation Abstracts Online* was used to search for relevant dissertations. Interlibrary loan was used to obtain most of the dissertations. When dissertations could not be loaned, they were purchased from the University of Michigan dissertation service. There were a few dissertations and theses that could not be obtained because their home library would not loan them and they were not available for purchase.
- *WorldCat* was used to search for relevant

**Table 1. Characteristics of Studies Used in the Meta-analysis**

Characteristic	# of Sources
<i>Source</i>	
Journal article	94
Doctoral dissertation	9
Master's thesis	1
Unpublished	3
Book chapter	1
<i>Study Decade</i>	
1960s	2
1970s	10
1980s	23
1990s	35
2000s	37

master's theses, dissertations, and books. WorldCat is a listing of books contained in many libraries throughout the world and is the single best source for finding relevant master's theses.

- *PsycInfo*, *InfoTrac*, *OneFile*, *ArticleFirst*, *ERIC*, *Periodicals Contents Index*, *Factiva*, *Lexis-Nexis*, *Google Scholar*, and *Criminal Justice Abstracts* were used to search for relevant journal articles and other periodicals.
- Hand searches were made of the *Journal of Police and Criminal Psychology*, *Journal of Applied Psychology*, *Journal of Criminal Justice*, and *Law and Human Behavior*.
- Reference lists from journal articles, theses, and dissertations were used to identify other relevant material.

Keywords used to search electronic databases included combinations of words involving deception (e.g., deception, lying, lies), words relating to individual differences (e.g., confidence, sex, experience), and words related to the task (e.g., detecting and accuracy).

The literature search yielded 206 studies from 108 relevant sources covering 16,537 subjects (the number of studies is greater than the number of sources because some journal articles and dissertations contained more than one study). A summary of sample characteristics can be found in Table 1.

To be included in the meta-analysis, an article had to report the results of an empirical investigation and had to include a correlation coefficient, another statistic that could be converted to a correlation coefficient (e.g.,  $t$ ,  $F$ ,  $X^2$ ), or tabular data

or raw data that could be analyzed to yield a correlation coefficient. Articles reporting results without the above statistics (e.g., “We found no significant relationship between accuracy and confidence”) could not be included in the meta-analysis.

**Converting Research Findings to Correlations.** Once the studies were located, statistical results that needed to be converted into correlation coefficients ( $r$ ) were done so using the formulas provided in Arthur et al. (2001). In some cases, raw data or frequency data listed in tables were entered into an Excel program to directly compute a correlation coefficient.

**Cumulating Validity Coefficients.** After the individual correlation coefficients were computed, the validity coefficient for each study was weighted by the size of the sample and the coefficients combined using the method suggested by Hunter and Schmidt (1990) and Arthur et al. (2001). In addition to the mean validity coefficient, the observed variance, amount of variance expected due to sampling error, and 95% confidence interval were calculated. All meta-analysis calculations were performed using *Meta-Analyzer 5.2*, an Excel-based program written by Dr. Michael Aamodt. The integrity of the formulas in *Meta-Analyzer 5.2* were validated using datasets and meta-analysis results provided in Arthur et al. and in Hunter and Schmidt. Copies of the *Meta-Analyzer 5.2* template can be obtained without cost from Dr. Aamodt (maamodt@radford.edu).

**Searching for Moderators and Generalizing Results.** Generalizing meta-analysis findings across similar organizations and settings (validity generalization) is an important goal of any meta-analysis. In this meta-analysis, when variance due to sampling error accounted for less than 75% of observed variance, the next step was to remove outliers. Outliers were defined as correlation coefficients that were at least three standard deviations from the mean correlation. Outliers are removed from meta-analyses because a study obtaining results that are very different from those found in other studies is

due to such factors as calculation errors, coding errors, or the use of a unique sample. In a meta-analysis, the removal of outliers typically reduces the variance but not the mean correlation or effect size. After removing outliers, if the variance accounted for by sampling error was still less than 75%, a search for such potential moderators as the year, study, and sample type (e.g., students versus law enforcement) was conducted.

## Results

**Are Professionals More Accurate in Detecting Deception Than Students?** As shown in Table 2, local and federal law enforcement agencies have levels of accuracy in detecting deception similar to students. The accuracy rate for students in this meta-analysis (54.22%) is similar to, but a bit lower than, the 57% reported in an earlier and much smaller meta-analysis by Kraut (1980). Criminals were one of the most accurate groups in detecting deception. Although based on only one study, that finding is consistent with the findings by Granhag, Andersson, Strömwall, and Hartwig (2004) who found that criminals have more insight than students and prison personnel regarding the cues that, according to research, are the best to use when detecting deception.

Though criminals, secret service agents, psychologists, social workers, teachers, and judges seem to be the best and parole officers seem to be the worst at detecting deception, the small number of studies involving these groups strongly suggests that further research is necessary before concluding any of these groups to be different from students or law enforcement personnel.

The fact that law enforcement officials were no more accurate than students at detecting deception may at first appear to be a surprising finding. However, previous

**Table 2. Are Professionals Better at Detecting Deception than Students?**

Group	Studies/Groups	N	Accuracy %
Teachers	1	20	70.00
Social workers	1	20	66.25
Criminals	1	52	65.40
Secret service agents	1	34	64.12
Psychologists	4	508	61.56
Judges	2	194	59.01
Police officers	12	655	55.30
Customs officers	3	123	55.30
Federal officers	4	341	54.54
Students	156	11,647	54.22
Detectives	7	758	50.80
Parole officers	1	32	40.42
TOTAL	193	14,379	54.50

research indicates that law enforcement professionals are likely to believe that cues such as gaze aversion are indicators of deception, when research is clear that such cues are not related to deception (Akehurst, Köhnken, Vrij, & Bull, 1996; Strömwall & Granhag, 2003; Vrij, 1993; Vrij & Semin, 1996)

**Is Confidence Related to Accuracy?** The next question we addressed was whether a person's confidence in his or her ability to detect deception was related to his or her actual accuracy in detecting deception. As shown in Table 3, on the basis of 58 studies, the average correlation between confidence and accuracy is only .05. Although this correlation is statistically significant because the confidence interval does not include zero, it is of such a low magnitude that it would probably not have much practical significance. Because 76% of the variability among studies would be expected due to sampling error alone, these results can be generalized across situations.

That confidence was not highly related to accuracy in detecting deception is not surprising. Not only are these results consistent with an earlier and smaller meta-analysis on the subject (DePaulo, Charlton, Cooper, Lindsay, & Muhlenbruck, 1997), but they are also consistent with research indicating that confidence and accuracy are not highly related in many areas. For example, a meta-analysis by Sporer et al. (1995) found only a small correlation ( $r = .28$ ) between eyewitness confidence and

accuracy. Three studies suggest that there is an insignificant relationship between confidence and the accuracy of interpersonal judgments (Iizuka, Patterson, & Matchen, 2002; Patterson, Foster, & Ballmer, 2001; Patterson & Stockbridge, 1998). Thus it appears that people are not good judges of their own skill levels.

**Are Experienced Lie Catchers More Accurate Than Novices?** The next question we looked at was whether “experienced lie catchers” were better able to detect deception than naïve or less experienced people. We used three strategies to answer this question. The first strategy was to look at correlations between years of law enforcement/forensic experience and accuracy in detecting deception. The second strategy was to look at correlations between age and accuracy, assuming that with age came more opportunity to encounter and detect deception. The third strategy was to compare accuracy rates for novices (students) with accuracy rates from people who detect deception for a living (e.g., law enforcement personnel, judges, parole officers). As shown in Table 3, neither age nor years of experience was significantly related to accuracy in detecting deception. As shown back in Table 2, people who detect deception for a living (police, detectives, psychologists, secret service agents, parole officers, and judges) have an accuracy rate ( $M = 55.51\%$ ,  $N = 2,685$ ) that is only slightly higher than novices ( $M = 54.22\%$ ,  $N = 11,647$ ).

**Are Educated People More Accurate in Detecting Deception?** As shown in Table 3, only four studies investigated whether more highly educated people or people with higher cognitive ability are better at detecting deception than their counterparts. On the basis of these four studies, education and cognitive ability do not appear to be related to accuracy in detecting deception. With only four studies, this conclusion is tenuous, and more research is necessary.

**Are Some Personalities Better Than Others at Detecting Deception?** Though several studies investigated this question, few personality traits had been addressed

**Table 3: Meta-Analysis Results**

Individual difference	K	N	r	95% Confidence Interval			Q <sub>w</sub>
				Lower	Upper	SE%	
Confidence	58	6,315	.05	.02	.08	76%	75.22
Age	17	2,025	-.03	-.07	.01	100%	4.76
Experience	13	1,163	-.08	-.14	-.03	100%	7.37
Education/cognitive ability	4	522	.03	-.05	.12	100%	1.51
Neuroticism	3	439	.00	-.09	.09	100%	0.61
Extraversion	5	653	.00	-.12	.12	41%	12.24*
Self-monitoring	4	251	.14	.01	.26	74%	5.39

K = # of studies, N = sample size, r = mean correlation, and SE% = percentage of variance explained by sampling error.

in enough studies to conduct a meta-analysis. As shown in Table 3, the most promising personality trait seems to be self-monitoring (Snyder, 1987). High self-monitors are people who scan the environment to determine how others are behaving and then adjust their own behavior accordingly. Thus it is not surprising that such individuals would be good at detecting deception because their behavior is based on their ability to read the verbal and nonverbal cues of others.

**Are Women Better Lie Detectors Than Men?** To determine if there are sex differences in the ability to detect deception, d scores rather than correlations (r) were used. D scores are computed by taking the mean accuracy rate for men, subtracting the mean accuracy rate for women, and dividing by the overall standard deviation. There were several studies, such as Feeley, deTurck, and Young (1995) that indicated that there were no significant sex differences in accuracy but did not include the necessary statistics to be included in the meta-analysis. Many studies did not include information about sex differences, but when contacted, several authors (Elaad, 2003; Garrido, Masip, & Herrero, 2004; Masip, Garrido, & Herrero, 2003a; Masip, Garrido, & Herrero, 2003b; Hartwig, Granhag, Strömwall, & Andersson, 2004; Hartwig, Granhag, Strömwall, & Vrig, 2004a; Hartwig, Granhag, Strömwall, & Vrig, 2004b; Leach, Talwar, Lee, Bala, & Lindsay, 2004; Strömwall, Granhag, & Jonsson, 2003) were kind enough to provide means and standard deviations for men and women so that their studies could be included in the meta-analysis.

As shown in Table 4, contrary to popular belief, men and women are not significant-

ly different in their ability to detect deception. This is surprising given a previous qualitative review that found that women are better at interpersonal perception than men (Hall, 1985). Because the percentage of variability due to sampling error in the meta-analysis was less than 75%, we searched for moderators. As shown in Table 4, after separating the samples into law enforcement and non-law enforcement groups, the results indicate that women are slightly more effective than men in detecting deception in non-law enforcement samples and men slightly more effective than women in detecting deception in law enforcement samples. These differences, however, are not statistically significant.

### Conclusions

The results of this meta-analysis suggest that such individual differences as age, education, law enforcement experience, confidence, and sex are not related to the ability to detect deception. There are two interpretations of these findings. It could be that, in general, people are not good detectors of deception regardless of their age, sex, confidence, and experience. Or, it could be that the artificial situations and tasks used in the studies do not allow for the proper detection of deception. In “real world” situations, judgments about deception are often made on such factors as the story not making logical sense, a person not directly answering the questions being asked, and inconsistencies with previous statements or the statements of others. With the tasks used in most studies, such factors could not be used by the subjects attempting to detect deception. Furthermore, deception is best detected when there is a baseline of behavior, responses are spontaneous, and there is a



consequence for getting caught (e.g., going to prison, not getting a job). In most, if not all, of the studies in this meta-analysis, such conditions were not met. Thus, it is imperative that in future studies more realistic situations be used.

The authors of this article had hoped to explore the relationship between personal-ity and accuracy in detecting deception. However, there were not enough studies to conduct a meta-analysis. Thus, this might be an excellent area for future research.

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**Table 4: Differences Between Men and Women**

Individual difference	K	N	d	95% Confidence Interval		SE%	Q <sub>w</sub>
				Lower	Upper		
Overall	53	6,023	-.03	-.33	.26	62%	85.88*
Law enforcement	13	833	.10	-.33	.52	58%	22.39*
Students/other	40	5,190	-.06	-.30	.18	68%	59.12*

K = number of studies, N = sample size, d = mean effect size, and SE% = percentage of variance explained by sampling error. Note: a positive d indicates that men were more accurate at detecting deception than women.

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