D31 Deception Data, Mindset, and Validation Testing

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Learning Overview: After attending this presentation, attendees will better understand how to evaluate methods developed for classifying written statements as true or false. Attendees will be able to assess the deception data in relation to one individual's mindset and how different mindsets affect validation test results.

Impact on the Forensic Science Community: This presentation will impact the forensic science community by providing cautionary evidence regarding the validity and usefulness of different methods for linguistic deception detection.

The ability to discern that statements are false is a much-coveted and highly regarded tool in any investigator's toolkit. This ability, however, is mitigated by the "truth-bias" that humans have: humans want to be told the truth and therefore can easily be fooled by other humans who do not tell the truth.[1]

One approach to overcoming the "truth-bias" is to assert that any subject in an investigative setting is lying and to train investigators to convince the investigative subject that he is lying. This approach is at the core of the Reid Technique, which provides seven different ways for convincing the investigative subject that he is lying.[2] The well-documented problem with this first approach is that it can lead to false confessions, if the investigative subject cannot resist the investigator's methods.[3]

A second approach to overcoming the "truth bias" is to employ "wizards" who, unlike most humans, appear to be able to discern deception better than others.[4] However, wizards are rare, and although popularized by television shows, validation of the "wizards" is weak statistically.[5] In fact, even experienced police interrogators are not perfect deception detectors.[6]

A third approach to overcoming the "truth bias" is to employ a checklist in which an investigator looks for specific patterns that are identified as untruthful. This approach is known as "statement analysis" or "investigative discourse analysis" or Scientific Content Analysis (SCAN).[7-9] While the checklist approach can be systematized, validation testing of its reliability shows that it is weak because the investigator may or may not follow the checklist. In one test of SCAN, for example, four investigators agreed with each other, but they each used a different set of features from the same checklist.[10]

A fourth approach to overcoming the "truth bias" is to employ computer software that classifies a written statement as true or false based on the quantified linguistic patterns in the text that match a statistical model of true or false statements. Since computer software and statistical analysis are not human, they do not suffer from the "truth bias," nor do they suffer from an anti-truth bias. Such algorithms merely, without any skin in the game, calculate the probability that the linguistic features of a written statement are more like the statistical model of truthful or false statements. VeriPol and Witness Statement Evaluation Research (WISER) are both computer programs that have attained similarity reliability in validation testing.[11,12] VeriPol attained 91% accuracy at detecting deceptive statements from a very large dataset collected by the Spanish National Police Corps in Madrid; WISER attained 93% accuracy at detecting deceptive statements from a very small dataset collected by a Midwestern American police department. Both of these results for algorithm-based analysis are based on "high-stakes" data, statements written during police custody.

Empirical results are presented which answer the question: does the mindset of the investigative subject affect the algorithmic classification of true and false written statements? If the investigative subject truly believes that he is telling the truth, can falsehood still be detected? If the investigative subject truly believes that he is telling a lie, can truth still be detected? WISER was deployed on four different datasets that reflect different mindsets: (1) true or false statements to the police, a high-stakes setting; (2) written statements regarding the investigative subject's abduction by aliens; (3) true or false statements written by experienced forensic interrogators; and (4) true or false statements written by students, a low-stakes laboratory setting.

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