Journal of Applied Research in Memory and Cognition 2 (2013) 33–41

Contents lists available at SciVerse ScienceDirect

Journal of Applied Research in Memory and Cognition

journal homepage: www.elsevier.com/locate/jarmac

Validating a new assessment method for deception detection: Introducing a Psychologically Based Credibility Assessment Tool☆

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ARTICLE INFO

Article history:
Received 14 July 2011
Received in revised form 4 February 2013
Accepted 4 February 2013
Available online 11 February 2013

Keywords:
Deception
Cognitive load
Deception detection
Language proficiency

ABSTRACT

The current set of studies was designed to test a new credibility assessment tool, the Psychologically Based Credibility Assessment Tool (PBCAT). Participants watched lab-generated videos of true and false alibi statements, provided while under varying degrees of cognitive load. Judges either provided a truth/lie judgment only, or also rated 11 behavioral cues on the PBCAT. When stories were told under cognitive load the effectiveness of cues at discriminating truth/deception was enhanced, with targets under higher load judged more accurately. Results regarding the new assessment tool indicate that it is capable of improving deception detection performance, even with minimally trained, nonexpert observers.

While the ability to detect deceit has been of interest for centuries, and deceitful interactions are ubiquitous (Bond & DePaulo, 2006; Vrij, 2008), humans have yet to master the skill of determining whether or not a given statement is truthful. A meta-analysis of the literature examining the ability of humans (without aids) to detect deceit estimated performance at about 53.5% accuracy (Bond & DePaulo, 2006). While this is a (statistically) significant increase above chance, there is clearly much room for improvement. The current set of studies will present preliminary testing of an instrument – the Psychologically Based Credibility Assessment Tool (PBCAT) – designed with the goal of directing observers to cues that have been empirically linked to truth or deception, and improving the accuracy of deception detection judgments.

1. Developing the PBCAT

The PBCAT was designed with certain priorities in mind. The first was to ensure that the cues included were based upon both psychological theory and empirical evidence that demonstrated their effectiveness, without restricting the cues to a particular theory. To select the cues, a review of the deception literature was conducted with a specific emphasis on Criteria-Based Content Analysis (CBCA), reality monitoring (RM), cognitive complexity theory, and emotional theories. A second priority was maximizing "user-friendliness." For the sake of practitioners and agencies with restricted time and budgets who might be interested in using the PBCAT, we wanted to develop a tool requiring minimal training and expense to implement. Relatedly, we aimed to minimize the user's cognitive load by making the tool short, and including cues that would be easy to understand and score, even for individuals with no background in psychology and/or deception detection. These priorities led to cues that were fairly subjective – instead of counting the number of instances of a given cue, judges rate frequency/strength on a continuum (see Appendix A). Beyond increasing ease of use, there is empirical evidence suggesting that this is a promising strategy. A meta-analysis conducted by DePaulo et al. (2003) found that when both subjective and objective measures of the same cues were examined, the subjective version of the cue was superior in distinguishing between truths and lies (see also DePaulo & Morris, 2004).

One deception detection technique from which cues were taken was the Criteria-Based Content Analysis (CBCA) phase of Statement Validity Assessment (SVA; Köhnken & Steller, 1988). SVA was created with the goal of evaluating the veracity of statements made by children alleging sexual abuse, but is not limited to that context (Köhnken, 2004). The CBCA phase of SVA involves evaluating

☆ This research was supported by an Intelligence Community Post-Doctoral Research Fellowship, and a grant from the Federal Bureau of Investigation, to the first author. The statements of fact, opinion, and analysis in the paper are those of the authors and do not reflect the official policy or position of the FBI or the U.S. Government.

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http://dx.doi.org/10.1016/j.jarmac.2013.02.002

transcribed interviews by scoring for the presence of cues indicative of truth. Cues on the CBCA checklist are based on the premise that the cognitive processes yielding memory-based accounts and fabricated accounts differ (i.e., the Undeutsch hypothesis; Steller, 1989) as does the motivation of the target (e.g., a liar will be more concerned with impression management than a truth-teller; Köhnken, 1996). A more thorough review of SVA is beyond the scope of the present paper, but the interested reader is referred to Köhnken (2004) and Vrij (2008). Nineteen criteria/cues are included in the CBCA phase (e.g., logical structure, quantity of details, pardoning of perpetrator; see Steller & Köhnken, 1989). Cues selected for inclusion in the PBCAT from this technique were those that were strongly supported by empirical research (DePaulo et al., 2003; Vrij, 2008) and that were judged to be reasonably easy to implement with minimal training, including: logical structure, quantity of details, contextual embedding, reproduction of conversation, spontaneous corrections, and admitted lack of memory.

Another theoretical account of deception detection that the PBCAT relied upon was reality monitoring (RM) – an account seeking to distinguish between memories of real events and imagined events. This approach is based on the idea that memories of experienced events differ from memories of non-experienced events (similar to the Undeutsch hypothesis), and that much of the difference is due to the fact that experienced events are actually perceived (Johnson, Hashtroudi, & Lindsay, 1993; Johnson & Raye, 1981). This results in memories that contain information about the perceptual experience of the event – sensory, contextual, and affective information. In contrast, events that are not experienced lack such details and instead may include details relating to cognitive operations. When we engage in the meta-memorial process of reality monitoring these are the cues we examine (Johnson, Foley, Suengas, & Raye, 1988). The RM approach to deception is at the meta-meta-level of memory (Sporer, 2004) – it involves interpersonal reality monitoring (Johnson, Bush, & Mitchell, 1998) – determining whether another person's memory is of an actual event based upon the types of details provided. For a more complete review of the RM approach to deception see Sporer (2004) and Vrij (2008). Although there are not "official" RM criteria (Vrij, 2008), Sporer (1997) constructed a list of eight criteria including clarity, perceptual (i.e., sensory) information, spatial information, temporal information, affect, reconstructability of the story, realism, and cognitive operations. The cues highlighted for potential use in the PBCAT included the presence of auditory, spatial, and temporal details, and story reconstructability.

Another theory, the cognitive complexity theory, focuses not only on the cognitive/memorial processes that lead to the statement provided, consistent with CBCA and RM, but also on the differential cognitive demands faced by liars and truth-tellers while providing their statements. This theory is based upon the idea that lying is more difficult than telling the truth (see Vrij, Fisher, Mann, & Leal, 2006, 2008, 2010). For example, liars must suppress the truth, create a lie, monitor the interviewer's responses, remember what they have said, and ensure what they report is plausible given both currently known and discoverable information. In contrast, truth-tellers simply must report their memories and may be less concerned with the investigator's responses or the plausibility of their story. Based on the theory of cognitive complexity, liars should display behaviors similar to anyone engaging in a complex cognitive task (e.g., speech hesitations; Goldman-Eisler, 1968; Lay & Paivio, 1969; Vrij, Mann, et al., 2008). Highlighting the importance of this theory is the recent work by Aldert Vrij and colleagues demonstrating improved deception detection accuracy when targets are interviewed in a cognitively demanding way (e.g., Vrij, Fisher, et al., 2010; Vrij, Granhag, Mann, & Leal, 2011; Vrij, Granhag, & Porter, 2010). Given these findings, several cues related to cognitive load were included in list of possible PBCAT cues: rate of speech, speech hesitations, impression of target cognitive effort, and overall number of details provided.

The final framework considered involved emotional theories, based on the hypothesis that three emotions are likely to accompany lying: guilt, fear, and excitement (Ekman, 1989, 1992). Guilt may result in behavioral cues, such as gaze aversion. Liars may also fear that they will be caught lying. This may result in arousal, which in turn could lead to increases in fidgeting, speech errors, and speech hesitations. Finally, a liar may feel excitement from the challenge of trying to trick the "detector." Excitement may also cause arousal; therefore, it can result in similar non-verbal behaviors as fear. Given that this is the framework that most lay persons subscribe to (The Global Deception Team, 2006; Vrij, 2008) and that there is some support for cues associated with anxiety (DePaulo et al., 2003), an overall impression of anxiety and a measure of undifferentiated fidgeting (i.e., fidgeting with objects or self) were included in the preliminary list of PBCAT cues.

Three additional cues were added to the preliminary list because they were noted as among the more effective cues in the DePaulo et al. (2003) meta-analysis. These were negativity, uncertainty, and immediacy. Together, the literature search yielded a list of 16 cues: presence of auditory, spatial, and temporal details, overall quantity of details, immediacy, story makes sense, reproduction of conversation, admitted lack of memory, spontaneous corrections, uncertainty, thought hard, tense/nervous, negative, rate of speech, speech fillers, and fidgeting. Initial pilot testing led us to remove five cues. Immediacy was removed because participants had a difficult time understanding immediacy and how to recognize it. Reproduction of conversation was removed because it proved difficult to identify, and in pilot testing it was consistently found to be a misleading cue. Fidgeting was also removed, and instead an instruction was included in the training materials to use fidgeting as an indicator of anxiety. Speech fillers and uncertainty were removed based on the rationale that they would be used to inform ratings of cognitive load/thinking hard. This left the PBCAT with 11 cues (see Appendix A).

2. Overview of the current studies

The current research was designed to test whether the PBCAT is sufficiently sensitive to discriminate differences in cue frequency across true and false statements. We also manipulated cognitive load to assess whether the tool might perform better under such conditions. We expected that when targets were under greater cognitive load, the cues included in the tool would be displayed more frequently/to a greater degree, especially for liars, allowing observer-participants to better discriminate between liars and truth-tellers.

We hypothesized in Study 1 that the effect of veracity on the cue ratings would be stronger in the higher cognitive load condition than in the lower cognitive load condition. We also expected that participants' veracity judgments would be more accurate in the higher cognitive load condition.

3. Study 1

3.1. Methods

3.1.1. Participants

Undergraduate psychology students at a university in south Florida ($N = 46$) completed this study in exchange for research credit in a psychology course. The sample was mostly female (76%) and Hispanic (83%), with a median age of 20.5 years.