

The protection of innocent suspects:

A comment on Palmatier and Rovner (2014)

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Dear Dr Barry,

Many thanks for your and the reviewers' comments on my polygraph commentary. I have made the following changes:

- I have deleted the text about a lie bias
- I have deleted text about the baseline approach
- Nerve wrecking is replaced by nerve wracking
- I now applaud Palmatier and Rovner's (2014) efforts to examine whether CQT and CIT polygraph testing methods can be reconciled by common theory, but still do not comment on what they say about this issue. Instead, my commentary emphasizes what they left out in their article and I have made this clearer in the text by changing the Abstract and highlights and by adding a second introductory paragraph to my commentary.
- I also added a paragraph about the popularity of CQT and CIT testing amongst scientists and practitioners.

I hope that these changes satisfy your expectations and would like to thank you for giving me this opportunity to write this commentary.

Yours sincerely,

The author

Abstract

Palmatier and Rovner (2014) should be applauded for their efforts to examine whether CQT and CIT polygraph testing methods can be reconciled by common theory. They (understandably) focus on liars in their article, however, liars are only part of the equation. Lie detection tests also involve truth tellers, and the ways in which truth tellers are protected against a false accusation is where the CQT and CIT differ. This important point is not addressed by Palmatier and Rovner (2014), but the concern expressed by CQT opponents that innocent suspects are not well protected in a CQT test needs to be addressed head on by CQT supporters.

Highlights

- 1) Innocent suspects could well show the strongest response to a relevant question
- 2) A CQT does not protect truth tellers adequately against false accusations
- 3) It is of greater importance to establish that a test works when it is used rather than how often it can be used

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Palmatier and Rovner (2014) include an interesting paragraph in the first part of their article:

“In 2003, an NRC report focusing on the polygraph concluded, in part, that "The theoretical rationale for the polygraph [the CQT] is quite weak, especially in terms of differential fear, arousal, or other emotional states that are triggered in response to relevant or comparison questions" (p.213). We concur with the NRC's conclusions that at that time the CQT's theoretical grounding was at best "weak", while concurrently the theoretical grounding of the CIT was comparatively far more defensible”.

I was therefore keen to learn what these new insights actually were, but I was left feeling disappointed after reading the article. For example, the fact that fMRI research shows that liars and truth tellers display different brain activities does not demonstrate that the use of the Comparison Question polygraph Test (CQT) is theoretically and practically sound, for the simple reason that in a CQT polygraph test, brain activities are not measured.

Palmatier and Rovner (2014) should be applauded for their effort to examine whether a CQT and a Concealed Information polygraph Test (CIT) can be reconciled by common theory. They thereby understandably focus on liars in their article. However, in lie detection, liars are only part of the equation, and truth tellers also need to be considered. Palmatier and Rovner

(2014) do not discuss truth tellers in their paper, which is unfortunate because a CQT and CIT differ in the treatment of truth tellers and that is where a CQT becomes problematic.

In my view, the key problem in using the CQT is the protection of innocent suspects (truth tellers). In that respect the Concealed Information polygraph Test (CIT) differs entirely from the CQT and the CIT is actually much better, a point Palmatier and Rovner do not address. In a CIT polygraph test the innocent suspect who has no knowledge of the crime is adequately protected. That is, an innocent suspect in a murder case typically would not know what the correct answer is when asked whether the person was (i) shot with a gun, (ii) strangled with a rope, (iii) stabbed with a knife or (iv) hit with an object. Neither would this suspect typically know whether the murdered individual was found in the (i) kitchen, (ii) bedroom, (iii) living room or (iv) bathroom. The chance that an innocent suspect will show the strongest response to the correct items is low. The chance is 1/4 for one question and 1/16 for two questions. The chance is further reduced to 1/64 if three questions are asked, and so on.

In a CQT polygraph test in the same murder case the suspect will be asked the question: “Did you do it?” (a question taken from Palmatier and Rovner, 2014) and the physiological responses will be compared with the physiological responses elicited by a comparison question. Why wouldn’t innocent suspects show the strongest response to this “Did you do it” question? This is in my view the key weakness of the CQT but not addressed by Palmatier and Rovner. Consider the position of the innocent suspect. The reason why the suspect undergoes a polygraph test is that the investigator believes s/he may be involved in the crime whereas the suspect cannot demonstrate his/her innocence (the alibi may be weak). This situation, being innocent but not being able to prove it, is nerve wracking for the suspect. If the suspect fails the test, his/her problems will become more severe because s/he is running out of ways to convince the

investigators that s/he is innocent. Considering this position of the innocent suspect, it is entirely plausible that a “Did you do it?” question is arousal-evoking for an innocent suspect resulting in a stronger physiological response to this question than to a comparison question and thus failure of the test.

Palmatier and Rovner cite high accuracy rates for CQT studies (taken from Honts, 2004), but do not report the problems associated with the CQT studies that resulted in such accuracy rates. First, one may wonder how representative laboratory-based CQT polygraph studies are for real life CQT polygraph tests. In laboratory-based studies participants are typically promised a small incentive in case they are believed, but a punishment for when they are not believed is rarely introduced. Punishments are difficult to introduce in the laboratory because, for ethical reasons, participants are informed that they can leave the experiment any time they like. The participant is thus made aware that s/he does not have to undergo the punishment if s/he chooses not to. The small incentive for being believed and absence of punishment when not believed are in stark contrast with real life situations where the stakes of being believed or not being believed are typically much higher. If the stakes are low (laboratory-based studies), the chance that innocent suspects will show weaker responses to the relevant “Did you do it?” question than to a comparison question (which they need to do to pass the test) is considerably higher than when the stakes are high (real life cases). Therefore, accuracy rates for innocent suspects are in all likelihood inflated in laboratory-based studies.

CQT field studies are also problematic albeit for a different reason. The problem of those studies is that the ground truth, the actual veracity status of the suspect, is often unknown. This is in itself not surprising because this is exactly the reason why a polygraph test is carried out. If the investigator has conclusive evidence that the suspect is guilty, a polygraph test is redundant.

Therefore, confessions are often used as ground truth in field studies (as noted by Palmatier and Rovner) but they lead to inflated accuracy rates. Suspects who fail the polygraph test will, in all likelihood, be further interrogated. These interrogations may lead to confessions and these cases are included in the field study. In these cases the guilty polygraph outcomes are backed up by confessions and are thus interpreted as correct decisions. What happens to suspects who do not confess when further interrogated? These cases will not be included in the field study because the ground truth is considered to be unknown due to the absence of confessions. This will include cases of suspects who did not confess because they were innocent. The polygraph outcomes (failing the test) of these cases were incorrect, but since the cases are excluded from the field study, it will not affect the outcomes of the field study. In other words, confessions are not appropriate to use to demonstrate that a CQT actually works and field studies need to be conducted that include ground truth exclusively based on real conclusive evidence. To my knowledge, such a field study does not exist, and in any case Palmatier and Rovner fail to cite such a field study.

The idea of not protecting innocent suspects also plays a role in lie detection based on the display of nonverbal behavior. In that domain it is known as the Othello error: Mistakenly interpreting signs of nervousness displayed by truth tellers as signs of deceit (Ekman, 1985/2001). It is named after Othello, the title character in Shakespeare's play. Othello falsely accuses Desdemona (his wife) of infidelity. He tells her to confess since he is going to kill her for her betrayal. Desdemona asks Cassio (her alleged lover) to be called so that he can testify her innocence. Othello tells her that he has already murdered Cassio. Realising that she cannot prove her innocence, Desdemona reacts with an emotional outburst which Othello misinterprets as a sign of her infidelity.

Like Othello, CQT polygraph tests are vulnerable to Othello-errors, as innocent suspects can easily display stronger responses to the relevant than to the comparison questions, as I outlined above.

With their comment on page 6 “Collaboration between CQT and CIT advocates, however, has generally been nonexistent and we believe may be due more to the strong philosophical differences...embraced by a few individuals rather than any discrepant findings that are occasionally found in empirical studies” Palmatier and Rovner (2014) give the impression that only a few individuals oppose the CQT. I think this is misleading. When Iacono and Lykken (1997) asked scientists -experts in psychophysiological research- for their opinion about CQT and CIT polygraph testing, approximately 33% considered the CQT and approximately 75% the CIT to be based on scientifically sound psychological principles or theory. Thus, amongst scientists, CQT supporters rather than CIT supporters are in the minority. Could the lack of support for the CQT amongst scientists perhaps be the reason for Palmatier and Rovner’s (2014) observation that “there is little apparent interest in CQT research”? Indeed, the situation is different in the field and the CQT is much more popular amongst practitioners than the CIT, perhaps because the CIT can be used less frequently than the CQT due to the absence of testable items. I understand the frustration amongst practitioners if they cannot use a polygraph test in a particular case but should it not matter most that a test is theoretically and practically sound when it is used?

The “...there is little apparent interest in CQT research” statement is introduced by Palmatier and Rovner in response to Meijer and Verschuere’s (2010) observation that the most controversial proposition in CQT polygraph testing is that truthful individuals “will be most concerned about the control questions” (p. 327). In my commentary I have echoed Meijer and Verschuere’s concern. I think it would be useful for the polygraph debate if CQT proponents

actually carried out research to address this key issue mentioned by Meijer and Verschuere and myself, head on.

References

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