



Effects of coping and cooperative instructions on guilty and informed innocents' physiological responses to concealed information [☆]

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ABSTRACT

Previous research on the Concealed Information Test indicates that knowledge of the critical information of a given event is sufficient for the elicitation of strong physiological reactions, thus facilitating detection by the test. Other factors that affect the test's efficacy are deceptive verbal responses to the test's questions and motivation of guilty examinees to avoid detection. In the present study effects of coping and cooperative instructions – delivered to guilty and innocent participants – on detection were examined. In a mock-theft experiment guilty participants who actually committed a mock-crime, and informed innocent participants who handled the critical items of the crime in an innocent context, were instructed to adopt either a coping or a cooperative attitude toward the polygraph test. Results indicated that both, guilt and coping behavior, were associated with enhanced physiological responses to the critical information, whereas innocence and cooperative behavior attenuated physiological responses. Theoretical and applied implications of the results are discussed.

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1. Introduction

The Concealed Information Test (CIT), also known as the Guilty Knowledge Test (GKT) (e.g., Lykken, 1959), is a psychophysiological technique for detection of concealed information. It utilizes a series of multiple-choice questions, each having one correct (e.g., a feature of the crime under investigation) and several incorrect (control) alternatives, chosen so that an innocent suspect who has no crime-related knowledge cannot discriminate among them (Lykken, 1998). Typically, if the suspect's physiological responses to the critical alternatives are consistently larger than to the controls, knowledge about the event in question is inferred.

Early accounts (e.g. Lykken, 1974) explained the enhanced responsivity to critical items of information with the orienting reflex (OR). The OR is a complex of behavioral and physiological reactions elicited to a novel or personally significant stimulus (Sokolov, 1963). According to Sokolov (1963), during repeated processing of sensory information a mental model of the surrounding world is being gradually built. Any new incoming sensory information is matched with that model. An incoming novel stimulus, which does

not match the existing mental model, elicits an OR. According to Gati and Ben-Shakhar (1990) a significant stimulus which matches a prior mental representation also elicits an OR. This notion has been recently repeated by Verschuere and Ben-Shakhar (2011).

However, reservations have been raised regarding the dual nature of the OR and the assumption that it is the sole mechanism underlying the CIT (e.g., Verschuere et al., 2007). Verschuere et al. (2007) argued that inhibition of arousal may play a more prominent role than OR in accounting for the responses in the CIT. Thus, guilty suspects who recognize the critical item as associated with the crime in question, try to inhibit the physiological arousal that accompanies the OR which in turn enhances their physiological responses rather than attenuate them.

The idea that significance triggers an OR, and the reasoning that it is associated with an attempt to inhibit arousal, endow both factors with the potential to be the underlying mechanisms of physiological responses to concealed information.

According to Lykken (1974), only guilty suspects possess crime-related information. Therefore, only their responses to the critical items are expected to be stronger than to the control alternatives. For innocent suspects without this particular knowledge, all answers are equivalent in significance, and therefore elicit non-systematic responses. Lykken's cognitive approach emphasizes the individual's knowledge and recognition rather than his or her emotions, act of deception or motivation to deceive. Support for the cognitive approach may be obtained from findings demonstrating how crime-related information is detected under conditions where no motivational instructions

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are delivered to the examinees and with no verbal responses to the test's questions (see Ben-Shakhar and Elaad (2003) for a review).

However, the assumption that only guilty suspects possess crime-related information raises a few questions. Real-life polygraph tests are usually conducted weeks and even months after the execution of the criminal act, and during this period the suspects might receive information about the crime from various sources. For example, crime-related information might leak through mass media or internet descriptions of the crime, through contact with other people who may have some knowledge of the crime and even through the behavior and verbalizations of the interrogator. As long as the innocent suspects can explain how they became aware of the critical information, the problem is not severe. However, it is possible that they are unaware of their exposure to that information and cannot consequently account for its sources. Furthermore, in some cases knowledgeable but innocent witnesses to a crime might refuse to admit their knowledge because of fear of reprisal by the culprit.

Several studies have addressed the issue of leakage of crime-related information in the CIT. Early research on innocent participants who were exposed to crime-related information in an innocent context has shown that it is possible to distinguish between them and the guilty participants who actually committed the crime (Giesen and Rollison, 1980; Stern et al., 1981). In these two studies the critical items had a special meaning to all participants, guilty and informed innocent alike, and the effect of deception was excluded because participants remained silent during the test. More recent studies on informed innocent participants (e.g., Ben-Shakhar et al., 1999; Bradley and Rettinger, 1992; Bradley and Warfield, 1984) used a different questioning paradigm which ensured that the informed innocents were truthful when denying association with the crime-related items. In this paradigm, called the Guilty Actions Test (GAT), the wording of the questions was changed from passive knowledge (e.g., "what was the color of the stolen envelope?") to active participation (e.g., "was the color of the envelope you stole...?") (see Bradley and Warfield, 1984). Under this condition the detection rates of guilty participants were higher than those of any informed innocent group. However, when deception and knowledge were controlled, and the effect of guilt was examined alone, a very high rate of false positives was reported for the informed innocent participants (Bradley et al., 1996). It seems that in experimental settings guilt alone is insufficient to differentiate between guilty and informed innocent participants (Elaad, 2009; 2011).

The results of the aforementioned studies cannot be accounted for by the cognitive approach, because significant differences in detection were obtained between groups who shared the same information. It was therefore suggested that factors other than mere knowledge, such as the act of lying and the motivation of guilty examinees to avoid detection, also affect CIT detection efficacy (Ben-Shakhar and Elaad, 2003). Specifically, it was argued that these factors increase the significance of the critical stimuli and make them difficult to ignore (Elaad and Ben-Shakhar, 1989).

A new theoretical formulation for the differential responding to critical and neutral items in the CIT is, therefore, required. Bradley (2009; Bradley and Lang, 2007) suggested that in the OR attention is linked to emotion. Emotions are fundamentally organized around two motivational systems, defensive and appetitive, which evolve to mediate transactions in the environment that either threaten or promote survival, and stimulus significance is defined in terms of pleasure and arousal. Orienting in emotional, novel, and task-relevant contexts reflects the engagement of the two motivational systems: Judgment of pleasure indicates which motivational system is engaged (appetitive or defensive), and judgment of arousal indicates the intensity of its activation. When activation of either system is minimal, arousal is rated as "low", and events are usually labeled "unemotional" or "neutral", implying a weak action tendency and a weak physiological responsivity. As appetitive or defensive motivation increases, the ratings of arousal and physiological responding

increase, indicating anticipation for action. Hence, when crime-unrelated items are presented in the CIT, activation of the defensive motivation is minimal and physiological responsivity is weak. But as soon as a crime-related item is identified, defensive motivation is activated, accompanied by elevated physiological responsivity. Another explanation was proposed by Verschuere et al. (2007) who argued that guilty suspects attempt to inhibit the physiological arousal that the OR produces. Orienting and inhibition interact during the CIT to create the differential physiological responsivity to the significant stimuli.

In experimental CITs both the guilty and the innocent participants know that they are playing a game, and that once it is over they are free to leave whatever the outcome. In such low-stake conditions, the two groups are very similar to each other in terms of defensive motivation and attempts to inhibit arousal, and guilt alone cannot differentiate between guilty and informed innocent participants (Bradley et al., 1996).

By contrast, in real-life situations guilty suspects are aware of the low odds of "beating" the polygraph test. They therefore consider it a threat, expecting to be punished following its completion. The result may be either feelings of despair and hopelessness, or increased motivation to "beat" the test. Guilty suspects in despair are likely to refrain from taking the test. However, most of those who choose to take the test have some hope for success. Their coping attitude is likely to be accompanied by increased defensive motivation to take action, increased attention, and intensified physiological responses to the threatening stimuli.

As to the innocent suspects, in real-life polygraph tests they might fear false positive outcomes, and therefore refuse to take the test. Yet those who choose to take the test feel confident that they are able to prove their innocence because the polygraph examiner presumably share their interest of arriving at the correct decision (namely, that they are truthful). Furthermore, evidence from both actual cases and laboratory experiments shows that innocent people who are accused tend to have naïve faith in the power of their own innocence to set them free, and seem to trust the criminal justice system and cooperate with it (Kassin, 2005). Their beliefs that truth and justice will prevail, and that their innocence will be uncovered, often lead them to waive their rights to silence, attorney and lineup (Holland, Kassin, and Wells, 2005, cited in Kassin, 2005; Kassin and Norwick, 2004), and to behave in ways that are forthcoming and cooperative in their interviews with police interrogators (Hartwig et al., 2005, 2006). This attitude seems to be linked to a generalized belief in a just world where people get what they deserve and deserve what they get (Lerner, 1980), as well as to the "illusion of transparency" – the tendency to overestimate the extent to which one's true thoughts, emotions and other inner states can be observed by others (Gilovich et al., 1998).

Feeling that the prospects of proving their innocence in the CIT are good, innocent suspects tend to adopt a passive attitude toward the test, which is accompanied by low defensive motivation, lack of inhibition attempts, less focused attention, and weak physiological responses to the critical items.

The guilty and the innocents' states of mind have never been simulated in low-stake experimental settings. In the present study we manipulated these states of mind by specific instructions delivered to the participants. One set of instructions motivated some guilty and informed innocent participants to cope with the polygraph, while the other set motivated the rest of the participants to cooperate with it. The coping instructions indicated that the polygraph is biased against the participants and opposes their interest to yield truthful outcomes. They were therefore encouraged to cope with it by being constantly alert, attentive, and prepared for action. On the other hand, the cooperative instructions indicated that the polygraph is biased in the participants' favor. They were therefore advised to avoid interfering with the process, stay calm and relaxed, and follow the examiner's instructions. Note that this is the first experimental examination of the motivation to cooperate within the context of the CIT.

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