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Polygraph Examiner Awareness of Crime-Relevant Information and the Guilty Knowledge Test

Eitan Elaad¹

A mock-theft experiment was designed to examine the efficiency of the Guilty Knowledge Test when (a) the examiner was aware of some of the crime-relevant items; (b) target items (i.e., items that are significant to participants for reasons other than crime-relevance) were incorporated into the test; (c) the motivation of guilty participants to appear innocent was manipulated. Results indicated that (a) participants yielded weaker responses to relevant items when the examiner was aware of them than when he did not have the knowledge; (b) the inclusion of target items had no overall effect on the responses to the relevant items; (c) within the guilty condition, highly motivated participants were more responsive to the relevant items than less motivated participants, and the inclusion of target items significantly decreased detection accuracy of low motivated participants.

The Guilty Knowledge Test (GKT) is a psychophysiological method for the detection of guilt (Lykken, 1974, 1981). It is used in applied settings to detect information that an individual cannot or does not wish to reveal. The GKT is based on a series of multiple-choice questions (items), each having one relevant alternative (e.g., a feature of the crime that would be known to the perpetrator but not to innocent suspects) and several control alternatives. For example, the suspect might be asked: "Do you know that the color of the stolen car was: (1) grey, (2) white, (3) yellow, (4) blue, or (5) red. It is assumed that only a guilty suspect will be able to single out and respond differentially to the color of the stolen car, while innocent examinees, who have no guilty knowledge, are unable to distinguish crime-related information from other alternatives.

Inferences are made on the basis of the GKT by comparing the responses elicited by the relevant item with the responses to irrelevant items. Only if the responses to the relevant item are consistently larger, guilty knowledge is inferred. This provides a proper control against false positive outcomes, inasmuch as the likelihood that an innocent examinee might show consistently greater responsiveness to the correct alternative just by chance can be reduced to a low level by using

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many irrelevant items, by utilizing several GKT questions, and by repeating each series of questions.

An important issue related to polygraphic testing concerns the extent to which a high accuracy level can be maintained when the polygraph examiner knows the relevant information. An argument against examiner's knowledge is that the examiner who expects the examinee to be deceptive may present the questions in a way that may affect the result in the expected direction, enhancing thus false positive error rate (Ben-Shakhar & Furedy, 1990). If the examiner expects the examinee to be innocent, the knowledge of the relevant items may help to elicit truthful results.

In the present study, the examiner had no knowledge regarding guilt or innocence of the examinee prior to the test, and was blind to the base rates of guilt and innocence. Under such conditions, it is possible that the examiner forms a hypothesis about the examinee's guilt or innocence during the first administration of the GKT and checks out the hypothesis in the following GKT series using the knowledge of the relevant information. In the process of checking the hypothesis the examiner may enhance the salience of the relevant item for examinees that responded in the first GKT series, and enhance false positive error rate. The examiner may also reduce the salience of the relevant item for examinees who did not respond to the relevant item in the first GKT presentation, thus increasing the danger of false negative outcomes. This would suggest that the optimal administration of the GKT is in a blind fashion similar to the way psychological experiments are administered. One goal of the present study was to examine whether the informed examiner influences the GKT results, and if so in what direction.

Furthermore, innocent examinees who are unaware of the relevant information may make up hypotheses about the nature of that information in order to reduce uncertainty. For that purpose, they may use explicit and implicit information, situational clues, and subtle behavioral cues emitted by the informed examiners. Thus, if an innocent examinee guesses the relevant item, the added attention to the guessed item may increase the likelihood of a false positive outcome (Elaad, 1993).

The inclusion of target items in the GKT series may protect innocent examinees from an increased false positive error rate. The set of items serving as targets are items that have special significance to all examinees, and therefore should elicit enhanced responsivity. Such an item can be generated by telling the examinees to press a switch whenever the item appears (Farwell & Donchin, 1991), or by any mean that draws the attention of examinees. The target may be useful in diverting the attention of uninformed innocent examinees from the relevant item, which may be stressed by an informed examiner. For guilty examinees, both the relevant and the target items stand out among the irrelevant ones, and the danger exists that informed guilty examinees would also be influenced by the target item and respond less to the relevant one.

The rate of correct detection of "guilty" examinees reported in simulated experiments is quite impressive (Davidson, 1968; Lykken, 1959, 1960, Podlesny & Raskin, 1978). However, recent field studies (Elaad, 1990; Elaad, Ginton & Jungman, 1992) revealed that detection rates of guilty examinees in true examination conditions are much smaller. It was decided to use target items that are less salient

than the relevant items to prevent strong target items from further decreasing the detection rate of guilty examinees. Thus, one item in a series was selected to be used as a target merely because the examinee could discriminate it from the other items. It was assumed that the inclusion of the target item will not reduce the efficiency of the GKT. It may, however, safeguard against the influence of the informed examiner on the responses of the uninformed innocent examinee.

A motivational manipulation in the present study was included because guilty examinees, who are highly motivated not to disclose the concealed knowledge, may be occupied with the relevant issue, and therefore, it would be more difficult for the target item to detract their attention from the relevant item. The less motivated guilty examinees may be more free to attend to the noticeable target, so that a decrease in the detection efficiency of less motivated guilty examinees can be expected. Two motivation levels were included in the present study, defined by the different amount of money the guilty examinee could receive if found truthful. As long as the bonus for such a successful performance was less than the amount of money promised for participation, the stakes were considered to be low. In cases where the bonus was higher than the participation fee, stakes were considered to be high. The promised reward was determined according to the stolen amount of money. Since this amount served as a relevant item in the GKT it was not fixed.

Finally, the experimental situation was designed to resemble field conditions. For example, standard field equipment and measurement procedures were utilized. The promised reward for guilty examinees, in the case of truthful outcomes, was high. The setting was designed to impress the participants and to make them believe that their task is to cope with highly professional forensic experts. The participants were recruited from outside the Israel Police Headquarters, but the test was conducted at the Headquarters building where many policemen in uniforms were present. The participants enacted the crime several days before they were assigned to the GKT test, as is usual in actual interrogations. Finally, they went through a standard procedure of interrogation, gave their fingerprints, were photographed, and were submitted to other forensic examinations.

METHOD

Participants

The participants were 80 males, with an age range from 19 to 51 years ($M = 25.01$, $SD = 5.37$). All participants reported good health. Participants were recruited either from the local community by the local employment services, or by the student employment agency of the Hebrew University of Jerusalem. Participants were offered 100 NIS (about \$40) for participation in a forensic science experiment, and were told that there might be a possible bonus for successful performance. Participants responded by telephone and were given general information about the experiment. They were told that the experiment was a two-session project. Those who agreed to participate were assigned an appointment for the first session.

Apparatus

The experiment was conducted in the Israel police polygraph laboratory where polygraph examinations of actual criminal cases are conducted routinely. Two examination rooms were used. A Lafayette Factfinder field model polygraph was installed in one room and a Lafayette Ambassador in the other. The examination rooms were sparsely furnished. Each contained a table, two chairs, a carpet on the floor, and bare walls without windows. Three measures were recorded on each polygraph: Respiration was measured by two pneumatic tubes positioned around the thoracic area and abdomen; skin resistance responses (SRR) were recorded from two stainless steel electrodes attached to the volar side of the index and fourth fingers of the examinee's left hand. Following standard field practice no electrode paste was used for the SRR. Cardiovascular activity was recorded by a pneumatic blood-pressure cuff positioned around the upper right arm. The blood-pressure cuff was inflated to a pressure between 40 and 50 mm Hg.

Procedure

The Mock Crime Execution

A mock crime design was used in which one group of 25 participants acted out a mock crime, and 55 participants in the other group simulated the innocents. This division is similar to the proportions of deceptive and truthful examinees in actual field examinations conducted by the Israeli police (Elaad & Schahar, 1985).

The experiment was conducted at the Israel Police Headquarters in two sessions separated on the average by 3.3 days (ranging from 1 to 7 days). Participants arrived at the forensic laboratories individually at a predetermined time. On arriving for the first session they met the experimenter, who informed them of the nature of the experiment and requested their cooperation. Participants were then asked to complete a form requesting background information and signed a consent agreement to be interrogated with the polygraph about a mock crime in which they might be involved. Participants who were assigned to the guilty condition received written instructions that informed them to enact a mock crime which consisted of entering a closed room, opening a box located on a desk and stealing money from an envelope which was placed inside that box. They were instructed to take the money and put it in their pocket. To avoid disclosure, they were asked to falsify a receipt indicating that a certain person, whose name was indicated in the instructions, received the money in return for delivering equipment to the Israel police. Guilty participants were further instructed to make a phone call to a certain number, notifying a partner that the theft was accomplished and that they should meet at a certain street indicated in the instructions. After enacting the crime, 13 of the guilty participants were instructed to go to a nearby room, take a parcel addressed to a certain person and bring it to the experimenter who waited downstairs. The other 12 guilty participants were instructed to take another envelope with a different amount of money in it and deliver it to the experimenter. Finally, to ensure that

participants were aware of the four GKT items, the experimenter asked the subject to repeat the stolen sum of money, the color of the envelope, the street in which the subject would meet his partner, and the falsified name.

The group of innocent participants received instructions that informed them to enter the nearby room, take the parcel (or envelope), and bring it to the experimenter. After receiving the parcel (or envelope), the experimenter informed all participants that they would receive 100 NIS (about \$40) for participating in the experiment. Guilty participants were further informed that in addition to the 100 NIS, they were entitled to the money they stole, if found innocent. For the low motivation group the stolen sum ranged from 40 to 70 NIS (about \$16 to \$28), which is less than the amount promised for participation. For the high motivation group it ranged from 150 to 480 NIS (about \$60 to \$190). If found deceptive, guilty participants would not get their stolen money and would be punished with a reduction of 25 NIS of their participation fee. To enhance the motivation of the innocent participants they were told that if they would yield deceptive outcomes, they would also be punished with a reduction of 25 NIS of their participation fee.

The experimenter informed the participants that they were under suspicion of stealing the money and therefore, they were to be interrogated. He cautioned the suspects not to confess the mock crime to the interrogator or to anyone else. In the case of confession, the suspect could expect to lose all the money. Suspects were then individually interrogated by a police interrogator as to their involvement in the crime. They were told that they would have the opportunity to clear themselves from suspicion through polygraph examinations. They gave their written consent for the polygraph examination which was scheduled to take place several days later. All participants were then assigned an appointment for the continuation of the examinations.

Several days after executing the mock crime, each suspect returned for the polygraph tests. Upon arrival, the experimenter reminded the suspect about the suspicion against him. The suspect was further reminded of the incentive conditions and of the importance of yielding an innocent outcome. Guilty suspects were not, however, reminded of the relevant GKT items. Then, they were sent to the polygraph examinations.

Examiner's Knowledge Manipulation

Before examining the suspects, examiners received a written report about the case. The examiners were informed of the suspicion about the suspect and about 2 of the 4 GKT items (either the falsified name and the meeting street, or the stolen sum of money and the color of the envelope in which the stolen money was placed). To check for the knowledge manipulation, examiners were asked about these two items after the test. For one innocent subject the examiner forgot the relevant items and therefore the knowledge manipulation was not implemented. This subject was excluded from all knowledge analyses.

The Polygraph Test

The polygraph tests were conducted by eight polygraphers of the Israel police, all experienced in operating the polygraph. Following field practice, another psychophysiological method for detection of deception, the Control Question Technique (CQT) (Raskin, 1989; Reid & Inbau, 1977), preceded the GKT (Elaad & Kleiner, 1992). The GKT was conducted by a different examiner, who was unaware of the previous CQT result. All examiners were uninformed of the base rates of guilt and innocence. Examinees were presented with four series of GKT questions: the stolen sum of money, the color of the envelope from which the money was taken, the name of the street in which the culprit was going to meet his partner, and the name the culprit falsified on the receipt. The order of questions was counterbalanced across cases.

The four GKT series were constructed by the experimenter. To each relevant item the experimenter added six neutral items, one of which was introduced at the beginning of each series to serve as a buffer. In two GKT series one target item was included instead of one neutral item. For the examinees who took the parcel, one target item was the name of the person that was written on the parcel. This target item was added to the series that introduced the name falsified on the receipt. Another target item was the address street name which appeared on the parcel. This item was added to the series presenting the street in which the culprit would meet his partner. In the other two GKT series no target items were included.

For the examinees who were asked to take an envelope, the color of that envelope served as a target. This target was added to the GKT series that presented the color of the envelope from which the money was stolen. The sum of money in the envelope the examinee was asked to take served as a target item in the series that presented the stolen sum of money.

The polygraph examiner accompanied the examinee to the examination room, attached the examinee to the polygraph, and explained the nature of the guilty knowledge test. The actual GKT examination began after ensuring that the examinee understood the GKT procedure.

Each GKT question was presented to the examinee in the following form: Do you know that the color of the envelope from which the money was stolen was: blue? yellow? brown? red? green? white? purple? Examinees were instructed to answer "no" to all the alternatives, including the relevant one. Thus, guilty examinees lied when answering "no" to the relevant item, whereas innocent examinees told the truth. Every presentation of a new question started with a declaration of its topic (e.g., Now I will ask you about the falsified name. Do you know. . .) and then seven items were presented with a 15–20-second interstimulus interval between them. The GKT questions were presented to the examinees in a predetermined order, counterbalanced across cases. Each series was repeated three times in different orders. The positions of the relevant and target items were randomly determined in each repetition.

After all four questions were presented, the examinee was detached from the polygraph and accompanied to the waiting room, where he waited for the outcome.

Finally, the examinee was paid according to the results and was debriefed about the purpose of the study.

Data Acquisition

Electrodermal response amplitude is considered a highly reliable and accurate measure for detecting concealed knowledge in laboratory settings (Balloun & Holmes, 1979; Thackray & Orne, 1968). Therefore, SSR amplitude was used in the present study to estimate the observed effects. Cardiovascular and respiration tracings were monitored but not scored.

Acquisition of the responses to each item was carried out by measuring the maximal difference between SRR onset and peak (SRR amplitude) within 10 seconds starting immediately after the presentation of the item. The response to the first item in each set of items was excluded from measurement because it served as a buffer to dissipate the examinee's tendency to react strongly to the initial item. In cases where some kind of external disturbance (movements, deep breath, noise, etc.) occurred, the item was excluded from the analysis. The whole set was excluded when the disturbance occurred during presentation of the relevant item.

RESULTS

Two measures were used to analyze the results, a within-subject standardization procedure, and a modification of a common decision rule of GKT detection accuracy (Lykken, 1959).

Each GKT question, with all its alternatives, was presented to the examinee three times. After excluding the buffer, the electrodermal response amplitudes to all alternatives within each question were transformed into standard scores relative to the subject's mean and standard deviation. The mean standard responses to the relevant and target items were then computed across repetitions for each subject.

Another scoring procedure to analyze the results corresponds to detection accuracy. Excluding the buffer, the SRR amplitudes in each repetition were ranked from 1 (the largest) to 6 (the smallest). The mean ranking across the three repetitions was computed for each alternative. The GKT questions were then classified into three categories. If the mean rank of the relevant alternative was the smallest, the question was classified in the guilty knowledge indicated (GKI) category; if the mean rank of the relevant alternative was the second smallest, the question was classified in the inconclusive category; for any larger mean rank of the relevant alternative the question was classified as no guilty knowledge indicated (NGKI). Examinees were classified as guilty if the question was classified GKI, and were classified as innocent if the question was classified either inconclusive or NGKI.

Target Manipulation Check

Targets should be more salient to innocent examinees than relevant items. At the same time, it is important that target items will not reduce the detection efficiency of guilty examinees, and therefore, be less salient than the relevant items to guilty examinees.

To find out whether the manipulation of the target items was implemented as desired, the mean standard responses computed for the relevant and target items were compared for guilty and innocent subjects. Two innocent and one guilty subjects for whom the target manipulation was not implemented, were excluded from analysis. The means and standard deviations are displayed in Table I.

A two-way ANOVA was conducted using a 2×2 (Guilty vs. Innocent subjects $\times$ Relevant vs. Target items) factorial design with repeated measures for the item type factor. The analysis revealed a highly significant interaction effect, $F(1,75) = 24.8$, $p < .001$, indicating that innocent examinees responded more to target than to relevant items, and guilty examinees responded more to relevant than to target items. The target item manipulation was, therefore, implemented as desired. In addition, a significant main effect for guilt, $F(1,75) = 8.04$, $p < .01$, was obtained, mainly because guilty subjects were more responsive to relevant items than innocent subjects, and a significant main effect for item's type was obtained, $F(1,75) = 5.38$, $p < .05$, indicating that the responses to relevant items were larger than those to target items.

Differentiating Guilt from Innocence Within the Experimental Conditions

The Z scores computed for the relevant items were used to differentiate between guilty and innocent subjects. Six innocent and two guilty subjects were excluded from the Z score analysis. The innocent subjects were excluded either because relevant information was disclosed to them during preceding tests (as was indicated by the subjects after the experiment), or because the examiner forgot the relevant items and therefore the knowledge manipulation was not implemented (according to the examiner's report after the test), or because the target manipulation was not administered. For one guilty subject the target manipulation was not im-

Table I. Means and Standard Deviations of SRR Z Scores Computed for Relevant and Target Items, in the Two Guilt Conditions which Included Target Items

Participants	<i>N</i>	Items			
		Relevant		Target	
		<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Guilty	24	.73	.57	-.04	.38
Innocent	53	.00	.36	.29	.65
	77	.23	.55	.18	.60

Table II. Means and Standard Deviations of SRR Z Scores to the Relevant Items, Computed for Guilty and Innocent Participants Within the Four Experimental Conditions

	N	Examiner's knowledge							
		Knowledge				No knowledge			
		Target		No target		Target		No target	
		M	SD	M	SD	M	SD	M	SD
Guilty	23	.52	.77	.77	.78	.87	.60	.84	.75
Innocent	49	.00	.54	-.06	.60	.01	.49	.17	.61

plemented. In one additional case the guilty subject confessed after two GKT series, and therefore the test was curtailed.

The computed mean Z scores for guilty and innocent subjects within each knowledge and target condition are presented in Table II.

A three-way ANOVA was conducted on the mean Z scores, computed for the responses to the relevant items. A $2 \times 2 \times 2$ factorial design was used with one between-subjects factor (Guilty vs. Innocent subjects), and two within-subjects factors (examiners' knowledge vs. lack of knowledge; target vs. no target). Results revealed a highly significant main effect for guilt, $F(1,70) = 87.5, p < .0001$, resulting from larger responses to relevant items by guilty than by innocent examinees. A significant knowledge effect was also obtained, $F(1,70) = 4.05, p < .05$, indicating that larger responses to relevant items were observed when the examiner was not informed of the relevant items than when he had the knowledge. The main effect for the target factor was not significant, $F(1,70) = 1.38$, indicating that the inclusion of the target items had no overall effect on the responses to the relevant items. No significant interaction effects were obtained. This indicates that the examiner's knowledge of the relevant item did not reduce the GKT capacity to differentiate between guilty and innocent examinees, and the target condition did not limit the GKT accuracy, irrespective of the guilt and knowledge conditions.

The detection accuracy measure provides another look at the results. The correct detection rates computed for each experimental condition are displayed in Table III.

Following procedures from previous field studies (Elaad, 1990; Elaad et al., 1992), two knowledge scores across target conditions and two target scores across knowledge conditions were computed for each subject. Each question that was classified as GKI, inconclusive, or NGKI was assigned scores of 2, 1, or 0, respectively. Thus, for example, a perfect deception score for a subject presented with the two knowledge questions would be 4 and a perfect truthful score would be 0. When missing values exist, only one question was used and hence a perfect deception score would be 2. Scores were classified into two categories according to the following decision rule: A sum of scores greater than the number of the respective questions was classified in the GKI category (Scores of 3 or 4 for two questions and a score of 2 for a single question); all other subjects were classified as NGKI. This rule ensured that a subject would be classified as GKI only if a score of 2

Table III. Correct Detection Rates Computed for Guilty and Innocent Participants for the Four Experimental Conditions and Across Conditions

Experimental conditions		Guilty		Innocent		Total	
		N	Percent correct	N	Percent correct	N	Percent correct
Target	Knowledge	23	48%	51	80%	74	70%
	No knowledge	24	67%	50	86%	74	80%
No target	Knowledge	25	68%	53	91%	78	83%
	No knowledge	24	58%	54	78%	78	72%
Across target conditions	Knowledge	25	48%	54	96%	79	81%
	No knowledge	25	68%	55	95%	80	86%
Across knowledge conditions	Target	24	58%	53	94%	77	83%
	No target	25	68%	55	93%	80	85%
Across experimental conditions		25	76%	55	100%	80	93%

Note: The across target and across knowledge analysis is based on two GKT question and the across experimental analysis is based on four GKT questions.

was obtained on at least one question. The distribution of GKT classifications made for guilty and innocent subjects across target conditions and across knowledge conditions are presented in Table III.

Comparing the no knowledge condition and the knowledge condition (which are dependent) for guilty subjects yielded a better detection rate for the former, binomial $z = 2.00$, $p < .05$. Across knowledge conditions, the no target condition was not significantly better than the target condition in detecting guilty subjects, binomial $z = 0.98$, $p > .05$. The detection accuracy measure lends support to the results of the previous Z score analysis.

Finally, the subject scores were computed across the four experimental conditions. For each subject, the question scores were summed up, such that a perfect deception score for a subject presented with four GKT questions would be 8 and a perfect truthfulness score would be 0. The subject scores were classified into the two categories (GKI, NGKI) according to the exact same decision rule mentioned above. The distribution of GKT classifications made for guilty and innocent subjects across experimental conditions are presented in Table III. It should be noted that a perfect detection rate for innocent subjects was revealed across experimental conditions.

The Motivation Effect

The motivation manipulation was relevant only for guilty subjects. Therefore, only guilty subjects were considered. The detection accuracy rates computed for the guilty subjects within each motivation level are displayed in Table IV.

The detection scores across the four experimental conditions revealed a perfect detection rate for guilty subjects under the high motivation level and rather

Table IV. Correct Detection Rates Computed for Guilty Participants in Two Motivation Levels and Four Experimental Conditions

Experimental conditions		High motivation			Low motivation		
		N	Correct	Percent correct	N	Correct	Percent correct
Target	Knowledge	12	6	50%	11	5	45%
	No knowledge	13	12	92%	11	4	36%
No target	Knowledge	13	11	85%	12	7	58%
	No knowledge	12	7	58%	12	6	50%
Across target conditions	Knowledge	13	9	69%	12	4	33%
	No knowledge	13	12	92%	12	4	33%
Across knowledge conditions	Target	13	10	77%	11	3	27%
	No target	13	11	85%	12	7	58%
Across experimental conditions		13	13	100%	12	6	50%

Note: The across target and across knowledge analysis is based on two GKT questions and the across experimental analysis is based on four GKT questions.

poor detection for guilty subjects under the low motivation level (50%). The difference between the two motivation levels is significant, binomial $z = 3.61$, $p < .01$. Furthermore, the relation between stronger motivation and enhanced detection rate appears in all four experimental conditions and is significant in the "no-knowledge target" condition, binomial $z = 4.02$, $p < .01$. This indicates that the subjects' motivation to avoid detection, as defined in the present study, was associated with enhanced detection efficiency.

It was suggested that the less motivated guilty subject would be relatively free to respond to the target item and hence, reduce detection. The detection scores computed for the low motivation subjects, across knowledge conditions, revealed a significant difference between the target and the no target conditions, binomial $z = -2.09$, $p < .05$. Regarding subjects for whom the promised reward for truthful outcomes was higher, the obtained detection rate in the target condition (77%) does not differ from that of the no target condition (85%), binomial $z = -0.66$, $p > .05$. This indicates that the target item decreased detection accuracy of low motivation subjects but not of high motivation subjects.

DISCUSSION

Contrary to expectations, larger responses to relevant items were obtained when the examiner had no knowledge of the relevant items than when he was informed of them. Apparently, the knowledge of the examiner did not enhance the salience of the relevant items. It should be noted, however, that the examiners who participated in the present study had psychological background and knowledge about biases and their contaminating effects. Such examiners are expected to be

more careful in administrating the GKT when they are informed of the relevant items than when they remain blind as to what the relevant item is.

From a practical perspective this result may be important. It suggests that with guilty examinees an examiner who is uninformed of the relevant items may yield better results than an informed examiner. The main shortcoming of the GKT procedure is the high proportion of false negative outcomes when applying the GKT in real-life criminal investigations (Elaad, 1990; Elaad et al., 1992). In these field studies the examiner was informed of the relevant item.

On the other hand, knowledge of the relevant item provides the examiner with better control over disturbances while presenting the relevant items. This may avoid the disqualification of entire GKT series.

It was expected that the target item will safeguard against the examiner's knowledge of the relevant items. However, the fact that false positive error rate was not enhanced by the examiner's knowledge rendered the target manipulation for innocent examinees irrelevant.

Nevertheless, the effect of the target items on psychophysiological detection in the GKT was examined. Results indicated that the incorporation of the target item did not significantly decrease detection accuracy. Guilty examinees were highly responsive to the relevant items even in the presence of target items, whereas innocent examinees did not respond to the relevant items above chance level (mean $Z = .00$).

One exception to this rule was the observed relation between the target manipulation and the motivation level of the guilty examinees. This implies that the target items distract the attention of some guilty examinees from the relevant items. The distraction was more pronounced in the low motivation level. However, the motivation of guilty examinees in real-life settings is much greater than in the present study. Therefore, the inclusion of a target item may not limit the accuracy of the test.

Finally, innocent examinees were more responsive to target than to relevant items. This result is encouraging because it suggests that the target item may be used as a standard for an enhanced response to familiar information which does not involve guilt. Elaad and Ben-Shakhar (1989) showed that innocent examinees who were informed about the relevant details of a mock crime (Bradley & Warfield, 1984) elicited stronger responses to the relevant items relative to chance expectancy. Future research should manipulate the exposure of innocent examinees to crime-relevant information in order to learn about the conditions for an optimal use of the target items as standards for enhanced responses.

It was suggested that whenever it is expected that uninformed innocent suspects might guess the relevant item from information gathered about the crime during the interrogation or from the media, the inclusion of a target item may be helpful. Future research should use target items when investigating the effect of guessing.

In the present experiment the relevant items were more salient to guilty examinees than the target items. Furthermore, the target corresponds to familiar knowledge which does not always ensure the elicitation of a response. In realistic GKT examinations a strong target may increase the false negative error rate. It is

the task of future research to manipulate the target item's salience in typical GKT conditions and to systematically investigate the target's effect.

Other aspects of the present results replicate and extend results of previous studies. The effects of the motivation manipulation was pronounced and significant. This result is consistent with earlier research (Elaad & Ben-Shakhar, 1989, 1991; Gustafson & Orne, 1963). Motivation was defined by the amount of money the guilty examinee could have earned if found innocent. Such motivation may enhance the attention of guilty examinees to the relevant information, which is associated with greater differential autonomic responsivity and with better psychophysiological differentiation. The practical implication of this finding is that since the motivation level in real-life settings is much greater than in simulated conditions, the attention paid to the relevant items is likely to be greater in the real-life context.

Finally, the present study provides a unique look at the GKT efficiency under conditions that resemble actual GKT procedures more than many other laboratory studies. This was expected to increase the concern of guilty examinees about the test results. Furthermore, the study adhered to field practice according to which the CQT preceded the administration of the GKT. Under such conditions, field studies (Elaad, 1990; Elaad et al., 1992) reported large false negative error rates. It may be argued that examinees are fatigued from the earlier test and therefore are less inclined to pay attention to the stimuli in the GKT, thus increasing the false negative error rate. However, the present results indicate that the GKT may be accurate even when a CQT is conducted before the GKT.

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