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Deception Detection in Legal Contexts

Polygraphic Examination in Japan:
Application of the Concealed Information Test in Forensic Investigation

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2. A general procedure to enforce polygraph test in Japan
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Two Prevalent Techniques of Psychophysiological Deception Detection

- The Control Questions Test (CQT)
- The Concealed Information Test (CIT), also labeled, Guilty Knowledge Test (GKT)
  - The CIT is superior to the CQT in its validity.
  - The CIT is the only scientifically-based and valid psychophysiological detection method.
  - The CIT is widely used in laboratory research but also in field examinations only in Japan.
Control Question Test (CQT)

- Prior to 2009, did you ever do something dishonest or illegal? (Control)
- Did you steal 200,000 W from the desk? (Relevant)
- Before the age of 20, did you ever lie to get out of trouble? (Control)
- Did you take the money? (Relevant)
Concealed Information Test (CIT)

A car was stolen from the parking lot during the robbery. If you are the guilty person, you know what it is. Was it:

1. Hyundai Sonata?
2. KIA Optima?
3. SsangYong Actyon? (Critical Question)
4. Daewoo Matiz?
5. Samsung SM3?
Three Distinctive Features of Polygraphic Examination in Japan

1. **Japanese police polygraphers only engage in polygraphic examinations as researchers and do not investigate criminal cases as detectives.**

2. **The CIT has been the main method of polygraphic examination by the Japanese police since the 1950s.**

3. **The Japanese National Research Institute of Police Science (NRIPS) developed their own portable digital polygraph system and the Japanese police polygraphers use mainly this device in their field.**
Police Polygraphers as Researchers

• There are about 100 polygraph examiners including 13% females in Japan. They belong to the Forensic Science Laboratory in each prefectural police Headquarters.

• University graduates with at least a bachelor’s degree in psychology or behavioral science are employed as polygraph examiners. Approximately half of them have a master’s degree, and a few examiners have a Ph.D..
Three Training Courses for Polygraphers by the National Research Institute of Police Science (NRIPS)

1. Basic Course (3 months, obligatory)
2. Advanced Course (20 days, obligatory)
3. Specialized Technical Course (10 days, optional)

A six-month research leave (at a domestic university lab) and a three-month international research leave are also permitted.
Distinctive Features of Polygraphic Examination in Japan

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CIT as the Main Method of Polygraphy

• CIT was first introduced into Japanese police agencies in 1956.

• Since 1970, the number of examinations has been about 5,000 per annum.

Japanese police polygraphers have accumulated a lot of field CIT data.
Field CIT Procedures

1. Request for polygraphy by the chief of police station who commands a criminal investigation

2. Dispatch of a polygrapher to the station

3. Visiting the fresh crime scene and collecting salient features of the crime to formulate CIT questions

4. Formulating 10 or more CIT questions
Formulating CIT questions

A) A ring, personal computer, oil painting, wallet, or watch

B) A ring, necklace, earring, brooch, or bracelet

C) A ruby, emerald, garnet, pearl, or diamond (presented by a photograph of each item)
Field CIT Procedures

5. Enforcement of the CIT on the suspect(s) before in-depth interrogation by detectives

I. The test is performed solely by a police polygrapher.

II. A consent form must be obtained before the test.

III. Following person is excluded from the test.
   1. Person with heart disease
   2. Mental/Intellectual handicapped
   3. Temporarily destabilised person by drugs, lack of sleep, extreme fatigue or alcohol
Field CIT Procedures

6. Judgment about whether or not the suspect has concealed information about the crime

7. Documentation of the test result and sending it to the relevant police station
Legal Status of Polygraph Test in Japan

- The result of polygraph test can be used as one of evidence in legal proceedings if the test is performed:
  1. By a qualified examiner
  2. With standardized equipment
  3. Upon on a person whose physical and mental states are considered normal

(A decision by the Japanese Supreme Court in 1968)
The Myths of the CIT

• CIT method simply cannot be used in many situations in which the lie detector is now used (Lykken, 1974).

• CIT has so far been used almost exclusively in laboratory (Podlesny & Raskin, 1977).

• CIT might have been used in 13.1% of the examinations (Podlesny, 1993).
The Myths of the CIT

• CIT has not been systematically studied in the context of real-life criminal investigation (Lykken, 1998, p.307).

• SRR as an inefficient detection index of the CQT because it is so sensitive that spontaneous SRRs intermix with an SRR to a specific question (Reid & Inbau, 1977).
The Myths of the CIT

• Details of a crime that may seem quite distinctive and memorable to an investigator or polygraph examiner may have gone unnoticed or been forgotten by the perpetrator because of emotional stress, confusion, inattention, or intoxication during the crime (Podlesny, 1993).

• A naïve, innocent person tends to show higher and unusual levels of arousal during polygraphy (The British Psychological Society, October 6, 2004)
Beat the Myths of the CIT

• We compared psychophysiological responses of 52 guilty persons and 32 innocents, which had been obtained in real-life criminal investigations.

• We found that the guilty persons had remembered and responded to their own criminal acts that were questioned during CITs (233 out of 315 questions, 74.0%).

Idiosyncratic Responses Observed during Field CITs ($n=52$)

<table>
<thead>
<tr>
<th>Type of idiosyncratic responses to critical alternatives</th>
<th>Percent of responses</th>
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</thead>
<tbody>
<tr>
<td>Respiration suppression</td>
<td>36.2</td>
</tr>
<tr>
<td>Acute change in respiration cycle</td>
<td>25.0</td>
</tr>
<tr>
<td>Change in respiration cycle to all alternatives after critical alternatives</td>
<td>24.0</td>
</tr>
<tr>
<td>Respiration baseline rising</td>
<td>10.2</td>
</tr>
<tr>
<td>Respiration blocking for over 3 sec</td>
<td>8.1</td>
</tr>
<tr>
<td>Largest SRR amplitude</td>
<td>62.0</td>
</tr>
<tr>
<td>Decrease in SRR amplitude to all alternatives after critical alternatives</td>
<td>26.6</td>
</tr>
</tbody>
</table>

Hira & Furumitsu (2002)
Tonic Arousal during Field Polygraph Tests in Guilty vs. Innocent Suspects in Japan
Hira & Furumitsu (2009).
*Applied Psychophysiology and Biofeedback, 34, 173-176.*

- Eighty four sets of CIT field data (52 guilty and 32 innocent persons) were analyzed for tonic level of heart rate during polygraph interrogation.

- In the first and the last question of CIT, heart rate (bpm) are calculated by the examiner’s visual inspection for an arbitrary selected period of 1 min.
Mean Heart Rate of Guilty and Innocent Persons over the Course of CIT

- In the first CIT, mean HRs of the perpetrators and the innocents were 96.1 and 89.4 bpm respectively. In contrast, mean HRs of the perpetrators and the innocents in the last CIT segment decreased to 92.9 and 82.3 bpm respectively.

- We concluded that the innocent person does not show a tonically elevated arousal level during testing in comparison to guilty persons.

Hira & Furumitsu (2009)
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A Newly Developed Polygraph System

Lafayette polygraph

Portable digital polygraph system

This new system also enables us to measure not only the conventional autonomic indices such as respiration, heart rate, and electrodermal activity, but also EEGs with high reliability.
Possible International Contributions by Japanese Police Polygraphers

• Construction of database of physiological indices during field CIT and the norm of decision making (guilty or not guilty).

• Verification of new indices and new protocol.
  - P300 (event-related brain potential), fMRI, fNIRS
  - Complex Trial Protocol (Rosenfeld et al., 2008)
Acknowledgement

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