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# Effect of Habituation to Least Threatening Zone Questions on the Most Threatening Zone Comparison Questions in Psychophysiological Veracity Examinations

During the past 39 years of conducting psychophysiological veracity (PV) examinations, this author observed a phenomenon wherein the responsivity of the confirmed deceptive and truthful examinees remained constant and often increased with each chart collected on the relevant questions if deceptive or the control questions if truthful.

This author suspected that the reason for this occurrence was due to the truthful examinee's habituation to the relevant questions and the deceptive examinee's habituation to the control questions, as a result of their psychological set being focused on the tests questions having the greatest threat to their security.

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This empirical observation was based on charts collected from the administration of the Quadri-Track Zone Comparison Technique, a single-issue test that clearly separates the relevant questions (Red Zone) dealing with a single-issue from the control questions (Green Zone) embracing earlier-in-life experiences with the use of non-current exclusive control questions that employ time bars that enable the "Either-Or" rule. In essence, the examinee is presented with two threats, the red zone questions and the green zone questions from which he/she must choose which of those two threats offer the greatest threat to his/her well-being, thus creating a double-bind effect (Bateson, et al, 1956), and this is determined and discovered from the physiological data collected from the examinee during the presentation of those two threats.

This empirical observation prompted this author to review and examine the raw data acquired in a field study (Matte-Reuss, 1989) comprising 122 confirmed real-life cases that used the Quadri-Track Zone Comparison Technique where the scores for each chart collected were recorded and reported.

There were 62 confirmed Deception Indicated (DI) cases, 53 confirmed No Deception Indicated (NDI), and 7 Inconclusives.

## Results

Of the 62 confirmed DI cases, 39 cases (62.9%) had an average greater score for charts succeeding the first chart (Chart #1), and 4 cases (6.4%) had average equal scores for charts succeeding the first chart. There were 10 cases (16.1%) where a fourth chart was collected. Five of those cases (50%) had greater scores than the first chart collected. Raw data available in Appendix A.

The scores for each chart collected were tallied and divided by the number of cases to obtain the average score for charts number 1 thru 4. The results are as follows:

| Deception Indicated | CHART #1 | CHART #2 | CHART #3 | CHART #4 |
|---|---|---|---|---|
| Total Score: | -516 (n.62) | -617 (n.62) | -387 (n.42) | -83 (n.9) |
| Average Score: | -8.32 | -9.95 | -9.21 | -9.22 |

Of the 53 confirmed NDI cases, 23 cases (43.3%) had an average greater score for charts succeeding the first chart, and 7 cases (13.2%) had average equal

scores for charts succeeding the first chart. There were three cases (5.6%) where a fourth chart was collected. Two of those cases (66.6%) had greater scores than the first chart collected and one of those cases (33.3%) had scores equal to the first chart collected.

| No Deception Indicated | CHART #1 | CHART #2 | CHART #3 | CHART #4 |
|---|---|---|---|---|
| Total Score: | +355 (n.53) | +301 (n.53) | +80 (n.10) | +26 (n.3) |
| Average Score: | +6.6 | +5.6 | +8.0 | +8.6 |

## Discussion

The data for deceptive cases clearly indicate a lack of habituation to the relevant test questions throughout the collection of the four charts. Indeed the scores from charts 2 through 4 are higher than chart 1 indicating increased responsivity to the relevant questions, which may be due to habituation to the control questions.

The data for the truthful cases indicate a slight score decrease in Chart #2 (+5.6) versus Chart #1 (+6.6), but this is followed by Chart #3 with +8.0 and Chart #4 with +8.6 indicating an overall increase in responsivity to the control questions versus the relevant questions. It is recognized that the number of charts available in Charts #3 and #4 for NDI were small, and additional field research needs to be conducted. It must be noted that this data was collected from a true single-issue zone comparison technique where, unlike multiple-issue tests, the examinee is confronted with only two distinctly separate threats which permits one threat to dampen the other thus creating a double-bind effect that can result in eventual habituation to the least threatening questions.

The implications from this data are that polygraphists should be receptive to the collection of additional charts beyond the customary three-charts when confronted with an inconclusive result, especially when using a single-issue polygraph technique that employs an increasing score threshold with each chart collected rather than a fixed score threshold that does not increase with each chart collected. The data further supports the Quadri-Track Zone Comparison Technique's increasing score threshold, which multiplies its initial scoring threshold with the collection of each subsequent chart, clearly showing that its increasing score threshold does not contribute to inconclusive results. Published field studies by Matte-Reuss 1989; Mangan, et al 2008; Shurany, et

al 2009, comprising a total of 319 subjects reported a combined inconclusive rate of only 2.2 percent.

## Notes

[1] The term "control" question has been replaced with the term "comparison" to conform to the scientific literature. Nevertheless, in this study the term "control" is still used to avoid duplication of the term comparison in succession which could cause confusion, such as comparison of the comparison versus relevant questions.

[2] The "Either-Or" Rule is unique to the Backster ZCT and the Quadri-Track ZCT. Research by Meiron, et al 2008 showed that the "Either-Or) rule was an essential element of the Backster ZCT and its high accuracy. For a full explanation of the "Either-Or" Rule, see Matte, 1996; Mangan, et al 2008; and Shurany, et al 2009.

[3] Double-bind: A situation in which a person must choose between equally unsatisfactory alternatives; a punishing and inescapable dilemma. American Heritage Dictionary.

[4] The Quadri-Track ZCT employs the following increasing score threshold: Chart 1, -5 DI, +3 NDI; Chart 2, -10 DI, +6 NDI; Chart 3, -15 DI, +9 NDI; Chart 4, -20 DI, +12 NDI. A minimum of 2 charts must be collected in order to render a decision of Truth or Deception. Scores below the indicated threshold fall into the inconclusive category.

## Appendix

**TABLE 4   POLYGRAPH GRANDSCORE WITH ZONE 4 LISTED BY RANK SCORES**

| NUM | CASE | CONF | CONC | C13 | C23 | C33 | C43 | GS23 |
|-----|------|------|------|-----|-----|-----|-----|------|
| 43 | M11 | DI | DI | -9 | -17 | -19 | | -45 |
| 87 | M53 | DI | DI | -1 | -17 | -9 | -18 | -45 |
| 118 | M70A | DI | DI | -15 | -13 | -5 | -11 | -44 |
| 7 | L7A2 | DI | DI | -18 | -11 | -9 | | -38 |
| 57 | M23 | DI | DI | -10 | -14 | -13 | | -37 |
| 47 | M13B | DI | DI | -11 | -11 | -14 | | -36 |
| 1 | A1A | DI | DI | -10 | -12 | -13 | | -35 |
| 112 | M67A | DI | DI | -8 | -15 | -12 | | -35 |
| 60 | M26 | DI | DI | -8 | -10 | -5 | -11 | -34 |
| 114 | M68A | DI | DI | -13 | -7 | -14 | | -34 |
| 75 | M41 | DI | DI | -10 | -11 | -12 | | -33 |
| 14 | A12A | DI | DI | -3 | -17 | -12 | | -32 |
| 93 | M56 | DI | DI | -12 | -11 | -9 | | -32 |
| 15 | A13A | DI | DI | -17 | -14 | | | -31 |
| 92 | M55B | DI | DI | -9 | -3 | -12 | -7 | -31 |
| 107 | M64A | DI | DI | -13 | -11 | -7 | | -31 |
| 72 | M38 | DI | DI | -5 | -3 | -10 | -12 | -30 |
| 89 | M54B | DI | DI | -9 | -12 | -9 | | -30 |
| 98 | M59A | DI | DI | -10 | -1 | -19 | | -30 |
| 113 | M67B | DI | DI | -9 | -8 | -13 | | -30 |
| 119 | M70B | DI | DI | -9 | -9 | -12 | | -30 |
| 61 | M27 | DI | DI | -4 | -9 | 0 | -16 | -29 |
| 34 | M2 | DI | DI | -12 | -13 | -2 | -1 | -28 |
| 111 | M66 | DI | DI | -12 | -7 | -9 | | -28 |
| 91 | M55A | DI | DI | -9 | -11 | -5 | -2 | -27 |
| 95 | M57B | DI | DI | -15 | -12 | | | -27 |
| 40 | M8 | DI | DI | -15 | -11 | | | -26 |
| 77 | M43 | DI | DI | -4 | -11 | -11 | | -26 |
| 121 | M71B | DI | DI | -9 | -17 | | | -26 |
| 46 | M13A | DI | DI | -6 | -10 | -9 | | -25 |
| 110 | M65B | DI | DI | -10 | -8 | -7 | | -25 |
| 41 | M9 | DI | DI | -12 | -12 | | | -24 |
| 115 | M68B | DI | DI | -2 | -9 | -13 | | -24 |
| 32 | A26B | DI | DI | -12 | -11 | | | -23 |
| 103 | M62A | DI | DI | -10 | -13 | | | -23 |
| 106 | M63B | DI | DI | -9 | -14 | | | -23 |
| 117 | M69B | DI | DI | -7 | -6 | -10 | | -23 |
| 122 | M71C | DI | DI | -16 | -7 | | | -23 |
| 73 | M39 | DI | DI | -11 | -11 | | | -22 |
| 88 | M54A | DI | DI | 0 | -12 | -10 | | -22 |
| 99 | M59B | DI | DI | -9 | -13 | | | -22 |
| 100 | M60 | DI | DI | -4 | -8 | -10 | | -22 |
| 30 | A25 | DI | DI | -6 | -15 | | | -21 |
| 104 | M62B | DI | DI | -9 | -12 | | | -21 |
| 105 | M63A | DI | DI | -11 | -10 | | | -21 |
| 120 | M71A | DI | DI | -3 | -12 | -6 | | -21 |
| 31 | A26A | DI | DI | -10 | -9 | -1 | | -20 |
| 33 | M1 | DI | DI | -1 | -4 | -10 | -5 | -20 |
| 90 | M54C | DI | DI | -9 | -11 | | | -20 |
| 94 | M57A | DI | DI | -7 | -6 | -7 | | -20 |

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                        TABLE 4   POLYGRAPH GRANDSCO
                           ZONE 4 LISTED BY RANK SC

NUM CASE CONF CONC C13 C23 C33 C43 GS23

| NUM | CASE | CONF | CONC | C13 | C23 | C33 | C43 | GS23 |
|-----|------|------|------|-----|-----|-----|-----|------|
| 101 | M61A | DI | DI. | 2 | -10 | -11 | | -19 |
| 109 | M65A | DI | DI | -6 | -7 | -6 | | -19 |
| 11 | A10B | DI | DI | -3 | -15 | | | -18 |
| 16 | A14A | DI | DI | -8 | -6 | -4 | | -18 |
| 20 | A17 | DI | DI | -8 | -10 | | | -18 |
| 108 | M64B | DI | DI | -7 | -11 | | | -18 |
| 5 | A5A2 | DI | DI | -8 | 2 | -9 | | -15 |
| 8 | L8A3 | NDI | INC | -8 | -4 | 0 | -3 | -15 |
| 10 | A10A | DI | DI | -4 | 1 | -12 | | -15 |
| 28 | A23B | DI | DI | -4 | -4 | -7 | | -15 |
| 42 | M10 | DI | DI | -7 | -8 | | | -15 |
| 96 | M58A | DI | DI | -5 | -8 | | | -13 |
| 102 | M61B | DI | DI | -5 | -8 | | | -13 |
| 13 | A11B | DI | INC | -7 | 2 | -5 | | -10 |
| 97 | M58B | NDI | INC | 3 | -3 | | | 0 |
| 116 | M69A | DI | INC | 5 | -2 | -1 | | 2 |
| 74 | M40 | NDI | INC | -4 | 3 | 4 | | 3 |
| 86 | M52 | NDI | INC | 3 | 2 | | | 5 |
| 9 | A9A | NDI | INC | 3 | -1 | 4 | | 6 |
| 18 | A15B | NDI | NDI | -1 | 9 | | | 8 |
| 25 | A21B | NDI | NDI | 6 | 2 | | | 8 |
| 29 | A24 | NDI | NDI | 7 | 1 | | | 8 |
| 35 | M3 | NDI | NDI | 4 | 4 | | | 8 |
| 36 | M4 | NDI | NDI | 4 | 4 | | | 8 |
| 39 | M7 | NDI | NDI | 4 | 4 | | | 8 |
| 49 | M15 | NDI | NDI | 6 | 2 | | | 8 |
| 50 | M16 | NDI | NDI | 0 | 8 | | | 8 |
| 53 | M19 | NDI | NDI | 3 | 5 | | | 8 |
| 55 | M21 | NDI | NDI | 6 | 2 | | | 8 |
| 71 | M37 | NDI | NDI | -2 | 10 | | | 8 |
| 84 | M50 | NDI | NDI | 8 | 0 | | | 8 |
| 59 | M25 | NDI | NDI | 12 | -3 | | | 9 |
| 82 | M48 | NDI | NDI | 2 | 7 | | | 9 |
| 4 | A4A1 | NDI | NDI | 8 | 3 | | | 11 |
| 12 | A11A | NDI | NDI | 5 | 6 | | | 11 |
| 63 | M29 | NDI | NDI | 8 | 3 | | | 11 |
| 66 | M32 | NDI | NDI | 11 | 0 | | | 11 |
| 83 | M49 | NDI | NDI | 8 | 3 | | | 11 |
| 52 | M18 | NDI | NDI | 7 | 5 | | | 12 |
| 79 | M45 | NDI | NDI | 2 | -5 | 15 | | 12 |
| 80 | M46 | NDI | NDI | 6 | 6 | | | 12 |
| 2 | A2A1 | NDI | NDI | 4 | 4 | 5 | | 13 |
| 3 | A3A2 | NDI | NDI | 10 | 3 | | | 13 |
| 22 | A19 | NDI | NDI | 0 | 7 | 6 | | 13 |
| 48 | M14 | NDI | NDI | 3 | 0 | 5 | 5 | 13 |
| 81 | M47 | NDI | NDI | 8 | 7 | | | 13 |
| 38 | M6 | NDI | NDI | 10 | 4 | | | 14 |
| 64 | M30 | NDI | NDI | 1 | 13 | | | 14 |
| 69 | M35 | NDI | NDI | 7 | 7 | | | 14 |
| 70 | M36 | NDI | NDI | 9 | 5 | | | 14 |

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                        TABLE 4   POLYGRAPH GRANDSCORE WITH
                          ZONE 4 LISTED BY RANK SCORES

NUM CASE CONF CONC C13 C23 C33 C43 GS23


 78 M44  NDI  NDI    7    7              14
 51 M17  NDI  NDI    7    8              15
 76 M42  NDI  NDI    2   13              15
 54 M20  NDI  NDI    7    9              16
 85 M51  NDI  NDI    8    8              16
 27 A23A NDI  NDI    6   11              17
 44 M12A NDI  NDI   -2    7   12         17
 45 M12B NDI  NDI    7   10              17
 19 A16  NDI  NDI   14    4              18
 23 A20  NDI  NDI   12    6              18
 67 M33  NDI  NDI    5   13              18
 17 A15A NDI  NDI    9   10              19
 26 A22  NDI  NDI   13    6              19
 58 M24  NDI  NDI   12    8              20
 68 M34  NDI  NDI    9   12              21
  6 L6A1 NDI  NDI    8   -1    5   11    23
 21 A18  NDI  NDI    8    8    7         23
 24 A21A NDI  NDI    1   13   10         24
 37 M5   NDI  NDI   10    0    4   10    24
 56 M22  NDI  NDI   11    3   11         25
 65 M31  NDI  NDI   18   10              28
 62 M28  NDI  NDI   20   10              30
*** Total ***
                   *** *** *** -60 -847
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