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Polygraph Pro Suite

Limestone TECHNOLOGIES INC.

Contact us today for a competitive quote!

## Contents

### Membership News

- **5** Greetings From the Editor's Desk by Mark Handler
- **7** 2017 APA Elections
- **10** Survey invitation by Manuel Novoa

### Training & Seminars

- **9** Polygraph Examiner Training Schedule
- **11** 52nd APA Annual Seminar Program
- **19** Maine Polygraph Association Seminar Program
- **87** Polygraph Schools Accredited by The APA

### From the Board

- **23** President's Message
- **27** Board of Directors' Reports

### Regular Features

- **34** How to Deal with Those Difficult Examinees by George Baranowski
- **37** Five Minute Science Lesson: An Algorithm to "Roll-Your Own" Standard Deviations by Raymond Nelson
- **51** Polygraph Abroad: Russia by Yaroslava Komissarova and Said Khamzin

### Special Features

- **45** Practical Polygraph: Managing the Respiration Sensors During the Polygraph Pretest Interview by Rodolfo Prado, Raymond Nelson and Mark Handler
- **73** Heuristic Principles to Select Comparison and Relevant Question Pairs when Scoring Any CQT Format by Raymond Nelson
Contributors to this issue

George Baranowski
Gary F. Davis
Steven Duncan
Mark Handler
Lisa Jacocks
Said R. Khamzin
Yaroslava Komissarova
Sabino Martinez
Raymond Nelson
Patrick O’Burke
Rodolfo Prado

Deadlines

This issue closed on
January 31

Deadline for March/April
2016 issue is March 30

Submission of Articles

The APA Magazine is published by the American Polygraph Association. All views, opinions and conclusions expressed in this magazine are those of the authors, and do not necessarily reflect the opinion and/or policy of the APA or its leadership. References in this magazine to any specific commercial products, process, or service by trade name, trademark, manufacturer or otherwise, does not necessarily constitute or imply endorsement, recommendation, or favoring by the APA or its leadership.

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Membership News

President
Patrick O’Burke
president@polygraph.org

President - Elect
Jamie McCloughan
president-elect@polygraph.org

Chairman of the Board
Walt Goodson
chair@polygraph.org

Director 1
Barry Cushman
109 Middle Street
Portland, ME 04101
directorcushman@polygraph.org

Director 2
Raymond Nelson
directornelson@polygraph.org

Director 3
George Baranowski
1912 E. US Hwy 20, Suite 202
Michigan City, IN 46360
directorbaranowski@polygraph.org

Director 4
Sabino Martinez
directormartinez@polygraph.org

Director 5
Steve Duncan
directorduncan@polygraph.org

Director 6
Darryl Starks
directorstarks@polygraph.org

Director 7
Gary F. Davis
directordavis@polygraph.org

Director 8
Dan Violette
directorviolette@polygraph.org

Ex Officio Members

National Office Manager
Lisa Jacocks
P.O. Box 8037
Chattanooga, TN 37414-0037
manager@polygraph.org

Assistant Office Manager
Stephanie Prairie
apaoffice@polygraph.org

Treasurer
Chad Russell
treasurer@polygraph.org

General Counsel
Gordon L. Vaughan
111 S. Tejon St., Suite 545
Colorado Springs, CO 80903-2245
generalcounsel@polygraph.org

Seminar Chair
Michael Gougler
seminarchair@polygraph.org

Editor-in-Chief
Mark Handler
editor@polygraph.org

Managing Editor
Nayeli Hernandez
polygraph.managing.editor@gmail.com
Greetings From The Editor’s Desk

By Mark Handler

May this magazine find you warm, safe and healthy. I think for many parts of the country it has been a long cold winter. I know sometimes when it is cold we don’t want to move, and that includes typing on a computer. You may notice this magazine is a bit short on content, and I attribute that to the winter. Please know we are always interested in your contribution to the magazine.

As members, this is your magazine and we would love to publish your stories. If you have an interesting case, please share it. If you have found a benefit or improvement by changing something you are doing, please share it. If you want to shout out something someone else has done well, please share it.

This magazine has contributions from several board members that are informative. George Baranowski has promised to share his wisdom with us each magazine as a regular column. He begins with advice on managing difficult test subjects. I am sure you will find it as helpful and insightful as I did. There are several articles from Raymond Nelson who continues to provide sage advice in practical aspects of testing, challenges us to consider our profession’s direction, and continues to try to help us improve our science understanding. Thanks to Rodolfo Prado for sharing his thoughts on managing the respiration channel.

Please take time to respond to the survey invitation, it will be helpful to the profession at large.

Don’t forget to sign up early for the 2017 APA seminar. Mike Gougler and
Gordon Vaughn are working hard to make this an exceptional experience.

A friendly reminder that if you have not yet had a chance to renew your membership, please take time to do so. We count on your membership to keep the association great. Please keep your email addresses current on the website as that is how we contact you with notices and editorial content. If you run into trouble getting on the website, please contact the National Office or me.

As always, we are humbled by the responsibility entrusted upon us to publish the magazine and journal. We believe the upcoming journal will have some exceptional content. At the direction of President O’Burke, we have sought content that addresses more than polygraph. We reached out to credibility assessment experts and have some novel content upcoming.

Take care, be well, and share your experience and knowledge with us.

Mark Handler & Nayeli Hernandez
APA Elections 2017

Be part of the solution...
Get involved
Announcement Regarding the 2017 APA Election Schedule

APA will hold its annual election for Board offices in June. If you are interested in running for office, please take note of the positions being voted this year:

- President Elect (1 year)
- Director 1 (2 years)
- Director 3 (2 years)
- Director 5 (2 years)
- Director 7 (2 years)

Applicants must specify which of the five offices he or she is a candidate. Candidates may run for only one office per year.

Below are important dates to remember:

- **April 1 – April 30:** Period to submit nominations and self-nominations in writing to the National Office. Nominations must include a cover letter specifying for which office the candidate is vying.
- **May 1 – 7:** Validation of candidates’ eligibility to hold APA office.
- **May 7:** Last day to submit a candidate statement up to 500 words for the APA Magazine and the APA website (editor@polygraph.org)
- **June 7:** Candidacy letters published on the APA website and in the APA Magazine in the order they are received.
- **June 17:** Email notification of elections (Ensure your email address is current on the APA website; www.polygraph.org)
- **June 18 - 24:** Electronic elections.
- **June 26:** Posting of results on the APA website.
- **July 9 - 15:** Runoff elections, if necessary.
- **July 17:** Notification to winners. Posting of final election results.
- **August 31:** Officers sworn in at the APA Annual Banquet.

For additional information, contact Mark Handler at editor@polygraph.org or (859) 539-0705.
American Polygraph Association

52nd Annual Seminar/Workshop
August 27 - September 1
Las Vegas, NV

National Polygraph Academy

Basic Examiner Courses:
April 3 - June 9, 2017 (Richmond, KY)
June 5 - August 11, 2017 (Amarillo, TX)
Sept 11 - November 17, 2017 (TBA)

PCSOT Courses:
June 12-16, 2017 (Richmond, KY)
August 14-18, 2017 (Amarillo, TX)

Advanced Continuing Education (ACE) Courses: March 20-22, 2017 (Lafayette, IN)

PEAK Credibility Assessment Training Center

Basic Examiner's Course
May 8, 2017 - July 14, 2017 (Cape Coral FL)
September 5, 2017 - November 10, 2017 (Cape Coral FL)

Advanced Examiner's Course
March 27 - 31, 2017 (Cape Coral FL)

July 24 - 28, 2017 (Cape Coral FL)
December 4, 2017 - December 8, 2017 (Lafayette IN)

PCSOT Course
March 20 - 24, 2017 (Cape Coral FL)
July 17 - 21, 2017 (Cape Coral FL)

American International Institute of Polygraph

Basic Classes:
May 15 – July 21, 2017 (Stockbridge, GA)
September 13 – November 17, 2017 (Stockbridge, GA)

Continuing Education
PCSOT July 24-28, 2017 (Stockbridge, GA)

Attention School Directors

If you would like to see your school’s course dates listed here, simply send your upcoming course schedule to editor@polygraph.org
Survey Invitation

Dear APA Members:

Manuel Novoa of the Latinamerican Polygraph Institute is conducting an online survey regarding the use of the Acquaintance Test (ACQT). He invites all polygraph examiners to go to a website he set up, and answer seven questions about the ACQT. It takes less than 2 minutes. Please go to: https://lpicolombia.wufoo.com.mx/forms/scientific-research-project/ and take the anonymous survey.
52nd Annual Seminar
American Polygraph Association

August 27 - September 1, 2017
<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>1:00 - 2:00 PM</td>
<td>Avoiding the Pitfalls: Ethics for Polygraph Examiners</td>
</tr>
<tr>
<td></td>
<td>Steve Duncan, APA Director</td>
</tr>
<tr>
<td>2:00 - 5:00 PM</td>
<td>You Want Me to Ask What? Test Question Construction</td>
</tr>
<tr>
<td></td>
<td>Steve Duncan, APA Director</td>
</tr>
<tr>
<td></td>
<td><strong>SCHOOL DIRECTOR’S MEETING</strong></td>
</tr>
<tr>
<td></td>
<td>1:00 - 3:00 PM</td>
</tr>
<tr>
<td></td>
<td>(ROOM TO BE ANNOUNCED)</td>
</tr>
<tr>
<td></td>
<td><strong>APA WELCOME RECEPTION</strong></td>
</tr>
<tr>
<td></td>
<td>6:30 - 8:30 PM</td>
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### MONDAY, AUGUST 28, 2017

#### CLASSROOM A (disponible en Español)

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
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<tbody>
<tr>
<td>7:30 - 8:00 AM</td>
<td>Break Sponsored by:</td>
</tr>
<tr>
<td>8:00 - 9:30 AM</td>
<td>OPENING CEREMONIES</td>
</tr>
<tr>
<td>Call to Order</td>
<td>J. Patrick O’Burke, APA President</td>
</tr>
<tr>
<td>Master of Ceremonies</td>
<td>Michael C. Gougler, Seminar Program Chair</td>
</tr>
<tr>
<td>The National Anthem</td>
<td>Las Vegas Metro Police Department</td>
</tr>
<tr>
<td>Presentation of Colors</td>
<td>J. Patrick O’Burke, APA President</td>
</tr>
<tr>
<td>Pledge of Allegiance</td>
<td>Richard Pascuito</td>
</tr>
<tr>
<td>Taps</td>
<td>Welcome to Las Vegas Sponsored by:</td>
</tr>
<tr>
<td>Invocation</td>
<td>Barry Cushman, APA Director</td>
</tr>
<tr>
<td>9:30 - 9:45 AM</td>
<td>Break Sponsored by:</td>
</tr>
<tr>
<td>9:45 - 12:00 NOON</td>
<td>Panel Discussion</td>
</tr>
<tr>
<td>Gordon L. Vaughan, Moderator</td>
<td></td>
</tr>
<tr>
<td>Panel: Don Krapohl, Pat O'Burke, Raymond Nelson, Dr. David Raskin</td>
<td></td>
</tr>
<tr>
<td>12:00 NOON - 1:00 PM</td>
<td>Lunch on your own</td>
</tr>
<tr>
<td>1:00 - 5:00 PM</td>
<td>Validated Polygraph Principles</td>
</tr>
<tr>
<td>Donald J. Krapohl</td>
<td>APA Past-President</td>
</tr>
<tr>
<td>2:45 - 3:00 PM</td>
<td>Break Sponsored by:</td>
</tr>
<tr>
<td>(CONT'D)</td>
<td>Validated Polygraph Principles</td>
</tr>
<tr>
<td>Donald J. Krapohl</td>
<td>APA Past-President</td>
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### (CONT'D)
### TUESDAY, AUGUST 29, 2017

#### 7:30 - 8:00 AM Break Sponsored By:

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<th>CLASSROOM B</th>
<th>CLASSROOM C</th>
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<tbody>
<tr>
<td>8:00 - 9:45 AM TBA NCCA TBA</td>
<td>8:00 - 9:45 AM UTAH Scoring System Dr. David Raskin</td>
<td>8:00 - 9:45 AM Understanding Child Abduction Dirk Tarpley SA FBI, BAU PCSOT</td>
</tr>
</tbody>
</table>

#### 9:45 - 10:00 AM Break Sponsored By:

#### APA ANNUAL BUSINESS MEETING

**10:00 AM - 12:00 NOON**

**CLASSROOM A**

12:00 Noon - 1:00 PM   Lunch On Your Own

<table>
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<th>1:00 - 5:00 PM</th>
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<th>1:00 - 3:00 PM</th>
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#### 3:00 - 5:00 PM
### Wednesday, August 30, 2017

#### 7:30 - 8:00 AM Break Sponsored By:

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<th>CLASSROOM B</th>
<th>CLASSROOM C</th>
</tr>
</thead>
<tbody>
<tr>
<td>8:00 - 12:00 NOON Interview Route Maps</td>
<td>8:00 - 10:00 AM Test Question Formulation; What We Know, What We Think We Know, and What We Pretend to Know</td>
<td>8:00 - 10:00 AM PCSOT Update George Baranowski APA Director</td>
</tr>
<tr>
<td>NCCA TBA</td>
<td>Mark Handler, APA Editor Raymond Nelson, APA Director</td>
<td>PCSOT</td>
</tr>
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</table>

#### 9:45 - 10:00 AM Break Sponsored By:

<table>
<thead>
<tr>
<th>(CONT'D) Interview Route Maps</th>
<th>10:00 - 12:00 NOON Understanding Polygraph Test Outcomes; What Does the Test Result Really Mean</th>
<th>10:00 - 12:00 NOON Interview and Interrogation &quot;JUST DO IT&quot;</th>
</tr>
</thead>
<tbody>
<tr>
<td>NCCA TBA</td>
<td>Mark Handler, APA Editor Raymond Nelson, APA Director</td>
<td>Chad Russell APA Treasurer</td>
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#### 12:00 Noon - 1:00 PM Lunch On Your Own

<table>
<thead>
<tr>
<th>1:00 - 5:00 PM Screening Exams</th>
<th>1:00 - 3:00 PM What We Might Know Wrong Jamie McCloughan APA President-Elect</th>
<th>1:00 - 5:00 PM RNR: Bringing PCSOT into the 21st Century Don Grubin PCSOT</th>
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<td>NCCA TBA</td>
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#### 2:45 - 3:00 PM Break Sponsored By: **Texas Association of Polygraph Examiners**

<table>
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<tr>
<th>(CONT'D) Screening Exams</th>
<th>3:00 - 5:00 APA Membership Exam Jamie McCloughan APA President-Elect</th>
<th>(CONT'T) RNR: Bringing PCSOT into the 21st Century Don Grubin PCSOT</th>
</tr>
</thead>
<tbody>
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**APA Magazine** 2017, 50 (1)
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<tr>
<th>Time</th>
<th>Classroom A</th>
<th>Classroom B</th>
<th>Classroom C</th>
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<tbody>
<tr>
<td>8:00 - 12:00</td>
<td>The Probable Lie Pre-Test Interview</td>
<td>Lessons Learned About Testing Serious Sexual</td>
<td>Developing and Implementing an Internal Quality</td>
</tr>
<tr>
<td>NOON</td>
<td>Milton O. &quot;Skip&quot; Webb</td>
<td>Assaults and Ethics Charles Slupski, APA Past</td>
<td>Control Policy</td>
</tr>
<tr>
<td></td>
<td>APA Past President</td>
<td>President, AIIP School Director</td>
<td>J. Patrick O’Burke</td>
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<td>(disponible en Espanol)</td>
<td>PCSOT</td>
<td>APA President</td>
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<td>12:00 Noon - 1:00</td>
<td>Lunch On Your Own</td>
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<td>Noon</td>
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<td>1:00 - 2:45</td>
<td>Legal Issues</td>
<td>Interview and Interrogation</td>
<td>Developing and Implementing an Internal Quality</td>
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<tr>
<td>PM</td>
<td>Gordon L. Vaughan, Esq.</td>
<td>Marty Woods SA FBI</td>
<td>Control Policy</td>
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<td></td>
<td>APA General Counsel</td>
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<td>J. Patrick O’Burke</td>
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<td>APA President</td>
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<td>1:00 - 5:00</td>
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<tr>
<td>3:00 - 5:00</td>
<td>TBA</td>
<td>(CON’T)</td>
<td>Testing the Adult and Juvenile Sex Offender</td>
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<td>PM</td>
<td>Darryl Starks APA Director</td>
<td>Interview and Interrogation</td>
<td>and Their Differences</td>
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<td></td>
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<td>Marty Woods SA FBI</td>
<td>Sabino Martinez</td>
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<td>APA Director</td>
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<td>3:00 - 5:00</td>
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<td>PM</td>
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<tr>
<td>APA ANNUAL BANQUET AND AWARDS</td>
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<tr>
<td>6:30 - 7:00 COCKTAILS</td>
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<tr>
<td>7:00 PM DINNER</td>
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</tbody>
</table>
## FRIDAY, SEPTEMBER 1, 2017

### 7:30 - 8:00 AM Break Sponsored By:

**CLASSROOM A (disponible en Español)**
- 8:00 - 12:00 NOON
  - Pretest Interview Using Directed Lie
  - Gary F. Davis, APA Director

### 9:45 - 10:00 AM Break Sponsored By:

**CLASSROOM B**
- 8:00 - 12:00 NOON
  - PCSOT
  - TBA

### 12:00 Noon - 1:00 PM   Lunch On Your Own

**CLASSROOM C**
- 8:00 - 10:00 AM
  - Progress of Research Regarding Polygraph in Colombia: A Look to the Automation and the Acquaintance Test Using Images
  - Manuel Novoa, Director Latin American Polygraph Institute

### 12:00 Noon - 1:00 PM   Lunch On Your Own

**CLASSROOM B**
- 10:00 AM - 12:00 NOON
  - Practice of Polygraph Use in Court Proceedings in Russia and the Eurasian Region
  - Said Khamzin, APA Member

### 1:00 - 3:00 PM

**CLASSROOM C**
- 1:00 - 3:00 PM
  - DLC Single Issue Technique
  - Rodolfo Prado
  - APA Member

### 3:00 PM

**CLOSING REMARKS**
- James B. McCloughan
- APA PRESIDENT
ACADEMY OF POLYGRAPH SCIENCE

SIMPLIFYING POLYGRAPH
For Law Enforcement, Government & Private Examiners

www.apsPolygraphSchool.com

HURRY, SIGN UP NOW!

Upcoming Courses

Basic Forensic Examiner’s Course
January 16 - March 24, 2017
May 1 - July 7, 2017

PCSOT Course
March 27 - March 31, 2017

Advanced Forensic Examiner’s Course
July 10 - July 14, 2017

About APS Polygraph School

Our objective here at APS is to provide our students with the best education and training in the best practices of the polygraph profession. This comprehensive instruction consists of the most scientifically reliable, valid and up-to-date principles and techniques.

Our training will prepare students to perform ethical, valid, and reliable single issue, event-specific issue and multiple-issue exams proficiently. Our courses are designed to provide the highest quality, tailor-made instruction in both the classroom and laboratory settings. Upon graduation, students will be ready to effectively conduct screening and diagnostic polygraph examination techniques.

CALL (630) 860-9700 Ext. 235 for reserved scheduling!

E-mail John@StoeltingCo.com

Academy of Polygraph Science • 8695 College Parkway, Suite 2160 • Fort Myers, Florida 33919
For registration, tuition and general questions, contact John Park:
Phone: (630) 860-9700 Ext. 235 • Email: John@StoeltingCo.com • Website: www.apsPolygraphSchool.com
POLYGRAPH

Best Practices & Legal Issues

WHEN:
May 24 - 26th, 2017

**ADDITIONAL 2 DAY TRAINING AVAILABLE ON**

MAY 22 & 23, 2017

*NEAPP MEMBER COST $75*

ADVANCED INTERVIEW TECHNIQUES FOR SEX AND DOMESTIC VIOLENCE CASES

WHERE:
Ramada Saco
352 North St, Saco, ME 04072
Phone: (207) 286-9600
SPECIAL ROOM RATE OF $84.95 PER NIGHT

This is a split 5 day workshop that will provide training on the latest examples of best polygraph practices and polygraph related legal issues.

Additionally there is a separate 2 day course of instruction aimed at the enhancement of interviewing skills and question formulation by improving one’s ability to successfully "listen" to those that have been impacted by violence and refine an individual’s skills for working with perpetrators of violence. This material utilizes research from the fields of traumatology, neuro-psychology, linguistics, polygraph, child protection, behavioral profiling and forensic psychology.

Email: mainepolygraphassociation@gmail.com
**MONDAY & TUESDAY, MAY 22-23, 2017**

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
<th>Presenter</th>
</tr>
</thead>
<tbody>
<tr>
<td>8:00 Am – 9:00 Am</td>
<td>Registration &amp; Coffee</td>
<td></td>
</tr>
<tr>
<td>9:00 Am – 4:00 Pm</td>
<td>The Use Of Polygraph With Sex Offenders. An In-Depth Study Of The Typologies Of The Sexual Offender And Their Victims For Investigators, Probation And Parole Officers, Child Protective Agencies, Mental Health Clinicians, First-Line Responders And Victim Advocates</td>
<td>Cara Kent, M.A.; LCPC, Me Licensed Polygraph Examiner</td>
</tr>
<tr>
<td>12:00 Pm – 1:00 Pm</td>
<td>Catered Lunch</td>
<td></td>
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**WEDNESDAY, MAY 24, 2017**

<table>
<thead>
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<tbody>
<tr>
<td>8:00 Am – 9:00 Am</td>
<td>Registration &amp; Coffee</td>
<td></td>
</tr>
<tr>
<td>9:00 Am – 10:00 Am</td>
<td>Opening Ceremony</td>
<td>York County Sheriff Bill King And Honor Guard</td>
</tr>
<tr>
<td>10:00 Am – 12:00 Pm</td>
<td>Ethics Attorney Steve Schwartz</td>
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<tr>
<td>12:00 Noon – 1:00 Pm</td>
<td>Catered Lunch</td>
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<tr>
<td>1:00 Pm – 4:00 Pm</td>
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**THURSDAY, MAY 25, 2017**

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<th>Time</th>
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<td>8:00 Am – 9:00 Am</td>
<td>Coffee</td>
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<tr>
<td>9:00 Am – 12:00 Pm</td>
<td>Best Practices – Jamie McCloughan, APA President-Elect</td>
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**FRIDAY, MAY 26, 2017**

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<tr>
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<td>9:00 Am – 10:00 Am</td>
<td>View From The Bench</td>
<td>Ma Superior Court Judge Kenneth Fishman</td>
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<tr>
<td>10:00 Am – 12:00 Pm</td>
<td>What The PLC Examiner Must Know To Run DLC Exams</td>
<td>Dale Austin, US CBP</td>
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<td>12:00 Pm – 1:00 Pm</td>
<td>Catered Lunch</td>
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<td>1:00 Pm – 4:00 Pm</td>
<td>Panel Discussion</td>
<td>F. Lee Bailey – Keynote Speaker</td>
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**NOTE:**

“The Presentations Of The Speakers And The Materials At This Seminar Are Designed To Provide General Information On The Seminar Topics Presented In An Effort To Help Polygraph Professionals Maintain Their Professional Competence. The Views Of The Speakers And Contents Of The Materials Presented Have Not Been Approved By The Board Of Directors Of The American Polygraph Association (APA) And, Accordingly, Should Not Be Construed As Representing The Policy Of The American Polygraph Association. The Presentations And Materials Provided At This Seminar Are Provided With The Understanding That The APA Is Not Engaged In Rendering Professional Or Legal Services.”
Speakers

GAIL ROBERSON, MS LPC

Gail has been a practicing Sex Offender Treatment Provider for more than 17 years. She was the first treatment provider in Kansas to adopt the Containment Model for sex offender treatment.

Bryant Crosby MS

Bryant is a Licensed Polygraph Examiner in Nebraska and an APA Certified PCSOT examiner. He has conducted PCSOT examinations in Kansas, Nebraska, Iowa and Missouri. He is considered an expert on PCSOT testing.

Gary Davis, Director

Gary is the Director of the Academy of Polygraph Science. He is licensed in the States of Oklahoma and Nebraska and practices in Kansas and Missouri where licensing is not required. Gary has been an examiner since 1982 and PCSOT examiner since 1989. He has qualified as an expert in PCSOT testing in the Courts of Kansas and Missouri.

Mail your registration to:

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620 Wheat Lane Wood Dale IL 60191
630-860-9700
Syllabus

Day One: (8.25 hours)

A Introduction into Treatment of Sex Offenders and Current treatment theory (ATSA Guidelines)

Integration of Polygraph into the Treatment Model

Psycho-pathology of Sex Offenders; Impact on Victims and the Role of Offenders Spouse in the treatment Model. (Therapist Interview videos of Offenders, Victims and Spouses)

Day Two (8.25 hours)

Day One Review and Questions

The Scientific Basis and Problems with Screening Examinations

Use of Validated Techniques and statistically valid scoring model

Integrating computer scoring to insure objective analysis

Interviewing the Sexual Offender, suitability for testing and Legal Aspects of sex offender testing

Day Three (8.25 hours)

Review Day Two and Questions

APA Best Practices

Structured Interviewing of Offenders; the use of interview booklets

Question Formulation for History, Maintenance and Monitoring Examinations

Practical Exercise in Question Formulation

Day Four (8.25 hours)

Practical Exercise in Test Data Analysis (using real life charts)

Practical Exercise in Interviewing the Sexual Offender

Day Five (7.0 hours)

Preparing written reports for Clinicians, Courts and Corrections

Course Review and Critique

APA Written Examination for APA Members

Completion Examination for Non APA Members

REGISTRATION

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One of the goals that I have wanted to accomplish as your President was establishing a Model Policy for Quality Control for all polygraph examiners. There are several difficulties with this task; including creating a policy that is applicable to all, identifying and understanding what quality control is, and trying not to create “quality control experts”. I will try and take these one at a time in this article. However, many examiners will question whether there is even a need for a Model Policy. After all, the American Polygraph Association has Standards of Practice, Model Policies for various specialties within polygraph, and a meta-analysis to help guide test format selection and question development. Everyone is compliance, right?

I was contacted last week by a sports promoter that needed polygraph services to attempt to keep banned substances out of their competition. They had some requirements that had to be consistent with what their current polygraph examiner was providing. The polygraph tests had to be given in fifteen (15) minutes and four (4) per hour due to the number of contestants. The tests also had to cost no more than $50 per exam. The promoter said this was fair since their current examiner would make about $5000 in two days. You can do the math, but that is about fifty (50) exams a day.

It took me a little bit of time to sort this out in my head. I thought it was a joke, or some misunderstanding and the use of CVSA. However, there is a real examiner using a polygraph instrument to do this sort of nonsense. I explained to the promoter what a real polygraph exam should consist of and why this promoter was getting cheated out of what he was paying for, a test for detection of deception. Ultimately, the promoter admitted that he knew the polygraphs he was paying for were a sham. However, he stated that every now and then somebody admitted a violation. Once I explained civil liability to him he became very concerned and understood this outweighed any utility value.
At a conference within the last 60 days, I had a respected examiner, with a subordinate examiner present, explain that he was using six (6) to eight (8) questions in his pre-employment examinations for several law enforcement agency clients. If you have read the APA meta-analysis you know there is no such single format that would fit. I subsequently found out that the examiner was using an R/I format. I am told that others have told him the format lacks the research to support using this format. The rationalization explained is that the clients like what is being done.

I could go on and on but I think you get the point. It is troubling to me that his normalization of deviance for examiners show either deliberate indifference, or a lack of understanding of Standards of Practice and Model Policies. I believe that a Quality Control process should involve at a minimum a simple inspection for compliance with established Standards of Practice. The APA has done fantastic effort in publishing Standards, but we know little about what is occurring in the field. One of my old supervisors told me that people don’t do what you expect, they do what you inspect. It is not a great touchy feely management philosophy, but it does underscore that we tend to do better when we know another person will look and objectively ask about our work.

The sharp edge to the other side of this issue is to avoid creating some cottage industry of “expert” quality control reviewers. This should not be the goal. Many ex-
Examiners cannot afford expensive reviews from external reviewers, nor should the process drift to a “brother in law” approach of covering for your co-worker. Another aggravating concern is the ego driven fixation of the “expert” arguing over a single exam and individual spot scores. There really should not be an “expert” in Test Data Analysis. There are good established scoring models. You should be able to point to and explain what you did. There can be some but limited deviation from others review of decision making. Of course, there is a lot to be understood from that last sentence. Remember polygraph works because of what it is and not who you are.

One of the most economical and objective methods to utilize in test data analysis is the scoring algorithms provided with most computer polygraph instruments. Yet we know that many examiners, and even entire agencies, avoid the use of scoring algorithms. This is baffling to me. I know that many critiques will say it is a “crutch” to rely on an algorithm. I know some will say that you need to remove artifacts from our current algorithms for them to work, and you would be correct. Clearly, some examiners for a variety of reasons feel some discomfort from using scoring algorithms. This is troubling and we need to fully understand why.

If our discomfort stems from dissatisfaction with a particular algorithm, then we should be insisting our polygraph instrument manufacturers give us better analytical tools. If we are concerned with artifacts distorting what the algorithm does, then we should ask scientists to produce algorithms that can recognize movement, or the countermeasure boogeyman. This is not beyond the reach of science. However, we should be vocal in asking the smart people in our profession provide analytical tools to objectively review polygraph data.

As an exercise, sit down today and write out a Quality Control process for your agency or business that will show an audit process to demonstrate your compliance with the APA Standards of Practice and Model Policies. Can you show how your written process helps avoid bias from creeping into your Quality Control process, or what you do? If you see that your internal policy is wrapped around your expertise and experience, you may have a problem. If you see your process includes a co-worker who would be inclined to never disagree with you, then you may have a problem. We may be the only profession to lack an unbiased quality control requirement.
I know many will not agree with what I have written here. I have learned from training that people make decisions from an emotional basis or a reasoned basis. Did you ever wonder why you often see heated discussions on chart interpretation instead of reasoned analysis? Richards Heur’s book on intelligence analysis is applicable to scientific understanding of polygraph decision making. Heur points out that the longer are exposed to an incorrect assumption, the greater the amount of information required to invalidate that assumption. Therefore, objectivity and reasoned analysis should be supported by external analysis processes that cause a reduction in our human biases and flaws. A good way to start is write out your own guide to understanding and eliminating these biases in your forensic opinion.

Use your scoring algorithms on your instrument. Call your manufacturer and ask them to demonstrate why the scoring algorithm, does what it does and what your questions are. If you are dissatisfied, ask them to give you a better scoring algorithm to help with unbiased test data analysis. If your hand score and the algorithm are in conflict, you are going to go with what you feel the most comfortable with. However, take that effort to explore with someone else why there is a conflict. Is there something in what you did that could have been done differently? If you have some input on the process of a Model Policy please get in touch with Chairman Walt Goodson, or Jim Gallagher to talk directly with the committee that is working on this.

If you did not know, we are having our next annual conference at the J.W. Marriot resort in Las Vegas. This is expected to be the largest attended conference in APA history. I hope you will join me there for what will be the finest training anywhere in the world. We will have an excellent range of speakers and topics. Make your hotel reservations now or you may find yourself without a room at this five-star resort. The APA is planning on having the entire property to ourselves for this event. I hope to see you there.
Gary Davis  
**Director**

On January 1, 2017, the new membership requirements took effect. The time period between the membership vote and the effective date have been turbulent. Members have scrambled to upgrade before the change took effect. Many have taken the APA examination and successfully upgraded their membership status.

The biggest challenge has been the number of applicants from non APA accredited schools. Many of the applicants graduated from foreign schools or schools without much history. Lisa the National Office Manager and Stephanie, Assistant Office Manager have done an outstanding job fielding requests from both members and those seeking membership. While the change in Membership status has caused confusion and discontent, the change was necessary.

As a profession we are often viewed with skepticism usually by those with 20 year-old research data, those relying on third party horror stories and those who are generally misinformed.

To counteract this misinformation we as a profession must admit we are not perfect. Nothing involving human beings is without error. What we need to do is capitalize on our strengths. We must continue to support research into all forms of detection of deception. In our own practices we can strengthen our position by using validated techniques, up to date scoring models and use computer analysis to demonstrate an objective approach to detection of deception.

We will never be recognized as a Forensic Science until we begin to act like one. Failure to change may well destroy the most effective method of detection of deception available today. The impact on me is minimal since I am in the twilight of my career. I have spent half my life engaging in detection of deception and believe in what we do is for the public good. Because of our work, the innocent has been set free, the guilty identified and applicants for sensitive positions screened. Let us continue the good work by standing together for the future of our profession.

The time is nearing for selection of officers. If you are interested in serving your association remember to file early. We need your input.
Hello, APA Members. With the Holidays behind us, it’s time to tackle the New Year. The Board and the National Office have been busy, as usual, with renewals, Membership upgrades and applications and other business.

The Ethics Committee has been very busy addressing several new Cases and completing challenging ones from last year. Our Complaints continue to be limited which is a good thing. Again, this is evidence that we are following our guidelines and best practices. Work is still ongoing with the Committee Policy.

As a Board Member I have continued to assist Members with issues as requested and, as always, I am here to help with problems if I can. During the month I assisted the Tennessee Polygraph Association with addressing Rule and Law change recommendations to better balance with current Polygraph applications. Feel free to call or email me if I can be of assistance to you.

I close wishing you all well and looking forward to a great year.

Steven Duncan
Director

Greetings!

I hope to find all of you in good health and in great spirits. As the chair of the awards committee I would like to get all of you involved in selecting candidates for the banquet awards. You can access the information on the APA website and read the qualifications for each award. I know that some of you have expressed concerns about who is receiving the awards but to be frank with all of you sometimes we don’t get enough choices. So please get involved and submit candidates you believe should receive recognition for their contributions to our profession. We also have the scholarship award that awards free tuition to a polygraph course of their choice and an instrument to go along with it. I am sure that you know of someone that is interested in becoming a polygraph examiner and is a qualified candidate. I hope to be hearing from as many of you as possible.

Thanks!

Sabino Martinez
Director
The future is coming quickly. In fact, I sometimes have the notion that time is actually speeding up. Each passing year seems to fly by faster than the last. And while a great many things about the future are presently uncertain. The one thing that is certain about the future is that it will not be exactly the same as the past. It is reasonably certain that we should study the past so that we might become more effective and more efficient in the future – or the very least not repeat the same errors from the past. If we learn from the past, and if we use all our resources, in terms of technologies, information, communication, and problem-solving tools, then we are much more likely to enjoy a successful future – and correspondingly less likely to become frustrated by an unsuccessful future.

With all this in mind, I have a prediction: the polygraph profession will begin to change. Decades ago polygraph examiners were more likely to sell “expertise” than science as the basis of the test validity. At times this included subtly or not so subtly encouraging both policy makers and the public to harbor hope that the polygraph should be virtually infallible – if you have the right expert. Of course the polygraph is not infallible. Errors occur. And when they did occur people were justifiably upset – because they were told to expect infallibility. For a time, a solution to the aggravation over polygraph errors seemed to be to find fault with the examiner as having insufficient expertise - thereby achieving two goals, re-establishing a belief that the polygraph should be infallible, and marketing our expertise as the antidote to a less competent examiner who produced an error. Along the way we demonstrated our professionalism and competence with our long history of work experience, training, certifications, and continued training.

In response to critical threats to the existence and use of the polygraph as a legitimate scientific test, we could always find and describe some dramatic case examples to make an emotional impact, and in doing so we helped people to understand what kind of evil-doer might have gone undetected, or what kind of ethically questionable person may have gained employment in our prestigious agencies, or what kind of sexually deviant person might be living un-monitored in our neighborhoods. To be sure, this is a tactical deflection away from the questions about science and validity.
of the polygraph (an appeal to emotion) – but it was nonetheless effective. The main reason this “utility-focused” argument was effective, is that historically there has been no real scientific alternative to the polygraph. Which brings us to why the polygraph profession may now need to prepare for change.

In the past we were more free to act as if the test results don’t matter – because there was no alternative to the polygraph. However, the reason I predict that the polygraph profession must prepare for change is that the polygraph is no longer the only commercially available scientific test for credibility assessment and lie detection. We can try to pretend that the existence, and commercial availability, of new technologies won’t change anything, but that would be unwise. We could continue along as we have for decades, but that will leave us unprepared to respond to reality when other people’s perceptions and expectations begin to change. In the past we all knew the story - everybody hates the polygraph, we say it should be infallible but everyone knows it is not, and in the end, they didn’t really care if the polygraph was not perfect because they enjoyed the sense of confidence and bravado, and they enjoyed the ability to extract information and confessions. In fact, former President Nixon once said of the polygraph, “…I don’t know anything about polygraphs, and I don’t know how accurate they are, but I know they’ll scare the hell out of people.” This statement, though somewhat entertaining – is a disservice to our profession.

When difficult arguments arose in the past – we could always fall back onto a suggestion that polygraph test results should never be used alone as a basis for decisions that affect a person’s rights and liberties - which people tend to interpret as a suggestion that polygraph test results should never be used. The meta-message – the message within the message – was that polygraph test results are not useful (i.e., useless) without a confession, and polygraph test results are similarly not useful (useless) when we obtain a confession. However, many public safety agencies refuse to hire anyone with less than a favorable polygraph test result - so the test result does seem to matter. There seems to be then, a nagging inconsistency in our discussion whenever we talk about the test results. Until recently, discussions about test results were characterized by an obvious absence of scientific and probabilistic discussion – instead emphasizing the competency and experience and training and expertise of

From the Board
the examiner as the basis for the validity of the test.

I am not predicting that anything will change suddenly, only that things may begin to change. They will change simply because – if these new technologies actually work – policy makers and the public will slowly start to realize they have a choice. They can continue to spend their lie-detection budgets on the polygraph – which is perceived by the public and policy makers to be mid-century technology – and so is perceived as overly subjective, overly expensive, overly uncomfortable, and overly vulnerable to human interference from either the examinee or the examiner. If new technologies for lie detection and credibility assessment can survive economically during the early years of their entry into the marketplace, then it is inevitable that they will begin to change the expectation of policy makers and the public as to which lie-detection and credibility assessment technologies they will prefer when they want to use the test result.

The simple formula for long term successful will be this: if new technologies are perceived as better, faster, and cheaper, their use will increase. Which brings us back to the future of the polygraph. The future of the polygraph and polygraph professionals will be more secure if we continue to evolve away from subjective mid-century technologies and emphasize the scientific and probabilistic value of the test result. It will do no good to continue to encourage perceptions of infallibility. My prediction is that our interviewing methods will also need to continue to evolve to become less dependent on psychological manipulation – something that has been associated with self-report information of questionable or dubious value. My prediction is that the future of the polygraph involves a greater emphasis on science and a greater emphasis on the use of 21st century technologies – including the use of intelligent algorithms to evaluate data quality, artifacts and faking, in addition to quantifying the test result itself.

If I am incorrect then the polygraph may be at risk for being thought of as simply an instrument-assisted interrogation, for which the test result is not useful. If so, then we are likely to observe a market and policy shift towards the use of other scientific technologies when people actually want a scientific test result. Perhaps I am wrong in my prediction. As the saying goes: prediction is difficult, especially concerning the future. Regardless, I think it would be unwise for our profession...
to neglect to prepare ourselves for a future that will be different from the past. To me this means that our profession should continue to strengthen our scientific competence, and we should begin learning to make use of 21st century interviewing and data analysis technologies. The changes I imagine will involve a range of engineering and computational technologies along with sociological/psychological technologies. These changes will continue to ensure that the polygraph remains at the forefront of the science of credibility assessment and lie detection.
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CONTACT:

UNITED STATES: Nathan J. Gordon, Director
E-Mail: truthdoctor@polygraph-training.com

MIDDLE EAST: Essam Ali Gamal-El-Din
Voice: 2027607178 Cell: 2010-164-0503
E-Mail: academytruthseeker@yahoo.com

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How To Deal With Those Difficult Examinees

By George Baranowski

George Baranowski will share his wisdom with us each magazine as a regular column.

This is a good question, what do you do when a person you’ve been asked to conduct a polygraph examination with is annoying, deliberately offensive and it seems like he or she makes everybody uncomfortable. What examiner hasn’t ever experienced this. This is someone who continually displays anger or conceit, or maybe even superiority. If the subject is on probation of course, you can say something like the person is “non-cooperative” or just do things to fuel that haughtiness or threaten them with lock up, and nothing ever changes. Yeah, and I realize that there are also sources who would give advice just to deal with it, it’s the guys or gals problem, and not yours.

However, if this person is, for example, someone who is a PCSOT individual who will be on probation for several years and will probably be in your examination chair about every four to six months, you might want to think of a possible avenue that will not only

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help you but might even be of great assistance to this subject.

One thought might be to understand the source of your own annoyance before you react. This kind of helps you figure out whether you’re being realistic in taking offense to this person’s demeanor. If you call the person out, you might even create more unnecessary tension. With that in mind, here’s a few thoughts that might work pretty well for your own follow up behavior.

First, “Ignore it.” An obnoxious individual may simply want attention. Is he or she just trying to get a rise out of you, or any others that he or she has contact with? If ignored, I’ve seen that behavior diminish on its own. Oh, maybe not right away, but about the third, or maybe even the second time I have contact with them. I have to tell you that change of attitude or behavior change always does amaze me. I find that you have to be consistent in ignoring the behavior.

Of course, another alternative is to confront the offender but recognize that your confronting or corrective action might only anger him or her. One thing that I thought was interesting that individuals that I’ll call “prejudiced people” seem to be much more likely to change if they can first be made to feel good about themselves. Try asking good, self-affirming questions of a person whose behavior you’re trying to soften. Shining up someone’s self-esteem may help him or her feel less threatened. Similarly, if the offender won’t seem to soften up, another approach could consist of a little praise when the humor is more mature.

The experts on pre-test interviews and related observations and behaviors like the John Reid Associates and Stan Walters note in their work that the attitude displayed by the examiner during pre-test interviews should include being cordial and polite, interested and sincere. I agree, and I feel it should stay even-tempered and avoid challenging the examinee’s statements or alibis.

An emphasis that I have found myself repeating that also seems to help is relating that the polygraph test is a “NOT A LIE DETECTOR” as much as it is a “TRUTH DETERMINATE” procedure. The popular belief is of course is that it is a lie detector and the automatic attitude from the subject taking the test is that it is an instrument process to “Catch me doing something I’m not supposed to be doing” or “Catch me lying.” However, in bringing up that this is a “Truth Determinate” process, I’ve found that the belief of this event appears to subconsciously change
a thinking that “This guy wants to prove I’m telling the truth. Everyone else things I’m guilty,” or that he did it, or whatever. I’m saying that this has worked for me.

Also, your own appearance and behavior has to match this attitude. This includes facial expressions of understanding and acceptance. Obviously, expressions of disgust, disbelief or anger work against this presentation.

The behavioral attitudes of examinees obviously differ from composed and cooperative to nervous, angry and even fearful. We experience examinees who are overly anxious and even overly polite, guarded and complaining, plus an much even longer list. But I feel that our own behavioral attitude is an important game changer.

I wanted to share with you an almost comical experience I had maybe about 20-years ago with an individual who was on probation for a sexual molestation offense. He was tough, evasive, complaining, ridged, and even confrontational. However, I was able to maintain an objective disposition (as best I could, I feel I’m much better at this now than I was 20-years ago,) but the turning point came maybe about the third appointment he had with us. He was required to pay for his examination. What made this unusual was that instead of paying dollar bills for the test, he had first gone to the bank and obtained $250 in quarters, and brought this to pay for his test, thinking this would be something that I would be angry about this kind of defiance. However, instead of being angry about this, Paula and I look as if we were more amused, and we laughed about it. More importantly, his attitude also changed. Oh by the way, the tons of quarters he presented really did not present any kind of problem because they were at least rolled up. He disclosed the name of the bank he had used, and later that day I just returned to that same bank and exchanged the quarter mine for paper cash.

The important thing about this event was the change in this examinees attitude from trying to be disruptive and non-cooperative to cooperative and understanding. Anyway, the message here might be, “don’t turn away a ton of quarters” or any negative attitude or uncooperative behavior. Or put another way, let YOUR attitude do the talking.
Five Minute Science Lesson: 
An Algorithm to “Roll-Your-Own” Standard Deviations

Raymond Nelson¹

¹. Raymond Nelson is a psychotherapist and polygraph examiner who has conducted several thousand polygraph examinations. He has expertise in working with perpetrators and victims of sexual crimes and other abuse and violence. Mr. Nelson has expertise in statistics and data analysis and is one of the developers of the OSS-3 scoring algorithm and the Empirical Scoring System. He is a researcher for Lafayette Instrument Company (LIC), a developer and manufacturer of polygraph and life-science technologies, and is also a past-President of the American Polygraph Association (APA), currently serving as an elected Director. Mr. Nelson teaches and lectures frequently throughout the United States and internationally, and has published numerous studies and papers on all aspects of the polygraph testing, including the psychological and physiological basis, test data analysis, faking/countermeasures, interviewing and question formation and test target selection. Mr. Nelson has been involved in policy development at the local, state, national and international levels in both polygraph and psychology, and has testified as an expert witness in court cases in municipal, district, appellate, superior and supreme courts. Mr. Nelson is also the academic director of the International Polygraph Training Center (IPTC). There are no proprietary or commercial interests and no conflicts of interest associated with the content of this publication. The views and opinions expressed in this publication are those of the author and not necessarily those of the APA, LIC or IPTC. Mr. Nelson can be reached at raymond.nelson@gmail.com.
A standard deviation is a statistical measurement of variation or dispersion in a set of data. Whereas the average or mathematical mean is a measurement of central tendency, intended to describe how the data points similar are similar to each other, the standard deviation is a statistic that describes how the data points are different from each other – how the data vary. A simpler measurement of dispersion would be to calculate the range between the maximum level and minimum level values, but the standard deviation gives us much more information about the density or amount of variation of data at each level. A large standard deviation indicates that data points are spread out away from the mean. A small standard deviation indicates that the data are clustered close to the mean value. The unit of measure for a standard deviation is the same unit of measure as for the data values. If the data are measured in centimeters then standard deviation units are also centimeters. Similarly, if the data are measured in kilograms then the standard deviation units are also kilograms. Having the same unit of measure as the data make for more intuitive comparison and understanding of the data magnitudes expressed by standard deviation units. The standard deviation is represented by the Greek letter sigma (σ) or the letter (s).

**Procedure – how to “roll-your-own” standard deviations**

Use the following steps to calculate a standard deviation.

**Step 1: Identify the data set**

Consider these values, Data

1
2
3
4
5
Step 2: Calculate the mean

Sum all the values and then divide the result by the number of values.

<table>
<thead>
<tr>
<th>Data</th>
<th>Cumulative Sum</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
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</tr>
<tr>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>3</td>
<td>6</td>
</tr>
<tr>
<td>4</td>
<td>10</td>
</tr>
<tr>
<td>5</td>
<td>15</td>
</tr>
</tbody>
</table>

Mean = 15 / 5 = 3

Step 3: Calculate the differences

Subtract each data value from the mean

<table>
<thead>
<tr>
<th>Data</th>
<th>Subtract the mean</th>
<th>Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>-3</td>
<td>-2</td>
</tr>
<tr>
<td>2</td>
<td>-3</td>
<td>-1</td>
</tr>
<tr>
<td>3</td>
<td>-3</td>
<td>0</td>
</tr>
<tr>
<td>4</td>
<td>-3</td>
<td>1</td>
</tr>
<tr>
<td>5</td>
<td>-3</td>
<td>2</td>
</tr>
</tbody>
</table>

Step 4: Square all the differences

Subtract each data value from the mean

<table>
<thead>
<tr>
<th>Data</th>
<th>Subtract the mean</th>
<th>Difference</th>
<th>Squared differences</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>-3</td>
<td>-2</td>
<td>4</td>
</tr>
<tr>
<td>2</td>
<td>-3</td>
<td>-1</td>
<td>1</td>
</tr>
<tr>
<td>3</td>
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<tr>
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<td>1</td>
</tr>
<tr>
<td>5</td>
<td>-3</td>
<td>2</td>
<td>4</td>
</tr>
</tbody>
</table>
Step 5: Sum all the squared differences
Subtract each data value from the mean

<table>
<thead>
<tr>
<th>Data</th>
<th>Subtract the mean</th>
<th>Difference</th>
<th>Squared differences</th>
<th>Cumulative Sum of Squared Differences</th>
</tr>
</thead>
<tbody>
<tr>
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<td>-2</td>
<td>4</td>
<td>4</td>
</tr>
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<td>5</td>
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<td>3</td>
<td>-3</td>
<td>-0</td>
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<td>5</td>
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<tr>
<td>4</td>
<td>-3</td>
<td>1</td>
<td>1</td>
<td>6</td>
</tr>
<tr>
<td>5</td>
<td>-3</td>
<td>2</td>
<td>4</td>
<td>10</td>
</tr>
</tbody>
</table>

Step 6: Calculate the variance

Divide the sum of squared differences by the N. We use the N whenever the set of data values is a population (when the data contain all possible values in a population). In this case it is called a *population variance*.

Population variance = 10 / 5 = 2

However, dividing by N when the data set is a *sample* (when the data do not contain all possible population values) will give a biased estimate of the population variance. In this case it is called a *biased variance estimate* for the population.

To calculate an *un-biased estimate of the population variance* – also known as a *sample variance* – using a sample data set that does not contain all possible population values, we divide by N-1.

Sample variance = 10 / (5-1) = 10 / 4 = 2.5

Step 7: Calculate the standard deviation from the variance

Take the square root of the variance to get the standard deviation. Population standard deviation = $\sqrt{2} = 1.414$

For the sample standard deviation take the square root of the sample variance.

Sample standard deviation = $\sqrt{2.5} = 1.581$
What does a standard deviation tell us? What can we do with it?

Standard deviations are highly useful statistics because they tell us the distance of a typical data value from the mean value. We can use the standard deviation to determine statistical significance. One simple and common way is to report the mean and standard deviation from some experimental data, and regard values more than 2 standard deviations away from the mean as statistically significant. It happens for many natural phenomena, approximately 95% of all values will be observed within 2 standard deviations (above or below) the mean value.

The standard deviation can be used to calculate the density and area under the normal distribution, and can be used as a measure of uncertainty. For example: we can calculate the mean and standard deviation for a group of studies on polygraph classification accuracy. We can then use the mean and standard deviation to test the hypothesis that test accuracy is at a certain level or in a certain range.

A very interesting use of standard deviations is to calculate standard errors (SE), often referred to as a standard error of the estimate or standard error of the statistic – most often the standard error of the mean estimate or standard error of the mean (SEM). The mean is a statistic (i.e., an estimate of the population) when it describes a sample of data. When the mean describes the entire population is called a parameter. The SEM is the standard deviation of the sampling estimate of the population mean (or the standard deviation of the error of the sampling estimate of the population mean). The SEM is calculated as

\[
SEM = \frac{s}{\sqrt{N}}
\]

Using the data above as a sample for a larger population,

\[
SEM = \frac{1.581}{\sqrt{5}} = 1.581 / 2.236 = .707
\]

We can then use the SEM to calculate a confidence interval for the population mean. CI = 3 +/- 2 * .707 = [1.586, 4.414]

This tells us that, based on the sampling data above, we can be 95% confident that the true population mean is between 1.586 and 4.414. This type of use for the SEM is common in opinion polls and social surveys. In the polygraph context, we can use the SEM to calculate a confidence interval for classification accuracy rates such as test sensitivity and specificity or for false-positive and false-negative error rates. In this example, the lower limit of the confidence interval for
the population mean is 1.586, while the upper limit for the confidence interval for the population parameter is 4.414. When selecting one of these – upper or lower limit – for emphasis, it is important to always attention to the worst-case-scenario, that will guide cautious interpretation and decision making, and avoid becoming enamored with the happier seeming best-case-scenario that will be more likely to lead to some later disappointment and frustration.

Although we can never know the exact true accuracy for polygraph test accuracy (because this would require something impossible – that we conduct and obtain data for every possible test on every possible person in the entire population). Realistically, scientists do not expect to ever know the exact accuracy level for any test. Instead we calculate statistical confidence intervals based on available sampling data – with the known caveat that more data is generally always helpful.

Why learn to “roll-your-own” statistics?

Virtually all computers today will provide convenient tools – in the form of calculators, spreadsheets, interpreters, and code libraries – to calculate standard deviations and standard errors. Scientists and statisticians today will rarely, if ever, calculate a standard deviation manually. Which raises the question: why should you learn to roll-your-own statistical calculations?

The answer is this: to avoid the dumbing-down of our profession and humans in general. Computers today are very powerful, statistical learning and machine learning theories (artificial intelligence) have made great strides in recent years. Children are expected to learn something about mathematics in school, but some adults can go weeks and months, or even years, without the need to complete any calculations other than the simple addition or subtraction necessary to count change when making purchases. The result of our willingness to rely on computers to complete our calculations can be the atrophy of computational, mathematical and logical skills. Another potential result is an almost phobic avoidance of all things mathematical, and, for some, an impulse to avoid reliance on technologies that are difficult for us to understand.

Learning and practicing the principles of mathematics, and the algorithmic procedure to calculate a standard deviation – and actually doing it a couple of times – builds our mental capacity. Without some intimate understanding of what the statistical numbers
actually mean and where they come from there will be a tendency for our reliance on statistical information to becoming easily confused or mis-led. Or, there will be a tendency to reject the use of powerful learning tools that can help us to achieve our goals. Professionals who learn to calculate basic statistics will have stronger intuition and clearer understanding about what the numbers mean and what the data are telling us when we set out to answer real-world problems. Neither statistical learning nor machine algorithms are going to go away. Our choice is to either become more familiar with the use and value of statistical calculations, or to eventually be replaced by computerized robots as when these evolve to the point where they can achieve our goals in a manner that is better, faster and cheaper – simply because machines are not afraid to make use of math and statistics. Professionals who become familiar with the actual calculation of basic statistics are more likely to make confident effective use of the capabilities of algorithms, computational machines and automation as these technologies become available and more prominent in the polygraph and credibility-assessment professions.
“Price is what you pay. Value is what you get.”

- Warren Buffet
Practical Polygraph: Managing the Respiration Sensors During the Polygraph Pretest Interview

Rodolfo Prado, Raymond Nelson and Mark Handler

Respiration sensors are a rich and important source of information during polygraph testing. Standardized field practice requirements today include the use of two respiration sensors, scored together as a single component. Effective introduction and management of the respiration sensors during the polygraph pretest interview – including the explanation of the sensors and attachment of the sensors to the examinee – is an important aspect of a successful and effective polygraph exam.

Potential problems associated with the respiration sensors stem mainly from the fact that it is relatively easy for examinees to notice and voluntarily control their respiration activity during testing, resulting in potential distraction of attention away from the test stimuli. Respiration activity may also affect the quality of other polygraph measurements, and the occurrence of these potential problems may lead to data of suboptimal interpretable quality.

Polygraph examiners will first introduce and discuss the respiration sensors during early stages of a structured
We suggest that examiners limit or forgo the use of the words “respiration” and “breathing” altogether, unless unavoidable. All that is necessary is to show or display the sensors to the examinee, and explain where and how they are attached to the examinee’s body, along with a brief explanation of what they sensors do and the fact that they are non-restrictive.

For example:

These sensors are placed on your upper and lower body area. They monitor and record movement in your upper and lower body areas during the test. It is important that you sit still during the test. For example, keep your arms and feet still and look straight ahead so that you do not move your head and your body during the test. Please remember that having a successful test depends on two things: my ability to give you clear instructions, and your effort toward following those instructions. Do you have any questions about these sensors?

Attachment of the respiration sensors

Respiration sensors are generally attached one at a time, beginning with the lower sensor, with the examinee remaining seated. It makes no difference to the validity or effectiveness of the test if the sensor connections are placed on the right side or left side.
Standards of practice and strict rules are necessary where they affect or support the validity and effectiveness of the polygraph test. Where it does not affect the validity of the test or the ethics of the test, rules serve only to make professionals vulnerable to criticism with no benefit in return.

Respiration sensors have been shown to work well over clothing, and there is never any need to request an examinee to be in a state of undress. Polygraphs are conducted successfully in every geographical and climate zone and every season, including those in which heavier clothing is worn in colder seasons and colder climates. Of course, the polygraph testing environment must itself be of normal comfortable temperature. Casually dressed male examinees can often be asked to remove a jacket without any problem. However, it may be more appropriate to permit ranking officers to remain wearing a jacket that is part of a uniform. In this case, simply place the respiration sensors over the uniform jacket. Similarly, it may become socially awkward and unacceptable to ask female examinees to remove part of carefully selected ensemble such as a business suit or stylish jacket if removal of the article of clothing might produce a sensation or perception of reduction to a partially dressed state. Of course, heavy winter clothing can and should be removed during testing, as long as the examinee remains fully dressed for indoor activities.

It is important for the examiner to maintain professional boundaries while attaching the sensors, avoiding “bear-hugging”, and avoiding asking the examinee to assume an awkward, compromising, uncomfortable or unusual position. At times, it may be useful for an examiner to stand in front of the examinee and using himself or herself to demonstrate how to attach the respiration to oneself. Attaching the sensors from a position behind the examinee may make the examinee feel intimidated or uncomfortable. Examiners should practice attaching the sensors to persons of different physical size. Although the examiner will most often attach the sensors to the examinee, some examiners may also wish to practice and become familiar with how to instruct an examinee to attach the respiration sensors to themselves, if necessary. Additionally, examiners may want to ask the examinee to move the sensor to the center, once it is attached, rather than moving it themselves.

Discussion

Although most examinees will deny attempting to access information about the polygraph prior to the ex-
amination date, many may have, in fact, read information or have spoken to others about the test, including the sensors, test data, testing process and test questions. Examinees who have sought out information on the polygraph may attempt to voluntarily regulate their respiration activity under the belief that this may help them to have better results (e.g., people may believe that slow or controlled breathing is associated with a low-stress or low-anxiety state, and may attempt to create or feign an appearance of tranquility in attempt to increase their chance of passing the test.)

Voluntary regulation of respiration activity is ill-advised. Studies have generally shown that attempts at countermeasures during polygraph testing have little effect on guilty examinees but can have adverse effects for innocent persons. Examiners whose goal is to conduct the polygraph test to a precise result will want to provide clear and concise instructions with a minimum of discussion on the topic of breathing or respiration. Some examiners choose to explain that the respiration sensors as activity or movement sensors. This is acceptable so long as the information is factual. For example: “these sensors monitor and record movement in your upper and lower body areas.”

Some examinees may be concerned about the actual purpose of the respiration sensors, and some others may ask directly if their respiration pattern may affect the test result. It is advisable for examiners to answer these questions in a factual and neutral manner that neither exaggerates nor minimizes the actual purpose of the respiration sensor. Ideally, information and discussion during the early stage of the pretest interview will provide sufficient information to obtain the examinee’s informed consent for testing and minimize the likelihood of remaining unanswered questions. It is preferable to instruct and discuss with the examinee what he or she should do to have a successful test - instead of discussing what not to do (e.g. do not think about your breathing).

Use of “tricks” such as using an unnecessarily high level of pressure in the cardio sensor or other methods to distract the examinee’s attention away from his or her respiration is not advisable. This strategy, may achieve the objective of drawing attention away from respiration activity, but also diverts attention away from the test stimuli. Attempts at convincing the examinee that the respiration sensors do not measure respiration activity, or that respiration, will not affect the test result, is a hazardous strategy that will serve only to damage the exam-
iners rapport and credibility for those examinees who have already acquired information on the polygraph. Again, a factual and neutral explanation of the respiration sensors during the early stages of the polygraph pretest interview should serve to help the examinee to understand what to do in order to achieve a successful test result, and the potential consequences of not following instructions during testing.

Of course, some examinees are intent on attempts to disrupt the test as a strategy to either conceal the fact that they are being deceptive or in attempt to distort the polygraph test data to achieve a favorable result. In these cases, there may be nothing that will deter an examinee from a determined course of action. Effective explanation and management of the respiration sensors, in the form of clear information and simple instructions, will provide the professional polygraph examiner an opportunity better observe whether an examinee is capable of, and willing to cooperate during testing. For innocent and truthful individuals who desire to cooperate and produce favorable testing outcomes, skillful management of the respiration sensors can help to contribute to an effective rapport between an examiner and examinee. This will help the examinee to achieve and maintain the calm, relaxed, awake and alert psychological states that are known to be associated with more effective attention, concentration, cooperation, memory, comprehension, and communication.

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Overview of Polygraph Examinations Practice in Russia
(Results of the Polygraph Examiners Survey conducted 2003 through 2016)
By Yaroslava Komissarova and Said R. Khamzin

Abstract

A survey was conducted among Russian polygraph examiners 2003 through 2016. There were three stages of the survey with the first stage conducted 2003 through 2004, second stage in 2012 and third stage 2015 through 2016. Results of all stages of the survey were compiled and analyzed and found its reflection in the following publication.

Keywords: polygraph, lie detection, survey, polygraph in Russia

General characteristics of respondents

In the survey that was conducted in 2003-2004 243 polygraph examiners participated (hereinafter, the first stage), in the survey of 2012 167 polygraph examiners participated (hereinafter, the second stage) and

1. Komissarova Yaroslava Vladimirovna, PhD, docent, Associate Professor of the Criminalistics Department in the Kutafin Moscow State Law University (MSAL), Editor-in-chief of the Federal science-practice journal "Forensics analyst" (Moscow, Russia). Yaroslava Komissarova can be reached at a5143836@yandex.ru
Khamzin Said Rushanovich is a private polygraph examiner, researcher and instructor (Moscow, Russia). Said Khamzin can be reached at saidhamzin@gmail.com
in the survey of 2015-2016 181 polygraph examiners participated (hereinafter — the third stage). Among the respondents were the officers of various agencies, government and non-government organizations and institutions as well as individual entrepreneurs (private examiners) of the Russian Federation.

During the first stage among the participants of the survey 67.5% were male, 32.5% were female. During the second and the third stages female participants prevailed over males (on 12% and on 20% respectively).

At all stages the predominant age of respondents was from 31 to 40 years old: in the first stage – 44.9%, in the second stage – 40.7%, in the third stage – 62.4%.

As for work experience as a polygraph examiner, in the first stage respondents who reported their work experience in the range of up to two years, from two to five years and from five to 10 years, were roughly equal — about 30%.

In the second stage the ratio changed: the number of survey participants with experience of 5-10 years was slightly higher (37.1% compared to 32.9% in the first stage), and with experience of 2-5 years — lower (25.7% compared to 34.6% in the first stage). In the third stage more than half of the respondents reported their work experience in the range of 5-10 years.

The change of demographic indicators can be explained as follows:

In 1997-2011, the Ministry of Internal Affairs of the Russian Federation held regular conferences on exchange of best practices in the field of polygraph at the premises of the Main Department of Internal Affairs of the Krasnodar Region.

In the first stage of the survey, the majority of the respondents were questioned in 2003 during the Sochi International Scientific-Practical Conference "Actual problems of special
psychophysiological examinations and prospects for their use in fight against crime and staff management. Most of the respondents were male law enforcement officers.

In 2012 during the second stage, a survey was held as a part of the Moscow Forum of Russian Polygraph Examiners "Actual problems of instrumental lie detection. Modern methods of diagnostics of lies" in which law enforcement officers were in the minority.

The third stage of the survey was partially conducted in 2015, during Sochi International Scientific-Practical Conference. The conference was held under the auspices of the public organization — All-Russian Police Association IPA². Among the participants, as well as in the second stage, there were just a few of male law enforcement officers.

It should be noted that the majority of polygraph examiners of Russia do not have a law degree and because of this fact they see no difference between operational-investigative activity and criminal proceedings. This fact was taken into account in the formulation of the survey questions and the analysis of the survey results.

Analytical report on the survey results

In the opinion of the survey participants, polygraph use in criminal proceedings is mostly effective in:

a) narrowing the circle of individuals suspected in committing of a crime or involvement in the incident (in the first stage this option was chosen by 38.7% of the respondents, in the second stage 52.1% in the third — 50.8% of respondents);

b) obtaining additional information about the crime (25.9%, 43.7%, and 38.1%);

c) defining the roles of the accessories to the crime (21.4%, 11.4%, and 12.2%);

d) interrogation of individuals, pointing to circumstances of the crime, — False Reporting of a crime (4.5%, 14.4%, 19.3%);

d) determination whether the particular person exaggerated or concealed information about the incident (3.7%, 12.6%, 9.2%).

All of the options listed above, was

² International Police Association (IPA) is a nongovernmental organization in consultative status "Special" with the United Nations Economic and Social Council, the Council of Europe and the Organization of American States, supportive working relationship.
noted by 5.8% of respondents in the first stage, 69.5% on the second and 68.5% — on the third stage.

In the first stage, while answering the question "In your opinion, what is the attitude of law enforcement officers towards the use of polygraph in criminal proceedings" opinions were divided in the following way:

— 76.5% believe that polygraph is used in operational-investigative activities;

— 23.9% believe that polygraph is used when it becomes necessary to use special knowledge (expertise) in the statutory manner;

— 9.5% believe that polygraph is used in the form of psychophysiological examination;

— 7% believe that it is one of the non-conventional methods of crime solving alongside with telepathy, water dowsing etc., used mainly informally;

— 4.9% believe that the use of polygraph is related to the conduction of forensic psychological examination.

In the second and third stages multiple options could be chosen when answering this question.

It was not a surprise that many respondents fairly noted that currently law enforcement officers are aware that polygraph is used in the operational-investigative activities (50.3% in the second stage and 51.4% in the third stage), when it becomes necessary to use special knowledge (46.7% and 48.1%) and specifically in the form of psychophysiological examination (34.1% and 25.4%).

Regarding the position of polygraph examiners on what is the most appropriate use of polygraph in investigation of criminal cases, only 8.2% of respondents in the first stage, 13.2% in the second and 8.3% — in the third stages called for restriction of its use to the limits of the operational-investigative activities.

During the first two stages about a quarter of the survey participants mentioned the possibility of classification of a polygraph examiner report in the case file as a source of evidence document (29.6% and 22.8%). In the third stage there were only 7.7% proponents of this approach.

During all stages of the survey, the majority of respondents, linking a polygraph examination with the use of special knowledge, agreed that the psychophysiological polygraph examination is an independent type of
examination, apart from forensic psychological examination (36.2%, 38.3%, 31.5%, respectively).

Only four out of 243 respondents supported the use of polygraph as a part of forensic psychological examination during the first stage, five out of 167 – during the second and six out of 181 – during the third stages of the survey.

The represented data indicate that Russian polygraph examiners and law enforcement officers do not associate the use of polygraph with the conduction of forensic psychological examination. Apparently, this is due to a correlation dependence of the opinion of law enforcers from the fact how polygraph examiners themselves evaluate the terms of personal competence and professionalism.

In 2015-2016 in addition to the questions that were asked during the first two stages of the survey, polygraph examiners answered the following question "What determines the competence of a polygraph examiner" (you can choose several options):

1. The availability and the quality of training in the field of polygraph. The overwhelming majority of the examiners – 71.3%, chose this option.

2. Work experience as a polygraph examiner in government agencies and organizations and/or private sector – 19.3%. Among those who chose this answer, 12 respondents indicated that work experience in government agencies and/or organizations is preferable, and four noted the importance of diverse experience as a polygraph examiner.

3. The possession of a higher education. This answer was chosen by 10.5% of respondents. Two of them emphasized that "not any" higher education, but medical and/or psychological higher education, three of the respondents further noted the need for higher legal education and one for higher technical education.

4. Work experience as a polygraph examiner in government agencies and organizations and/or private sector was noted by 7.2% of the respondents.

5. The presence of positive feedback from the employer, customers, and fellow polygraph examiners was noted by 3.9% of the respondents. It is important to note that all of those who chose this answer, noted it only in addition to the options specified in paragraphs 2 and 3.

Among the respondents only 15.5% believe that all the above listed is important. Five further pointed out the
importance of personal responsibility of a polygraph examiner for the quality of the conducted examination.

In addition, 84.5% of the respondents surveyed in 2015-2016, mentioned the need for the development and subsequent approval by the Ministry of Labor and Social Protection of the Russian Federation of professional standards of activities of a polygraph examiner.

Based on the foregoing, it becomes clear that among the factors impeding the effective use of polygraph in criminal proceedings, in the third stage of the survey, 57.4% of the respondents identified lack of qualified specialists in the field and some episodes of low-qualified work performed by polygraph examiners, which received great public attention. In the second stage, these factors were indicated by 42.6% of the respondents. In the first stage only 14.8% of the survey participants mentioned the lack of qualified professionals.

During the first stage, 49.8% of polygraph examiners noted that law enforcement officers are not very well informed about the specifics of the polygraph examinations and their efficiency. During the second stage, it was indicated by 61.1% of the respondents and during the third stage – by 31% of the respondents.

Although in the first stage 93 of respondents (38.3%) mentioned that there are some limitations in equipment and technical support of the law enforcement activities, in the second stage this was indicated only by 2 (1.2%) respondents and in the third stage by 6 (3.3%) respondents.

The number of those who believe that an adverse opinion about the effectiveness of polygraph, which has prevailed in Russia for a long time, has played the negative role, was divided in the following way: about 10% in 2012 and 2015-2016, against 20.2% in 2003.

The absence of direct provisions in the current legislation (special act, law) authorizing the use of polygraph in various spheres of public life was indicated by 47.7% of the respondents in the first stage, 17.4% the second, and 23.8% in the third stages.

It must be said here that the idea of

development and adoption of the Polygraph Act (Law), which seemed attractive to some Russian polygraph examiners in the late 90s — early 2000s, did not receive public support.

In December of 2010, a group of State Duma (Russian parliament) members submitted the draft of the Federal Law "On Polygraph Use" to the State Duma of the Federal Assembly of the Russian Federation of V convocation (responsibility for the bill was assigned to the Security Committee).

The work on the statutory wording of the draft was conducted over the preceding 10 years. In the spring of 2006 the text of the draft was officially studied in a number of agencies and received a negative evaluation. Over the years, except for a few technical amendments, the draft law has not changed. The law was not enacted and in February of 2012 The Board of the State Duma supported the proposal of the Committee for Security and Anti-Corruption to return the draft to authors of the legislative initiative4.

Use of technical means may not be the subject of legal regulation, because in modern conditions they continuously update and improve and are replaced with completely new ones. In addition, the authors of the draft made a number of errors that led to the impossibility of its completion and adoption of the Polygraph Law. The critical point is a mixture of two different procedures: a) examination conducted by a polygraph examiner within the limits of his/her competence, which is limited by the scope of his/her special knowledge (expertise) for the purpose of obtaining additional information relevant for management decision; b) procedure of the review (examination) and evaluation by the polygraph examiner of the information in the process of making this decision (according to the draft, a polygraph examiner in fact was imposed with a duty of evaluation of information received during the examination, despite the fact that he/she is not the subject to enforcement of law) (Komissarova, 2011).

In the course of the survey the affirmative answer to the question: "Do the law enforcement officers check your competence when assigning (authorizing) you to conduct the examination on a particular case", was given by 37.9% of respondents (first stage), 42.6% (second), 57.4% (third). In their comments, those examiners, who answered affirmatively, explained that most often the initiators of examina-

tions ask about their education and work experience as a polygraph examiner and ask them to show previously prepared reports.

Interestingly, that the necessity to show the customer the examples of the reports that a specific examiner had prepared earlier based upon the results of another examinations, was first mentioned by the respondents only in 2015-2016.

This is due to the fact that from 2009 polygraph examiners – regular employees of regional offices of forensic subdivisions of the Investigative Committee of the Russian Federation (further — SK Russia) began conducting polygraph examinations and expert examinations (evaluations). According to the figures available to the authors, in 2009-2010 they had prepared over 2,500 specialist and expert reports, in 2014 — about 10,000 and in 2016 — more than 11000 (including 3138 of expert reports).

Polygraph examiners of the Investigative Committee prepare reports based on the standard model developed by one of the authors of this article, Yaroslava Komissarova. This model is included in the handouts, which for many years the author gives to the audience of her lectures, which include polygraph examiners, attorneys, investigators, students of the Higher Courses of Improvement of Qualification (Continuing Education) of Lawyers of the Russian Academy of Advocacy and Notaries (since 2005), Continuing Education Courses for Forensic Attorneys under the auspices of the Main Department of Criminalistics of the Office of the Prosecutor General of the Russian Federation, and then Investigative Committee at the Office of Prosecutor General of the Russian Federation (2004-2010); the Institute of Continuing Education and then the Academy of the Investigative Committee of the Russian Federation (since 2012). Reports of the Investigative Committee polygraph examiners are widely used as averment (proof) in criminal cases during preliminary investigation; each year in conjunction with other evidence they form the basis of, on average, about 200 court verdicts. This contributed to strengthening of the attention from customers to document the results of the conducted examinations.

When polygraph is used in the investigation of criminal cases, law enforcement officers are confronted with various kinds of difficulties. In the first stage, 34.6% of the respondents felt that the difficulties that polygraph examinations initiators are confronted with are mainly for reasons of organizational and procedural nature,
or in the formulation of the questions submitted for the resolution by a polygraph examiner (30.9%), to a lesser extent, in clarifying the nature of the examination (16.9%) or the conclusions drawn from its results (11.5%).

In the second and third stages, on the contrary, polygraph examiners noted that field examiners meet the most of the difficulties during questions formulation (38.9% and 39.2%), clarification of findings (34.7% and 30.9%) and nature of the examination (27.5% and 12.7%). Organizational and procedural difficulties were noted only by 26.3% and 13.8%, respectively.

To some extent this is explained by the fact that there is no consensus among Russian polygraph examiners on how to formulate the findings of the examination. Unfortunately, experience of international colleagues in this case does little to clarify the situation.

In appendix to a textbook Fundamentals of Polygraph Practice, published by the American publisher "Academic Press" in 2015, authored by a well-known American polygraph examiner Donald J. Crapola co-authored with Past-President of the American Polygraph Association, Pamela K. Shaw, there are examples of polygraph examination reports (Krapohl & Shaw, 2015). Acknowledging the expertise of polygraph examiners in the Unit-
methodology was used during polygraph testing, polygraph examiner (including the volume and nature of the identified reactions) formulates a conclusion regarding the knowledge of the examinee about the incident. He is also entitled to express an opinion on the possible circumstances of how the examinee obtained an information about the event and the probability of obtaining it immediately at the time of the event. But he should not be ahead of the present level of development of science and should not determine what information is contained in the memory of an individual (Komissarova & Khamzin, 2016).

The position, closest to the mentality of a Russian polygraph examiner is the approach, used for the formulation of test decision for screening examinations which is reflected in the US Department of Energy Counterintelligence Evaluation Regulations, effective since October 30, 2006.

According to the Regulations, a polygraph examiner may draw his conclusions in a polygraph report about the presence of significant response when:

...the analysis of the polygraph charts reveals consistent, significant, timely physiological responses to the relevant questions.

or no opinion:

...an evaluation of a polygraph test by a polygraph examiner in which the polygraph examiner cannot render an opinion.

Importantly, the decision regarding maintenance or shift of powers of the examinee depending on the results of the examination is taken not by a polygraph examiner, but by the authorized officials (usually after additional evaluation activities) (Federal Register, 2006).

56.9% of Russian polygraph examiners, surveyed in 2015-2016, generally agree with the approach described above (the first and the second stage of the survey question "How do you formulate the findings of the examination" was not asked). Still, however, 16% of polygraph examiners put into their reports such conclusions as examinee is involved or not involved in the event (exactly as Russian polygraph examiners formulated their conclusions in the 1990s), and 9.4% 5

5 As it was shown during the survey, all of the examiners are familiar with the contents of the Counterintelligence Evaluation Regulations, first of all, thanks to the translation into Russian language made by Russian specialist in the field of "lie detection" A. B. Pelenitsyn. (See. in the book: Komissarova, Y. V., Myagkikh, N. And. Pelenitsyn, A. B. Polygraph in Russia and in the United States: Problems of Application. M.: Yurlitinform, 2012. Pp. 98-152).
formulate it as reliable or unreliable (objectively or not) was the information about the incident stated by the examined person, and 11.6% — did the examinee commit or did not commit the certain actions (what did he/she make, saw, heard, etc.).

Because law enforcement officers are experiencing difficulties in the formulation of the questions submitted for the resolution by a polygraph examiner, and the clarification of its findings, as it was explained by over 70% of respondents at all stages of the survey, they had to answer to the informal questions of the initiators of the examinations during and (or) after their conduction. This situation is not really the concern. It is more alarming that polygraph examiners are predominantly convinced that it is acceptable to have an informal communication with law enforcement officials while conducting research about the views and findings that are not reflected in their conclusion. This was reported by 90.1% of respondents in the first, 87.4% — in the second, and 91.8% in the third stage. But there were those who found this kind of communication unacceptable from the point of view that the independence of the polygraph examiner should be ensured. Unfortunately, no one thought about the rights of the examinee.

It seems that a certain guarantee of protection of the rights and legitimate interests of the examinee (moreover, of all participants of the trial) is to keep a video recording of the procedure of a polygraph examination. Only in the presence of video recording the parties have a real opportunity to assess the adequacy (compliance) of actions of a particular polygraph examiner to the scientific-methodical standards formulated by the international practice. According to the Standards of Practice of the American Polygraph Association, an audio and video recording of all phases of the exam shall be maintained as part of the examination files, consistent with agency policy, regulation or law, for a minimum of one year (American Polygraph Association, 2015). Russian legislation does not have a requirement to conduct a video recording of a forensic examination, including those conducted in relation to a living person.

It is impossible to understand how the test questions were discussed in the absence of a video camera. The text of the report does not allow to assess the correctness of polygraph testing in the course of which questions should be asked in a flat and neutral voice, without intentional highlighting of certain words or questions; the intervals between the questions of the test shall not be less than 15 seconds from...
question onset to question onset, compared to 20 seconds interval between the questions, established by the Standards of Practice of the American Polygraph Association (American Polygraph Association, 2015); each test must be presented at least 2 times in order to avoid the appearance of situation-based reactions; etc.

The video camera must be installed properly so that the face of the examinee and his psychophysiological reactions on the screen of the computer monitor was visible when viewing a video recording. Sounds must be well distinguished, because the video recording of the procedure is performed for the purpose of synchronization of the processes of reading of the test questions by a polygraph examiner, answers given by the examinee and the characteristics of the responses (Komissarova, 2008).

We share the position of polygraph examiners who believe that a video recording needs to be maintained always (regardless of who initiated the examination) from the beginning to the end of the procedure, not only during the testing phase. This position was shared by 69.6% of respondents in 2015-2016 (in the previous stages of the survey questions about the value of video recording were not raised).

However, 20.4% of the examiners still hold a view that "video recording sometimes (given the circumstances) can be conducted if the examiner consider it necessary".

When answering the question "Do you personally conduct a video recording of the examination", 65.7% of the respondents reported that, with rare exception, they always do the recording. Eight of them stated that the requirement of their employer to maintain video recordings of the examinations is mandatory. Sometimes, when it deems necessary, video recording is conducted by 17.7% of respondents and only 9.9% indicated that they do not conduct video recording due to the insufficient technical capabilities.

According to polygraph examiners, who participated in the survey in 2015-2016, primarily maintenance of video recording is (in all situations or occasionally) necessary for the following reasons:

a) the examiner was insured from charges of improper behavior in relation to the examined person (34.3%);

b) the examiner could show the results to the customer and make corresponding comments (8.8%);
c) to protect the rights of the examinee (7.2%);

d) in order to check the performance quality of a polygraph examiner (6.6%).

40.3% of the respondents believe the fact that all of the reasons mentioned above are equally important. Five of the survey participants indicated the feasibility of conducting the video recording from the viewpoint of obtaining additional information for the analysis, in particular, to identify examinee countermeasures.

Based upon the results of the second and third stages of the survey (2012-2016), today the most accurate description of a polygraph examination characteristics is reflected in the term "psychophysiological polygraph examination". It was mentioned by about 80% of the respondents. The term "polygraph survey" which was well known in Russian domestic practice since the 90-ies of the last century was mentioned by 18% of the respondents. Option "forensic polygraph examination" in 2012 was chosen by one person out of 167, and in 2015-2016 — by two out of 181 participants of the survey.

**Summary**

Today in Russia, as well as in many other countries, polygraph is actively used:

a) in the implementation of operative-investigative activity in accordance with the requirements of the Russian legislation regulating this activity;

b) in court proceedings in accordance with the requirements of procedural law of the Russian Federation;

c) upon entry on a position in government agency and during the service in accordance with the legislation of the Russian Federation;

d) in the regulation of labor and other directly related relations in accordance with the requirements of labor legislation and acts regulating certain spheres of the community activities;

e) in the course of providing services under civil contracts.

Regardless of the nature of the tasks and conditions of conduction, psychophysiological polygraph examination poses a procedure of the use of...
special knowledge from the fields of psychology, physiology and forensic science together, organized in a particular way.

The result of numerous studies conducted at the interface of these disciplines, was the development of a new interdisciplinary field of knowledge of Polygraph (Komissarova, 2016). Today, within the framework of this field of knowledge, the scientific-methodical bases, technical, organizational and legal conditions of conducting psychophysiological polygraph examinations are considered for the purposes of diagnostics of informational state of the test subject while conducting judicial, investigative, labor, and service activities.

References


Appendix

Data of random survey of polygraph examiners in Russia (2015-2016)

In the survey conducted in 2015-2016 took part 181 polygraph examiners from a number of departments, government agencies, nongovernment organizations and institutions as well as private examiners from Russia.

When answering to the questions No. 5-7, 9, 12, 14 survey participants were asked to choose several options if necessary.

1. **Sex:** among participants of the survey 72 were male (39.8%), 109 were female (60.2%).

2. **Age:**

   2.1  20 – 30 y/o  19  10.5%
   2.2  31 – 40 y/o  113  62.4%
   2.3  41 – 50 y/o  37  20.4%
   2.4  51 y/o and up  12  6.6%

3. **Work experience as a polygraph examiner:**

   3.1  2 years and less  14  7.7%
   3.2  2 – 5 years  41  22.7%
   3.3  5 – 10 years  97  53.6%
   3.4  10 years and more  29  16.0%

4. **Do law enforcement officers check your competence when assigning (authorizing) you to conduct an examination on a particular case:**

   4.1  No  93  57.4%
   4.2  Yes  69  42.6%

   **Note:** 173 respondents answered to this question (8 of them explained that they never interacted with the law enforcement); when answering Yes to this question, the respondents explained that most initiators of polygraph examinations are concerned with the education and work experience as a polygraph examiner and ask to show previous reports.

5. **In your opinion, what is the attitude of law enforcement officers towards the use of polygraph in criminal proceedings (you can choose several options):**

   5.1  Believe that it is one of nonconventional methods of crime solving alongside with telepathy, water dowsing, etc., used mainly informally  2  1.1%
   5.2  Believe that polygraph is used in operational-investigative activities  93  51.4%
   5.3  Believe that polygraph is  87  48.1%
5.4 Believe that the use of polygraph is related to the conduction of forensic psychological examination  
5.5 Believe that polygraph is used in a form of psychophysiological examination  
5.6 Other (specify)  

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<tbody>
<tr>
<td>12</td>
<td>6.6%</td>
<td></td>
</tr>
<tr>
<td>46</td>
<td>25.4%</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>4.4%</td>
<td></td>
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</table>

6. In your opinion, what difficulties do field examiners meet when polygraph is used in investigation of criminal cases (you can choose several options):

<p>| | | |</p>
<table>
<thead>
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</thead>
<tbody>
<tr>
<td>6.1 In the formulation of questions submitted for the resolution by a polygraph examiner</td>
<td>71</td>
<td>39.2%</td>
</tr>
<tr>
<td>6.2 In clarifying the nature of the examination</td>
<td>23</td>
<td>12.7%</td>
</tr>
<tr>
<td>6.3 In clarifying the conclusions drawn from the examination results</td>
<td>56</td>
<td>30.9%</td>
</tr>
<tr>
<td>6.4 For reasons of organizational and procedural nature</td>
<td>25</td>
<td>13.8%</td>
</tr>
<tr>
<td>6.5 Other (specify)</td>
<td>18</td>
<td>9.9%</td>
</tr>
<tr>
<td>6.6 Do not meet any difficulties</td>
<td>13</td>
<td>7.2%</td>
</tr>
</tbody>
</table>

Note: 8 of the survey participants who chose the answer 6.5 indicated that they never interacted with law enforcement; 5 of the participants indicated that the difficulties are associated with all of the above reasons together; 2 of the participants noted that the difficulties are associated with the low level of professional skills of some polygraph examiners.

7. In your opinion, the use polygraph in criminal proceedings is mostly effective in (you can choose several options):

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>7.1 Narrowing the circle of individuals suspected in committing of a crime or involvement in the incident</td>
<td>92</td>
<td>50.8%</td>
</tr>
<tr>
<td>7.2 Interrogation of individuals pointing to the circumstances of the crime – whether there was an actual crime</td>
<td>35</td>
<td>19.3%</td>
</tr>
<tr>
<td>7.3 Defining the roles of the accessories to the crime</td>
<td>22</td>
<td>12.2%</td>
</tr>
<tr>
<td>7.4 Determining whether the particular person exaggerated or concealed information about the incident</td>
<td>17</td>
<td>9.2%</td>
</tr>
</tbody>
</table>
### 7.5 Obtaining additional information about the crime

<table>
<thead>
<tr>
<th>Option</th>
<th>Count</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>69</td>
<td></td>
<td>38.1%</td>
</tr>
</tbody>
</table>

### 7.6 In all cases, listed above

<table>
<thead>
<tr>
<th>Option</th>
<th>Count</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>124</td>
<td></td>
<td>68.5%</td>
</tr>
</tbody>
</table>

### 7.7 Other (specify)

<table>
<thead>
<tr>
<th>Option</th>
<th>Count</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td></td>
<td>0.0%</td>
</tr>
</tbody>
</table>

8. Do you know that according to the Counterintelligence Evaluation Regulations of the US Department of Energy, effective since 2006, a polygraph examiner may draw the conclusion that either indicate that it has been recorded a **significant response** - an opinion that the analysis of the polygraph charts revealed consistent, significant, timely physiological response to the relevant questions, or **no opinion** – an evaluation of a polygraph test by a polygraph examiner in which the polygraph examiner cannot render an opinion.

<table>
<thead>
<tr>
<th>Option</th>
<th>Count</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>98</td>
<td>54.1%</td>
</tr>
<tr>
<td>No</td>
<td>83</td>
<td>45.9%</td>
</tr>
</tbody>
</table>

9. How do you personally render an opinion on examination results (you can choose several options):

<table>
<thead>
<tr>
<th>Option</th>
<th>Count</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Involved/Not involved</td>
<td>29</td>
<td>16.0%</td>
</tr>
<tr>
<td>Reliable/Unreliable</td>
<td>17</td>
<td>9.4%</td>
</tr>
<tr>
<td>Commit/Did not commit</td>
<td>21</td>
<td>11.6%</td>
</tr>
<tr>
<td>Detected/Not detected</td>
<td>103</td>
<td>56.9%</td>
</tr>
<tr>
<td>Other (specify)</td>
<td>12</td>
<td>6.6%</td>
</tr>
</tbody>
</table>

**Note:** those respondents, who chose the answer 9.5, specified their opinion options as: *possessed the guilty information, detected the reactions specific for the involved person, are the detected reactions consistent with the information stated by the person, specific risk factors were identified* (for employer); 3 of the respondents explained that they use any of the options mentioned above, depending on how the question is formulated by the examination initiator.

10. In your opinion, is an informal communication between law enforcement officers and polygraph examiner regarding case story and conclusions that were not reflected in the examiner’s report accepted during and after the examination:

<table>
<thead>
<tr>
<th>Option</th>
<th>Count</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>It is accepted in the interests of the case</td>
<td>142</td>
<td>78.5%</td>
</tr>
<tr>
<td>More likely yes than no</td>
<td>24</td>
<td>13.3%</td>
</tr>
<tr>
<td>No (explain why)</td>
<td>15</td>
<td>8.3%</td>
</tr>
</tbody>
</table>

**Note:** if an answer was negative, survey participant were offered an option to reflect their own motivation: 8 of the respondents explained that they had never interacted with the law enforcement; 3 of them in one form or another noted the need to ensure independence of the examiner (risk of pressure put on the examiner); 2 indicated that this kind of communication is acceptable after the examination is over, but not during the examination.
11. During or after the end of the examination, have you ever answered any informal questions of the examination initiators about your theories or findings that were not reflected in the conclusions:

11.1 Yes  
   148  81.8%
11.2 No  
   33  18.2%

12. In your opinion, what exactly prevents the effective use of polygraph in criminal proceedings (you can choose several options):

12.1 Low awareness of law enforcement officers about the features (specifics) of the examination conduction and its effectiveness  
   58  31.0%
12.2 Lack of qualified professionals in the field  
   79  43.6%
12.3 Limitations in the equipment and technical support of the law enforcement activities  
   6  3.3%
12.4 Adverse public opinion on the effectiveness of polygraph which prevailed for a long time  
   17  9.4%
12.5 Absence of direct instructions in the current legislation (special act) authorizing the use of polygraph in criminal investigations  
   43  23.8%
12.6 Individual episodes of low-qualified work of polygraph examiners, which received great public attention  
   25  13.8%
12.7 Other reasons (specify)  
   7  3.9%

Note: 6 of the survey participants who chose answer 12.7, included all the reasons, mentioned above

13. In your opinion, is there a need for the development and subsequent approval by the Ministry of Labor and Social Protection of the Russian Federation of professional standards of activities of a polygraph examiner when exercising the labor and other directly related rights, as well as in the other cases prescribed by the law:

13.1 Yes  
   153  84.5%
13.2 No  
   12  6.6%
13.3 Undecided  
   16  8.8%

14. In your opinion, what determines the competence of a polygraph examiner (you can choose several options):

14.1 Possession of a higher education:  
   19  10.5%
14.2 Possession of any higher education, medical, psychological, other (underline or add...
Note: Among those who chose this answer, 2 respondents indicated “not any” higher education, but medical and/or psychological; 3 of the respondents added the need for a higher legal education; 1 indicated the need for a higher technical education.

14.2 The availability and the quality of training in the field of polygraph
14.3 Work experience as a polygraph examiner in government agencies and organizations and/or private sector (underline or add the appropriate)

Note: Among those who chose this answer, 12 indicated that work experience in government agencies and/or organizations is preferable; 4 indicated the importance of a diverse experience as a polygraph examiner.

14.4 Work experience as a polygraph examiner in government agencies and organizations and/or private sector (underline or add the appropriate)
14.5 The presence of positive feedback from the employers, customers, fellow polygraph examiners

Note: Those who chose this answer, noted it in addition to 14.2 and/or 12.3.

14.6 All of the above is important but the major factor is (specify):

Note: Among those who chose this answer as a major factor, 11 respondents indicated the availability and the quality of training in the field of polygraph; 7 indicated work experience as a polygraph examiner; 5 indicated the personality factor and personal responsibility of the examiner in addition to the listed factors; 1 respondent emphasized the need of continuing education.

15. In your opinion, what is the most appropriate form of polygraph use in criminal proceedings:

15.1 Only as a part of operational-investigative activities
15.2 Polygraph examiner report should be included into the case file as a source of evidence document
15.3 Polygraph should be used as a part of psychophysiological examination
15.4 Polygraph should be used as for a comprehensive psychological-psychophysiological expert
examination

15.5 Psychophysiological polygraph examination is an independent type of examination
15.5 Polygraph can be used in any of the forms mentioned above

16. In your opinion, what is the term that gives the most accurate description of polygraph characteristics

<table>
<thead>
<tr>
<th>Term</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Forensic polygraph examination</td>
<td>1.1%</td>
</tr>
<tr>
<td>Polygraph survey</td>
<td>18.8%</td>
</tr>
<tr>
<td>Human psychophysiological polygraph</td>
<td>0.6%</td>
</tr>
<tr>
<td>Psychophysiological polygraph examination</td>
<td>79.6%</td>
</tr>
<tr>
<td>Other (specify)</td>
<td>0.0%</td>
</tr>
</tbody>
</table>

17. Regarding a video recording during the polygraph examination, you think that:

<table>
<thead>
<tr>
<th>Video recording policy</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Video recording should be conducted always (regardless of who initiated the examination) from the beginning and to the end of the procedure</td>
<td>69.6%</td>
</tr>
<tr>
<td>Video recording should be conducted always (regardless of who initiated the examination) but only during the testing phase</td>
<td>1.7%</td>
</tr>
<tr>
<td>Video recording should be conducted only during the examinations on criminal cases from the beginning and to the end of the procedure</td>
<td>4.4%</td>
</tr>
<tr>
<td>Video recording should be conducted only during the examinations on criminal cases during the testing phase</td>
<td>2.8%</td>
</tr>
<tr>
<td>Video recording sometimes (with regard to circumstances) can be conducted if the examiner considers it necessary</td>
<td>20.4%</td>
</tr>
<tr>
<td>Video recording should not be conducted (explain why)</td>
<td>1.1%</td>
</tr>
</tbody>
</table>

18. Do you personally conduct a video recording of the examination:

<table>
<thead>
<tr>
<th>Personal video recording policy</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Always conduct with rare exceptions</td>
<td>65.7%</td>
</tr>
<tr>
<td>Only during examinations and expert examinations on criminal cases</td>
<td>4.4%</td>
</tr>
</tbody>
</table>
from the beginning to the end of the procedure
18.3 Only during examinations and expert examinations on criminal cases during the testing phase 4 2.2%
18.4 Never (explain the reasons) 18 9.9%
18.5 Sometimes, when I consider it necessary 32 17.7%

Note: 22 participants who chose the answers 18.4 and 18.5 referred to the insufficient technical capabilities to conduct a video recording; over 30 of the participants who chose the answer 18.1 indicated that they always conduct a video recording without exceptions, with 8 of them stated that the requirement of their employer to maintain a video recording is mandatory

19. Primarily video recording is necessary (in all situations or occasionally):

19.1 To insure the examiner from charges of improper behavior in relation to the examined person 62 34.3%
19.2 That the examiner could show the results to the customer and make corresponding comments 16 8.8%
19.3 To check the performance quality of a polygraph examiner 12 6.6%
19.4 To protect the rights of the examinee 13 7.2%
19.5 All of the mentioned reasons are equally important 73 40.3%
19.6 Other (specify) 5 2.8%

Note: 5 of the survey participants indicated the feasibility of conducting of video recording from the viewpoint of obtaining additional information for the analysis, in particular, to identify examinee countermeasures
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www.peakcatc.com
Heuristic Principles to Select Comparison and Relevant Question Pairs When Scoring Any CQT Format

By Raymond Nelson

Fourteen different named techniques met the criteria for inclusion in a meta-analytic survey of validated polygraph techniques (American Polygraph Association, 2011). Some commonly used question formats have multiple names. For example: the Test for Espionage and Sabotage (TES; Re-

Raymond Nelson is a psychotherapist, behavior scientist, trainer, and polygraph examiner who has conducted several thousand polygraph examinations. He has expertise in working with perpetrators and victims of sexual crimes and other abuse and violence. Mr. Nelson has expertise in statistics and data analysis and is one of the developers of the OSS-3 scoring algorithm and the Empirical Scoring System. He is a researcher for Lafayette Instrument Company (LIC), a developer and manufacturer of polygraph and life-science technologies. Mr. Nelson is a past-President of the American Polygraph Association (APA), currently serving as an elected Director. Mr. Nelson teaches and lectures frequently throughout the United States and internationally, and has published numerous studies and papers on all aspects of the polygraph testing, including the psychological and physiological basis, test data analysis, faking/countermeasures, interviewing and question formation and test target selection. Mr. Nelson has been involved in policy development at the local, state, national and international levels in both polygraph and psychology, and has testified as an expert witness in court cases in municipal, district, appellate, superior and supreme courts. Mr. Nelson is also the academic director of the International Polygraph Training Center (IPTC) and the Escuela National del Poligrafo (ENPOL). There are no proprietary or commercial interests and no conflicts of interest associated with the content of this publication. The views and opinions expressed in this publication are those of the author and not necessarily those of the APA, LIC or IPTC. Mr. Nelson can be reached at raymond.nelson@gmail.com.
search Division Staff, 1995a; 1995b) is also known as the Directed Lie Screening Test (DLST; Nelson & Handler, 2012). The YouPhase technique (Department of Defense, 2006) is also referred to as a BiZone. And there are a number of similar techniques referred to as a family of Zone Comparison Techniques (ZCT) or Zone of Comparison Techniques – a needless discussion that serves only to distract – including the Federal ZCT (Department of Defense, 2006), Utah 3 question format (Kircher & Raskin, 1988), RCMP/CPC A-Series (Honts, 1996), and a small number of boutique formats. We also have the two versions of AFMGQT (Department of Defense, 2006), one of which is structurally virtually identical to the Utah 4 question format (Handler, 2006, Handler & Nelson, 2008; Raskin, Honts, Nelson & Handler, 2015) though it is used differently.

An example of the different names and rules associated with these named test formats can be seen in the selection of which comparison question to use when numerically scoring each relevant question. The Federal YouPhase/BiZone format, with two relevant questions at positions 5 and 7 in the question sequence, is commonly scoring by comparing each relevant question to the adjacent comparison question in the question series, either preceding or following, depending on which comparison question produced the greater change in physiological activity. In contrast, the Federal ZCT format, with three relevant questions at positions 5, 7 and 10, is evaluated by comparing question 5 to the adjacent comparison questions at positions 4 and 6, while questions 7 and 10 are scored only to the preceding comparison questions at positions 6 and 9 in the question sequence. The Utah 3-question format – referred to by some as the Utah Zone or Utah ZCT has three relevant questions at positions 5, 8 and 11 that are evaluated with the preceding comparison questions at positions, 4, 7, and 9. The RCMP/CPC A-Series format – structurally somewhat similar to the Federal ZCT though derived from the Utah 3-question format – has relevant questions at positions 5, 7 and 10, and there is anecdotal information that some examiners evaluate these using only the preceding comparison questions at 4, 6 and 9, while others use the Federal rules for which relevant question number 5 is evaluated against the comparison questions at positions 4 and 6 depending on which comparison question produces the greater change in physiology.

Polygraph exams conducted using the AFMGQT V1 format are commonly scored by evaluating the relevant question at position 4 with the com-
parison questions at position 3 and 5, depending on which comparison question produced the greater change in physiological activity, while the relevant question at position 6 is evaluated with the comparison questions at positions 5 and 7 and the relevant question at position 8 is evaluated with the comparison questions at positions 7 and 9. The relevant question at position 10 is evaluate only with the comparison question at position 9. These rules differ slightly from those for the AFMGQT V2 format for which the relevant questions at positions 4 and 5 are both evaluated with the comparison questions at positions 3 and 6, depending on which comparison question produced the greater change in physiological activity, while the relevant questions at positions 7 and 8 are evaluated with the comparison questions at positions 6 and 9. The Utah 4-question format, structurally similar to the AFMGQT V2, uses relevant question in position 5 and 6 that are evaluated with comparison questions at positions 4 and 7, with the relevant questions in positions 8 and 9 evaluated with comparison questions at positions 7 and 10. DLST/TES format is scored with each of the three or four repetitions of relevant questions 1 and 2 evaluated with comparison questions 1 or 2 depending which comparison question produced the greater change in physiology. Over-emphasa-

sis named techniques can create the mistaken impression that all of these named techniques are different.

All of these examination formats are, in fact, more similar than they are different. All of these test formats conform to the same underlying theory of polygraph testing: that greater changes in physiological activity are loaded at different types of test stimuli as a function of deception or truth-telling in response to the investigation target stimuli. Over-emphasis on named techniques and associated rules serves to distract attention away from things actually do affect the test performance characteristics, and serves to cause un-necessary confusion about underlying scientific principles that form the basis of the necessary test structure.

**Two important considerations**

The traditional system of named techniques requires that trainees and working professionals devote attentional and memorization resources to master a dizzying array of names, question numbers and different rules. In reality the name of the technique is not important. What is important are two fundamental considerations: 1) is the technique to be used as a diagnostic test or as a screening test, and 2) how many relevant questions are going to be employed.
Diagnostic or screening test?

The first consideration – diagnostic or screening test – is a simple function of whether there is or is not a known problem. The existence of a known problem – incident or allegation – will mean that the purpose of the polygraph test will be to gain an accurate diagnosis of the examinee’s involvement or non-involvement in the known problem. Because the test result is intended to become a basis of evidence or information on which to make a decision that can affect the future rights and liberties of the examinee, examiners are ethically obligated to conduct diagnostic tests in a manner that permits them to make one decision about deception and truth-telling concerning the known allegation or known incident. Test conducted in this way – with the goal of making a single classification – are known to have the smallest potential for error, and for this reason they can provide the greatest level of precision or accuracy.

Screening tests are all tests conducted in the absence of a known problem – known incident or known allegation – with the goal of identifying and rectifying unknown problems while they are easily managed (i.e., before they turn into larger problems that are more difficult and costly to manage). Because they are looking for possible problem where there are no known problems, screening tests are often more useful when they can address a number of possible problems. Although it is possible to conduct a screening test regarding a single issue, when there is a single issue of concern to the screening context – including screening polygraph tests – they are often conducted as multiple-issue tests (i.e., tests that are interpreted with the assumption of independent criterion variance). Multiple-issue tests are intended to make multiple simultaneous classifications, each of which is, in reality, a probability decision.

Because these tests involve multiple simultaneous probability decisions, they introduce the potential for multiplicity effects that are well known to statisticians and researchers. These multiplicity effects will increase the total probability of error for the test as function of the number of probability decisions. The overall effect is that multiple-issue tests can have correspondingly less precision and accuracy compared to single-issue exams. Statistical corrections can be used to reduce the influence of multiplicity effects (Nelson, 2015), but these are imperfect solutions and multiple-issue tests will still have inherently weaker precision than a test designed to make a single probability decision. It
is for this reason that multiple issue test formats are not used in diagnostic testing contexts – when there is a known problem – for which the test is intended to be a basis for decision and action. In the diagnostic context it would be ethically questionable to select a testing format that is known to offer weaker precision than a readily available alternative.

**How many relevant questions?**

The second consideration – how many relevant questions will be used in the test question sequence – will manifest itself in different effects for diagnostic and screening tests. This will be a function of the different types of decision rules used to classify the results of diagnostic and screening tests.

Diagnostic tests – because of the ethical mandate for high precision when the test results are intended as a basis for action in response to a known problem – will be interpreted with a single classification at the level of the test as a whole. In the diagnostic context, more relevant questions means a larger data set or more data on which to calculate a precise result. More data will contribute to smaller errors of measurement and greater overall precision. Said differently, more relevant questions will contribute to greater precision for diagnostic polygraphs.

Screening tests – because they are intended to search for possible problems in the absence of any known problems – are often most useful when the test sensitivity can be broadened to multiple issues of concern to the screening context. Although screening tests can be formulated to investigate a single issue of screening concern, most screening polygraphs are conducted as multiple-issue exams, for which the use of multiple investigation target issues will mean multiple classifications or decisions. Because every testing classification or decision is fundamentally a probability statement – including when these are reduced to categorical conclusions – every classification will have some accompanying probability of error. Due the effects of multiplicity (i.e., multiple simultaneous statistical comparisons), testing errors are cumulative for multiple probability decisions. The result is the test error rates can increase as a function of the number of screening issues and decisions to be made. In other words, use of more relevant questions will contribute to reduced precision in for multiple issue screening polygraphs.

A simple heuristic for understanding polygraph testing formats

The simple heuristic to understanding polygraph techniques is this:
• Is the test a diagnostic test or screening test, and how many relevant questions will be used?

At the present time there is no evidence of any effect or effectiveness for the esoteric ideas associated with named polygraph techniques – including the use of time-bars, symptomatic questions, special types of relevant questions or any technical questions intended to achieve testing objectives that are generally related to questions about internal consistency and internal validity. All that is necessary to understand the relationship between polygraph test question format and test effectiveness is to known whether a test is intended for diagnostic or screening purposes, and how many relevant questions will be used in the test question sequence.

The answer to this simple heuristic question, along with the choice of scoring or transformation method, will provide all the information that is needed to select the correct tables from the available published normative reference data (Nelson & Handler, 2015). Statistical reference tables can be used to optimize practical decisions about test sensitivity, specificity and tolerance for false-negative and false-positive errors. Ultimately, the answer to this heuristic question will also guide both the selection of decision rules and the selection of which comparison question to use when quantifying responses to the relevant target stimuli.

Information published by the American Polygraph Association (2011) showed that polygraph testing formats interpreted at the level of the test as a whole have greater overall precision, with effectively similar test sensitivity, compared to test formats that are interpreted with an assumption of independent criterion variance. Some work has been published on polygraph decision rules (Senter, 2003; Senter & Dollins, 2003) showing that interpretation at the level of the test as a whole provides greater overall precision or accuracy than interpretation at the level of the individual questions. Having derived a simple evidence-based heuristic for conceptualizing the issues that determine the relationship between the test format and test effectiveness (i.e., Diagnostic or screening test? And how many relevant questions?), we can now proceed to define a simple heuristic for selecting the correct comparison question for any comparison question polygraph technique.
A simple heuristic to select comparison and relevant question pairs

Although less work has been done on the matter of the selection of the comparison question when quantifying responses to the relevant question, Raskin, Honts, and Kircher (2014) reported that diagnostic test results were optimized by evaluating each relevant stimulus with the preceding comparison question, while multiple issue exams were optimized by evaluating each relevant question with either the preceding or following comparison questions depending on which has produced the greater change in physiological activity. Unpublished analysis by this writer has found similar results. The following heuristic can be applied to virtually any of the polygraph techniques described in the meta-analytic survey (American Polygraph Association, 2011) to achieve the correct selection of relevant and comparison stimulus pairs:

1) Do not evaluate a relevant stimulus with a comparison question if there is a data artifact, instruction, or other type of test stimulus between the presentation of relevant and comparison stimulus. This is subject to one exception (see #5 below) when the preceding comparison question is unusable.

2) Whenever possible, evaluate each relevant stimulus with the two comparison questions that are adjacent with (i.e., immediately preceding or immediately subsequent to) the relevant question in the question sequence, selecting the comparison question that produces the greater change in physiological activity.

3) Pairs of adjacent relevant questions can be evaluated with the comparison questions that are immediately preceding or subsequent to the paired relevant questions. In other words, it is acceptable to there can be one additional relevant question between a relevant question and preceding or subsequent comparison question.

4) Evaluate the relevant question with the preceding comparison question when there is no comparison question immediately subsequent to a relevant question in the question sequence.

5) If the comparison question preceding the relevant stimulus is unusable then a relevant question can be evaluated with the subsequent comparison question even when there is a single neutral question in question sequence between the relevant question and subsequent
comparison question, but only as long as there are no data artifacts, instructions or other questions in between the relevant question and subsequent comparison question.

This heuristic, once learned, can be applied to any polygraph test format regardless of the name of the format.

**Summary**

In decades past, named polygraph techniques were affiliated with particular schools, typically named after the founder or originator of the polygraph technique and school. Polygraph training during those early pioneering and development years may have functioned as a form of professional imprinting, whereby once having been trained at a particular school that used a particular techniques, a professional field examiner may have had a sense that the technique was very different from the polygraph techniques used by other examiners who were trained at other schools. Today we know that comparison question polygraph techniques are largely similar to each other in their structure, use and interpretation. We also know that the name of a technique is far less important that its principles and procedures, most of which are increasingly similar for many polygraph techniques in use today.

At the present time there is little or no information suggesting that any named polygraph technique is actually superior to others, though there are some practical differences that remain important and can be used to optimize testing accuracy or precision. Those basic differences involve only two concerns: whether the polygraph test is intended for diagnostic or screening purposes, and how many relevant questions are included in the test question sequence. These two issues will determine, together with the numerical transformation method, the selection of the statistical reference model (or normative reference tables), and the selection of optimal decision rules.

In general, diagnostic polygraph with more relevant questions will have greater precision, simply because they can have more data for any given number of repetitions of the test question sequence. Multiple-issue screening polygraphs with more relevant questions – interpreted with an assumption of independent criterion variance – involve more probabilistic decisions and therefore more opportunity for testing error and inconclusive results, and this may be loaded for examinees who are actually truthful. Use of statistical corrections can reduce but does not completely eliminate these multiplicity effects.
The tradition of named polygraph techniques no longer serves the needs of the polygraph profession, and instead distracts attention away from these more important considerations. Named polygraph techniques, while they once served to help organize conceptual information about defined polygraph techniques, have the effect today of causing people to hold onto an arcane and incorrect viewpoint that comparison question polygraph techniques are actually different simply because they have different names. More importantly, continued reliance on the tradition of named techniques serves to inhibit progress by maintaining burdensome memorization tasks that cannot be easily described in simple heuristics, cannot be easily generalized to other formats. In other words, the rules for each named format have, until this time, had to learned and memorized separately - without the option to apply generalizable knowledge from one named format to another. A simpler and more adaptive solution will be to begin to think about polygraph techniques in terms that are descriptive of the factors that govern both the use and effectiveness of the test, and to learn select relevant and comparison question pairs using a simpler heuristic that can be generalized to any comparison question test format.

The selection and choice of which comparison question to use may remain an important consideration when evaluating the relevant questions in both diagnostic and screening polygraphs. This should, however, be guided by a conscious awareness of the principles that govern the test effectiveness. The simple heuristic, detailed earlier, involves the evaluation of each relevant question with either the preceding or subsequent comparison question when possible, and with the preceding comparison question when not. Paired relevant questions are handled the same way. The only remaining caveat is that the occurrence of data artifacts, instructions, or other types of test stimuli in between the relevant and comparison question should be a cause for concern caution.

The tradition of named polygraph techniques is no longer serving the needs and goals of the profession, and should be replaced by a conceptual and procedural heuristic that can be more easily generalized to any polygraph technique. Remaining anchored to arcane notions that cannot advance our profession further will only increase the likelihood that polygraph testing may be replaced by newer credibility assessment technologies that are perceived as less burdened with the typical problematic perceptions that polygraph testing is overly
complex, overly subjective, and overly vulnerable to human error. Polygraph field examiners and polygraph training programs will be wise to encourage professional field practitioners to think about and describe their work and field practices in terms that will not remain locked to arcane tradition, and will better ensure the continued usefulness of the polygraph in a field practice context that will likely include the increased juxtaposition of polygraph methodologies with other emerging scientific technologies for credibility assessment.

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E-Mail: susan.gatlin@ncca.mil

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PO Box 4087
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Director: Matt Hicks, 512/424-5024
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E-Mail: rioscarmona@hotmail.com
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**VIRGINIA**

Virginia School Of Polygraph
7885 Coppermine Rd
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Director: Darryl L. DeBow – 571/435-1207
E-Mail: polygraph11@verizon.net
Behavioral Measures Institute, UK, Polygraph Training Centre
Office 6
6-8 Charlotte Square
Newcastle upon Tyne, NE1 4XF
United Kingdom
Director: Donnie W. Dutton
U.S. Inquires 803-238-7999
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E-Mail: DuttonPoly@aol.com

British Polygraph Academy
380 Uxbridge Road
London, England W5 3LH
United Kingdom
Director: Nadia Penner
UK Inquires: Don Cargill – 44 7876198762
E-Mail: don@nationalpolygraphs.co.uk
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