



# *Who should or could be a good Transportation Security Officer?*

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*Presented to:*

Awareness and Localization of  
Explosives-Related Threats (ALERT)

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Carl Crawford

# Who *should/could* be a Behavior Detection Officer?

- **Specialized individuals**
  - Natural ability & life history
  - Empathic
  - Emotional Intelligence
  - Work in jobs that pull for such skills
  
- **Profile current excellent BDO's**
  - TSA has data on who are the better BDO's
    - Hit rates (*How to assess?*)
  - Create a testing regime to best identify them
  - Train the others (*perishable? Sort of...*)
  
- **Conclusion: Find & Reverse Engineer the best ones**

# What do we know about BDOs?

- They are better than others.
  - They do better in the airport getting contraband
  - They do better in controlled laboratory situations
- **Cautions when interpreting previous research**
- **Realistic Accuracy Model and BDO development**
  - Issues with materials to train or assess
- Conclusion: Find and Reverse Engineer the best ones

# Realistic Accuracy Model & BDO development

## ■ **Relevance**

- High stakes deception scenario in lab
- Intentions and concealment materials
- Actual behavioral information in field

## ■ **Availability**

- Image capture
- Point of view

## ■ **ALL a FUNCTION of the stimulus material used to assess and/or train**

- GIGO

# Realistic Accuracy Model & BDO development

## ■ **Detection**

- Women more sensitive detectors than men
- Individual differences inherent but can be assessed:
  - Raised in environments where emotional climate changes quickly
  - Gravitate toward jobs that utilize observational skill set
  - “Olympic athlete model” (O’Sullivan, 2004)
- *What do the good BDO’s do?*
  - Test on...
    - Social intelligence/anomaly
    - Micro expressions
    - Big 5 personality indices...etc...

# Realistic Accuracy Model & BDO development

## ■ Utilization

- Men more cynical detectors than women
  - Police/Secret Service....3 years into the job....enthusiasm...
    - Gladwell's "10,000 hours" outliers hypothesis (2008)
    - Learn environmental baseline (Frank et al 2013)
  - "Ethnic bias check" by articulating observations
- 
- **TSA has the data on who are the better BDO's**
    - Hit Rates
    - Social/Emotional intelligence
    - Demographics/Previous job experience
    - **CONCLUSION: Find and Reverse engineer them**

# QUESTIONS?

Thank you!

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# BACK UP SLIDES

Thank you!

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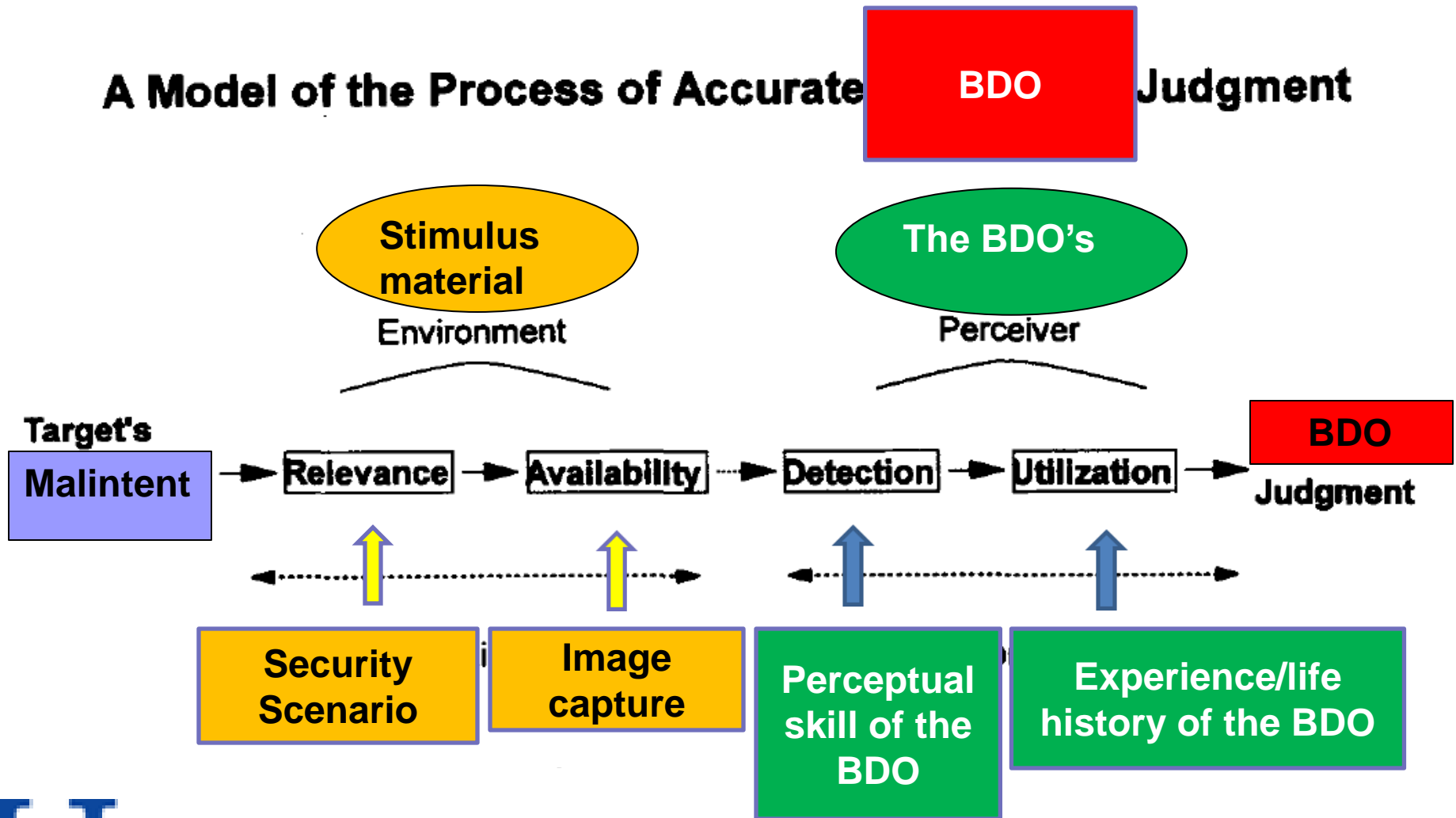




# Realistic Accuracy Model (RAM; Funder, 1995)

(borrowed by O'Sullivan, Frank, Hurley, & Tiwana, 2009)

## A Model of the Process of Accurate **BDO** Judgment



# What do we know about BDOs?

- They are better than others.
  - They do better in the airport getting contraband
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- Cautions when interpreting previous research
- Realistic Accuracy Model and BDO development
  - Issues with materials to train or assess
- Conclusion: Reverse Engineer the best ones



# Who *could* be a Behavior Detection Officer?

- **Specialized individuals**
  - Natural ability
  - Life history
  - Empathic
  - Emotional Intelligence
  - Work in jobs that pull for such skills
  - Openness to training
  
- **Conclusion: Find them; reverse Engineer the best ones**



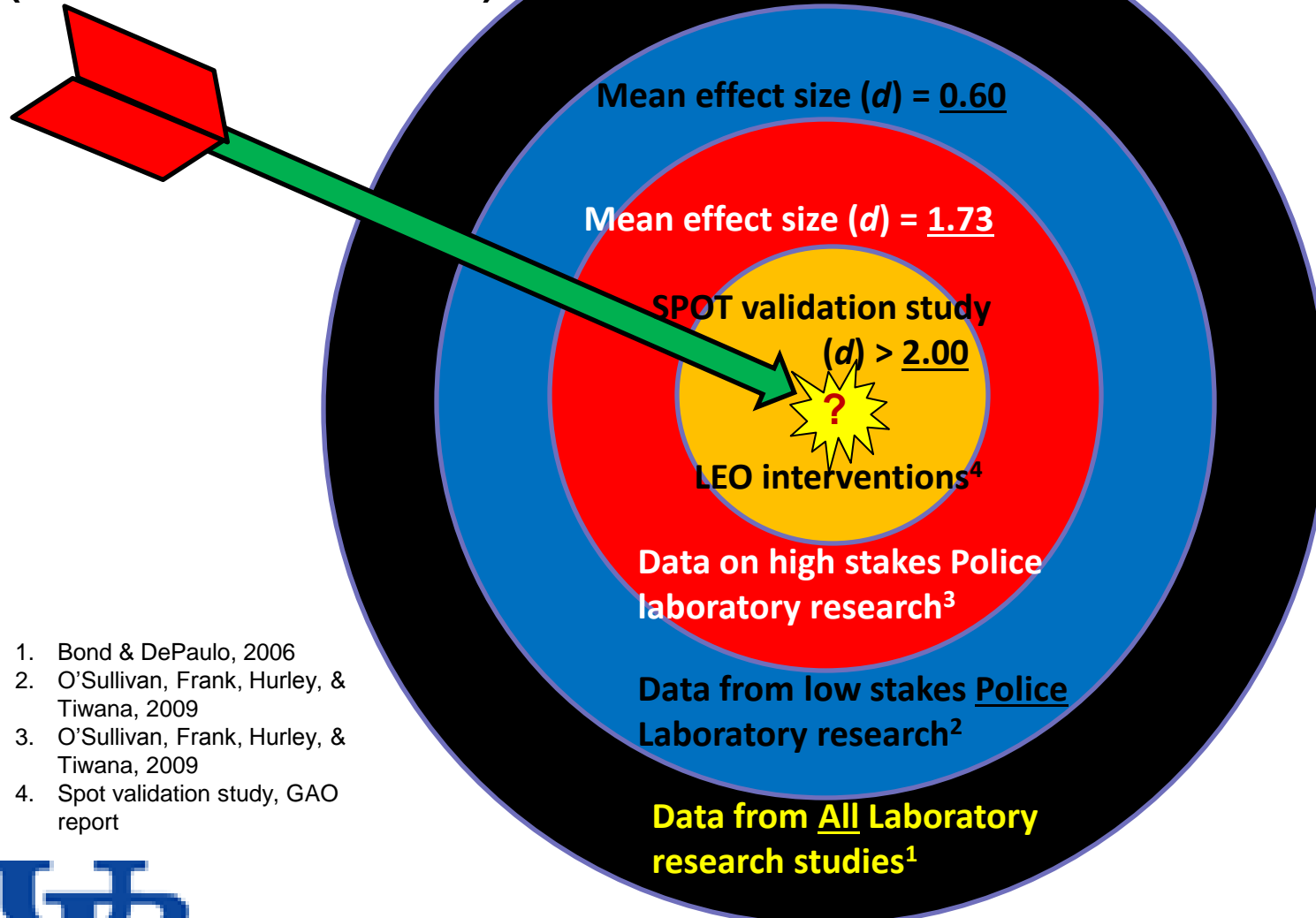
# Who *should* be a Behavior Detection Officer?

- Profile current excellent BDO's
  - TSA has data on who are the better BDO's
    - Hit rates
      - *How to assess?*
  - Create a testing regime to best identify them
  - Train the others
    - *Perishable (sort of)*
- Conclusion: Assess them; reverse Engineer the best ones



# They do better in Airport getting contraband

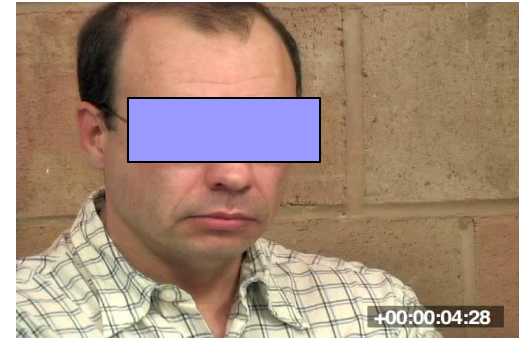
The unknown  
(Actual terrorist attacks)



“DHS’s 2011 validation study compared the effectiveness of SPOT with a random selection of passengers and found that SPOT was between 4 and 52 times more likely to correctly identify a high-risk passenger than random selection, depending on which of the study’s outcome measures was used to define persons knowingly and intentionally trying to defeat the security process.” (GAO report GAO-14-159 p. 30)

1. Bond & DePaulo, 2006
2. O’Sullivan, Frank, Hurley, & Tiwana, 2009
3. O’Sullivan, Frank, Hurley, & Tiwana, 2009
4. Spot validation study, GAO report

# Laboratory Controlled situation - Intended theft



## ***How many SPOT behaviors do subjects show?***

***- Simple presence or absence***

<b>Group</b>	<b>Showing 0 behaviors</b>	<b>Showing 1+ behaviors</b>	
<b>Intended thief</b>	<b>1 (12.5%)</b>	<b>7 (87.5%)</b>	<b>8</b>
<b>Intended innocent</b>	<b>6 (75%)</b>	<b>2 (25%)</b>	<b>8</b>
	<b>7</b>	<b>9</b>	<b>Overall 81%</b>

***Test video showed that there was information available to detect intended thieves...***

## Lab Controlled: SPOT vs. NON SPOT trained TSA/DHS

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Group	Overall	Intended	NonIntend	No FP	n
<i>SPOT BDO</i>	58.3%	70.3%	46.0%	67.0%	16
<i>Other DHS</i>	55.9%	57.7%	53.7%	60.0%	70
<i>Undergraduates</i>	50.1%	46.0%	54.2%	52.8%	42

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*Spot trained statistically better than the other three groups, and are doing better than simply guessing. (2 items with FP clues - BDO's get 0% correct).*





## ***How many SPOT behaviors do subjects show?***

***- Simple presence or absence***

<b>Group</b>	<b>Showing 0 behaviors</b>	<b>Showing 1+ behaviors</b>	
<b>Intended thief</b>	<b>2 (18%)</b>	<b>9 (82%)</b>	<b>11</b>
<b>Intended innocent</b>	<b>6 (67%)</b>	<b>3 (33%)</b>	<b>9</b>
	<b>8</b>	<b>12</b>	<b>Overall 75%</b>

***First 20 subjects showed that there was information to detect intended thieves...***

# The Big Picture

- At the core of every terrorist attack: A PERSON!
- It is an immutable fact that any integrated security program must address the human element.



- **Humans are a dynamic threat that requires a dynamic defense**
- **The SPOT/BDO program is that dynamic defense**



# Summary & Future Issues

## ■ Diagnostic behaviors exist

- Universal, not ethnic, not perfect, can be trained
- Fear the human...integrate & improve the technology?
- Costs associated with detection
  - *30-90 seconds interview; better criteria for secondary; scale issues*

## ■ What constitutes evidence for accuracy?

- Arrest? Tale of the Creeps...
- Only terrorists, and when active? (*verb v noun*)

## ■ Training vs. selection?

- Training for detection effective
- *Who* are the good people? Find more...
- What about deterrence value? \$\$?



# Example: Meta analysis of Police deception detection, high v. low stakes.

(From: O'Sullivan, Frank, Hurley, & Tiwana, 2009).

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<i>Stakes</i>	<i>k</i>	<i>Accuracy</i>
High	13	67.2% (SD = 9.9)
Low	18	55.2% (SD = 8.6)

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$t [29] = 4.21, p < .001, d = 1.22$

# Can we do better?

*Training participants to detect microexpressions.*

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Group	Pretest	Posttest	n
<b><i>US Undergraduates</i></b>			
Control	64%	65%	136
<b>Training</b>	<b>63%</b>	<b>81%</b>	<b>139</b>
<b><i>US Coast Guard</i></b>			
Control	53%	50%	37
<b>Training</b>	<b>57%</b>	<b>83%</b>	<b>42</b>
<b><i>Japanese Business People</i></b>			
Control	63%	64%	20
<b>Training</b>	<b>60%</b>	<b>81%</b>	<b>20</b>

---

*Training Main Effect (F 1,379) = 39.0, p < .0001*

# Example: Lab vs. Real world

- We can rank order research data for

Relevance	Type	Evidence Source
1. Perfect	Actual <b>Terrorists</b> in airports	Doesn't really exist / Small
2. Very Good	Actual <b>Criminals</b> in airports	Validation study / 30k obs.
3. Good	Laboratory subjects: <b>High stakes deception ONLY</b>	Research literature
4. Moderate	Laboratory subjects: <b>All</b> studies on deception detection	Research literature

- Let's examine their utility (effect sizes) as we get zero in on the target - the perfectly relevant data



*Training participants to detect microexpressions & deception detection.*

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<b>Group</b>	<b>Real Time Micros</b>	<b>n</b>
<b><i>US Undergraduates</i></b>		
Control	24%	136
<b>Training</b>	<b>31%</b>	<b>139</b>
<b><i>US Coast Guard</i></b>		
Control	20%	37
<b>Training</b>	<b>38%</b>	<b>42</b>

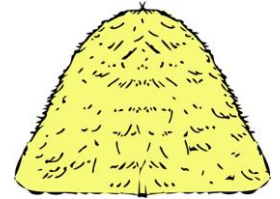
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***Training Main Effect (F 1,350) = 39.3, p < .0001***

***Interaction Training & Group (F1, 350) = 7.56, p < .007***

# Full cost of the event

*The Needle (terrorist) in the Haystack  
(everyone else)*



**Terrorism is a *rare* event...BUT  
Terrorism is a *costly* event**

**The cost of Sept 11: Almost 2 trillion  
including indirect costs...**



# What SPOT does not/ does do

- *“it is ridiculous to arrest someone for being nervous in an airport...who isn't nervous to fly?”*
- *E.g., GAO report ‘...SPOT conducted at a distance...’ or ‘officers...should elicit verbal responses...’ and ‘reading facial expressions...to identify suspicious passengers.’*
- Turns out these are only partially true.
- **SPOT involves observation, interview, referral**
- Based on Israeli model...sort of
  - No profiling
  - Lawyer-induced checklist
  - Scale (flights per day)

# The GAO report(s) on Behavior Detection

- The issues...

- Failure to comprehend:

- What SPOT does

- **Ecological validity**

- Full cost of an attack (indirect & direct)

- Whether one can test easily

# Ecological validity?

- Meta analytic approaches suggest we are not very good at spotting lies
- Most recent/comprehensive meta analysis (*Bond & DePaulo, 2006*) shows that we are typically about 54% accurate
  - (61% accuracy truths, 47% accuracy lies)

# Ecological validity?

- Lens-model analysis suggests behavioral clues only weakly related to deception (*Hartwig & Bond, 2011*)
  - *“The common-sense notion that liars betray themselves through body language appears to be little more than a cultural fiction.”* M. Hartwig, **NY Times** March 25, 2014, p. D3

# Critique of the validation study

## ■ **PRO:**

- *Real behavior*
- *Real consequences*

## ■ **CON:**

- *BDO's knew who was random*
- *Random vs untrained officer choices?*

## ■ **UPSHOT:**

- *Premature to abandon behavioral detection*

# Ultimate applications?

- Each security layer does not need to be perfect
- The ultimate goal is more **modest** than assumed
  - First : Keep the terrorist away from the airport
  - Second: **If they arrive, make sure techniques put them in secondary screening**
    - A certain number of screens per hour
- *Playing the odds*: What should be the criteria for making judgments?
  - Ethnic? **NO**
  - Random? **Maybe**
  - Behavioral science - **YES!!**
    - IT UNDERPINS ALL ASPECTS OF TERRORISM



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## How much did the September 11 terrorist attack cost America?

Counting the value of lives lost as well as property damage and lost production of goods and services, losses already exceed \$100 billion. Including the loss in stock market wealth – the market's own estimate arising from expectations of lower corporate profits and higher discount rates for economic volatility – the price tag approaches \$2 trillion.

Among the big-ticket items:

The loss of four civilian aircraft valued at \$385 million.

The destruction of major buildings in the World Trade Center with a replacement cost of from \$3 billion to \$4.5 billion.

Damage to a portion of the Pentagon: up to \$1 billion.

Cleanup costs: \$1.3 billion.

Property and infrastructure damage: \$10 billion to \$13 billion.

Federal emergency funds (heightened airport security, sky marshals, government takeover of airport security, retrofitting aircraft with anti-terrorist devices, cost of operations in Afghanistan): \$40 billion.

Direct job losses amounted to 83,000, with \$17 billion in lost wages.

