

Salience (psychological set)

Raymond Nelson, MA, NCC

February 2018

Psychological Set

- A person's fears anxieties and apprehensions are channeled towards the situation which holds the greatest immediate threat to his self-preservation or general well-being. He tunes in that which indicates trouble or danger by having his sense organs tuned for a particular stimulus, and he tunes out that which is of a lesser threat to his self-preservation or general well-being. (Matte & Grove, 2000)
- Attributed to Floyd & Rush (1948)
- Also Attributed

Psychological Set

- Attributed to Floyd & Rush (1948)
- Also Attributed to Tichener (1914)
- Does NOT appear in either text
- Not found in published psychological literature

Related Concepts

- Anti-climax dampening effect
- Outside superdampening effect
- Do NOT appear in published psychological literature

Anticlimax Dampening

A person's fears, anxieties, and apprehensions will be directed to that situation which holds the greatest threat to his or her well-being or self-preservation at that point in time. In the polygraph examination, a guilty examinee's concern over an intense relevant question may result in a full or partial dampening of responses to other questions, such as less intense relevant questions or comparison questions.

Outside Super-dampening

There will be a suppression of general reactivity to relevant and comparison questions when the examinee is more concerned that the examiner will ask an unreviewed question about another issue outside the scope of the current examination questions. Though once widely accepted, the available evidence suggests that the effect is negligible or nonexistent.

Total Chart Minutes Concept

A concept offered to consider possible variation in the rate of habituation for the individual physiological parameters recorded in PDD. Backster developed a habituation curve for each of the parameters for the amount of time these activities were recorded during testing, and published his report in 1963. It has not received much attention among researchers, and is not currently taught in the field.

Poly-babble

- Ideosyncratic jargon that is not found outside of polygraph
- Not recognizable to other scientists
- Not found in published scientific literature
 - “Alice-in-wonderland” terminology
- Will not result in credibility or respect among the forensic sciences
- Risk of being regarded as pseudo-science

Psychological Basis

- Psychological Set (Barland, 1981)
- Conditioned Response Theory (Pavlov, 1927)
- Orienting Theory (Sokolov, 1963)
- Dichotomization Theory (Ben-Shakhar, 1977)
- Threat of Punishment Theory (Davis, 1961)
- Arousal Theory (Davis, 1961)
- Conflict Theory (Davis, 1961)

Salience (psychological set)

The subject will focus his or her attention and response potential on the issue that presents the greatest immediate concern (threat to his or her well being)

(Barland, 1981)

For non-naïve subjects, relevant questions could conceivably present the greatest threat-value, in response to fear of an erroneous result and false accusations

Conditioned Response Theory

- Autonomic responses can be classically conditioned
- Acts of transgression produce single-trial emotional conditioning
- Polygraph Question become a conditioned stimulus

Relevant stimuli could be conditioned through other mechanisms (i.e., experience of false accusation, prior testing and interrogation, personal experiences, etc.)

(Diven, 1937; LeDoux, 1995; Pavlov, 1927; Tursky, Lodge, Foley, Reeder, and Foley 1976)

Conditioned Response and Limit Testing (testing the limits)

- Besides what you told me...
- Besides those 8 times....
- Besides those 500 times...
- Are you now withholding any information about...

Conditioned response theory tells us that examinees who admit to involvement in a behavior are expressing they have a conditioned response to that stimulus

(Diven, 1937; LeDoux, 1995; Pavlov, 1927; Tursky, Lodge, Foley, Reeder, and Foley 1976)

Orienting Theory

- “What is it?”
- Orienting responses are attentional reactions to novel or personally significant stimuli
- Orienting theory includes:
 - Orienting responses – novel stimuli
 - Defensive responses – threatening stimuli
 - Biologically intended to facilitate a possible adaptive behavioral response to the stimulus

Weak discriminate validity between the
orienting response and defensive response

(Kahneman, 1973; Pavlov, 1927; Sokolov, 1963)

Dichotomization Theory

- Built on the concepts of signal value, conditioned response, orienting, and habituation
- Stimuli represent either of two categories
 - Threatening (Personally Relevant)
 - Aggressive dogs
 - Produce a defensive response
 - Neutral
 - Clocks, traffic noise, trains
 - Produce an orienting response

(Ben-Shakhar, 1977; Kahneman, 1973; Pavlov, 1927; Sokolov, 1963)

Dichotomization Theory

- Signal Value
 - How strong is the data you are seeking
 - What components or elements contribute to the strength of the data signal
- Conditioned Response
 - Direct involvement in a behavior or issue conditions an autonomic response potential that can be triggered by a stimulus
- Orienting
 - What is it?
 - Stimuli represent either Personally Relevant or Neutral categories
- Habituation
 - Getting used to it
 - Response capacity diminishes through continued exposure to stimulus

Dichotomization Theory

- Neutral stimuli habituate rapidly - allows concentration on salient information
- Threatening (Personally Relevant) stimuli habituate slowly – permits continual response as needed

For non-naïve subjects, responses to relevant questions could conceivably habituate more slowly than other questions, which the non-naïve subject's experience suggests will not affect important decisions

Threat of Punishment Theory

- Assumes that lying is an imperfect avoidance reactions in response to anticipated punishment that would definitely occur if one told the truth
- Anticipation of being caught lying causes physiological reactions

Does not exclude the possibility that relevant questions provide the greatest threat during an examination, particularly for non-naïve subjects

(National Research Council, 2003)

(Davis, 1961)

Arousal Theory

- Depends upon the personal significance of the stimulus to the examinee
 - Assumes examinees respond physiologically to differential signal value to test questions
 - Does not assume fear, guilt, or other emotions
- As in conditioned response theories, experiences other than engagement in a prohibited behavior could condition a response
 - Subject to the same concerns regarding the independent habituation of significant and non-significant stimulus for non-naïve subjects

(Ben-Shakhar, Leiblich, and Kugelmass, 1970; Prokasy and Raskin, 1973)

Conflict Theory

- Assumes that examinees experience conflict surrounding problem behavior
 - Conflict surrounding motivation for problem Bx
 - Conflict surrounding motivation for lying
 - Assumes that combined conflict elements will assure reactions greater than a reaction to a single conflict element
- Does not account for test performance when an examinee does not respond verbally
 - Cannot guarantee involvement in the issue as the only source of conflict surrounding an issue

(Davis, 1961)

Fight or Flight? (Cannon, 1929)

“Contrary to the notion that sympathetic nervous activation is global and diffuse, highly specific regional sympathetic activation has been observed in response to stressors (Johnson and Anderson, 1990), even in extreme conditions such as panic attacks (Wilkinson, Thomson, Lambert, Jennings, Schwarz, Jeffreys, Turner, and Esler, 1998).”

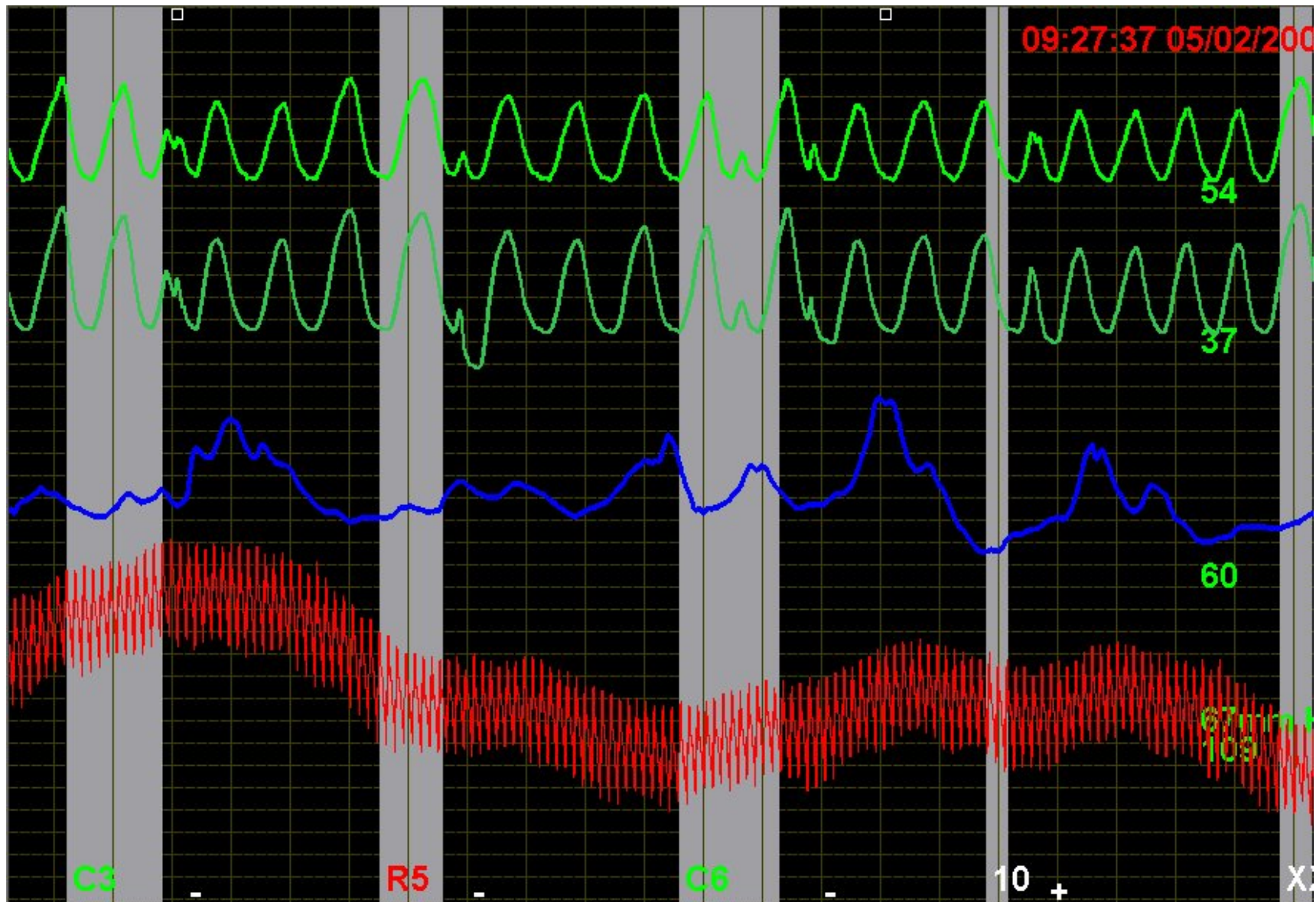
(National Academy of Sciences, 2003) [p.82]

Polygraph does not actually monitor fight or flight reactions, but more specific (non-global) ANS reactions to test stimulus questions

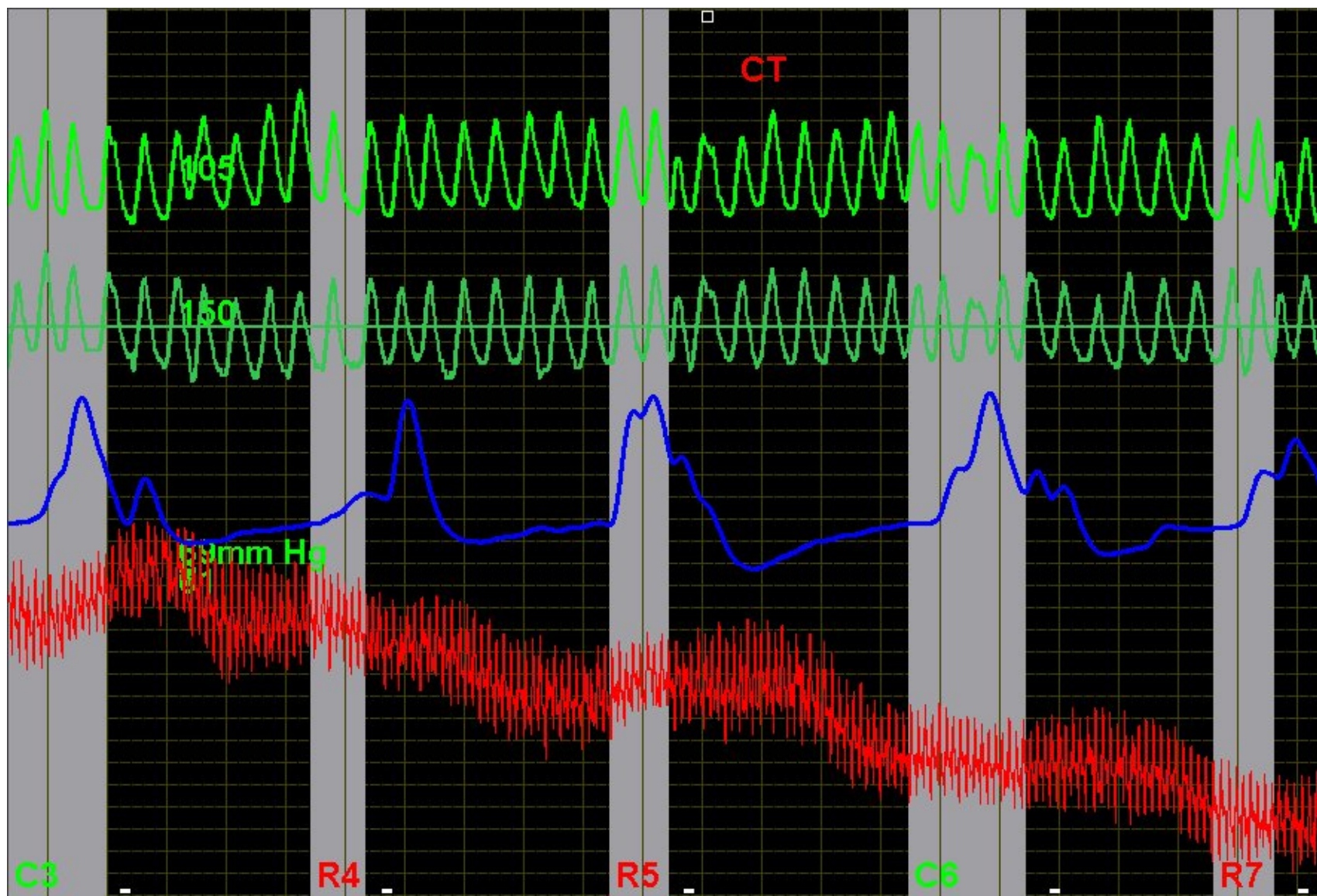
Directed Lie - Sensitivity



Severe PTSD - Adult



Severe PTSD - Juvenile



Salience

- A general theory
 - Does not attempt to guess at which emotion
 - Does not attempt to guess at cognition
 - Does not pretend certainty regarding past behavior
- Describes a reliable observable phenomena
 - Reactions are loaded onto certain types of questions depending on deception and truth-telling
 - Correlation is good but not perfect
- Assumes a combination of emotion cognition and behavior
- Depends on probability and decision theory to describe the level of confidence

Salience

- Described in neuroscience as the state or quality of standing out relative to neighboring items
- Considered to be a key attentional mechanism
- Facilitates learning and survival
- Similar to “psychological set” but not limited to emotion and fear
- Includes ***cognition, emotion, and behavioral conditioning*** as the psychological basis of physiological response

Salience and PDD

- When presented with a sequential array of relevant and comparison stimulus questions, an examinee's reactions will load more onto one type of stimuli depending on whether the person is truthful or deceptive.
- The basis of reaction is a combination of emotion, cognition, and conditioning related to past behavior that is described by the test stimuli.

Science

- Hypothesis
 - An idea or explanation
 - No evidence
 - A research question
 - We are obligated to discard hypothesis when there is any evidence that it is false
- Theory
 - A hypothesis for which there is replicated evidence to support it
- Law
 - A

Theory or Hypothesis Must Explain

- Parsimony
 - Greatest range of phenomena with simplest solution
- Why does the test work?
 - POT / GKT / CIT
 - CQT
 - PLC
 - DLC
 - Psychopathic persons
 - Non-psychopathic person
- What does the test actually measure?

Salience

- Emotion
- Cognition
- Behavioral experience

Emotion

- Fear
- Anger
- Disgust
- Other emotions

Cognition

- Memory
- Attention
- Mental activity

Behavioral Experience

- Conditioned response to descriptive stimulus

Salience and PDD

- When presented with a sequential array of relevant and comparison stimulus questions, an examinee's reactions will load more onto one type of stimuli depending on whether the person is truthful or deceptive.
- The basis of reaction is a combination of emotion, cognition, and conditioning related to past behavior that is described by the test stimuli.

What does the polygraph measure?

- Polygraph measures response to the test stimulus questions and the differential salience of different types of test questions: relevant and comparison questions.
- Salience is function of emotion, cognition and past behavior regarding the stimulus issue.
- Differences in responses are numerically scored, and normative data is used to calculate a statistical classifier regarding the level of significance – the probability of error or confidence level - regarding deception or truth-telling.

The End.

Thank You.

Raymond Nelson, MA
Denver, Colorado, USA
(303) 587-0599
raymond.nelson@gmail.com