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Nelson R., Handler M., Smitley B., (2017), "Practical Polygraph: FAQ on Electrodermal Activity and the Electrodermal Sensor", APA Magazine 2017, 50 (3), 60–76.

If you ever had any questions concerning the Electro Dermal Activity (EDA) aka the Galvanic Skin Response (GSR) this article will have the answer. It is an extensive review concerning the major contributor to polygraph test results, as, in the authors' words: "a number of studies have shown that EDA data has a stronger correlation with the external criterion compared to other data recorded during comparison question testing".

The term EDA was coined and emerged along with the new millennium and it refers to the electrical characteristics of the skin. In the past this activity was known as: skin conductance, galvanic skin response (GSR), electrodermal response (EDR), psychogalvanic reflex (PGR), skin conductance response (SCR), sympathetic skin response (SSR), and skin conductance level (SCL).

The traditional theory of EDA holds that skin resistance varies depending on the state of sweat glands in the skin. Sweating is controlled by the sympathetic nervous system, and skin conductance is an indication of psychophysiological arousal. If the sympathetic branch of the autonomic nervous system is highly aroused, then sweat gland activity also increases, and this in turn increases skin conductance. In this way, skin conductance can be a measure of emotional and sympathetic responses.

This article belongs to the "everything you ever wanted to know about the EDA but were afraid to ask" type. Which is why it asks the questions and answers them extensively, in a high resolution and detailed manner, and provides an extensive reading list for those who want to expand their knowledge. Although the main focus of the review is the EDA, it goes beyond the key issue to explore skin and sweat as well. If you have ever asked one of the following questions about the EDA, you will find it answered in this article:

- What is EDA?
- What is the difference between EDA and GSR?
- How is EDA measured?
- What are constant-current and constant voltage circuits, and why do we care about them?
- Should EDA be measured as resistance or conductance?
- What is the normal range of skin resistance and skin conductance?
- This tech stuff is nice but what is actually happening to the skin and EDA during polygraph testing?
- What is the difference between EDA and skin potential?
- What do we know about the skin?
- Everything you ever wanted to know about sweating but were afraid to ask.
- How much electricity is involved in the polygraph EDA sensor?
- What if a person has an artificial pacemaker or defibrillator?
- What is the unit of measurement for EDRs in the displayed or printed polygraph chart data and extracted scores?
- Should we use metal plates or wet electrodes?
- Should we clean the skin with soap and water or alcohol?
- Can we conduct a polygraph test with a subject with problematic EDA data?
- Is it possible to fix or rectify problematic EDA data?
- Should we use the automatic or manual EDA mode?
- Do medications affect the EDA?
- What can we tell the subject about the EDA data and EDA sensor?
- Why should field practitioners be concerned with all these technical details?

The list below comprises very short answers to some of the questions most frequently asked by practitioners. Extensive answers can be found in the article:

Q. "What if a person has an artificial pacemaker or defibrillator?"
A. "It is highly unlikely the applied current could travel beyond the skin region."

Q. "Should we use metal plates or wet electrodes?"
A. "Psychophysiologists prefer and recommend wet electrodes."

Q. “Should we clean the skin with soap and water or alcohol?”
A. “Cleaning the skin with alcohol-based cleaners is contraindicated.”

Q. “Should we use the automatic or manual EDA mode?”
A. “ Field polygraph professionals who do not interpret EDL data may want to use the Automatic EDA mode (…) making it easier to manage and extract EDRs from the recorded test data.”

Q. “Do medications affect the EDA?”
A. “Although some medications may cause an increased risk of inconclusive results, their use causes no known increase in the risk of test error.”

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