Measuring Human Personality by Machine: Could it be true?

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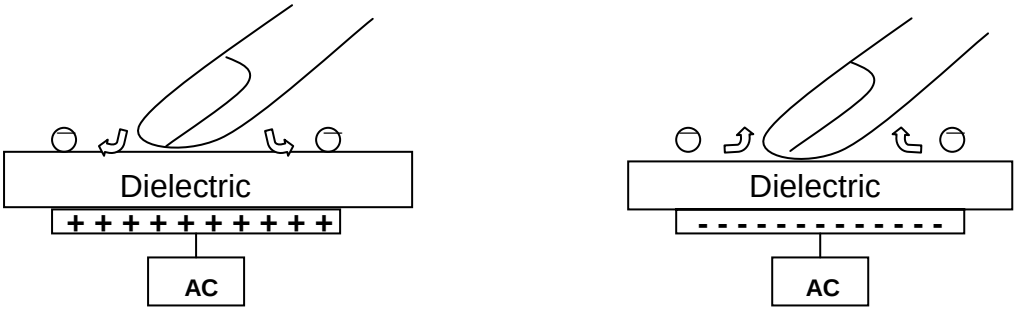
The Physics

The physics of gas discharge is well documented (see, for example, Nasser 1971). The Gas Discharge Visualization (GDV) technique (Korotkov 2004) places an object in a high intensive electromagnetic field (EMF). The object is separated from the electrode by a dielectric – a substance that does not conduct electricity but permits an electromagnetic field. If we apply a voltage between the object and the electrode current does not flow between them because of the dielectric but a potential difference builds up until the breakdown voltage is reached. This is the point at which electrons around the object begin to move and a current begins to flow along the surface of the dielectric. As they move the electrons collide with heavier gas molecules wrenching out electrons and emitting quanta of light (photons). Each collision results in two electrons so branching tree like patterns of light result. When an alternating current is used avalanches of ionization moving away or towards the electrode core are overlaid upon each other. The GDV uses a camera to photograph the emitted photons and a computer programme to analyse the captured AVI files. The resulting image parameters are stable and sufficiently distinctive to reliably distinguish between different liquids, metals and gemstones and between electrolytes of different concentrations (see Korotkov 2001, 2004).

Ionization of gases around a human finger



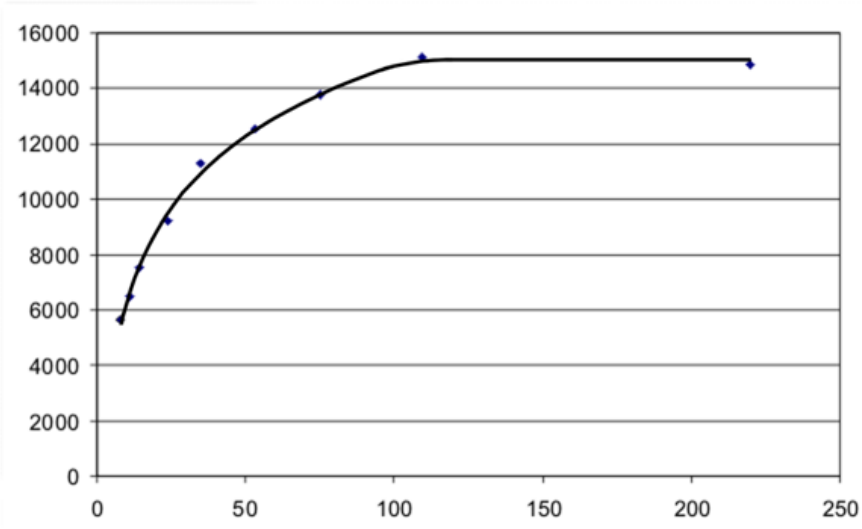
The nature of the ionisation and photon emission is dependent upon a) the nature of the EMF which in this case is constant (10kV impulses of 10 microseconds duration at a repetition frequency of 1024Hz for 0.5 seconds) b) the ability of the object to hold an electric charge (its capacitance) and hence its breakdown voltage c) the nature of the surrounding gases.

The relationship between GDV image area and the capacitance of a metal cylinder is shown below (Korotkov 2008, personal communication). As can be seen for a significant part of the range the GDV image area increases as capacitance increases.

Dependence of GDV image area on capacitance of the object

GDV image area (pixels)

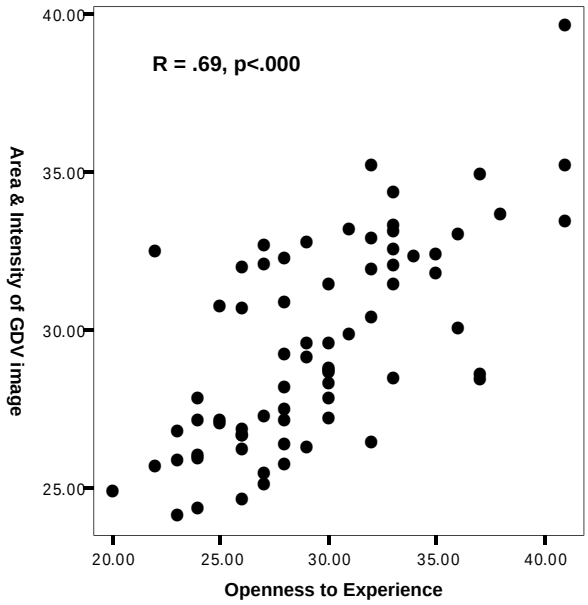
I



The Research

This paper reports an empirical study of the relationships between photon emission as measured by the GDV technique and the “Big Five” personality dimensions as measured by NEO-FFI (Costa & McCrae 1992) amongst samples in Russia (N = 35) and the UK (N = 42). With human subjects the fingers of both hands are subjected separately to the EMF. The Russian version of the NEO-FFI was used for the Russian sample and different GDV machines and operators were used in the two countries. Despite this, a strong relationship ($R = .69$, $p < .000$) was found between the extent of photon emission as measured by GDV parameters and one of the “Big Five" personality dimensions, namely, Openness to Experience. This relationship held for both sub-samples when analysed separately (UK, $R = .60$, $p < .002$; Russian, $R = .53$, $p < .015$) and for all the fingers of both hands. [The research also found some significant results for Extraversion but these were not as strong or as consistent as those for Openness]

Finger	Group	R
1.00	UK	.572
	Russian	.543
2.00	UK	.538
	Russian	.335
3.00	UK	.531
	Russian	.326
4.00	UK	.541
	Russian	.490
5.00	UK	.522
	Russian	.308



The Explanation?

A. Individual differences in the Autonomic Nervous System

Dry skin is a poor conductor and acts as a leaky dielectric. One of the consequences of ANS arousal is stimulation of the eccrine glands in the skin causing sweating, increasing skin conductivity, reducing its capacitance and breakdown voltage. A possible explanation of the obtained results is that those less Open to Experience have a higher resting level of ANS activity resulting in increased skin conductivity, less capacitance and a lower voltage at which breakdown occurs and hence less ionization and photon emission relative to those who are more open. DeYoung et al (2005) have reasoned that the fifth factor of Openness involves the limbic and autonomic systems and Costa and McCrae (1992) state that open individuals "experience both positive and negative emotions more keenly than closed individuals" also implicating mid-brain structures and the ANS in individual differences in openness. Also in support there is a significant body of research using the Galvanic Skin Response which finds individual differences in skin conductivity, namely, electro-dermal stabiles and labiles (for a review see Dawson et al 2000). Electro-dermal labiles display higher performance levels and less decrement in vigilance tasks than stabiles which is exactly what Hans Eysenck found to be the case for Introverts. In his book *The Biological Basis of Personality,* Eysenck reasons that individual differences in Introversion-Extraversion are associated with genetically based differences in the resting level of arousal in the Reticular Activating System (Eysenck 1967). Eysenck used the Eysenck Personality Inventory in his research and so did not measure Openness to Experience, but of interest is the significant correlation of 0.43 between Extraversion and Openness reported by Costa & McCrae (1992).

B. Individual differences in Body Energy

Bundzen & Korotkov (2004) in studies of top athletes conclude that the GDV image reflects the available energy reserves of the body. This conclusion is compatible with studies on physical illness, mental stress and mental work most of which report reduced GDV images relative to the norm as well as research on interventions such as meditation, yoga and stress management techniques which tend to result in enhanced images (see Dobson & O'Keeffe 2005, and a range of studies in Korotkov 2004). Such an explanation would suggest that an individual's Openness to Experience – open individuals are characterized by Costa & McCrae (1992) as imaginative, adventurous, humorous, outgoing, curious, optimistic and excitable – reflects their level of energy reserves.

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