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Robert Stelmack:

Introduction to Special Issue

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This special issue dedicated to Robert ('Bob') Stelmack is in recognition of his significant contributions to the psychology of individual differences. These consist in three parts. First, Bob's outstanding scientific work which has so influenced the literature. Secondly, the positive influences Bob has had on many people, which have both inspired and enabled their research careers. Thirdly, Bob's contribution to the *International Society for the Study of Individual Differences* (ISSID) which he helped to establish as well as serving the role of archivist and taking responsibility for its corporate governance in Canada - Bob describes this in his contribution to a special issue dedicated to Hans Eysenck (Stelmack, 2016). (As the current President of ISSID, I know just how time consuming scientific society work can become; and the fact that Bob contributed so much to ISSID *for so long* deserves special mention.) It is appropriate that this special issue is appearing in *Personality and Individual Differences* (PAID) which is the house journal of ISSID.

Bob's high quality psychophysiological research – focussed on the causal bases and implications of individual differences - serves to open wider the theoretical window on the biological foundations of personality and intelligence factors. In addition, his sophisticated choice and use of psychophysiological methodologies set a standard that others sensibly were to follow. It is easily forgotten that such pioneering conceptual, theoretical, methodological and statistical groundwork was necessary to lay the firm foundations on which are built the sophisticated neuroscience tools in common use today. These technological wonders, and

especially their extension to individual differences research, would not have been possible without such scientists who, it should be remembered, had to remain content with more basic psychophysiological methods – and who had to resist the temptation to be neither disappointed nor frustrated by them. But, for some, these psychophysiological measures were inadequate. Jeffrey Gray was fond of the joke of the man looking for his lost car keys under the street light to characterise this literature (when asked why, the man said he was looking there because that is where the light is!). Yet even in today's heady world of technology in the psychology laboratory, these basic psychophysiological tools are still in use, and the light they continue to shed remains illuminating (Cacioppo, Tassinary & Berntson, 2016).

In addition to his sound scientific contributions, Bob's interpersonal influence should not be under-estimated. If there were a specific hubris-humility scale for academics – and there should be - Bob most certainly would be securely positioned at the positive pole. He is never showy; rather, his is a diligent and sure-footed approach, although the price to be paid is perhaps less of the limelight that is garnered by others. Bob's is a true contribution to the advancement of the science of individual differences. For this reason alone, Bob's approach is bound to withstand the test of time.

Reflections from colleagues

As the personal recollections in this special issue attest, Bob has the ability to inspire students and colleagues alike. I am grateful for the further reflections on Bob shared by the contributors to this special issue – they reflect very well indeed on the man and his work.

Some of these influences were very direct. Donald T. Stuss reflects on Bob's early influence on him:

> "Bob's primary influence on me was through the classes he taught when I was a student at the University of Ottawa. As a student in the clinical psychology program, I

had little experimental background. What I remember about his classes, and his labs, was the emphasis on experimental rigour, and the importance of grounding one's thinking and research in historical influences. He loved Fechner! This grounding stood me in good stead as I gradually morphed into a researcher."

On a more personal note, Stuss goes on to recall:

"As a later colleague, Bob was one of the warmest individuals one could know. We share a common heritage (Ukrainian) which created a bond. And my warmest memory was his willingness to rent a then poor assistant professor his lake cottage, where my young daughter first learned to cast and catch fish."

Similarly, Britt Klinteberg remembers:

"I always liked Bob's kind friendship when we met at ISSID Conferences - the area of individual differences he did so much to develop has always been my leading research interest. I admired Bob mostly as a very gentle, kind and interesting person. Along with others, Bob came up with the idea to form ISSID. This was the first society that I joined and it gave me over the years a lot of inspiration in my research career."

Vilfredo De Pascalis states:

"Bob's papers on individual differences in Extraversion and ERPs were very important for me. Each new paper stimulated new ideas for my own research. More generally, I think his influence on psychological sciences was very important, since

his work was mainly oriented in biological bases of personality, intelligence and individual differences. His work in the 1970-1990s was especially important in showing that individual differences in extraversion and neuroticism could be reflected in different brain responses. For Bob this electrophysiological evidence was not limited to a description of differences in brain functioning, but was a clear demonstration of the genetic basis of extraversion/introversion. The same was true for the studies he conducted on intelligence and ERPs. Bob was the centre of attraction for a number of young psychophysiologists from of different countries and with different theoretical frames of reference (e.g., Rammsayer, Houlihan, Neubauer, myself, and many others). Bob's scientific, and personal, influence went far and deep."

On a general note, Thomas Rammsayer says:

"Bob made large contributions to the study of personality and individual differences, especially with regard to mental ability and extraversion. In both these areas, he successfully promoted the use of mental chronometry and psychophysiology (especially the use of event-related potentials) for a better understanding of human nature. More specifically, for more than three decades, Bob has been a highly recognized absolute expert within the fields of personality and individual differences as well as in psychophysiology. Thus, he promoted the use of psychophysiological methods in the study of personality and individual differences, on the one hand, and the consideration of individual differences in the field of psychophysiological research, on the other one."

Other influences were indirect. For example, Dean Fido recalls:

"Although I have never had the pleasure of meeting Prof. Stelmack, his commitment to bettering our understanding of the functional significance of event-related potentials in relation to individual differences in personality has very much influenced my work on aggressive and callous-unemotional traits. So much so that I no longer see the use of electroencephalography as simply a means to an end, but rather a multidimensional tool that can be adjusted (for example, in terms of paradigm and parameters) to tease apart distinct mechanisms associated with personality."

Fido adds:

"Bob's influence on psychological research is plentiful. Stemming from his earlier research on extroversion, he has gifted the psychological community evidence, from multiple sources, about how responses to stimuli may be modulated by variation within personality traits. It is partly because of this footing, that psychological research has progressed to use psychophysical, electrodermal, and evoked potentials in order to define atypical variation in personal traits."

Gennady Knyazev recalls Bob's influence on his own scientific work in Russia.

"To my regret, I had no personal relationships with Bob Stelmack and can define it as being an admirer of his scientific work. I think his line of research had been extremely productive for both psychology and psychophysiology. For the former, by attracting attention to the brain underpinning of psychological constructs and for the latter, by

emphasising the issue of individual differences in physiological responses and thus helping to transform the psychophysiology from purely normative discipline, as it used to be previously, to the science of individual differences, as it is beginning to be now."

Papers in this special issue

Papers in this special issue come from Bob's former students and research collaborators, as well as from those who admire and respect his work albeit from afar.

Donald Stuss relates Bob's influence on his own work in neuropsychology (traumatic brain injury and frontal lobe focal pathology) where variability of performance within a supposedly homogeneous clinical group is often found: this attests to the relevance of individual differences in the clinical sphere. As Stuss notes, better understanding of such individual differences may be expected not only to advance basic (bench) scientific research but also applied (bed) treatments.

Paul Morris and Amy Warne provide an elegantly simple behavioural experiment to show the role played by introversion-extraversion in arousal modulated behaviour. Building on H. J. Eysenck's (1967) arousal theory of personality, Gale (1969) suggested that inconsistencies in the experimental literature may be due to introverts and extraverts modulating their level of arousal by behavioural means (e.g., fidgeting). Such effects are important when interpreting psychophysiological measures of arousal, especially when testing biological models of personality. The finding that extraverts move more than introverts is consistent with Bob's hypothesis that a basic difference between introverts and extraverts resides in their differential motor functions.

In another behavioural task, this time linked to EEG, Stefan Troche and colleagues employ the well-known Hick's paradigm to examine behavioural and electrophysiological

speed measures. Focussing on the P300 latency, and contrary to prediction, although RTs were negatively and significantly correlated with mental ability (MA), this relationship is not accounted for by P300 latency. This null finding suggest that the negative relationship between RTs and MA cannot be explained by reference to faster stimulus evaluation and consolidation in working memory. However, as the authors acknowledge, perhaps even the most complex condition in their experiment was not sufficiently demanding to engage the inhibitory processes underlying the P300 component. Further work is clearly needed here, of the sophisticated type emphasized by Bob. In this scientific spirit, Rammsayer, Pahund and Troche introduce a new method to understand individual differences in reaction time (RT) in relation to intelligence in the Hick's task. This work extends Bob's own endeavours which highlighted RTs as an index of intelligence-related processing.

Gerald Matthews and colleagues examine EEG individual differences to cognitive workload. Results reveal that five different EEG metrics differed in their psychometric properties, including correlations with subjective stress and task performance. They specifically note that the choice of metric may be critical in individual differences studies: The conclusion is that there is a need for a more sophisticated interpretation of EEG metrics. This line of research develops the themes in Bob's own work, namely the importance of the appropriate choice of EEG metrics and establishing the functional significance of them.

Alexandra Muller-Gass and colleagues examine which brain states are associated with perceptual learning. Measures of EEG were related to learning, showing that ERPs to a visual stimulus revealed a P3b that was larger in higher learners. The ways in which traits influence perception has been a focus of Bob's own work which he examined across a series of classic studies.

Gennady Knyazev and colleagues use a longitudinal design in primary school children to examine the relations between personality and electrophysiological (EE) resting

state measures of (a) the default mode network (DMN, associated with self-referential processing) and the central executive network (CEN, associated with the control of attention). Results show that changes in the balance between DMN and CEN in frontal cortical regions, involved in the affective value of primary reinforcers, predict parental ratings of children's personality. These findings corroborate Bob's work pointing to the importance of attention in the expression of personality.

Using a face processing and motor extinction paradigm, Dean Fido and colleagues provide an electrophysiological study of the violence inhibition mechanism, which has been associated with disorders entailing aggressive and callous-unemotional traits associated with psychopathy. A number of findings relating to N170 and P300 electrophysiological signatures are found in relation to individual differences in psychopathic traits. This type of work follows in the steps of Bob's work on the electrophysiology of introversion-extraversion, and now more specific questions may be asked, especially on matters of high clinical, criminal and social importance.

Aljoscha Neubauer and colleagues examine the effects of transcranial alternating current stimulation (tACS) on fluid intelligence using an fMRI design. Results show that theta tACS applied to the left parietal cortex increases fluid intelligence performance when working on difficult items on a matrices test. This work can be related directed to Bob's idea concerning the speed of neural transmission at task-relevant regions of the brain.

In the first of two papers, to analyse startle ERPs, Vilfredo DePascalis and Paolo Scacchia use low-resolution brain electromagnetic tomography (LORETA) to examine the role played by the behavioural approach system (BAS) during a placebo analgesia cold-cup-test (CCT). Various comparisons of baseline, pain and placebo (e.g., pain plus sham cream) conditions find associations between BAS (and its sub-factors) and activity in different brain areas (primary somatosensory cortex and ACC). The interpretation is that placebo analgesia

may reflect a form of reward (BAS-related) reactivity, an intriguing finding that calls for further scrutiny. In a second contribution to the special issue, DePascalis and Scacchia find that placebo analgesia is effective in pain and stress reduction. These back-to-back studies show how the type of psychophysiological approach to individual differences can be applied to important issues of clinical significance, in much the same way as Bob always thought.

Britt Klinteberg and colleagues examine the associations between childhood behaviour, adult personality and biochemical factors in smoking habits. (The groups comprised criminals and controls, and risk behaviour groups.) The range of findings are complex, but fascinating; and they attest to the value of the biological approach to personality pursued by Bob. Petra Netter similarly pursues the issue of smoking and biochemical factors which, once more, show the complex interactions of personality and neurochemical systems. Such results underscore the need to have theoretically coherent and empirically sound biological models of personality if we are ever to hope to unravel the complexity of gene, brain and environmental processes.

In conclusion, although neuroscience has advanced enormously since the earlier days when Bob Stelmack started working, it is all-too-easy to lose sight of the numerous and significant accomplishments made by people like him: this work predated, presaged and enabled later achievements. Individual differences research is vibrant today because of this legacy.

References

Cacioppo, J. T., Tassinary, L. G., & Berntson, G. (2016). *Handbook of Psychophysiology* (4th edition). New York: Cambridge University Press.

Eysenck, H. J. (1967). *The biological basis of personality*. Springfield, Il: Thomas

Gale, A. (1969). "Stimulus hunger": Individual differences in operant strategy in a button

pressing task. *Behaviour Research and Therapy, 7*, 265-274.

Stelmack, R. M. (2016). Reflections on Hans Eysenck: First encounter and the founding of ISSID. *Personality and Individual Differences, 103*, 16-17.