INTRODUCTION TO ACOUSTIC PSYCHOMETRY® for DEVELOPMENT PARTNERS

Acoustic Psychometry (AP) is a *computerized system to identify mental states using voice acoustics*. AP measures and displays acoustic patterns in speech that are thought to embody patterns of thinking and feeling. In so doing it aims to identify such aspects of personality as cognitive style, prevailing mood, and emotional state. AP is being developed by Dan Begel, M.D., a psychiatrist whose company, AP Systems, LLC, is located in Santa Monica, California.

AP Systems is looking for research and development partners who may be interested in assimilating a speech-based rapid mental assessment system to their products and protocols. Acoustic Psychometry can be developed as an engaging item on a *mobile phone app* catalogue, a method to weed out potential *placebo responders in drug development*, a *personality profiler for online* social and business networking, a *target variable generator* for *genomic and imaging research*, a *diagnostic test* for *clinical assessment*, a *personality filter* in *machine/human interactions*, an enhancement in *virtual reality systems*, and in many other ways.

AP is a unique and powerful instrument. With it, one can process a 30 second sample of digitized speech and discern the patterns created by the speaker in rendering his thoughts and feelings. The key underlying concepts are "*representation*" and "*structure*." Speech is the representation of an individual's thoughts and feelings, and the speaker generates patterns, or structures, of sound that represent the patterns of his mind. AP displays these patterns as *mosaic-like images* for rapid intuitive exploration. Structures are *quantified mathematically* by AP for precision and for identification of specific speaker characteristics.

As an indicator of personality, speech acoustics have drawn the attention of scientists for many decades. The work of Klaus Scherer at the University of Geneva is the cornerstone of this research, and it has been applied to clinical areas by Peter J. Snyder at Pfizer and Murray Alpert at New York University, among others. Over time, the field has moved toward *a probabilistic paradigm* derived from speech recognition techniques in which labelled emotional states are associated with best acoustic estimations. The probabilistic paradigm employs *highly sophisticated statistical methods* but its results are as yet *no more robust* than the "logical" paradigms that preceeded it. This is because, until now, it has relied on *naive psychological frameworks* that tend to obscure psychoacoustic parallels.

Acoustic Psychometry overcomes the limits of the probabilistic paradigm by *recreating the representational trends of the speaker.* In measuring the simultaneous changes of consistently selected acoustic features as these are generated over the course of an utterance, AP *mimics the acoustic mechanisms of spontaneous linguistic performance*. In separating the core structures of habitual speech from the less frequent expressive diversions, AP *dissects the natural ebb and flow of emotional dynamics in speech*. The unique approach of AP is the basis for its *enthusiastic endorsement by scientists*.

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