

Diagnosing Mental Health with Words Analysed with Artificial Intelligence

When you a client seek help for psychiatric problems they are assessed by ratings scales that, for example, measures their degree anxiety and depression. However, words are the natural way to communicate mental states. This project develops, evaluates, and implements a method where participants are asked to describe their level of depression and anxiety in descriptive keywords, and where we use statistical models to maps these words diagnoses.

In this project, we develop and validates *semantic measures* of mental health; which involves a method for measuring and diagnosing mental health using open-ended word responses, where the semantic content is analysed using artificial intelligence. Current methods assesses and diagnoses psychiatric conditions with rating scales and interviews. This project proposes an alternative to these standard methods by developing semantic measures of mental health constructs in clinical settings.

Word responses address several limitations associated with numerical rating scales. Our studies in the general population show that semantic measures have competitive, or higher, *validity* and *reliability* than rating scales. Furthermore, semantic measures *differentiate* better between psychological constructs than rating scales; where the word responses *describe* the constructs. Thus, the proposed method *measures*, *differentiates* and *describes* the to-be-measured constructs; which constitutes theoretical, empirical and methodological advancements that are crucial in clinical settings.

The project has extensively validated semantic measure in a normal population and is currently working on validating semantic measure in a psychiatric clinic in Malmö. Our method won the *Lund University Innovations* prize 2018, and *Venture Cup Startup of the Year* in Stockholm 2018. The project is supported grants from *Kamprad Foundation* and *Vinnova*. Recommend reading is Kjell et al 2018, where we published our methods in *Psychological Methods*. Online platforms for measuring mental health with words are being developed.

Contact person:

Sverker Sikström, Professor in Cognitive Psychology, sverker.sikstrom@psy.lu.se, 0703614333

Involved researcher:

Doktor Oscar Kjell, Doktorand Katarina Lundgren

Suggested references:

Kjell, O., Kjell, K., Garcia, D., Sikström, S. (2018) Semantic Measures: Using Natural Language Processing to Measure, Differentiate and Describe Psychological Constructs. *Psychological Methods*.

Online support tools:

<https://worddiagnostics.com/>

<https://semanticexcel.com>