ACL 2014

Workshop on Computational Linguistics and Clinical Psychology

From Linguistic Signal to Clinical Reality

Proceedings of the Workshop

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Introduction

Mental health problems are among the costliest challenges we face, in every possible sense of cost. The numbers are staggering: to cite just a few, in the United States mental health spending accounted for $33 billion in 1986, $100 billion in 2003, and is projected to increase to $203 billion for 2014; some 25 million American adults will have an episode of major depression this year; and suicide is the third leading cause of death for people between 10 and 24 years old. The importance of clinical psychology as a problem space cannot be overstated.

For clinical psychologists, language plays a central role in diagnosis. Indeed, many clinical instruments fundamentally rely on what is, in effect, manual annotation of patient language. Applying language technology in this domain, e.g. in language-based assessment, could potentially have an enormous impact, because many individuals are motivated to underreport psychiatric symptoms (consider active duty soldiers, for example) or lack the self-awareness to report accurately (consider individuals involved in substance abuse who do not recognize their own addiction), and because many people — e.g. those without adequate insurance or in rural areas — cannot even obtain access to a clinician who is *qualified* to perform a psychological evaluation. Bringing language technology to bear on these problems could potentially lead to inexpensive screening measures that could be administered by a wider array of healthcare professionals, which is particularly important since the majority of individuals who present with symptoms of mental health problems do so in a primary care physician's office. Given the burden on primary care physicians to diagnose mental health disorders in very little time, the American Academy of Family Physicians has recognized the need for diagnostic tools for physicians that are "suited to the realities of their practice".

Although automated language analysis connected with mental health conditions goes back at least as far as the 1990s, it has not been a major focus for computational linguistics compared with other application domains. However, recently there has been noticable uptick in research activity on this topic. One recent shared task brings together research on the Big-5 personality traits, and another involved research on identification of emotion in suicide notes. Research has been done on language analysis in the context of, for example, autistic spectrum disorders, dementia, depression, post-partum depression, general life satisfaction , and suicide risk. This increase in attention is consistent with, and gains power from, the recent rise in computational linguistics activity connected with computational social science more broadly.

With computational linguistics research on this topic moving toward critical mass, one key goal of this workshop was to bring together researchers to discuss the current state of the art, share methods, and set directions for the future. The workshop had a second goal also, though: to directly engage clinical *practitioners* in mental health. By including clinicians on our program committee and as discussants, the workshop was designed to increase NLP practitioners' understanding of what mental health clinicians do and what their real needs are, and to increase clinical practitioners' understanding of what is possible in NLP and what it might have to offer.

We received a total of 17 submissions. Of these, 7 (41%) were accepted for oral presentation and discussion, and an additional 7 were selected for inclusion in the workshop's poster session.

We wish to thank everyone who showed interest and submitted a paper, all of the authors for their

contributions, the members of the Program Committee for their thoughtful reviews, our clinical practitioner discussants, and all the attendees of the workshop. We also wish to extend sincere thanks to the Association for Computational Linguistics for making this workshop possible, and to CHIB, the Center for Health-related Informatics and Bioimaging at the University of Maryland, for its generous sponsorship.

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Rebecca Resnik, PsyD, Mindwell Psychology Bethesda

Margaret Mitchell, PhD, Microsoft Research

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Predicting military and veteran suicide risk: Cultural aspects
Paul Thompson, Craig Bryan and Chris Poulin

Linguistic Indicators of Severity and Progress in Online Text-based Therapy for Depression
Christine Howes, Matthew Purver and Rose McCabe

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11:00 Presentations and discussion 2

Comparison of different feature sets for identification of variants in progressive aphasia
Kathleen C. Fraser, Graeme Hirst, Naida L. Graham, Jed A. Meltzer, Sandra E. Black and Elizabeth Rochon

Aided diagnosis of dementia type through computer-based analysis of spontaneous speech
William Jarrold, Bart Peintner, David Wilkins, Dimitra Vergryi, Colleen Richey, Maria Luisa Gorno-Tempini and Jennifer Ogar

12:20 Poster teasers

12:30 Lunch (provided) and poster session

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Assessing Violence Risk in Threatening Communications
Kimberly Glasgow and Ronald Schouten

Detecting linguistic idiosyncratic interests in autism using distributional semantic models
Masoud Rouhizadeh, Emily Prud'hommeaux, Jan van Santen and Richard Sproat

3:30 Afternoon break

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Quantifying Mental Health Signals in Twitter
Glen Coppersmith, Mark Dredze and Craig Harman

4:45 General discussion

5:30 Workshop ends

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Applying prosodic speech features in mental health care: An exploratory study in a life-review intervention for depression
Sanne M.A. Lamers, Khiet P. Truong, Bas Steunenberg, Franciska de Jong and Gerben J. Westerhof

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