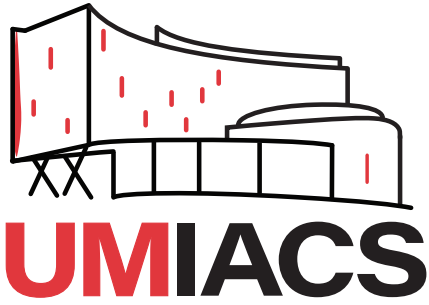


NAACL HLT 2021

**Computational Linguistics and Clinical Psychology:
Improving Access**

Proceedings of the Seventh Workshop

June 11, 2021



University of Maryland Institute for Advanced Computer Studies

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ISBN 978-1-954085-41-1

Introduction

Mental health is a formidable worldwide challenge. In economic terms, combining direct and indirect costs, the global cost of mental health conditions for 2010 was estimated at \$2.5 trillion dollars and is expected to grow to \$6 trillion by 2030 [Bloom et al. 2021]. In the United States, suicide is the second leading cause of death among those aged 10-34 and the fourth among those aged 35-54, and worldwide 800,000 people are lost to suicide each year [WHO 2014]. Access to professional help is inadequate – in the United States, more than 120 million people live in federally designated Mental Health Care Professional Health Professional Shortage Areas [HRSA 2021]; hence the selection “Improving Access” as this year’s workshop theme, with the aim of encouraging submissions and discussion on that subject.

The Seventh Workshop on Computational Linguistics and Clinical Psychology took place, in conjunction with NAACL’21, online on June 11, 2021, and as we wrote this introduction the tragedy of COVID-19 was still ongoing. Many people are experiencing unprecedented pressure – struggling with their health, finances, social isolation, and online work or education. In June 2020, a full 40% of adults in the U.S. reported struggles with mental health or substance abuse, with 31% reporting anxiety or depressive symptoms and 11% reporting having seriously considered suicide [Czeisler et al. 2020]. As of February 2021, those anxiety and depressive symptoms had increased to 41.5% [Vahratian et al. 2021]. Mental health experts have predicted a “tsunami” of need arising from the COVID pandemic [Inkster et al. 2021; Torjesen 2020].

CLPsych has an important role to play in bringing people together to discuss and exchange their recent work and results, with the aim of using human language as a tool to better understand emotional and mental states and reduce emotional suffering and the potential for self-harm. Since 2014, CLPsych has brought together researchers in computational linguistics and NLP, who use computational methods to better understand human language, infer meaning and intention, and predict individuals’ characteristics and potential behavior, with psychology researchers and practitioners, including participants who are focused on psychopathology and neurological health and engage directly with the needs of providers and their patients. The workshop’s distinctly interdisciplinary nature has improved the exchange of knowledge between computational linguistics and clinical psychology, fostered collaboration, and increased the visibility of mental health and psychological research as a problem domain in NLP.

The potential role of language technology, and AI more generally, in mental health is gaining increasing attention [Lee et al. 2021], leading to corresponding increases in discussion of real-world issues such as the ethics of research and deployment [Benton et al. 2017; Chancellor et al. 2019; Resnik et al. 2021]. At the same time, continued progress on NLP for mental health – indeed, for healthcare in general – is hampered by obstacles to shared, community-level access to relevant data. The 2021 CLPsych Shared Task introduced what is, to our knowledge, the first attempt to address this problem for mental health by conducting a shared task using sensitive data in a secure data enclave, bringing researchers to the data rather than sending the data out to researchers. Participating teams received access to Twitter posts donated for research using Qntfy’s OurDataHelps.org platform, including data from users with and without suicide attempts, and did all work with the dataset entirely within a secure computational environment provided by NORC at the University of Chicago. The shared task was organized by Sean MacAvaney, Anjali Mittu, and Philip Resnik, and the overview by MacAvaney, Mittu, Coppersmith, Leintz, and Resnik (2021) discusses the task, team results, and lessons learned to set the stage for future tasks on sensitive or confidential data.

In keeping with CLPsych’s traditional interdisciplinary approach, psychology researchers and practicing clinicians were included as part of our program committee along with technological experts, and our call for papers emphasized that communicating ideas and results to a mixed audience would be a very high priority. Submissions to the workshop included 28 papers, of which 6 were accepted for presentation and

12 were accepted to be presented in the poster session. The five shared task papers were also included in the program.

In addition to the submitted papers, CLPsych continued its tradition of superb invited talks and discussions. Keynote talks were delivered by Munmun De Choudhury (Georgia Tech) and Matthew Nock (Harvard), and invited talks by Glen Coppersmith (Qntfy), Carol Espy-Wilson (University of Maryland), and Lyle Ungar (University of Pennsylvania) were followed by a panel discussion that included the three invited speakers, moderated by Dr. Lorenzo Norris, Chief Wellness Officer for George Washington University Hospital and host and editor-in-chief of the MDedge Psychcast, a weekly podcast from MDedge Psychiatry.

The CLPsych organizing committee acknowledges with gratitude the efforts of the many people who helped make the workshop a success. This includes the authors and shared task participants for their insightful contributions, program committee members for their high quality, thoughtful reviews, and our keynote and invited speakers and panel moderator for their valuable insights. The committee is also grateful to Sean MacAvaney and Anjali Mittu for their tremendous efforts organizing and running the shared task, and particularly also to Glen Coppersmith of Qntfy, for his efforts collecting invaluable research data and making it available, as well as Jeff Leintz and his team at NORC at the University of Chicago, for hosting and supporting the shared task in their secure data enclave. Finally, the organizers thank the North American chapter of the Association for Computational Linguistics for making this workshop possible (with special thanks as always to Priscilla Rassmussen), Anjali Mittu for additional help making sure the workshop could run smoothly, Andrea Alessandri of 21am for his late-breaking redesign of the workshop web site, and the University of Maryland Institute for Advanced Computer Studies for its generous sponsorship.

Nazli Goharian, Philip Resnik, Andrew Yates, Molly Ireland, Kate Niederhoffer, & Rebecca Resnik

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Rebecca Resnik, Rebecca Resnik and Associates, LLC

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Anjali Mittu, University of Maryland
Philip Resnik, University of Maryland

Keynote Speakers:

Munmun De Choudhury, Georgia Tech
Matthew Nock, Harvard

Invited Speakers and Panelists:

Glen Coppersmith, Qntfy
Carol Espy-Wilson, University of Maryland
Lyle Ungar, University of Pennsylvania

Panel Moderator:

Lorenzo Norris, George Washington University

Program Committee:

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Tyler Davis, Texas Tech University
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Conference Program

Friday, June 11, 2021 – all times are Central Time

8:45am–10:45am Keynotes

8:45am–9:00am *Conference introduction*

Organizers

9:00am–9:05am *Keynote speaker introductions*

Organizers

9:05am–9:50am *Keynote 1 and Q&A*

Matthew Nock, Harvard

9:50am–10:35am *Keynote 2 and Q&A*

Munmun De Choudhury, Georgia Tech

10:35am–10:45am *Discussion*

Attendees

10:45am–
11:00am

Break

11:00am–12:00pm Paper session 1

Understanding who uses Reddit: Profiling individuals with a self-reported bipolar disorder diagnosis

Glorianna Jagfeld, Fiona Lobban, Paul Rayson and Steven Jones

On the State of Social Media Data for Mental Health Research

Keith Harrigan, Carlos Aguirre and Mark Dredze

Individual Differences in the Movement-Mood Relationship in Digital Life Data

Glen Coppersmith, Alex Fine, Patrick Crutchley and Joshua Carroll

11:30am–12:00pm *Discussion*

Attendees

12:00pm–
1:00pm

Lunch / Zoom poster session

Friday, June 11, 2021 – all times are Central Time (continued)

1:00pm–1:55pm Paper session 2

Dissociating Semantic and Phonemic Search Strategies in the Phonemic Verbal Fluency Task in early Dementia

Hali Lindsay, Philipp Müller, Nicklas Linz, Radia Zeghari, Mario Magued Mina, Alexandra König and Johannes Tröger

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1:30pm–1:55pm Discussion

Attendees

**1:55pm–
2:00pm**

Break

2:00pm–4:00pm Invited talks and panel discussion

2:00pm–2:20pm Invited talk 1

Glen Coppersmith, Qntfy

2:25pm–2:45pm Invited talk 2

Carol Espy-Wilson, University of Maryland

2:50pm–3:10pm Invited talk 3

Lyle Ungar, University of Pennsylvania

3:10pm–4:10pm Panel

Speakers & Lorzeno Norris, George Washington University Hospital (moderator)

Friday, June 11, 2021 – all times are Central Time (continued)

4:00pm–5:10pm Shared task

Community-level Research on Suicidality Prediction in a Secure Environment: Overview of the CLPsych 2021 Shared Task

Sean MacAvaney, Anjali Mittu, Glen Coppersmith, Jeff Leintz and Philip Resnik

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Using Psychologically-Informed Priors for Suicide Prediction in the CLPsych 2021 Shared Task

Avi Gamoran, Yonatan Kaplan, Almog Simchon and Michael Gilead

5:00pm–5:10pm Discussion

Attendees

**5:10pm–
5:20pm**

Break to make cocktails/obtain a drink

**5:20pm–
6:20pm**

Zoom cocktail poster session

Analysis of Behavior Classification in Motivational Interviewing

Leili Tavabi, Trang Tran, Kalin Stefanov, Brian Borsari, Joshua Woolley, Stefan Scherer and Mohammad Soleymani

Automatic Detection and Prediction of Psychiatric Hospitalizations From Social Media Posts

Zhengping Jiang, Jonathan Zomick, Sarah Ita Levitan, Mark Serper and Julia Hirschberg

Friday, June 11, 2021 – all times are Central Time (continued)

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Ana Sabina Uban, Berta Chulvi and Paolo Rosso

**6:20pm–
6:30pm**

Closing remarks