

Building An Ecological Mental Functioning Ontology: An Informatics Perspective

Guy Divita*, Maryanne Sacco, Kathleen Coale, Rebecca Parks and Elizabeth Rasch

Rehabilitation Medicine Department, National Institutes of Health Clinical Center, Bethesda, Maryland, USA

Abstract

Background: This Ontology of mental functioning is a needed resource for clinical natural language processing (cNLP) designed to highlight mental functioning in clinical records. Highlighting mental functioning in clinical records is wanted by practitioners. However, the body of work related to mental functioning ontologies is sparse and has focused on body-level mental functions and behavioral health. Existing standardized terminologies are also limited in conceptualizing mental functioning beyond biomedical or pathological perspectives[1].

Objectives: Our work provides a complementary perspective of mental functioning at the level of activities and participation[2] as human behaviors related to mental functioning that can be observed in daily life activities. The domain of mental functioning, from the perspective of an observer, as opposed to the patient perspective, is less codified in existing medical terminologies. Mental functioning is often documented via transforming patient sourced mentions into clinician observations. We endeavor to better codify what we understand to be mental functioning through the creation and curation of a domain ontology as part of our pursuit to find mental functioning mentions in clinical text.

Methods and Results: We present the Ecological Mental Functioning Ontology (EMFO) developed with the aims to catalog and disseminate didactic structures and terminology that describe mental functioning observations within clinical records. Face validation of the EMFO was sought as feedback from experts. The EMFO was also built upon the development of annotation guidelines detailing how to manually annotate mental functioning in a large clinical corpus. The manual annotation endeavor provided annotations to build NLP models and provided validating feedback to the ontology. The Ontology is available at <https://github.com/CC-RMD-EpiBio/EcologicalMentalFunctioningOntology>

Discussion: We are using the EMFO as a rhetorical device to encourage dialog, achieve consensus and contribute to standardizing mental functioning documentation in clinical records.

Keywords

ontology, mental functioning, controlled terminologies, natural language processing

References

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*Corresponding author.

✉ guy.divita@nih.gov (G. Divita); maryanne.sacco@nih.gov (M. Sacco); kathleen.coale@nih.gov (K. Coale); becky.parks@nih.gov (R. Parks); rasche@cc.nih.gov (E. Rasch)

ORCID: 0000-0001-9179-4544 (G. Divita); 0009-0009-1588-5677 (M. Sacco); 0009-0004-7367-6746 (K. Coale); 0000-0002-3331-727X (R. Parks); 0009-0009-9518-3471 (E. Rasch)



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