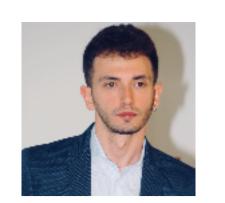
AI-based tools to promote mental health and wellbeing in the workplace: An overview and theoretically grounded assessment of market-available products and services















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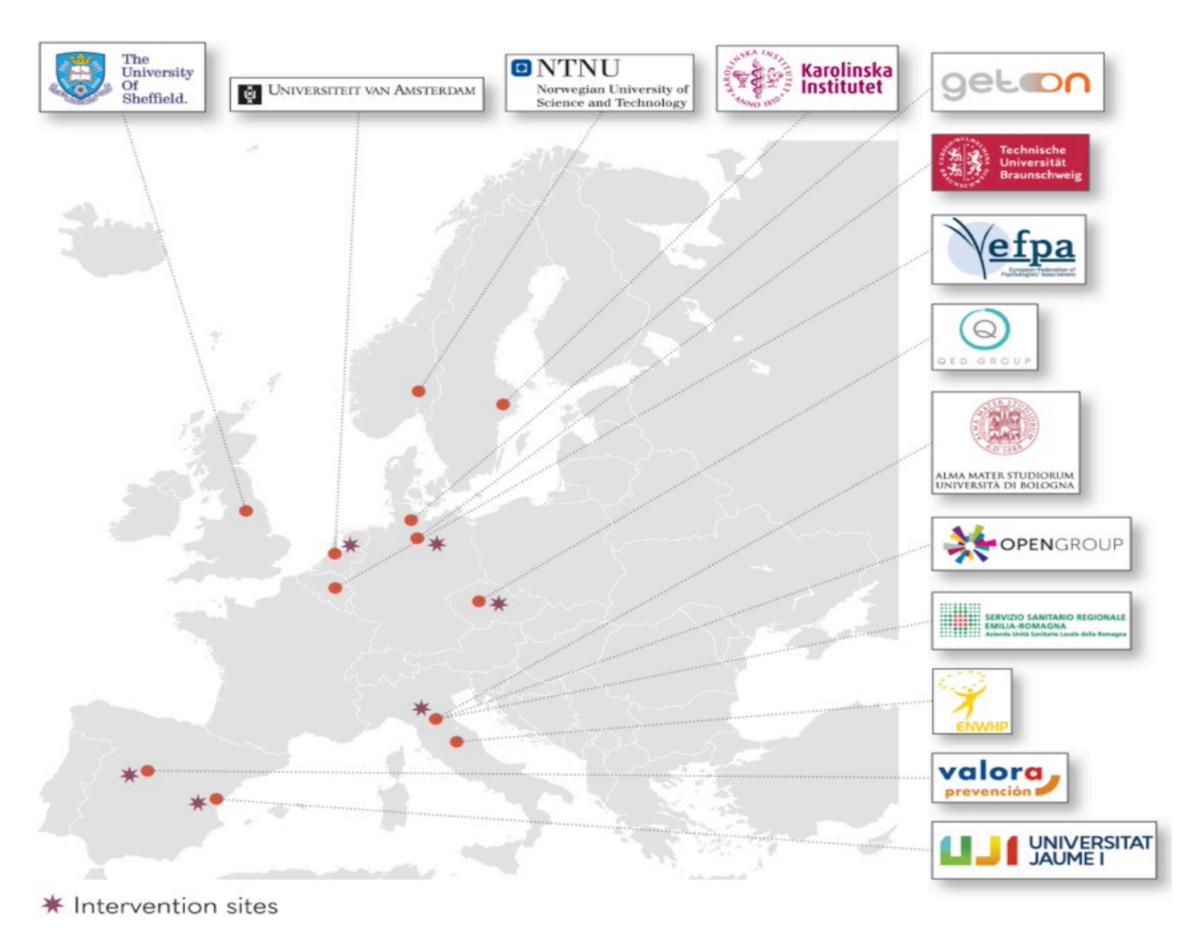
Introduction

One quarter of European working population experience a workplace-related mental health problem during their lifetime, like work anxiety, depression, burnout, and stress. This does not only harms employees, but it also results in higher turnover rates, absenteeism and sick leaves, worsened relationships with peers and supervisors, and loss of organisational productivity and image. To tackle this issue, app-, web- and computer-based advanced technologies to provide workplace mental health promotion interventions have proven promising. Little attempt has been made to investigate AI-based tools and solutions, with extant contributions from scientific literature mostly focusing on:

- employees' perceptions of potential AI benefits in reducing work accidents;
- chatbot development for digital counselling programmes;
- machine-learned modelling of work stress for detection by wearable physiological sensors.

The H-WORK Project

The EU-H2020 H-WORK project aims to design, develop and validate multilevel interventions to promote mental health in SMEs and public workplaces. The project aims to achieve several outputs, such as protocols for workplace mental health need analysis, for implementation of tailored multilevel interventions and for outcome, process and economic evaluation; an innovation platform to support interorganisational benchmarking and managerial decision-making; and policy briefs, guidelines and recommendations for Occupational Health stakeholders.



Purpose

Considering the current physical distancing safety rules due to the recent Covid-19 pandemic outbreak, H-WORK will exploit the potential of digital and advanced technologies for workplace mental health promotion, both for assessment and intervention. This study aimed to make a first attempt of systematising AI-based products and services available on the market to promote workplace mental health and wellbeing.

Method

A process of collecting and screening products and services was carried out to map the available tools and their potential organisational impact. Due to paucity of academic literature on the matter, a review approach using non-academic informational sources was adopted – i.e., web search. Identified tools were classified and compared according to a set of descriptive criteria.

Automation Levels in Worker-AI Interaction											
	Assis	stive	Autonomous								
	Level 1	Level 2	Level 3	Level 4	Level 5						
Function	Data presentation	Decision support	Conditional automation	High automation	Full automation						
Execution of answer	Human	Human	AI	AI	AI						
Domain, system and specificity of the population	Low	Low	Low	Low	High						
Liability	Customer	Customer	Case dependent	AI developer	AI developer						

Results

Name	AI Function	Level of Automation	Purpose	IGLO Level*	Level of Prevention**	Application	End-Users
Mindwell	Knowledge representation	2	Assessment, intervention	Individual, organisational	Secondary, tertiary	Work, clinical	Employers, employees
Affectiva	Facial recognition	5	Assessment	Individual	Primary	Work, consumer	Employees
Wellteq	Knowledge representation	3	Assessment, intervention	Individual, group	Secondary, tertiary	Workplace	Employees
Woebot	Natural language processing	4	Intervention	Individual	Tertiary	Work, consumer, clinical	Employees
Cogito	Natural language processing	4	Assessment, intervention	Individual	Primary	Work, clinical	Employees

^{*} IGLO model: I = Individual; G = Group; L = Leader; O = organisational.

Conclusions

- Little attempt has been made in the scientific literature to investigate workplace mental health solutions exploiting AI. Despite scarce evidences, several solutions can already be found on the market, thus raising questions on their actual effectiveness.
- Most products and services are using NLP (Natural Language Processing) as an AI function, both aiming at assessment and intervention, mostly addressing the individual level (i.e., employees).
- Future studies might investigate workplace mental health dimensions (e.g., stress, anxiety, depression), factors (e.g., negative exposure to customers), and outcomes (e.g., wellbeing and performance) targeted by AI-based products and services.
- The framework will be used within the H-WORK project to design innovative AI-based implementation activities to promote mental health and psychosocial wellbeing in public workplaces and SMEs.

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^{**}Level of prevention: primary = eliminate or reduce exposure to stressors; secondary = increase resilience against stressors; tertiary = offer the option of help and treatment.