Natural Language Processing and Deep Learning for Analyzing Emotional Intelligence and Predicting Stress in Women Employees

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Abstract

Women are subject to much higher levels of stress at work than men because of the demands of emotional labour, work-family conflict and persistent gender inequalities. This systematic review was conducted to find out how natural language processing and deep learning methods are applied in the context of analyzing indicators of emotional intelligence and predicting stress in women employees by evaluating forty empirical studies. The results indicate that 20 of the studies involved the application of deep learning for the detection of stress, eight related to emotional intelligence in the workplace, six target female's occupational stress, and six studies involved the multimodal methods of emotion recognition. Transformer-based language models were found to have accuracy levels between 85 and 92 percent in identifying stress-related linguistic cues, which were found to be better than previous machine learning systems that ranged between 70 and 82 percent. Multimodal models that combined a text, physiological signals and behavioral features increased the accuracy of the models by up to 15 percent over text only models. Despite these advances, only two computational studies looked directly at women as a discrete analytical group and this reveals a significant research gap. In the review, gender-specific datasets, ethical data-governance frameworks, and emotionally intelligent processes like analytical models that could be used to understand the specific patterns of stress-expression in women are pointed out. The findings highlight the potential and shortcomings of the existing computational methods and give a clear picture of the direction to take in order to create more fair and more accurate stress-prediction systems targeting women employees.

Index Terms

Women Employees; Workplace Stress; Emotional Intelligence; Natural Language Processing; Deep Learning