Mapping Disaster Mental Health Online: A Computational Analysis of Themes, Emotions, and Engagement on Reddit

Miaohong Huang[a], JooYoung Jang[b] , and Eyun-Jung Ki[c]*

[a]*Department of Advertising and Public Relations, The University of Alabama, Tuscaloosa, USA;*

[b] *Independent Researcher, Portland, OR, USA;*

[c]*Department of Advertising and Public Relations, The University of Alabama, Tuscaloosa, USA*

Correspondence concerning this article should be addressed to Eyun-Jung Ki, Department of Advertising and Public Relations, University of Alabama, Tuscaloosa, AL 35487, USA. Email: ki@apr.ua.edu

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Natural disasters pose significant psychological challenges, yet how related mental health experiences are expressed and supported online remains insufficiently understood. This study analyses 767 Reddit posts using computational methods, integrating topic modeling, emotion analysis, and behavioral engagement metrics. Four dominant themes emerged: emotional overwhelm and trauma, risk appraisal and preparedness, longer-term life disruptions, and catastrophic rumination. Emotion analysis revealed that fear predominated in posts concerning imminent threat and uncertainty, whereas sadness was more prevalent in discussions of loss and prolonged disruption. Engagement patterns also varied by theme: preparedness-oriented posts generated more conversations via comments, whereas trauma-focused posts received stronger community endorsement through upvotes. These findings extend the transactional model of stress and coping by demonstrating how online disaster-related mental health discourse reflects distinct configurations of cognitive appraisal and coping. The study also highlights digital platforms as key spaces where disaster-related distress is expressed, interpreted, and socially negotiated.

Keywords: disaster mental health; stress and coping; topic modeling; emotion classification; Reddit