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Collective emotions online and their influence on community life

Anna Chmiel, Julian Sienkiewicz, Mike Thelwall, Georgios Paltoglou, Kevan Buckley, Arvid Kappas, Janusz A. Hołyst

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E-communities, social groups interacting online, have recently become an object of interdisciplinary research. As with face-to-face meetings, Internet exchanges may not only include factual information but also emotional information - how participants feel about the subject discussed or other group members. Emotions are known to be important in affecting interaction partners in offline communication in many ways. Could emotions in Internet exchanges affect others and systematically influence quantitative and qualitative aspects of the trajectory of e-communities? The development of automatic sentiment analysis has made large scale emotion detection and analysis possible using text messages collected from the web. It is not clear if emotions in e-communities primarily derive from individual group members' personalities or if they result from intra-group interactions, and whether they influence group activities. We show the collective character of affective phenomena on a large scale as observed in 4 million posts downloaded from Blogs, Digg and BBC forums. To test whether the emotions of a community member may influence the emotions of others, posts were grouped into clusters of messages with similar emotional valences. The frequency of long clusters was much higher than it would be if emotions occurred at random. Distributions for cluster lengths can be explained by preferential processes because conditional probabilities for consecutive messages grow as a power law with cluster length. For BBC forum threads, average discussion lengths were higher for larger values of absolute average emotional valence in the first ten comments and the average amount of emotion in messages fell during discussions. Our results prove that collective emotional states can be created and modulated via Internet communication and that emotional expressiveness is the fuel that sustains some e-communities.

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