Generalized Threshold Model for Social Contagion: Theory, Simulations and Data

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We generalize the Watts threshold model of social contagion by including effects of media and by introducing "frozen" nodes, which never adopt. We show analytically and by simulations that this model can account for the observed broad range of spreading speed. The crossover from slow to fast spreading is accompanied by a percolation phase transition of the induced adopting clusters. The model is calibrated and verified by data from Skype, the World largest Voice over Internet service. Similar mechanism is observed at the collapse of an online social network.