

A Smile Goes a Long Way: Exploring the Effect of Culture, Weather, and Connectedness on Smile Diffusion with an Agent-based Model

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Abstract

This paper first synthesizes research showing that (a) people reciprocate smiles, (b) smiling and being smiled at elevates mood, and (c) elevated mood is associated with proclivity to smile. Collectively, these findings suggest that smiling is contagious, i.e., smiles diffuse through a social network. The paper then presents experiments carried out to investigate how various factors affect the contagiousness of smiling using an agent-based model in which smiling affects a mood variable, which in turn affected proclivity to smile. The society consistently stabilized on a proportion of smilers, the magnitude of which was a function of social connectivity. Using previous data on the effect of weather and cultural differences on smile reciprocity, we simulated how these factors affect smile diffusion. Smile diffusion was greater in the sunny condition than the cloudy condition, and in the American condition than the Japanese condition, and both effects were magnified by increased social connectivity.