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**Qi Su\*** (qisu1991@sas.upenn.edu), 20 S 39th St s1, Philadelphia, PA 19104, and **Alex McAvoy, Yoichiro Mori** and **Joshua B. Plotkin**. *Coupling multiple domains of interactions promotes prosocial behavior.*

Human societies involve many types of relationships. Friends, acquaintances, business colleagues, online contacts, and religious groups are all different, and yet they all contribute to an individual's social life. How behavior in one domain affects behavior in another is complicated, but the key to understanding societal dynamics. Here, we address this problem using multilayer networks to model a population with multiple domains of social interactions. An individual can appear in many different layers, each with separate behaviors and environments. We provide mathematical results that are applicable to any multilayer structure. Systematic analysis of all small networks, a diverse set of random networks, and six real-world examples reveals that coupling between layers tends to promote prosocial behavior. In fact, even if prosocial behavior is disfavored in each layer alone, multilayer coupling can promote its proliferation in all layers simultaneously. These results suggest that the multiple domains of interaction in human societies are critical for the spread of prosociality. (Received January 17, 2022)