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Eli S. Thompson* (thompse@miamioh.edu), 219 E. Church St., Oxford, OH 45056, and
Jasmine Everett. *Neighborhood Size and Memory Effects in a Spatial PD Game.*

Evolutionary Game Theory and the Prisoners Dilemma Game (PD) are commonly used to study the evolution of cooperation. We consider a population of asexually reproducing, age-structured individuals in a two-dimensional square lattice structure. The individuals, either cooperators or defectors, play the PD with their neighbors to accumulate reproductive fitness. We focus on the effects of memory of past interactions, and neighborhood size on the evolution of cooperation. We show that larger neighborhood sizes are detrimental to cooperation. Further, we show that longer memories can hurt the spread of cooperation in small neighborhood sizes. However, for larger neighborhood sizes, longer memories are more favorable for the spread of cooperation than shorter memories. (Received September 15, 2014)