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**Allison Bishop\*** (abishop@Princeton.EDU). *The Evolution of Cooperation in Finite, Growing Populations*. Preliminary report.

Prisoner's Dilemma represents a worst case scenario for cooperative players in a selfish, exploitive world. To explain the evolution of cooperation in this case, evolutionary game theorists have previously resorted to spatial mechanisms and very restrictive models converging to homogeneous populations. I will first present a variation on a previous model, removing the constraint of constant size and allowing the population to grow. I will then present an entirely new model, allowing population diversity as well as growth. These models demonstrate that growth is a dynamic element in evolution and that non-spatial models can yield stable mixed populations, allowing many cooperators to survive even in an atmosphere of domination. (Received August 30, 2005)