

1125-AC-785 **Michael Olinick*** (molinick@middlebury.edu), Department of Mathematics, Warner Hall,
Middlebury, VT 05753. *The Interaction Term in Population Models.*

Many situations arising in the social and life sciences involve interaction between two populations. Examples include two species competing for the same resource, predators and prey in biology, susceptibles and infectives in epidemiology, hawks and doves in evolutionary game theory, etc. Mathematical models of the resulting dynamics, borrowing a law of mass action from chemistry, frequently containing a term proportional to the product of the two groups in a system of differential equations. Alternative models using the product of their square roots often exhibits similar qualitative behavior and yield systems with closed form solutions. We investigate several such models and their relevance to real world phenomena, especially overshoot and collapse situations. (Received September 11, 2016)