Improving Health Systems Using a Systems Dynamics Lens

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Structural violence as *systemic* inequity/social injustice



(Galtung, 1969, p. 171)

Galtung, J. (1969). Violence, peace, and peace research. *Journal of Peace Research, 6*(3), 167-191.

Complicated versus Complex Systems



Complicated systems

Boeing 787 with ~ 2.3 million parts, controllable and predictable even to the point of minimizing pilot error

Exampled adapted from Harry Rutter, Annual Meeting of the EU Society for Prevention Research, Berlin, November 1, 2016

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Complex adaptive system = complexity

Domestic violence involves interaction among multiple actors (e.g., abuser, victim/survivor, children, police, counselors, teachers, etc.) adapting and changing in response to emergent behavior

Mental models mediate what we see in the system and planned action



Johnson-Laird, P. (1983). Mental models: Towards a cognitive science of language, inference and consciousness. Cambridge, MA: Harvard University Press.

System Dynamics with Group Model Building

System dynamics is the use of informal maps and formal models with computer simulation to uncover and understand **endogenous sources** of system behavior (Richardson, 2011, p. 241)



Richardson, G.P. (2011). Reflections on the foundations of system dynamics. System Dynamics Review, 27(3), 219-243.

Using formal SD models with <u>computer simulation</u> for developing a shared visual language of a system

