# Evolving models for dyadic network data to represent and test complex theories

*A Data Management Plan created using DMPonline*

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**Project abstract:**

Psychological theories of how individuals think, feel, and behave within social contexts (e.g., families, classrooms, work environments) are often too complex for current statistical models to represent. Treating individuals as discrete, isolated entities ignores information when studying inherently dyadic phenomena (e.g., dating, peer influence, bullying, family/classroom dynamics). I will develop structural network modeling to combine the advantages of generalized structural equation modeling (SEM), the social relations model (SRM), and social network analysis (SNA) models. The SRM can simultaneously estimate dispositional, situational, and interactive influences on behaviors or perceptions, but only recently have limited ad-hoc attempts been made to extend SRM beyond merely describing to actually explaining interpersonal psychosocial processes in the context of real human interactions, such as how peer conversations affect body image, disordered eating, or bullying. My project will extend SRM and SNA to account for measurement error in multiple indicators at various levels of measurement (binary, ordinal, continuous) and simultaneously evaluate theories (e.g., mediation, growth trajectories) at the level of individuals, relationships, and groups. SEM allows complex psychological theories to be both easily communicated via intuitive path diagrams and rigorously tested against empirical data. Recent publications reveal researchers' explicit demand for a generalized method to apply SEM to dyadic network data, which my project will accomplish. For example, the international antibullying program, KiVa, has been evaluated with multilevel SEM to test student-level and classroom-level effects of the program on bullying and victimization. Yet some observed indicators were aggregations across multiple interpersonal observations, which could still contain important information about whether KiVa works at the dyad level (on specific victim-bully relationships). My project will allow researchers to disentangle context-specific relationship effects from individuals' general interpersonal perceptions/behavior, consequently leading to more effective targeted interventions (e.g., prevent bullying particular individuals), and benefit behavioral scientists worldwide with easy-to-use open-source software.

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## 1 General information

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- Yes

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