

Statistical models for social network structures, individual beliefs and perceived social norms

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ABSTRACT

Social networks emerge from complex social processes including endogenous structuration effects, social selection based on individual-level attributes, and social norms that encourage individuals to direct ties in particular ways. Of these three possibilities, the relevance of social norms to network formation has received quite limited research attention. A social norm can be seen as an aspect of culture, implying a level of sharedness of beliefs or behaviors across network actors, yet each individual actor may perceive such norms differently. In adapting a prominent theory of gender to social network specifications, we propose that relational structures of power and violence may emerge not simply when actors have differing beliefs but additionally when they perceive the common attitudes and behaviors of others as different from their own.

Because these processes may overlap with well-known endogenous structural effects, there is a need to examine such hypotheses with a statistical model. We use new specifications for exponential random graph (p^*) models (Snijders, Pattison, Robins, & Handcock, 2006), which introduce novel higher order transitive structures. The result not only is a better account of highly transitive networks, but also frees up parameters for the examination of personal-level attributes. Applying these models to perceived power relations, to bullying networks and to positive affect networks among male secondary school students, we found that, as expected, both individual-level beliefs and perceived norms were important in explaining the formation of network structure, even when controlling for transitivity and aspects of the degree distribution.

If this result generalizes to other contexts, it raises interesting questions as to how social networks develop and evolve, with implications for the type of measurement that may be necessary for a rich understanding of network-based processes, and for the incorporation of cultural constructs into network models.

References

Snijders, T.A.B., Pattison, P., Robins, G., & Handcock, M. (2006) New specifications for exponential random graph models. *Sociological Methodology*.