**Handbook of Trust and Social Networks**

**Chapter Overview**

**Working Title of the Chapter:**

Network Control Effects on Trust: Aggregating Evidence from Multiple Studies

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**Chapter Type (place an X next to all that apply):**

**Conceptual (X)**

**Empirical X**

**Review**

**Other (please specify):** We aggregate evidence from a set of experimental studies, employing a novel method, building upon work on Bayesian Evidence Synthesis. That method allows for statistically aggregating evidence over conceptually similar but methodologically diverse studies.

**General Overview of the Chapter:**

In earlier work (Buskens and Raub 2002, 2013), we have developed a typology of effects of networks of social relations on trust problems along two dimensions. First, we distinguish the embeddedness of a trust problem in the dyadic trustor-trustee relation from the embeddedness in networked interactions of the trustor and trustee with third parties. Second, we distinguish two mechanisms affecting trust: learning and control. Someone’s own previous experiences or information from third parties allows for learning about a partner. Control refers to possibilities for sanctioning a partner positively or negatively in own future interactions and through sanctions executed by third parties. Employing theory on goal-directed and incentive-driven behavior allows for deriving four types of hypotheses, namely, on dyadic learning and control effects as well as network learning and control effects. The following table roughly summarizes examples of hypotheses.

Table: Examples of hypotheses about effects of social relations on trust and trustworthiness.

|  |  |  |
| --- | --- | --- |
| Two mechanisms | Two types of social relations | |
| Dyad | Network |
| Control | 1. Trust and trustworthiness increase with the likelihood that an interaction is repeated. | 3. Trust and trustworthiness increase with the trustor’s network and her outdegree. |
| Learning | 2. Trust and trustworthiness increase with positive experiences with a trustee. | 4. Trust and trustworthiness increase with the trustor’s network and her indegree (given that information about the trustee is predominantly positive). |

On the one hand, empirical evidence consistently confirms hypotheses on dyadic learning and control effects as well as on network learning effects. This includes evidence from studies employing complementary designs such as experiments, surveys, and vignette studies. Partly, we conducted these studies ourselves, but the overall picture also emerges from other literature (see Buskens and Raub 2013 for an overview). On the other hand, the empirical evidence on network control effects is ambiguous. This is an empirical puzzle for research on trust and social networks.

We assess the evidence for network control effects on trust and cooperation by reanalyzing the data from heterogeneous experimental studies. We attempt to include all available experimental studies suitable for studying network control effects in two-person dilemma games. Testing hypotheses on network control effects requires specific study designs and data. We therefore deliberately disregard observational studies, because control and learning effects are typically entangled in real-life settings, rendering the operationalization of the separate constructs without spillover effects extremely challenging. The studies employed differ substantially regarding details of the game played, game length, operationalization of network relations, network sizes, payoffs, and hierarchical structure of the data.

Regardless of the conceptual similarities, the variation between the studies prohibits conventional research synthesis approaches like meta-analysis. To tackle this problem, we employ a novel method called Bayesian Evidence Synthesis. Building upon work on the Bayes Factor (see Kass and Raftery,1995), this method does allow for statistically aggregating evidence over conceptually similar but methodologically diverse studies (Kuiper et al. 2013 provide an early ‘proof of concept’, Klugkist and Volker 2023 present an overview). Thus, we provide methodological progress by enriching the toolbox of replication research and Open Science.

Summarizing, the aggregated empirical evidence provides strong support for network control hypotheses. This evidence supports these hypotheses, especially in studies where network relations are implemented without repeated dyadic interactions. In the studies with network relations implemented in the presence of repeated dyadic interactions, the support is weaker and less consistent, but still positive when compared with the ‘complement hypothesis’ (technically, the parameter space that is *not* in line with the respective hypothesis on network control effects). The results provide important evidence for network control hypotheses.

Obviously, we include a discussion of our findings and their implications for research on trust and social networks, addressing further theoretical, empirical, and methodological work.

**The Anticipated Main Point or Line of Argument for the Chapter (in one or two sentences):**

The empirical evidence on network control effects is ambiguous. This is an empirical puzzle for research on trust and social networks. We employ a novel method to statistically aggregate the evidence, Bayesian Evidence Synthesis, and find strong support for network control hypotheses.

**If you intend to write a conceptual or review chapter, is there a specific theoretical lens or framework that you intend to use:** not applicable.

**If you intend to write an empirical chapter, is there a specific methodological approach that you intend to use:**

We employ Bayesian Evidence Synthesis, a novel method that allows for statistically aggregating evidence over conceptually similar but methodologically diverse studies (Klugkist and Volker 2023; Kuiper et al. 2013).

**What do you hope will be the expected contributions of your chapter (e.g., toward an understanding of the network mechanisms of trust dynamics in organizations, additional theoretical implications, and possible practical implications, etc.):**

In terms of the objectives of and potential research directions for the *Handbook*, we focus on the precise mechanisms through which networks foster trust and trustworthiness (research direction ‘trust creation’) and on influences of third parties on a trustor-trustee relationship (research direction ‘network structures, positions, ties, and trust’). We also contribute to employing a novel methodology – Bayesian Evidence Synthesis – for the empirical study of trust in networks (research direction ‘emerging technological trends and trust’).

**References**

Buskens, Vincent, and Werner Raub (2002) “Embedded Trust: Control and Learning.” Pp. 167–202 in *Advances in Group Processes*. Vol. 19.

Buskens, Vincent, and Werner Raub (2013) “Rational Choice Research on Social Dilemmas: Embeddedness Effects on Trust.” Pp. 113–50 in *The Handbook of Rational Choice Social Research*, edited by Rafael Wittek, Tom A. B. Snijders, and Victor Nee. Stanford, CA: Stanford University Press.

Kass, Robert E., and Adrian E. Raftery (1995) “Bayes Factors.” *Journal of the American* *Statistical Association* 90(430): 773–95.

Klugkist, Irene, and Thom B. Volker (2023). “Bayesian Evidence Synthesis for Informative Hypotheses: An Introduction.” Psychological Methods. Advance online publication. https://doi.org/10.1037/met0000602.

Kuiper, Rebecca M., Vincent Buskens, Werner Raub, and Herbert Hoijtink (2013) “Combining Statistical Evidence from Several Studies.” *Sociological* *Methods & Research* 42(1): 60–81.