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**DRAFT**

**Network Control Effects on Trust: Aggregating Evidence from Multiple Studies**

**Thom Volker, Vincent Buskens & Werner Raub**

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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’).

More specifically, in earlier work (Buskens and Raub 2002, 2013), we have developed a typology of effects 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 trustor and trustee with third parties. Second, we distinguish two mechanisms affecting trust: learning and control. Own previous experiences or information from third parties allow for learning on a partner. Control refers to possibilities for sanctioning a partner positively or negatively in own future interactions as well as through sanctions executed by third parties. Employing theory on goal-directed and incentive-driven behavior, this 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 these hypotheses.

Table: Hypotheses on effects of social relations.

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

On the one hand, empirical evidence quite 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, both studies we conducted ourselves as well as the overall picture emerging from other literature (see Buskens and Raub 2013 for overview). On the other hand, the empirical evidence on network control effects is ambiguous, also suggesting that network control might affect the trustee more than the trustor. 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 eight heterogeneous experimental studies. We attempted to search for and include all experimental studies specifically on network control effects in two-person dilemma games. Observational studies were deliberately disregarded, because control and learning effects are typically entangled in real-life settings, rendering the operationalization of the separate constructs without spillover effects extremely challenging. Moreover, we could not obtain the data from 4 of the 13 experimental studies that we are aware of. The remaining eight are included. The studies differ substantially with respect to 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 the use of conventional research synthesis approaches like meta-analysis. To tackle this problem, we employ a novel method. Building upon work on the Bayes Factor such as Kass and Raftery (1995), Bayesian Evidence Synthesis does allow to statistically aggregate evidence over conceptually similar but methodologically diverse studies (Kuiper et al. 2013 provides an early ‘proof of concept’). Thus, with respect to methodological progress, we likewise contribute to enriching the toolbox of replication research and Open Science.

Summarizing, we find strong support for the network control hypothesis on trustfulness. Especially in the studies where network relations were implemented without repeated dyadic interactions, all evidence supports this hypothesis. 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 comparing with the ‘complement hypothesis’ (technically, the parameter space that is *not* in line with the hypothesis on network control effects concerning trustfulness). The results provide even more evidence for the network control hypothesis for trustworthiness, regardless of the set of studies.

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

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

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