This paper develops a model relating prior experiences, network stability, exclusive partnership, geographical distance, and intermediation in inter-firm R&D networks to new product development (NPD) costs. The developed hypotheses are tested with unique multilevel R&D partnership data from 33% of all clinical trials in the pharmaceutical industry from 1988 to 2010. The results provide general support for the model’s predictions. Exclusive collaborations over time with the same partners that are geographically close to each other improve NPD efficiency, while involving intermediaries only becomes relevant for non-exclusive partnerships and dispersed networks. NPD costs also increase in more stable networks, reflecting the relevance of structural holes for control and information advantages. This study contributes to the network management literature by understanding the relation between specific partnership network trade-offs, intermediation, and NPD costs. This study also enhances the relational view by integrating network theory and contributing to a deeper understanding of inter-organizational competitive advantage through the analysis of longitudinal empirical partnership data and partnership structures hitherto not analyzed.