My planned contributions to the project would be in primarily in terms of theory development and testing, showing how computational techniques can lead to new theoretical insights. On the front end, I will help make sure that the research design includes all major elements in the theory, and operationalizes these elements in a way that will allow for meaningful theoretical interpretations of the results. On the back end, I will interpret our findings through the lens of social psychological theory, identifying aspects of extant theory we have successfully validated in a natural setting, and new insights our findings have yielded for the discipline.

We have a clear theoretical starting point in the literature, as an important line of work has studied and developed theory around the affective basis of collaboration, and this work has not yet been explicitly theoretically linked with affect control theory. Our research will allow for (1) a test of relational cohesion theory and, more broadly, the affect theory of social exchange in a natural setting which relaxes some of the scope conditions of the theory, (2) a test of BayesACT in such a setting, and the further development of a network-based model of Bayesian affect control, and (3) a theoretical bridge to be drawn between BayesACT and exchange theories, as we see how uncertainty is managed and beliefs formed about self and other in interaction, and learn how these mechanisms play into the affective processes involved in collaboration as described by Lawler, Thye, and Yoon in their previous work. Thus, several high-impact theory papers could be generated through this work for publication in sociological journals.

Work related to the affect theory of social exchange and relational cohesion theory has shown that network structures both enable and constrain the development of fruitful social relations.

Structural power and dependence shape who is likely to exchange with whom. The structure and frequency of social exchange affect positive/negative emotions, perceived cohesion with others, and ultimately one’s behavioral commitment to collaborative efforts. Each of these concepts is theorized and operationalized in specific ways in the literature, and will need to be translated effectively from a laboratory setting to natural interactions on GitHub. For example, commitment has been operationalized in the previous literature as staying in the relation when good alternatives exist (stay behavior), unilaterally providing token gifts to each other (i.e., gifts that have little or no extrinsic value, are given without knowledge whether the other is giving, and without explicit expectation of reciprocity), and contributing to a joint venture that constitutes a social dilemma (i.e., puts individual resources at risk).

Lawler, Thye, and Yoon have recently proposed and tested a theory of social commitments, showing that affective ties solve two fundamental problems of social order in groups that cannot be resolved with cognitive ties alone: sustaining membership and achieving the joint gains of collaboration. They find that joint tasks generate a sense of shared responsibility leading members to attribute their emotions from task interactions to the group as an object. These hypotheses could also be testing using collaborations on GitHub.