Atkisson et al. (2020), underscore the significance of understanding the structuring processes of multiplex networks to yield a more accurate and complete picture of social interactions. This is particularly relevant to our small teams research project that contains multiple networks that share the same set of nodes. The paper posits that multiplex networks, defined as multilayer networks where all layers share the same set of nodes with connections only to themselves across layers, must be examined in their entirety to avoid erroneous conclusions (Atkisson et al., 2020).

The researchers argue that the interdependence of layers can lead to a misunderstanding of network structuring if only a single layer is analyzed. In a single-layer perspective, the apparent non-optimality of a network might be a result of the agents optimizing their connections across the entire multiplex network, not just within a single domain (Atkisson et al., 2020).

One of the key premises of the study is that individuals have limited time and resources to invest in relationships, leading them to prioritize interactions that yield the highest net benefits. Consequently, relationships may span multiple domains, not necessarily because they are optimal in each, but because optimizing one important domain can inadvertently organize another (Atkisson et al., 2020). This concept of incidental network membership is crucial to our project as it informs the hypothesis that nodal attributes within a network may not be independently optimized but are rather a result of cross-domain interactions. We create the networks Personal Advice, Hang Out, Personal Friend from the surveys. These personal networks likely have cross-domain interactions. We create the networks Joint Publications, Conferences, Grant Proposal, University Business, Committee, My Mentor, Their Mentor, and Professional Advice. These professional networks are likely to have cross-domain interactions. We create network Knowledge-of and Understanding-How Networks which are likely to have cross-domain interactions with the professional and personal networks.

The paper’s model reveals how coupling strength between layers affects the likelihood of achieving network optimality. Interestingly, it finds that a balance in the coupling strength is necessary; too much or too little coupling can preclude the network from reaching an optimal state (Atkisson et al., 2020). This finding is integral to our analysis as we investigate the attributes that predict connections within the network, considering the balance of influences across various network layers.

Atkisson et al. (2020) suggest using advanced algorithms and tools such as Muxviz to determine the appropriate number of layers to include in analyses. This recommendation is particularly pertinent for our project, where the use of such tools can assist in deciding how to structure the network model accurately.

To encapsulate, the findings of Atkisson et al. (2020) are directly applicable to our research project as they offer a nuanced perspective on network relationships. The study informs our approach to modeling and analyzing our network data, emphasizing the need for a multiplex understanding of connections that extend beyond a single-layer analysis. It cautions against an oversimplified interpretation of social ties and encourages collaboration with experts to effectively navigate the complexities of multiplex networks.