Reviewer's report

Title: Drawbacks and benefits associated with inter-organizational collaboration along the discovery--development--delivery continuum: A cancer research network case study

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Reviewer: kara Hall

Reviewer's report:

Overall: This manuscript is certain to make a meaningful contribution to implementation science (as well as across the research continuum) as well as to the Science of Team Science. The findings support some likely anticipated relationships across the research continuum (e.g., positive association between knowledge sharing and collaboration) and highlight important new relationships, which can serve as the basis for future investigations and indicate potential leverage points for future policies and interventions to enhance scientific collaborations (and thereby leading to more efficient and effective investments and advancements in science).

I assume given the "open peer review system" of this journal, a key article was mistakenly listed as "author citations". The presumed "author citation" was identified by this reviewer as follows: Provan, Keith G., Leischow, Scott J., Keagy, Judith, and Nodora, Jesse. 2010. Research Collaboration in the Discovery, Development, and Delivery Networks of a Statewide Cancer Coalition. Evaluation and Program Planning, 33: 349-355.). After reading this associated manuscript, I believe the current manuscript may benefit from additional connections to this existing work (which document alternative analyses of the same general dataset used in this current work under review) as well as potentially clarifying decisions in the current manuscript that could be seen as potentially conflicting by readers of both articles. I provide more specific suggestions in the related sections below.

Abstract:

- Minor Essential Revisions
  • There seems to be a discrepancy in findings between the abstract, table, and discussion section related to - "In the delivery network, those who collaborated
were less likely to see enhanced influence on treatment and policy and greater quality or frequency of publications as benefits of collaboration."[in abstract]. I believe this relationship is about the development network?

• "are" is missing in the second to last sentence of the results section.

Background:
- Minor Essential Revisions

• "s" missing from "conflict" in 3rd sentence of 2nd paragraph

Methods
- Major Compulsory Revisions

• Please clarify the sample size for the study, including:
  o Addressing/discussing potential issues of power,
  o Identifying the unit of analysis for the ERGM (e.g., explaining and specifying the # of edges or dyads)

# Include number for each network (discovery, development, delivery)
  o Further clarify n=153 for dyads - where did this number come from, what is it based on?
  o Discuss issues of dependency in the data for the benefits and drawbacks given the data were collected at the organizational level.
  o Decision to use unconfirmed vs confirmed ties

# (Discretionary Revisions) Consider including information from Provan et al. (2010) regarding the similarity in patterns of relationships with confirmed and unconfirmed. Also, although I found the argument for using unconfirmed ties reasonable - I felt I wanted perhaps a bit more explanation based on the specifics of this study given the fact that the previous study based its results and made an argument for using the confirmed relationships. Was the decision based on a power issue in order to conduct the analyses in the current study?

- Minor Essential Revisions

• Table 1:
  o Include n's in table
  o Within the benefits and within the drawbacks, please place the items in numerical order to increase the readers ability to quickly glean the information presented.

• Please include exact item related to the respondents estimates of the amount an organization spent on discovery, development, and/or delivery.

- Discretionary Revisions

• Consider adding more specific rational to help clarify the choice to use betweeness centrality vs. degree centrality (as used in prior study). There is a good explanation of what betweenness centrality is, but given the discrepancies
between the two studies (Provan et al. 2010) a brief statement of how the metric is specifically relevant to the research questions in this study and/or more relevant for such questions than degree centrality may be useful.

- Include a table that includes each organization and the percentage of resources developed to each - discovery, development, and delivery.

Results:

- Minor Essential Revisions
  - Figure 1:
    o Please include a more complete key that indicates the metric (betweenness centrality) related to the size of the nodes
    o Please label the nodes with either a numerical value or some other identifier (e.g., representation of organization's name) to enable the reader to see how each organization changes its relationship with others across the different network diagrams. For instance, the large central “discovery” node in the Discovery Collaboration Network is less prominent in the other diagrams – labeling the node will enable the reader to determine its position in the other diagrams and see potential patterns.
  - Figure 2:
    o Given this paper is not a paper focused on methodology, I do not think this figure is necessary as Table 3 provide ample and necessary information regarding model fit.

- Discretionary Revisions
  - Can you explain the discrepancy between being involved in either the discovery, development or delivery networks with another organization, but not spending any resources on that particular “D”?

Discussion and Conclusion:

- Minor Essential Revisions
  - Discuss limitations due to sample size and dependencies in data.
  - Greater emphasis or discussion is warranted for the fact that nearly all of the drawbacks were significant in the delivery network whereas only geographical differences were significant for discover and development, perhaps highlighting the intense challenges experienced when collaborating towards a goal that involves stakeholders with different expectations, goals, and incentives.
  - More clearly discuss the positive relationships found for the delivery network, for instance, perhaps insufficient resources to support collaboration is an indication that collaborations were occurring, but that resources needed to support the collaborations in the delivery context were underestimated when the collaborations were initiated.

- Discretionary Revisions
  - Discuss the finding that more benefits than barriers overall were identified - consider this in contrast with the fact that only one significant relationship was
found for the benefits - how might this be related constrained range in response
for the benefits verses the greater degree of variability found for the drawbacks?

• Please carefully describe the interpretations of the “double negatives” to reduce
the cognitive load on the reader (e.g., negative relationship with a drawback -
difficulty due to geographical differences is negatively related to collaboration)

• What are the implications/limitations/considerations for the interpretation of
items such as “loss of control/autonomy over decisions” that are answered by
one representative of the organization?

• Was there a specific reasons that the names of the organizations were included
in the prior manuscript and not the current one? The inclusion of names or at
least numerical labeling may help with interpretation.

• Might there be extraneous factors that position the centrally positioned
“development” organization throughout these networks? For instance, is this
largest organization with the largest overall budget and greatest number of
investigators – and if so, how might these variables influence the network
characteristics?

• Consider potential connections to additional literature regarding impact of
distance and factors that influence collaborative success, such as:
  o Olson, G. M., & Olson, J. S. (2000). Distance Matters. Human-Computer
    Interaction, 15, 139-178.
  o Cummings, J. N., & Kiesler, S. (2007). Coordination costs and project

• Consider potential connections to literature related to collaboration with
respects to translation at the delivery stage of research such as:
    American Journal of Community Psychology, 38, 63-77.
    Team Science: Overview of the Field and Introduction to the Supplement.
    American Journal of Preventive Medicine, 35(2S), S77-S89.

• Consider potential connections to literature related to outcomes such as new
methods as well duration and intensity of collaboration as related to outcomes
(including frequency of publications), such as:
    The Evaluation of Large Research Initiatives: A Participatory Mixed-method
    Approach. American Journal of Evaluation. 29, 8-27
  o Hall, K.L., Stokols, D., Stipelman, B.A., Vogel, A., Feng, A., Masimore, B.,
    Science Add Value? A Bibliometric Study Comparing the Productivity of
    NIH-funded Team Science Center Grants with Single Investigator Driven Grants.
    American Journal of Preventive Medicine, 42(2), 157-163.
Level of interest: An article of importance in its field

Quality of written English: Needs some language corrections before being published

Statistical review: Yes, and I have assessed the statistics in my report.

Declaration of competing interests:

I declare that I have no competing interests