

Author's response to reviews

Title: Network-based social capital and capacity-building programs: An example from Ethiopia

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Version: 2 Date: 20 April 2010

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April 20, 2010

Mario Dal Poz
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Dear Dr. Dal Poz:

Thank you for the opportunity to revise our manuscript, "Network-based social capital and capacity-building programs: An example from Ethiopia." We have addressed the reviewers' comments, as described in the attached itemized list. We want to thank you and the reviewers for your feedback and believe that the manuscript has become stronger as a result. We hope you and the reviewers agree with our assessment.

Sincerely,

A handwritten signature in black ink, appearing to read "Shoba Ramanadhan", followed by a horizontal line extending to the right.

Shoba Ramanadhan, ScD, MPH

Referee Evaluations

Comment 1:

It is very important to clarify that the MHA program in the study setting either does or does not have building social networks as an explicit program goal. This should be made clear in the abstract too. Being clear from the beginning would make this conclusion more powerful.

Response:

We agree that the clarification that social network development was not an explicit program goal is important and have added language throughout the paper to this effect.

In the introduction section of the abstract (page 2, line 4), we added the following:

Although network development and social capital generation were not explicit program goals, we took advantage of a natural experiment and studied the social networks that developed in the first year of an executive-education Master of Hospital and Healthcare Administration (MHA) program in Jimma, Ethiopia.

In the background section of the main text (page 7, line 4), we added the following:

Social network development and social capital generation were not explicit goals of the training program, but we were able to take advantage of this natural experiment to test exploratory hypotheses.

In the discussion section (page 17, line 1), we added the following:

The [network] growth is also notable given that network development was not an explicit goal of the training program.

Comment 2:

In the paragraph that describes the characteristics of networks, there are many terms introduced quickly, and often unclearly. There is a special lack of clarity about the term ‘degree’ which could also be misinterpreted as academic degree. These are clarified somewhat on the next page, but this term and others might be defined in bullet fashion as they are introduced.

Response:

We thank the reviewer for the suggestion to clarify the network analysis terms used in the paper. We have revised the structure to: 1) present basics of network analysis measures, 2) introduce and define network-level measures, and 3) introduce and define individual-level measures. We also added an example of the calculation for out-degree given the importance of this measure for our analyses.

The revised section (starting on page 9, line 16) is as follows:

We measured a series of network characteristics which have been shown in other settings to promote exchange of information and flow through networks [26]. These measures were based on data about connections (or reported relationships) between network members. Some measures focus on presence or absence of a connection, whereas others include information about the “direction” of the connection. For the latter, the measure can capture whether Member X reported a connection to Member Y, Y reported a connection to X, or both reported a connection to each other.

To describe the network as a whole, the first measure of interest was network density, or the proportion of possible relationships between members that were realized, which described the extent to which network members are connected, regardless of the direction of connections [26]. A more dense, or more highly connected, network may be useful for sharing information and resources and cooperation, whereas a more sparsely connected network may provide greater access to diverse contacts and novel resources [10, 18]. A density level of around 15-20% is expected to support knowledge-sharing in a network of about 100 members [31]. We also identified isolates, individuals who reported no connections to other network members. Isolates are of interest as their lack of connections prevents them from contributing to or benefiting from network membership. Last, we identified components, or subgroups of members that are not connected to each other and therefore cannot share information and resources [26].

Shifting our focus to individual network members, we calculated degree, which is defined as the number of connections between a given network member and all other network members, regardless of the direction of ties [32]. The bulk of our analyses focused on out-degree, or connections from a given network member to other network members. Thus, if Member X reported three connections with other network members, his / her out-degree value would be three, regardless of how many network members reported connections to Member X. In the Trainee Network, trainee out-degree was the number of connections a trainee reported regarding other trainees, grouped into tertiles. In the Trainee-Supporter Network, trainee-supporter out-degree was the number of connections to supporters reported by each trainee, grouped into tertiles. Last, geographic homophily referred to whether or not pairs of network members worked in the same region.

Comment 3:

Later on (page 15), the terms informational and functional terms are used and again, they are unclear. I can guess at their meaning but could be defined a bit more clearly.

Response:

We appreciate the reviewer's comment. We have highlighted our definitions of informational and functional exchange in the Methods section (page 11, line 9). The section starts with the following language:

To assess potential by-products of social network development, we measured informational and functional exchanges, which are complementary manifestations of social capital that can help trainees achieve work-related goals [10, 24].

Comment 4:

On page 16, it is described when discussing the centralization of the network that access to technologies is a limiting factor, and that centralization tended to occur only in Addis. I was somewhat surprised at this because cell phone technology has been spreading rapidly. My most recent experience has been in Kenya and almost every manager in the health sector has one or

two cell phones and the networks seem to be robust, even in rural areas. Perhaps this is not the case in Ethiopia, but I think things are changing there also. Although the tendency is to use them for text messages given how time is charged, a program that was being intentional about including social networks could use cell phones as an explicit tool.

Response:

The reviewer makes an excellent point that cell phones will be an important way for capacity-building programs to move beyond the centralization that tends to reflect access to technology and services. At the time of our study, cell phone service was limited and unreliable in many areas of Ethiopia where CEOs lived and worked. However, to address the reviewer's comment, we have added the following to the discussion (page 17, line 11):

Information and communication technologies, such as mobile phones or internet, can mitigate challenges of physical distance and logistics in low-resource settings [25]. At the time of the study, reliable access to such technologies was limited for individuals working outside the Addis Ababa region [41], though these technologies may play an important role in network development in the future.