Dear Editor,

Please find attached a revised version of the manuscript, in which we have considered all the comments from the reviewer and modified it accordingly. The changes are marked in yellow. Also attached are responses to the reviewers´ comments.

Yours sincerely,

Renato Fabbri and Osvaldo Novais de Oliveira Junior

**Response to the reviewer comments**

In order to make it easier to follow the changes made, we reproduce all the reviewer comments, followed by our response, point by point.

Reviewer 1

In this manuscript the authors consider human interaction networks using e-mail lists, Facebook, Twitter and Participabr databasis. Authors (agents) are considered vertices and a directed and weighted link is set up from vertex A to B only if B answers a message from A. Each message is identified by its subject and the link weight is increased by one each time there is one more answer to that subject.

Contrary to most studies in the field, directed and weighted networks are addressed and circular statistics in different time scales, ranging from seconds to months is used. The richness of the built networks forces one to deal with many (statistical) estimators. The global network activity is obtained from local agent activity. The activity is the relevant quantity in the study but not clearly defined.\*\*\*\*\* I imagine it is the number of messages exchanged during the time interval considered.

It turns out that the dispersion around the averaged activity (not the average itself) is the quantity to be analyzed. Concerning the activity, the networks present a robust uniform stability along time. This result is important since it was obtained using very good statistics (each cell of the histograms has an assured large amount of realizations) and different databases. Concerning the links, the networks belong to the scale-free class and the authors proposed to compare these power-law distributions with the Erdos-Renyi one.

This procedure (which seems to be the first time applied to empirical data) allows one to classify vertices as hub, intermediate or peripheral ones. The important role played by the intermediate vertices are stressed in the manuscript. This manuscript present the invariance of the activity along timescales for the human interaction networks unequivocally (using very good statistics, methods and different databases). It also stresses the consistency of comparing scale-free networks to Erdos-Renyi ones to classify vertices. For these reasons, I recommend its publication in Physica A.

I would like to raise some minor points that maybe should help in the presentation of the results.

(1) To emphasize from the very beginning (abstract) the definition of "activity".

-- Triggered change in sentence:

" Activity, recognized through messages sent,

along time and topology were observed in snapshots in a timeline..."

(2) Abstract: there are gaps and overlaps in the quantity of hubs, intermediate and peripheral vertices (3-12%, 15-45% and 44-81%), although stable these number are rough estimation it would be better presented as (< 15%, 15-45%, 45%).

-- Triggered change in sentence:

Typically, <15\% of the vertices are hubs, 15-45\% are intermediary and >45\% are peripheral vertices.

(3) No need to have subsections with only one paragraph. In the introduction, for instance, the last paragraph could be switched with the previous one. In Sec. II, the subsection could be part of text or even a footnote.

-- Triggered changes:

- Switched the paragraphs at the end of the introduction (related work).

- Subsection heading of Sec. II was removed and the text incorporated

to Sec. II.

(4) To mention since the beginning one is dealing with directed and weighted networks and tell the reader how they are built.

-- Triggered the add of the sentence:

"Directed and weighted representations were built through the observation of replies as links."

at the beginning of the second paragraph in the introduction.