

Review of: "Toward a comprehensive behavioral model of hurricane preparedness: The Protective Behavior Model"

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From the very first lines of the abstract, I found it interesting to read and give my suggestion to this paper because I believe it deals with a relevant issue. I share the need and urgency to explain and predict human behaviour linked to natural disasters, such as hurricanes. In the last few sentences of the paper, I read that the model, with some modifications, could also work for other disaster contexts (volcanic and seismic activities), or outside of disaster studies (vaccination decisions). To be honest, I believe that the model could be even more powerful when applied to a contingent and huge in terms of magnitude, generally considered marginal issue, namely climate change and extreme weather events. It should be considered that the phenomenon of hurricanes does not only concern the USA, but with the occurrence of extreme climatic events it is increasingly widespread also in other areas of the planet (think of hurricanes in the Mediterranean Sea basin).

I am sympathetic to the author's willingness to uncover a specific model built for a particular set of protective behaviours finding a new comprehensive behavioural model, The Protective Behavior Model (PBM), which could explain why people choose to engage in hurricane preparedness behaviours. Preparedness is meant as a set of protective actions taken by people to increase their ability of efficiently respond to an event (hurricanes)

Literature framework of the work appears well done, and authors recall Protective behaviours theories and human behaviour theories. The methodology to develop a Protective Behavior Model (PBM) appears rigorous to me, even if left at a theoretical level.

A would suggest a list of thoughts that authors might decide to follow if they agree.

1. TIME FACTOR and MATERIALITY of effectiveness

A first order of factors connected with the time factor is the fact that it is possible to intervene both ex post, as in the case analysed in the paper (with protective behaviours) and ex ante (with preventive behaviours). I would suggest considering how the materiality of the effectiveness of any (information or educational) measures can differ if one thinks of reducing damage by acting in prevention with respect to human behaviour.

The result of the PBM is the Behavior Modification. What does it mean?

a-People will change the choice of where to live, or where to build their homes (long-term decisions that collide with several other considerations).

b-People will change their choice of how to build their homes (eg brick, long-term decisions that collides with cost considerations).

c-People will change their behaviour when a hurricane warning is released (immediate decision, to be taken in a very short time).

How effective is the protection in case c), if long term decisions a) and b) are neglected?

How short-medium-long term decisions are differently perceived and taken by individuals, considering the issue of subjective perception of time?

1. From DESCRIPTION to PREDICTION

The paper concludes by hinting at the implications of the model that could range from descriptive to predictive. It would be much more useful to propose a model that facilitates the prediction of behaviours, rather than their ex post description.

Moreover, behaviour modification, is it for the individuals or we might think important to change behaviours political decision-makers?

1. VALIDATION

The authors conclude that *“the PBM can be tested using survey instruments. All questions in the survey should be short and direct, such as Likert and Rising Scales, and the use of the free-response answer format should be very limited to minimize confusion and to facilitate the quantitative analysis of the data”*. I would add also PLS-SEM models. My concern is related to developing theories of behavioural indicators with no mention of their empirics and descriptive efficacy of true human behaviours. As an example, I found in my experience that I inserted some questions that are supposed to refer to a specific construct, used in the literature; I submitted a questionnaire to a variegated population of individuals, and then when running some investigation of latent variable, I found that my questions were not related at all to the construct that I meant to describe. This problem is quite disturbing if you are building an interpretative frame that do not correspond to what you effectively asked, to hundreds of individuals. So, please, help research with some validation, thank you!

Minor:

1) Since the beginning of the article, the author leaves implicit that it deals with US matters, but the reader would appreciate to understand that we are talking about a US story and a US concern. For example, we find FEMA, that is the Federal Emergency Management Agency, based in DC, but the reader could be living who knows where in the world.

2) Your Protective Behavior Model (PBM) is shown in Figure 1 rotated and in one page (at least in what it appears in a PDF download).

I conclude by reiterating that the paper is extremely promising because it deals with a problem that is becoming more and more important over time. That said, I would ask the authors for some more effort by testing the validity of the theoretical

model, with some empirical checks, which could reinforce the robustness of the model proposed.