

Evaluation of the Dissertation

**Organic Food Consumption as an Example of Pro-Environmental Behavior:
Application of the Theory of Planned Behavior**

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The above dissertation examines an important area of environmental sociology: the explanation of organic food consumption as a form of individual behavior that, at the societal level, may have strong benefits for environmental sustainability. To explain organic food consumption, specifically whether respondents “intend to buy organic food in the next month,” the author organized a small (N= 253) representative sample of the Czech adult population and compared the fit of models representing different modifications of the theory of planned behavior. The theory of planned behavior (hereinafter TPB) is a major theoretical framework in social science research, and has been particularly popular in the area of environmental sociology. This *dissertation represents one of the best and most comprehensive applications of TPB in any sociological study in the Czech Republic.*

The dissertation contains a number of very positive attributes that attest to its quality. First, the author demonstrates in his discussion of the literature a superb knowledge of TPB both in terms of the original theoretical contributions as well as in terms of the various modifications and applications of the theory. Second, in the empirical analysis, the author made use of appropriate measures of the variables of interest, demonstrating knowledge about how other scholars have empirically tested TPB theories. Third, the most appropriate statistical method for testing TPB theories was used – structural equation modeling – which was both explained as well as applied in the dissertation quite well. The author also correctly interpreted the parameters and fit statistics of the different models examined. Fourth, the author demonstrates a good deal of self-reflection, acknowledging both the possible merits as well as the limitations of the data and what could be extrapolated from it (see e.g. p. 161-162). Fifth, in my view the dissertation satisfies the criterion of novelty, both in terms of the originality of the data collected the appropriateness of the methods used, and the originality of the written analysis. Lastly, the dissertation is also very well organized, concise, well written and exhibits a strong

grasp of the literatures and issues covered in chapters 1-3. For these reasons and more, **I believe that this dissertation meets the expectations for a doctoral dissertation in partial fulfillment of the requirements for a Ph.D. in Sociology in the Czech Republic, and therefore recommend its acceptance.**

While I believe that the dissertation meets standard expectations, *I do not think that the dissertation goes far beyond them. The dissertation is rather un-ambitious in terms of its narrow theoretical scope and limited empirical analysis.* Certainly a lot more could be done in testing TPB on such an exciting topic as organic food consumption. I would like to organize my concerns and reservations in terms of the empirical context, conceptual concerns, and methodology.

Issues in the empirical context

First, *the dissertation is rather disjointed.* There are large sections of chapters 1-3 that are only marginally relevant to the empirical analysis in chapters 4-7. Yes, it is important to define what organic food is (topic of chapter 2), but such a discussion is actually far removed from the issue of how consumers perceive and judge organic foods – about which we learn little. There is, in fact, a literature on perceptions of organic food in Europe that would have been useful for understanding the main empirical analysis of the dissertation.¹ The author spends an entire chapter (chapter 3) taking issue with the environmental consequences of organic food consumption and production, but very little of that information is useful for understanding and interpreting the empirical research conducted.

Second, *the dissertation does a poor job of situating organic food consumption within the set of pro-environmental behaviors in the Czech Republic.* Citing Stern (p. 20), the author differentiates for different types of pro-environmental behavior: environmental activism, non-activist behavior in the public sphere, behavior in organizations, and private-sphere environmentalism, which the dissertation focuses on. That differentiation is fine. But in the dissertation we learn practically nothing about the relevance or impact of different forms of pro-environmental behavior on organic food consumption. For example:

- In what ways have Czech environmental organizations promoted organic food consumption?
- What major public controversies or debates (e.g. a lowered VAT for organic foods) have there been in the Czech Republic that might influence the degree of organic food consumption? This is important given that the author mentions the importance of “intervention campaigns” as a possible policy application of the dissertation (p. 143).

¹ See Torjusen, H., L Sangstad, K. O'Doherty Jensen, U. Kjærnes. 2004 *European Consumers' Conceptions of Organic Food: A Review of Available Research.* Oslo: National Institute for Consumer Research. And Krarup, S., C. Russell (eds). 2005. *Environment, Information and Consumer Behaviour.* Chletenham: Edward Elgar Publishing.

- What are the typical socio-demographic characteristics and value orientations of Czechs who engage in different pro-environmental behaviors, and how might that inform the authors' hypotheses?
- How has the development of farmers markets or *bedýnky* contributed to the organic food market, if at all?

Discussing *any* or several of these issues would have added valuable empirical context to this dissertation. Instead, we learn that Czechs on average purchase only 170 Kč of organic foods a year, but we are offered hardly any empirical data explaining why the adoption of organic food is so low.

Third, and connected to the second point, I was disappointed how much the literature overviewed, especially in chapter 3, is based on organic farming and consumption concerns in Western countries. But if Czechs consume only 170 Kč of organic foods a year – the equivalent of about 5 beers in a pub – isn't it a little premature to focus so extensively on the literature about the environmental consequences in Western countries? Again, the issue is not that the overview of the ecological friendliness of organic farming is not good – it certainly is – the problem is rather the lack of coherence between that discussion and the empirical research in the rest of the dissertation.

To be sure, the author does overview some of the key facts about organic food consumption in the Czech Republic (pages 43-46). But in that regard, I was surprised by the author's lack of reference (besides one article on organic chicken husbandry) to the recent work of Lukáš Zagata of the Czech University of Life Sciences, who is conducting similar research as the author.² I do not endorse Zagata's work, but it is certainly relevant for this dissertation.

Fourth, to remedy some of the issues above, the author should have overviewed the existing data sources on Czech consumption of organic foods. Since about 2008, CVVM in its May surveys has asked a question on how often Czechs purchase organic food, and that question can be directly compared to other forms of private pro-environmental behaviors. Basic results of some of those surveys can be found below.³ The datasets are publicly available free of charge. *I can easily imagine that the author could have briefly analyzed the CVVM data to at least compare the frequency of different private pro-environmental behaviors over time, including organic food consumption, and to describe the characteristics of Czechs who engage in these kinds of behaviors.* In fact, shouldn't the author have had implemented the CVVM questions into his own survey, and used them as dependent variables to further analyze the TPB models?

² Zagata, L. 2010. "How organic farmers view their own practice: results from the Czech Republic. *Agriculture and Human Values* 27 (3): 277-290. Zagata, L. 2007. "Bio cash-cow? Context and content of Czech organic farming." *Agricultural Economics* 53 (1): 45-53. Zagata has also just published a new article "Consumers' beliefs and behavioural intentions towards organic food. Evidence from the Czech Republic." *Appetite* 59 (1): 81-89, which directly applies TPB on organic food consumption in the Czech Republic.

³ http://www.cvvm.cas.cz/upl/zpravy/101170s_oe110707.pdf
http://www.cvvm.cas.cz/upl/zpravy/100928s_oe90616.pdf
http://www.cvvm.cas.cz/upl/zpravy/100805s_oe80625b.pdf

Two conceptual concerns

Fifth, the author is a bit imprecise about the very topic of the dissertation: the title itself indicates that it is about organic food *consumption*, though more precisely the empirical analysis is about the intended *purchase* of organic food. In many countries, the difference between the purchase and consumption of organic food is very small, perhaps negligible. But not for the Czech Republic.

I take issue with this conceptual imprecision because *there is a lot of data that suggest Czech households grow an enormous amount of their own fruits, vegetables, eggs and other agricultural products, and the current scholarly interpretation of that data suggests that the majority of that food self-provisioning is done in an organic way.*⁴ According to the 2010 Statistical Yearbook of the Czech Republic, in 2009 Czech households – i.e. in their own backyards – grew 176,213 tons of potatoes, 8,232 tons of strawberries, 14,686 tons of tomatoes, 116,950 tons of apples, etc.⁵ The degree of Czech household self-provisioning is actually very high compared to developed countries, and *can be seen as a alternative model to the arguably capitalist or market-based focus on the purchase of organic foods in the dissertation.* If it is the case that at least some Czech food self-provisioning involves organic methods (few Czechs probably use chemicals and fertilizers on the red currants and strawberries growing in their backyards and *chaty*), *Czech consumption of organic food may in fact be very high, even if Czech purchases of organic food is very low.* If Czech families grow hundreds of thousands of tons of fruits and vegetables, most likely without the use of pesticides or other chemicals, why would they buy such expensive organic food? Clearly, the issue of food self-provisioning is a very important aspect of Czech organic food consumption that the author did not discuss at all.

Sixth, I am also considered with the author's repeated use of the term "test" and "testing" a model, which appears several dozen times in the dissertation. First of all, it should be made clear that the dissertation actually *does not put TPB to an empirical test, but rather compares several different versions or applications of TPB.* For example, the author claims that "Our analysis demonstrates that the explanatory power of the model, with respect to prediction of intention, is quite high when compared to similar models of individual behavior used in social sciences" (p. 146). Actually, the author only *asserts* that TPB is superior to "similar models of individual behavior" and he *never tests on his data* whether TPB actually has more explanatory power compared to other explanations of behavior intention. Does TPB explain variation in the dependent variable more than a model based on socio-demographic characteristics? Does it explain the variation better than a model based on other values, such as altruism, post-materialism and egalitarianism? Is TPB superior to e.g. norm-activation theory? The author never tests it, he simply chose to focus on TPB for his dissertation and asserts its superiority to other models of intended pro-environmental behavior. I do not consider that all so acceptable,

⁴ For example, Jehlička, P. and J. Smith. 2011 "An unsustainable state: Contrasting food practices and state policies in the Czech Republic." *Geoforum* 42 (3): 362–372.

⁵ Table 13-15 of the yearbook is available at <http://www.zscr.cz/download/StatRocenska2010Zem.pdf>.

and at minimum the author should have included variables for other models into his questionnaire to do such a test.

Methodological concerns

As I mentioned before, the author does an excellent job using SEM given the limitations of his data. But that does not mean the dissertation is without methodological faults.

Seventh, for a dissertation it would be appropriate to include, as an appendix, the full questionnaire used. It is important for readers to see precisely 1) how questions were posed to respondents, 2) the order with which they appeared, 3) how the questionnaire was introduced, 4) the statement of confidentiality, and 5) the full range of questions posed. That is, it would be important to see what questions the author might have omitted from his analysis, if any.

Eighth, the dissertation does a *poor job of providing detailed information about the implementation of the survey*. All we learn is that the survey was implemented “in compliance with ISOMAR 109 standards” (p. 108-109), and used CAPI and quota sampling. Given the quality of the analysis in the dissertation, my inclination is to *trust* that the survey was implemented well, but he is certainly providing insufficient information for a dissertation! The following should have been discussed:

- The *sample frame* of the quota sample and its justification, as well as the database used to identify dwellings and households, and the method for determining which person within a household was selected (if relevant)
- The *response rate* (e.g. number of respondents who completed the survey compared to the number emailed/contacted, as well as the number of respondents who did not complete the survey) and a methodological discussion of the relevance of the response rate.
- Why is the *sample size* so small? Is it due to a lack of funding for a larger sample, is it related to the response rate, etc?
- The *statement of confidentiality*, or generally how the author ensured respondents of the confidentiality of the data
- A *justification for the survey mode*. Why was CAPI the most appropriate tool for the given analysis and what would be the limitations/constraints of alternatives?
- In using CAPI, were respondents given show cards or shown a computer screen?
- Was there any *item non-response*? If so, it needs to be analyzed. If there was no item non-response, then the author needs to discuss its consequences on the response rate of the survey (i.e. did any respondents quite the interview because they didn't want or couldn't respond to a given question?).
- Lastly, given that the author is responsible for the survey, a description of how the data file will be handled to ensure the *future confidentiality* of the data.

As you can see, section 5.2 of the dissertation, which is less than a page long, is just inadequate. There is no excuse for that.

Ninth, while the justification of structural equation-modelling (SEM) is quite good, the author only mentions once (p. 199) that the dependent variable is ordinal, and *inadequately discusses the different forms of estimation that could be used* for approaching ordinal data with 7 categories. For example, one common approach in the literature would be to use Bayesian estimation using MCMC (Markov chain Monte Carlo) methods. The author could have consulted more of the literature on ordinal regression (using or compatible with MPlus) to justify the use of maximum likelihood estimation.⁶

Tenth, the author is dealing with a very small sample size. While he admits its limitations, he could expand on the issue a lot more. For example, there could be a *more extensive discussion of the impact of sample size on chi-square statistics and type-II error*, and how that relates to the interpretation of the results.

Eleventh, the author does a great job of introducing “descriptive norms” and showing that they are indeed distinct from injunctive norms (see table 6.2). All of the measurement models in the dissertation are conducted appropriately. But *why is there not a theoretical discussion of the relevance of descriptive norms?* In fact, I can’t even find a justification for why the author decided to include descriptive norms in his study as opposed to some other set of norms. Both descriptive and injunctive norms involve social networks and social trust, and there are already quite substantial literatures on social networks and social trust in the Czech Republic (too much for me to cite here). The author could have engaged with that literature to explain why these norms should be seen as relevant (thus justifying the respective hypotheses).

Other minor issues

- Isn’t there a tension between the percent of respondents who report to intend to purchase organic food (nearly 15% of the respondents are located in response categories 5, 6 and 7 of the dependent variable), and the fact that Czechs in reality spend so little on organic food? What does that mean in terms of the reliability of either source of data?
- In terms of the practical implications of the empirical analysis (p. 161), how would one carry out “behavioral intervention in the form of a marketing campaign” if the analysis does not explain what it is that shapes people’s attitudes and subjective norms to purchase organic food?

In Prague, 15 June, 2012

⁶ E.g. Johnson, V.E., J.H. Albert. 1999. *Ordinal Data Modeling*. New York: Springer. Also, B. Muthen. 2010. “Bayesian Analysis In Mplus: A Brief Introduction,” available online.