

Psychosocial Basis of a Sustainable Food Pyramid

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Abstract

Drawing on FAO's definition of "sustainable diet", we propose a "sustainable food pyramid" (SFP) which aims to eradicate malnutrition, promote health and protect the environment. These aspirational objectives require changes in the productive system, eating habits of the population, and rebalancing power relations between all actors in the food chain.

This study addresses the psychosocial attitudes and food behaviours entrenched within the SFP, based on scientific consensus on the environmental and nutritional benefits of reducing the consumption of red and processed meat. A review of the evolution of traditional food choice questionnaires and surveys on current food concerns and behavioural intentions is presented.

The results reveal that ideals of safety, health and morals, inherent to any food culture, still prevail despite the unprecedented contemporary access to food; this is shown by the fast-growing concern for personal (safety and health) and ethical consequences (malnourished farmers, water footprint, climate change, animal welfare). A growing number of consumers are increasingly interested in adapting their diets to the SFP's values, an opportunity that should be addressed through public recommendations to support a turn towards a more sustainable diet. We highlight the need for a social recognition of those non-vegetarian individuals who intend to reduce their meat consumption and recognize this new trending food identity. Public strategies should, therefore, be backed by empirically-based research.

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Introduction

Building a Sustainable Food Pyramid on Psychosocial Grounds

The modern agro-industrial system is currently subject to a widespread social debate. International organizations, academia and opposing consumer groups question the unsustainable practices and consumption habits encouraged by the world food economy. (FAO, 2012) defines sustainable diets as "those diets with low environmental impacts which contribute to food and nutrition security and to healthy life for present and future generations. Sustainable diets are protective and respectful of biodiversity and ecosystems, culturally acceptable, accessible,

economically fair and affordable; nutritionally adequate, safe and healthy; while optimizing natural and human resources". In so doing, a three-level sustainable food pyramid (SFP) may be proposed, where policies to eradicate malnutrition stand at its base, healthy food consumption habits are promoted and, finally, environmental protection is introduced.

As regard to the top of the SFP, the (WBG, 2015), encourages a Climate-Smart Agriculture approach to improve agricultural productivity, increase resilience to climate change and lower greenhouse gas emissions. Besides remarking the issues of polluting and overusing of existing water supplies, the (WRI, 2015), highlights the significance of the social basis of the SFP



by advancing rural development, generating benefits for women, and finally reducing growth in consumption.

By focusing on required dietary changes (Ranganathan, J., et al., 2016), the environmental and health benefits of decreasing the high consumption of animal foods have been emphasized (Steinfeld, H, et al., 2006; WHO, 2015). Synergies are actually found between healthy diets and environmentally sustainable diets (Tilman, D, 2014; Stehfest, E, 2014; Springmann, M, et al., 2016), considering the Mediterranean diet an example of best practice that meets both criteria (FAO, 2012; Sáez-Almendros, S, et al., 2013), when excluding fish consumption. Fish are a rich source of healthy fats, but overfishing threatens biodiversity, while bio-magnification affects large predators. Regulation and less polluting aquaculture are necessary, but also clear guidelines on fish consumption (Lang, T, et al., 2013).

Beyond environmental and health sciences, the social branch contributes to a better understanding of human food behaviour and, thus, may guide the dietary shift. Given each culture essentially interposes health and moral ideals between the desire and the appropriate way to eat, the dietetic and ethic foundations of the SFP may be considered powerful instruments of change. We can easily realize that the interest in nutrition is an increasing concern: ten-year old school children know the basics of a healthy diet and guess right when targeting foods which intake should be limited or increased (Pich, J, et al., 2010). Further, less people are morally indifferent to the contrast between obese and malnourished (Gold, A., 2015), while more people and organizations are involved in food redistribution activities - indicating an increased awareness of food waste implications- and demand for fair trade foodstuffs expands.

In this cultural framework, psychology specifically investigates the citizens' knowledge and attitudes on food sustainability, and how these influence their willingness of adopting a consistent diet and purchasing food produced under environmentally responsible practices. This study aims to address this research through the revision of two types of instruments: 1) Food-choice questionnaires (FCQ), and 2) Surveys on people's concerns in relation to several impacts of the food system and how they affect their personal food behaviour.

The Rise of Sustainable Concerns Through Three Decades Of Food Questionnaires

Under the header "It is important to me the food I eat on a typical day", drawing on Likert scales, FCQs assess consumer buying motives. The following rank of importance was revealed in 1995: health, mood, convenience, sensory appeal, natural content, price, weight control, familiarity and ethical concern (Steptoe, A, et al., 1995). Ethics were reduced to the political approval of the country of origin, along with environmental considerations of packaging. In 2000, this construct expanded, including *ecological welfare* (animal welfare and environmental protection), *political values* and *religion*. While *political values* and *religion* were the least valued, the *ecological welfare* was ranked higher, just after *health*, *price* and *sensory appeal* (Lindeman, M, et al., 2000).

Also, in the Food Values Questionnaire, *environmental impact*, *naturalness* ("extent to which food is produced without modern technologies") and *tradition* ranked high, closely followed by *safety*, *price*, *taste* and *nutrition* (Lusk, J, 2011). The next Eating Motivation Survey included five items on *natural*

concerns (by ascribed importance: natural, contains no harmful substances, organic, fair trade, environmentally friendly). *Natural concerns* were placed in a central position out of fifteen values, being reported more important than *price* and *weight control* in women (Renner, B, et al., 2012).

The most recent FCQ classifies its items under *environmental* (environment, pollution, resource wastage, animal welfare), *health and well-being* (impact of food on health, concern about well-being, social norms), *economic* (price, price/quality ratios, label, brand) and *miscellaneous* (seasonal production, local production, natural food, convenience, innovation, religious conviction, familiarity). A factorial analysis extracted five factors related with the SFP: Ethics and environment, Local and traditional production, Not buying for environmental reasons, Health and Absence of Contaminants (Sautron, V, et al., 2015). The scaling up of ethical values on these scales confirms the social awareness of the SFP and, concurrently, it suggests an individual "rise" of the need to eat according to the Maslowian pyramid; that is, once the basic nutritional need is satisfied, people seek out healthier food and are finally eager for ethically produced foodstuffs.

The increasing social awareness of food sustainability is confirmed in questionnaires designed to determine knowledge, attitudes and behaviours in relation to this issue.

In 2008, a questionnaire on food-related environmental beliefs and behaviours (Lea, E, et al., 2008) included eight items: less packaging; composting scraps; local production; fewer pesticides and less water; less plastic carry bags; more organics; and less meat. Results show that 90% agreed on benefits of the two first items, 80% on reducing pesticides and water use, and only 20% on reducing meat consumption. However, half of this sample declared that they often or sometimes eat less meat for environmental reasons, thus suggesting a mixture of concerns on safety, nutrition and environmental issues. Shortly after, another survey showed a remarkable knowledge of the impacts of food system in relation to groundwater pollution, biodiversity loss and the global warming (Tobler, C, et al., 2011).

The most recent questionnaire on SFP concerns used a five-point scale, where "3" allowed uncertain or neutral answers (Worsley, A, et al., 2015). Most people rated 4 or 5 (very or extremely concerned) on these items: use of child labour in some countries for vegetable production; people in own country who do not have enough to eat; people starving in developing countries; and poor access to healthy food among people in remote areas. Nutrition concerns, such as eating too many processed foods and the type of fats, were scored slightly higher. Safety concerns scored similarly (i.e. microbiological contamination of food products; pesticide residues in food; irradiated foods; routine use of animal antibiotics to promote growth of farm animals). Similar percentages declared to be concerned by environmental issues, including discharge of effluent (sewerage) from intensive animal production; the effect of pesticides and fertilizers on the environment; fertilizer run-off to the ocean and depletion of ocean fish stocks. As to animal welfare concerns, being treated cruelly during food production topped as the highest concern, while slaughtering for meat production was reported as less distressful.

In the same study most people favoured purchasing environmentally-friendly food products; avoid buying products containing chemical food additives; buy free range eggs and try

to reduce household food waste. Finally participants declared they would support food policies influencing the reduction of salt, sugar and saturated fat food content; increasing recyclable food packaging and avoiding food imports from countries employing cheap labour.

Psychological Pathways to Eat More Ecological Diets

“Green consumption” gained social inertia when, in its early stages, sustainable food was equated to organic consumption. Numerous studies show how social popularity of organics was rooted back to food safety issues and fuelled by the open up to unknown GMO foods. The lower environmental impact was thus a value added. Today, the decision to pay a plus for an organic apple or a grain-fed chicken egg comprehend the initial interest in the safety, health and “universalist” moral values generally associated with the rejection of GMOs (Aertsens, J, et al., 2009).

However, while part of the organic production has been “industrialized” (conventionalization and bifurcation theses, (Goodman, D, et al., 2015)), concerns over GMOs also decline in concert with increasing scientific evidence over its safety for human consumption. Nonetheless, organic production is still environmentally preferable and decreases the health risks associated with synthetic chemicals, particularly those pesticides containing deadly neurotoxins and/or carcinogens. Misuses kill thousands of people annually, primarily in poor countries (Thies J., 2015). Thus, beyond strict safety controls of all authorized foodstuffs, the social concern on pesticide use subsists on an effect described as “Not in My Body”: “Food chemicals are perhaps necessary, but better out of me!” (DuPuis, E, 2000).

As shown above, the ideal of sustainable food is now best distributed, including not eating in excess, rejecting processed food, increasing consumption of local, seasonal and organic (when possible) fruit and vegetables and reducing consumption of food of animal origin. This interconnected understanding of sustainable food should contribute to dismantle the “negative footprint illusion” (Gorinssen, K, et al., 2016); that is, a sense of “being in peace” with the environment by eating an organic apple... after consuming a 200 g beef burger. As the sustainability equation turns in from more organics towards less meat, a new wave of scientific literature on carnivores’ willingness to reduce their meat consumption emerges. Psychometric instruments to identify those population segments more favourable to reduce their meat consumption (Worsley, A, et al., 2015; Graça, J, et al., 2015) coexist with experimental essays on the effectiveness of different mental strategies (Loy, L, et al., 2016). This increased psychologically based knowledge will be useful to future public campaigns specifically devoted to promote a sustainable dietary shift (Ranganathan, J., et al., 2016).

Conclusion

We aimed to review the mainstreaming evidence on how food sustainability criteria are adopted by Western population. This is profited by many alternative food movements convinced in the power of small individual actions through a bottom-up approach to transform the food system and encourage citizens to “vote with their money” (Johnston, J, et al., 2015).

We argued that this growing awareness regards to the

SFP’s objectives deeply connects with the universal demand of food ideals, not only dietary but also ethical. These revitalized ethical concerns, once watered-down by the “success” of the first green revolution that promised to eradicate extreme hunger, now may be again displaced by the Neo-Malthusian rhetoric to meet the challenge of feeding 9 billion people by 2050 only through biotechnological advances.

However we observe an unprecedented growing minority of people, within a specific economic status, that re-evaluate their consumption of food of animal origin. New categories such as “flexitarian”, “pescetarian” or “conscious omnivore” are attempts to define these new food identities. These are a sort of “social carnivores” that silently reduce the consumption of animal source foods. The social recognition of this “mixed” food identity, valuing their environmental contribution, would expand this permeable option towards those more carnivorous; as such, the social rejection and reluctance initially associated to the vegetarian option and vegan animal rhetoric would not act as barriers (Jaume, M, et al., 2015). In fact, the animal welfare is progressively gaining momentum in society as well as a specific food issue (DEFRA, 2016).

Whatever are the motives of the personal intentions to implement a more plant-based diet, it would be useful to reinforce candidates with positive public messages on the health and environmental benefits of a wide range of vegetal “meat substitutes” actually produced. Moreover, to promote the existent mixed veg-meat burgers may also be valuable for less compromised consumers.

Last, but not least, being healthy diets is also pro-environmental diets, from now on nutritional guidelines should consistently incorporate their environmental contribution and vice versa.

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