

From isolated labels and nudges to sustained tinkering: assessing long-term changes in sustainable eating at a lunch restaurant

Assessing
long-term
changes in
eating

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Abstract

Purpose – The critical role of diet in climate change mitigation has raised behavioural approaches to the top of the agenda. In this paper, the authors take a critical look at these behavioural approaches and call for a more dynamic, practice-oriented understanding of long-term changes in sustainable food consumption and supply.

Design/methodology/approach – This approach is based on the experiences from a long-term experiment promoting sustainable eating in a workplace lunch restaurant using a series of informational and nudging techniques. In the experiment, the authors found that focussing solely on eating behaviours did not help to capture the multi-level change processes mobilised. The authors therefore propose a more dynamic, practice-oriented methodology for examining long-term changes in sustainable eating. The empirical data of the experiment are based on qualitative and quantitative data, consisting of customer survey, customer and kitchen personnel focus group discussions and monitoring data on the use of food items in the restaurant and their climate impacts.

Findings – The results draw attention to a series of practical challenges restaurants face when promoting sustainable eating. Directing analytical attention to tinkering helped to reveal the tensions brought about by labelling and nudging in menu planning and recipe development. The results show how tinkering required attentiveness to customers' wishes in both cases. Nudging offered more freedom for the restaurant to develop menus and recipes. In the case scrutinised, however, nudging customers towards tastier and more satiating vegetarian dishes included the use of dairy. This partly watered down the climate benefits gained from reduced meat consumption.

Originality/value – Rather than looking separately at changes in consumer behaviour and in the supply of food, the authors show how we need analytical concepts that enable the evaluation of their mutual evolution. Tinkering can assist us in this endeavour. Its adaptive, adjustable character, however, calls for caution. The

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development of praxis in food services and catering requires critical companions from the transdisciplinary research community. Research can provide systematic knowledge on the impacts of labels and nudges on kitchen praxis. However, research itself also needs to tinker and learn from experiments. This necessitates long-term speculative research strategies.

Keywords Labelling, Experimentation, Nudging, Lunch restaurant, Sustainable eating, Tinkering

Paper type Research paper

1. Introduction

Change your behaviour for the climate! Put more veg on your plate!

We hear these slogans ever more often. The critical role of diet in climate change mitigation (Springmann *et al.*, 2018; Willett *et al.*, 2019) has placed behavioural change approaches at the top of the agenda in climate and food policies. In particular, nudging has gained interest as a technique for changing eating behaviours (e.g. Just and Gabrielyan, 2016; Mancino *et al.*, 2018; Reisch *et al.*, 2017). As information campaigns for healthy or environmentally friendly eating have largely proven ineffective, nudging has attracted attention as a potentially more effective approach to behavioural changes (Lehner *et al.*, 2016; Reisch *et al.*, 2017). Nudging builds on the assumption that by guiding people towards small, subtle adjustments in their daily eating routines, we can cumulatively achieve considerable health or environmental impacts.

Restaurants and food service providers, among others, have been active in trying out nudging (Bacon and Krpan, 2018; Filimonau and Krivcova, 2017; Lorenz and Langen, 2018). For restaurants, nudging is intuitive from practice and fits well with marketing approaches. The libertarian approach (Thaler and Sunstein, 2008), prompted by nudging, does not restrict the choice of the customer but gently guides them in the intended direction (Evans *et al.*, 2017). Nudging offers a more flexible, customer-oriented approach compared to environmental labelling. While labels offer information on food choices, nudges place food, its taste and appeal, at the centre of decision making. In this way, nudging offers restaurants and food service providers means to seduce customers towards sustainable eating, rather than restricting or convincing them about certain choices. This flexible and customer-oriented approach fits well with the ideal of deregulation that has been emphasised by food policies guiding healthy and sustainable eating and consumption (Mason and Lang, 2017; see also Whitehead *et al.*, 2018).

In this paper, we examine the results from a long-term experiment in which we promoted sustainable eating at a workplace lunch restaurant using a series of informational and nudging techniques. During the experimentation, we discovered that focussing solely on eating behaviours was not enough to fully capture the multi-level processes of change mobilised in the praxis of food preparation and services. We elaborate, thus, how the notion of tinkering can assist us in better understanding the development of praxis in restaurants. The concept draws from the work of Mol (2010, 2013), Stengers (2010) and practice theories (Schatzki, 2002; Shove *et al.*, 2012; Warde, 2016). The concept of tinkering in understanding sustainable eating has been elaborated earlier in the context of publicly governed school dining (Kaljonen *et al.*, 2018, 2019); here we extend the examination to workplace lunch restaurants. Workplace restaurants offer an important extension to the experimentation in sustainable and plant-based eating. They affect the eating of thousands of people daily and are in a position to shape the production, processing and consumption of food (Goggins, 2018). In restaurants, moreover, tinkering is practised by actions guided by voluntary corporate responsibility programmes and labour legislation. Our elaboration further extends the examination to long-term changes in sustainable eating and catering. To date, many behavioural interventions (Bucher *et al.*, 2016) and practice-focused experiments (Laakso, 2017; Spaargaren *et al.*, 2013) have been one-offs and focussed on only one set of means.

We begin the article by introducing the behavioural and practice approaches to sustainable eating, explaining also their different understanding of experiments. We continue by introducing the series of experiments under scrutiny and our own researcher-activist position in them carrying out. We show how the series of experiments caused kitchen personnel and customers to tinker in order to reach more impactful actions, while also making compromises along the way. We close the article by discussing how the compromises call further long-term transdisciplinary research on the praxis of restaurants in guiding sustainable eating.

2. Behavioural and practice approaches to sustainable eating and experimentation

In behavioural science, nudging refers to a subtle design of the context of choice in a way that mobilises the unconscious mind and alters human behaviour in a predictable manner (Thaler and Sunstein, 2008). The notion of nudging is based on the differentiation between cognitive processes that are fast, automatic and intuitive and those that are slow, deliberate and conscious (Kahneman, 2011). Fast processes largely guide our daily routines, whereas slow processes rely on much greater deliberate cognitive effort. In behavioural policies, information campaigns and labels target slow cognitive, deliberate processes, whereas changes in choice architecture or default choices target fast, intuitive decision-making (Bauer and Reisch, 2019; Lehner *et al.*, 2016; Reisch *et al.*, 2017). Kahneman (2011) underlines the interlinked nature of fast and slow cognitive processes, calling greater attention to the ways in which these different behavioural measures are co-designed.

Interventions are commonly used for testing the effectiveness of behavioural approaches. The research results gained from the environmental labelling of food in general (Eldesouky *et al.*, 2020; Feucht and Zander, 2018) and more specifically in restaurant settings (Babakhani *et al.*, 2020; Pulkkinen *et al.*, 2016; Spaargaren *et al.*, 2013) show that although labels have in many cases increased the knowledge of customers, other factors tend to override their decisions on food. These other factors, such as habits, rush or taste, are largely guided by intuitive cognitive processes. When the effects of nudging on these cognitive processes are tested, interventions show mixed results (for reviews see Bauer and Reisch, 2019; Broers *et al.*, 2017; Bucher *et al.*, 2016; Cadario and Chandon, 2019). A default option has been recognised as an effective means of guiding choices (Lehner *et al.*, 2016; Saulais *et al.*, 2019), but also an ineffective one (Löfgren *et al.*, 2012). The same applies to choice architecture more generally (Bucher *et al.*, 2016). In nudging interventions, which conventionally rely upon a controlled experimental design, the interfering factors are easily considered as noise or a distraction (Ansell and Bartenberger, 2016). This inhibits the integration of contextual, often unintended, cumulative – and even changing – factors into the explanation. Interventions both in labels and nudges have also often been one-offs, making the evaluation of their long-term effects challenging (Bucher *et al.*, 2016; Pulkkinen *et al.*, 2016; Spaargaren *et al.*, 2013).

The mixed results gained from interventions have caused several researchers to seek more integrated approaches to understanding changes in sustainable eating (Strengers and Maller, 2015). Upham *et al.* (2011) as well as Filimonau and Krivcova (2017) underline further scrutiny of how nudging and labelling affect the practices of food services and retail upstream. The complexities confronted in the practice of restaurants and food services also warrant greater attention (Goggins, 2018; Kaljonen *et al.*, 2019; Langen *et al.*, 2017; Wahlen *et al.*, 2012).

Social practice theories offer one plausible route to elaborate the complex set of interlinked factors affecting our eating (Heiskanen and Laakso, 2019; Shove, 2010). The practice theories advocate that, in contrast to individual behaviours, we should rather take social practices as analytical units when studying the changes in our daily consumption, including eating

(Schatzki, 2002; Shove *et al.*, 2012; Warde, 2016). Most of the practice theories see social practices as constituted by some combination of recognisable elements. For example, Shove *et al.* (2012, p. 82) define practices as consisting of a “relatively consistent, relatively enduring integration of elements”, including (1) materials and infrastructure; (2) competences, know-how and skills and (3) cultural meanings. According to this line of thinking, a single change in the choice architecture is seldom sufficient for achieving enduring changes in everyday practices such as eating. Rather, new materials and ingredients need to become more easily available and new cooking skills and recipes need to be learnt by the chefs (Kaljonen *et al.*, 2018). Also, information about environmental impacts is not enough to change our eating practices, and our deeply rooted cultural meanings attached to meat also need to change if plant-based eating is to take a stronger foothold in our diets (Jallinoja *et al.*, 2016).

Schatzki (2002) further suggests that practices can be seen as coordinated entities that are reproduced – and reconfigured – through concrete performances. This dynamic keeps practices alive, also allowing their renewal. Similarly, Shove and colleagues highlight that “[i]f specific configurations are to remain effective, connections between defining elements have to be renewed time and again. This suggests that stability and routinisation are not the endpoints of a linear process of normalisation” (Shove *et al.*, 2012, p. 24). Individual performances also provide room for experimentation and change. Some elements of practices may be either replaced or interconnected in novel ways (Mylan, 2015). Such focus on processes and mechanisms of change departs radically from the explanations sought by the behavioural approaches (Ansel and Bartenberger, 2016). Rather than looking for individual explanatory factors, practice theories aim to open up the black box of practices, making visible how the participating elements and their relations contribute to the reproduction or reconfiguration of practices.

Practice theories have informed burgeoning empirical investigations of daily eating (Brons and Oosterveer, 2017; Halkier and Jensen, 2011; Spaargaren *et al.*, 2013). Also, the role of experiments has been emphasised in the sustainability transition oriented studies of practices (Laakso *et al.*, 2017; Heiskanen *et al.*, 2015; Jalas *et al.*, 2017). The understanding of experiments in this strand of research, however, differs decisively from the classical experimental design in behavioural interventions (Kaljonen *et al.*, 2019; Weiland *et al.*, 2017). In sustainability transition and practice theory, experiments are seen as means to test novel practices with practitioners in real life, to evaluate their potential for wider usage and to collect ideas for their further development. Importantly, practice theory also calls for practitioners’ active participation in the co-design, execution and evaluation of experiments.

Mol emphasises attentive experimentation and learning from and through practices even further with her concept of tinkering (Mol, 2010, p. 227; Mol *et al.*, 2010, p. 13), which she has developed in relation to care and caring practices. With respect to serving food, Mol states that what is conceived as good eating can be strikingly complex (Mol, 2010, 2013). In the workplace lunch restaurant, for example, good food should be nutritious and tasty, but also inexpensive. The urge to lessen our meat consumption due to climate change may, in part, be in accordance with nutritional goals, but not necessarily in all aspects. Different customers may also interpret nutrition and sustainability in different ways. Mol reminds us that different ideas of good food can coexist, but sometimes they clash – “giving rise to ongoing tension or a victory of one alternative over the other” (Mol, 2010, p. 216). Mol argues that these tensions never go away, and they just need to be managed. By becoming attentive to frictions and tensions, practices evolve and develop. A persistent willingness to tinker is thus essential for good care and for sustainable eating.

In the following, we scrutinise how the notions of attentive experimentation and tinkering can assist us in learning from experiments in sustainable eating. Practice theories underline that experimentation with any novel practice is likely to generate resistance (Shove *et al.*, 2012). Resistance to new ways of eating illuminate the path dependencies in

normalised accounts of eating, opening them up for public deliberation (Warde, 2016). Resistance is relevant to tinkering. Encountering friction causes the experimenter to hesitate. Hesitation, in turn, opens up the possibility for the creation of genuinely new knowledge (Stengers, 2010). This means also that research should be designed to allow resistance and ethical questions related to proposed new practices and to encourage their public deliberation (Kaljonen *et al.*, 2019; Marres, 2009). This concerns, in particular, behavioural interventions that touch upon our intimate spheres of life (Nuffield Council of Bioethics, 2007; Wilkinson, 2013).

3. Experimentation at a lunch restaurant

In 2015, the Finnish Environment Institute (SYKE) made a sustainability commitment to reduce the environmental impacts caused by its food procurement and consumption [1]. That sustainability commitment began our collaboration with Fazer Foods Services [2], which was responsible for lunch and catering services at SYKE. At that time, the company operated in the Nordic market and had over the years developed sustainable food services as part of its responsibility programmes [3]. As part of the sustainability commitment of SYKE, the service provider agreed to introduce and try out several measures to lower the environmental impacts of its food provision. In the commitment, no precise targets for lowering climate impacts were, however, set.

Finns have a long-established tradition of having a warm meal during the working day (Holm *et al.*, 2019). More than half of the country's working adults have the opportunity to have a meal at a restaurant in their place of work or study and more than half of all employees who have access to one also use it (Valsta *et al.*, 2018). To date, the issues of good nutrition, health and wellbeing have gained the most attention in relation to the provision of a workplace lunch (Raulio *et al.*, 2010). The commitment made by SYKE widened this social responsibility of the employer [4] to environmental sustainability. This was in line with the national nutrition recommendations (NNC, 2014), which, as well as the Nordic nutrition recommendations (NCM, 2012), promote widening the use of vegetables and reducing the use of red and processed meat as part of sustainable eating (see also Willett *et al.*, 2019).

The first measure taken into use at the SYKE restaurant in 2015 was a climate label informing customers about the most climate-friendly options for lunch. The service provider had previously participated in piloting the climate label (Pulkkinen *et al.*, 2016) and now wanted to test it further to determine its long-term effectiveness. The label was promoted to the customers with separate information boards and was also included on the written weekly menus. We researchers conducted a survey of climate-labelled meal uptake after the first month of use of the label (Table 1). Altogether, 170 employees responded to our survey, the response rate being 59% [5]. The aim of the survey was to explore how often customers chose meals marked with the climate label and what were the key issues affecting their lunch choices. In addition to the survey, we carried out focus group discussions to gain more in-depth knowledge of how customers reacted to the climate-friendly lunches. The discussions were carried out after eight months of the label being in use. A total of 13 employees participated in two focus group discussions. We also carried out a focus group discussion with the kitchen personnel regarding the changes that the label had introduced to the kitchen, during which the personnel also had an opportunity to reflect upon the results of the customer survey.

We summarised our preliminary findings and delivered them for reflection to the kitchen. The results advised the kitchen to change their strategy more explicitly to nudging. At the beginning of 2016, the SYKE restaurant introduced vegetarian meals first to the buffet line. At the same time, the chefs also invested in recipe development and increased the diversity of vegetarian dishes. The climate label was still in use, but more resources were invested in developing the taste and appearance of vegetarian meals. We again gathered feedback from

Type of data	<i>N</i>	Date
<i>Round 1</i>		
Survey for SYKE employees eating at the office canteen	170	Feb. 2015
Two focus group discussions for SYKE employees	13	Oct. 2015
Focus group discussion for canteen personnel and corporate representatives	5	Oct. 2015
<i>Round 2</i>		
Two focus group discussions for SYKE employees	11	March 2017
Focus group discussion for canteen personnel and a corporate representative, focus on everyday practicalities at the canteen	3	March 2017
Focus group discussion for corporate representatives, focus on strategic and corporate-level issues	2	March 2017
<i>Quantitative monitoring</i>		
Food items used at the restaurant and estimation of climate impacts of food served (in total and per meal)		2014–2017
Number and type of lunches sold at the canteen based on cash register		2014–2017

Table 1. Synthesis of the quantitative and qualitative empirical material

the customers on the further changes. We organised two focus group discussions in 2017 involving 11 people. In these discussions we also presented our monitoring results on the use of ingredients and their estimated climate impacts from 2014 onwards. We also delivered these results to the personnel at the restaurant and organised another focus group with key persons at the corporate level to discuss the meaning of the results in relation to the corporate responsibility programme.

We monitored the use of food items in the kitchen from 2014 to 2017. This data gave us the possibility to evaluate the impacts of the measures on greenhouse gas (GHG) emissions. To enable this evaluation, the SYKE restaurant provided us with its purchase data including all ingredients and products, measured in kilogrammes, used to prepare lunches and provide catering services. The purchase data offered us reliable data to evaluate the actual total changes in the use and consumption of food items. For the estimation of GHG emissions, we used the Foodweb tool (Aan *et al.*, 2013). The GHG intensity data used by the tool is a compilation drawn from several life cycle assessment (LCA) databases. The GHG intensities reveal the variations in intensity across product groups, while keeping the intensity of each product group the same over the monitoring period. It is therefore well suited to analysing long-term change. The data includes life cycle information on food items, but not the energy used for preparing and serving the dishes. Neither is carbon sequestration included in the LCA data.

The long-term empirical material provides unique insights into the development of praxis for sustainable eating in one workplace lunch restaurant (see Table 1 for synthesis of the data). In the analysis, we scrutinise both the reactions of customers to different measures as well as the ways in which the measures led the kitchen to re-evaluate and change their practices. We pay special attention to the frictions confronted and the practical solutions tinkered. In the analysis we track the compromises made, highlighting their importance for the impact of the measures.

We explicitly used the research data and results as an input for further development of praxis at the SYKE restaurant. In this manner, we actively participated in the development of the lunch services. Similarly, as SYKE researchers, we also ate the food prepared by the chefs, tasted and were nourished by it. To ensure the quality and transparency of our results we acknowledge our researcher-activist positions and try to be as explicit as possible in the choices made in the co-design, execution and interpretation of the experiments (Reason, 2006).

4. Experimentation for plant-based eating

4.1 Targeting behaviours: from information labels to nudging

The first year of use of the climate label at the SYKE restaurant produced little success. Customers paid only little attention to the label in their lunch choices. In the survey carried out a month after introducing the label in 2015, more than half (58%) of respondents said they did not pay any attention to the label when making their lunch choices on that day. The share of those who had chosen the labelled lunch “every now and then” or “often” during the past month was 45%, with women being more responsive to the label (Figure 1). Only five per cent indicated they had chosen the climate lunch “nearly every time” or “whenever it was possible”. The survey also revealed a high proportion of customers who were unable to answer the question, indicating low awareness of the label.

Introduction of the label did, however, provoke discussion among the customers. The customers wondered why certain meals were given the label and others were not and considered the labelling to sometimes go against common sense.

I have wondered many times why, for example, wild mushroom soup is not a climate lunch. [Customer survey, open question]

Everyone thought the biggest drawback was that there was no description or manual available about the criteria, I mean, to justify why something was climate friendly. [Customer, Focus group 2, round 1]

The climate label used at the SYKE restaurant was based on criteria that integrated both climate and nutrition considerations (Pulkkinen *et al.*, 2016). In addition to climate impacts, the nutritional value of food items as recommended by the dietary guidelines (NNC, 2014) was taken into account. Furthermore, the labelling was based on the list of allowed items, not taking into account their proportional shares in the meals. For instance, if cream was used in wild mushroom soup, the soup could not be climate labelled. Similarly, oven-baked Baltic herring received the label, whereas the same herring fried with butter did not. The customers wished for more open communication about the climate labelling criteria. The environmental researchers at SYKE evaluated the label primarily on the basis of their professional understanding of climate impacts. The labelling was consequently based on a strict, categorical list of food items that was somewhat confusing to them. Use of the label therefore evoked thought and discussion amongst the researchers during the lunch.

Soon after its introduction, the customers’ level of attention to the climate label waned, and the label and its information became crowded out by other information provided on the meals. The kitchen personnel also put less effort into promoting the label, and information on it was usually only included on the weekly menus. In the focus group sessions, the customers stressed that it is the taste, smell and appearance of foods – and their past experiences of them

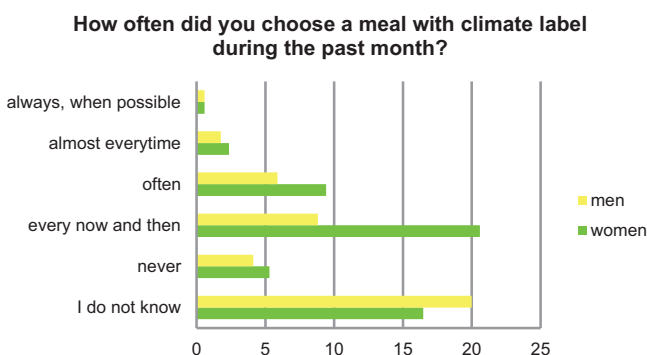


Figure 1.
The proportion (%) of SYKE personnel who paid attention to the climate label during the first month of the label in use

– that guide their decisions about what to have for lunch, as opposed to environmental considerations. The justifications given by the customers for their lunch choices resonated with the rapid cognitive processes emphasised by nudging approaches. The narratives highlighted how lunch choices are made in a highly automatic manner and emphasised the social aspects of eating. Some even saw the information provided on the label as disruptive to the social, relaxing meaning of a lunch break.

In the focus group discussions the customers also highlighted how they use certain heuristics in choosing what to eat and when. These heuristics mix slow and fast thinking in interesting ways, providing a wider frame against which people reflect on their eating (see also [Warde, 2016](#)). When the heuristic functions correctly, daily choices are more intuitive and automatic. In the focus group discussions, participants who favoured plant- or fish-based diets, in particular, emphasised these guiding heuristics in their eating. They emphasised how lunch provision can, at best, play a big role in making these heuristics functional and easy to follow.

I choose between vegetarian and fish. Then from these options I choose the one that looks nicer or that I like more. I have not paid much attention to the climate label. This is because the label is not right next to the dish. Of course I do have some idea in the back of my mind of what is climate friendly and what is not. This might play a minor role, but in the end it really comes down to what looks more tasty. [Customer, Focus group 1, round 1]

These results gained from the customers encouraged the restaurant to change their informational strategy to nudging. At the beginning of 2016, the restaurant relocated its vegetarian dishes to be first in line. They continued to use the label, but invested more explicitly in developing more appealing and tasty vegetarian meals and recipes. The feedback from the customers after the second round of changes was positive across the board. One participant in the focus group discussion expressed her astonishment: “I found it mind-blowing that the vegetarian food was served first in line; that it was no longer a given that meat comes first; that now it went the other way around”. The nudging techniques opened the cultural norms related to meat provisioning to critical reflection.

Many customers also stated that the vegetarian food had improved and become more diverse at the SYKE restaurant. This had persuaded more customers to try vegetarian dishes. Vegetarian became easy to choose as a lunch option, and this changed the daily eating habits of many customers. Many also stated that this had helped them reduce their overall meat consumption. Importantly, vegetarian food was no longer considered a “light” alternative. This was particularly important for male customers.

I used to be vegetarian, then switched back to eating meat, now I’m trying again to stick to a plant or fish-based diet. It’s very easy here because the vegetarian food is high quality and mostly also tastes good. You kind of find yourself in a bubble where you start expecting to get high-quality vegetarian food everywhere. You go for lunch in another restaurant only to find “what the hell, there’s only meat stew” and the vegetarian dish is just a lentil soup that would only be enough for a petite woman. [Customer, Focus group 3, round 2]

4.2 Tinkering for more tasty and satiating plant- and fish-based meals

Introduction of the labels and nudges raised tensions in the kitchen, the chefs and menu planners had to find practical solutions. Finding the right recipes for the climate label proved challenging. Additionally, nudging consumers towards plant-based eating required tasty and satiating vegetarian recipes. Menu planning and recipe development played a key role in tinkering solutions to the problems encountered.

The ingredient list provided by the climate label was “annoyingly short”, as one of the menu planners put it. The chefs and the menu planners had to be highly imaginative in creating dishes that fulfilled the set criteria. At least one climate labelled dish per day was needed to ensure customers could choose the climate-friendly option. Clear vegetable soups

were the easiest to label and to integrate into the menus. Baltic herring, which was a popular choice among SYKE personnel, was also often served. Root vegetable patties, by contrast, could not be labelled if, for example, eggs were used in their preparation. Moreover, as the climate label was not integrated into the recipe bank used by the corporation, the label was viewed rather as a separate burden by the kitchen staff.

As a result, after the first year of experience with the label, the SYKE restaurant made an explicit decision to move away from a strict ingredients list in developing their vegetarian meals. They continued to use the label, but broadened the variety of vegetarian dishes beyond the given criteria. This decision was taken in tandem with a greater emphasis on nudging. The restaurant wanted to develop its menus to contain a greater variety of tasty and more substantial vegetarian dishes serving a wider variety of customers. Men and vegans were identified as the most challenging consumer groups. In the lunch restaurants, vegetarian options had been conventionally prepared for women looking for lighter options. Such segmentation of customers, however, was no longer feasible. Men were looking for vegetarian options as well, but for more substantial dishes. The food service personnel also identified vegans as “a small but loud group who react quickly if they feel there is nothing on offer for them” [Corporate level personnel, round 2].

In order to develop more filling vegetarian dishes, the kitchen introduced pulses and beans more prominently on the menus. With pulses they could ensure the protein intake of the vegetarian dishes. New recipes were developed, tested and put to use. The use of pulses per meal served increased from 2014 to 2017 by almost a third (Figure 2). Some customers encouraged the kitchen to be even more courageous and let customers try new plant-based protein products, such as Quorn, crushed fava beans, or pulled oats. The sudden increase in the use of pulses also raised resistance.

[Negative comments] have been mostly about why beans and lentils need to be everywhere. Why have them in the salad buffet if you already have them in the vegetarian dish? This is probably the biggest discussion point -- The fact is, though, that it comes down to the recipe: there just is no other way to get more protein into the dishes. [SYKE restaurant personnel, round 2]

Pulses, excluding peas, are not customary in Finnish food culture (Jallinoja *et al.*, 2016). Resistance to them is therefore not surprising. Nonetheless, the SYKE restaurant staff, together with their colleagues at the corporate level, called for persistence. According to the menu planners, by continuing to offer customers the opportunity to try the new ingredients, they will, little by little, become accustomed to the taste and texture of pulses. The kitchen simply needs to develop the recipes so that they appeal to the tastes of the customers and tempt them to choose the new dishes. Persistence was also called for when replacing iceberg salad with cabbage on the salad buffet, for example (Figure 2). Increasing seasonality in the use of vegetables required informing customers about the changes and patience in letting the customers get accustomed to the new ingredients. Testing out the new recipes and solutions also fostered learning among the chefs. Tinkering was, in essence, a two-directional process.

Increased use of fish provided another solution for reducing the consumption of red meat. Fish dishes were popular among the SYKE personnel. During the focus group discussions, the SYKE personnel frequently mentioned sustainably sourced fish as a part of sustainable diet [6]. During the experimentation, the total fish consumption at the SYKE restaurant did not increase, but the varieties used in cooking did change (Figure 3). The SYKE restaurant took the criteria on sustainable fish, developed by the World Wildlife Fund (WWF), into use in their procurement. Observance of these criteria led them to replace Norwegian salmon with cultivated rainbow trout, at least to some extent. Baltic herring was also given preference and its use increased particularly during the first year of the climate label. The preference for sustainably sourced fish was also reflected in an increased use of processed roach fish products. Both the customers and kitchen personnel were willing to increase their use [7], but the volumes and stable supply of the novel

Vegetable use per meal (g) at the SYKE restaurant

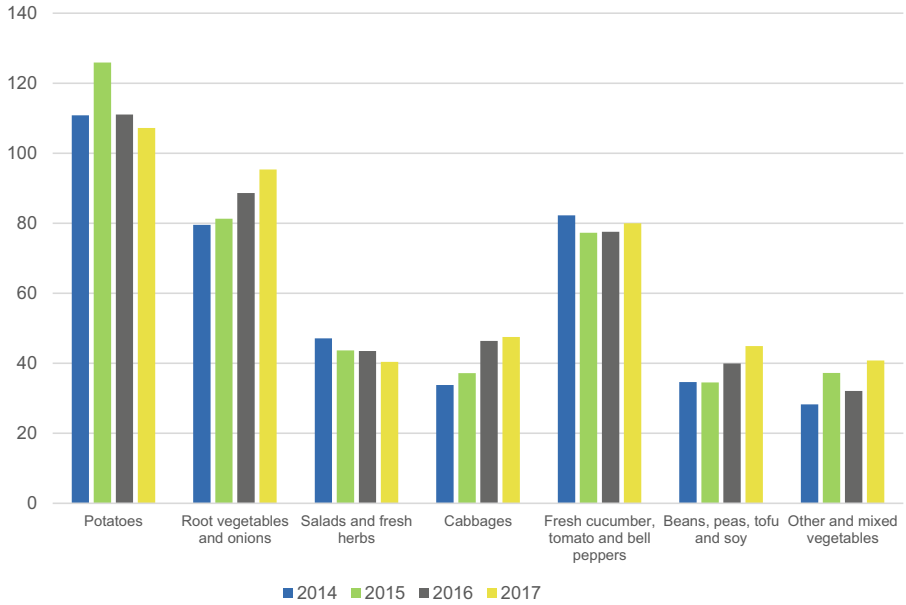


Figure 2. Vegetable use per meal (g) at the SYKE restaurant 2014–2017

Fish consumption per meal (g) at the SYKE restaurant

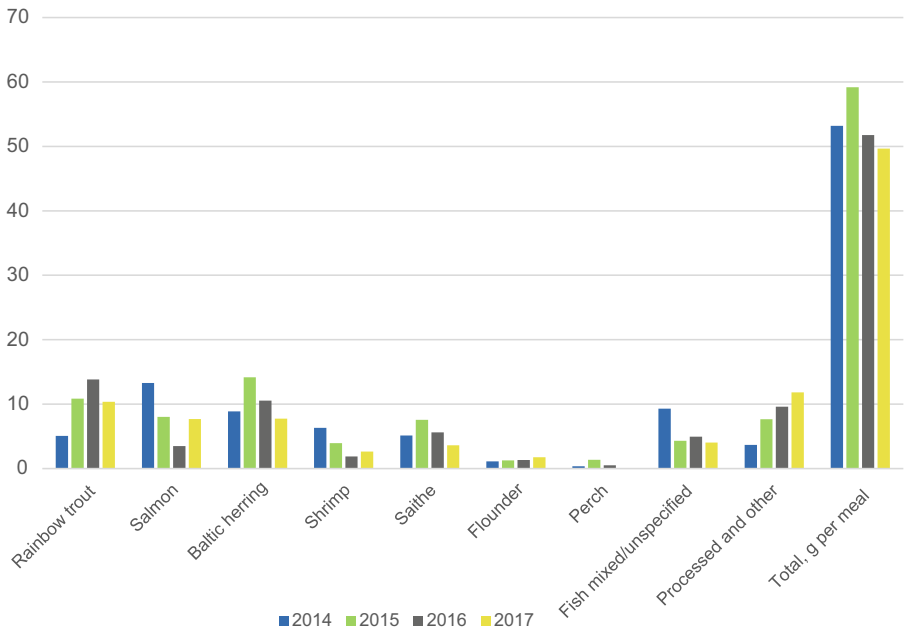


Figure 3. Fish consumption per meal (g) at the SYKE restaurant 2014–2017

processed roach fish products – usually prepared by smaller producers – proved challenging. In the case of rainbow trout and Baltic herring, availability and price were more easily adjustable to greater volumes.

In addition to these new approaches to climate-friendly recipes, the SYKE restaurant also turned to some more conventional solutions. Throughout the experimentation, use of dairy products remained fairly stable (Figure 4). Dairy products are an essential part of Finnish cuisine (Valsta *et al.*, 2018). Dairy is used both in cooking and as a food beverage. Neither the climate label nor the vegetarian nudges were able to challenge this. Instead, the kitchen used dairy as a solution to increase the appeal and satiety of the new vegetarian recipes. Use of dairy provided a secure way to reach new customer groups with sufficiently familiar tastes (see also Kaljonen *et al.*, 2018). The approach of using dairy in the new, more substantial vegetarian recipes, was also supported by the decisions made at the corporate level. In our interviews, the corporate-level personnel stressed that, as a company, healthy and sustainable eating does not mean abandoning meat and dairy products altogether, but rather, supporting more plant- and fish-based eating with great taste and quality.

4.3 Right to choose: how far can tinkering reach?

The changes in the purchases of the SYKE restaurant and their climate impacts from 2014 to 2017 were not linear. When we look at the separate food items, we can see that the use of vegetables increased by almost 10% (Figure 4). A major decrease in the use of meat, however, took place only in 2017 when the kitchen significantly increased its supply of vegetarian dishes. This shift was accompanied by a continuing use of dairy products in the more satiating and familiar vegetarian recipes. This trade-off resulted in almost no change in carbon emissions (Figure 5). When the years 2016 and 2017 are compared, the increased use of dairy products partly offsets the decrease in meat-related emissions.

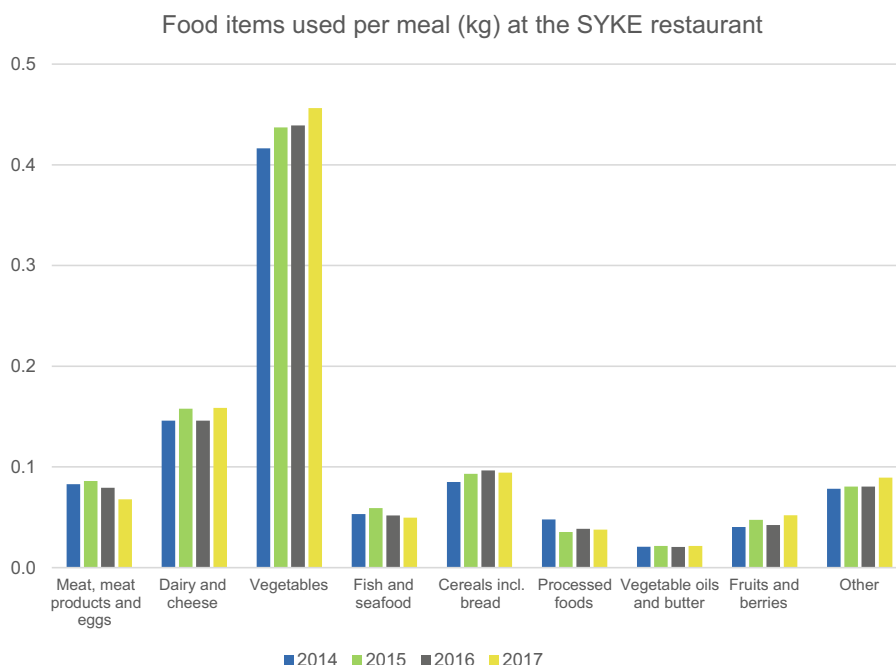


Figure 4.
Use of food items at the SYKE restaurant 2014–2017

GHG emissions kg per meal at the SYKE restaurant

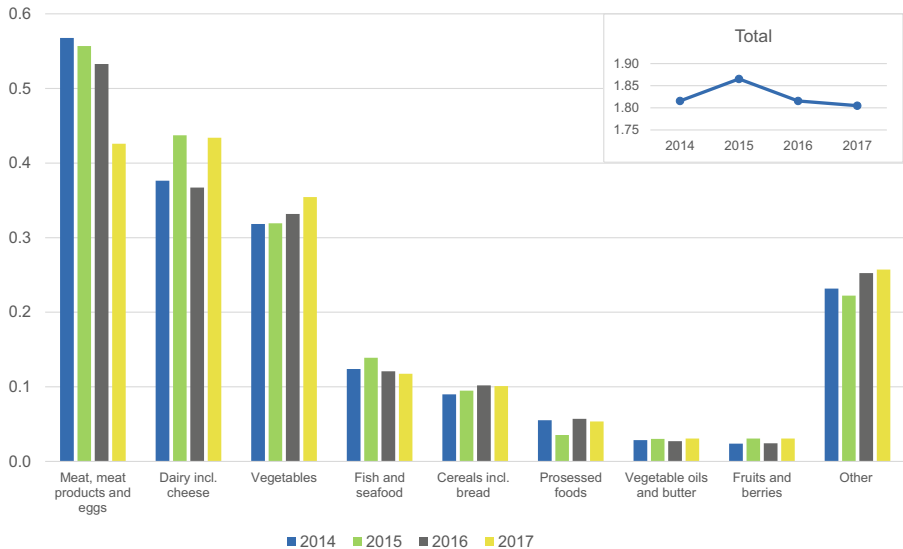


Figure 5. Climate impacts of the purchases in the SYKE restaurant 2014–2017

When we presented the GHG emission figures to the head of the SYKE restaurant, she responded:

The only way is forward. We've taken one step, and now we just need to keep improving all the time. -- I think they [changes in eating] happen in small steps, they do not happen overnight. Drastic changes make people wonder what on Earth is going on. I think these are things that are moving forward all the time, but they go forward in small steps. This [change made] is already great. [SYKE restaurant personnel, round 2]

The SYKE restaurant did not want to change the menus overnight. The staff emphasised that each customer should be able to find a lunch option to suit their taste and appetite. For the same reason, they decided in 2015 that the restaurant will not have a meat-free day. In 2017, however, they changed their tactics slightly. They removed red meat and poultry from the Wednesday menus, but did not advertise this change to the customers. Instead, they served more vegetarian choices, alongside fish. They also increased the share of vegetables in meat casseroles and sauces without informing customers of the change. This enabled them to reduce meat consumption without totally abandoning it.

Without belittling your concern, we do need to make sure that we do not lose customers. Having said that, as we now have approximately 250 customers per day, we are able to offer more options for customers as well. But if we had only 150 or so, it would be more difficult for us to keep the options so varied. [SYKE restaurant personnel, round 2]

Neglecting meat would have risked losing customers to competitors. The corporate-level representatives also stressed that “customers need to have the right to choose” and saw green nudging as a more effective means of supporting sustainable and healthy eating. Over the years, the green nudging strategy had gained more emphasis in the responsibility programmes as well [3]. When we asked one of the SYKE restaurant cashiers about the effectiveness of this strategy, she hesitated. Through her daily work she knows the customers and their preferences well:

SYKE restaurant cashier: I'm not sure if it [the rearrangement of dishes] changed people's habits towards having vegetarian meals. The ones who eat meat do not touch the vegetarian options. It was a good decision to move vegetarian dishes to the front, but I do not know if it helped for the meat eaters.

Researcher: Who are the ones who stick with their choices?

SYKE restaurant cashier: Men. Generally slightly older men. There are of course younger people who opt for vegetarian meals. But, of course, women more often go for vegetarian. [SYKE restaurant personnel, round 2]

5. Discussion and conclusions

The results from the SYKE restaurant highlight the need for comprehensive concepts that allow dynamic understanding of the long-term changes in sustainable eating and catering practices. The reactions gained from the customers to the labels and nudges stress the importance of making sustainable and healthy choices intuitive for customers. The results hence support the potential of nudging in a lunch restaurant setting (Bauer and Reisch, 2019; Reisch *et al.*, 2017). At the SYKE restaurant, nudging helped to reduce the meat eating of those customers who already wanted to increase their plant- and fish-based eating. Nudging also made fish- and plant-based alternatives more readily available to other customers.

Our results further highlight that more extensive reduction in meat consumption took place only after a major re-evaluation of practices in the kitchen. The focus on tinkering helped to reveal the tensions caused by the labels and nudges on menu planning and recipe development. The results from the SYKE restaurant show how tinkering required attentiveness to customers' wishes in both cases. The climate label was seen as a restriction with respect to menu and recipe development, but prompted the use of sustainably sourced fish, which was appreciated by the customers. Nudging gave the restaurant more freedom to develop the menus and recipes they wanted. Persistent nudging allowed the restaurant to develop novel dishes and different ways to serve pulses as part of the lunch service and to get their customers more accustomed to them. In the case scrutinised, however, nudging customers towards tastier and more satiating vegetarian dishes also included the use of dairy. Preparing the vegetarian dishes more familiar to Finnish taste and culinary culture, enabled the restaurant to meet and nudge the demands of a wider segment of customers.

Directing analytical attention to the ways in which tensions between the demands of customers and the supply of restaurants are tinkered allow us to pinpoint the benefits and drawbacks of the compromises made. Long-term analysis and mixed qualitative and quantitative data are required to determine the impacts of the compromises. In this case, the qualitative analysis highlighted how the frictions caused by the climate labelling and nudging gave impetus to the further development of the praxis in the kitchen. The long-term quantitative monitoring of the use of food items showed, in turn, how the compromises made in the use of dairy products partly watered down the climate benefits gained from reduced meat consumption.

Such combinations of knowledge are crucial for impactful and insightful tinkering towards more sustainable eating. Rather than separately looking at changes in consumer behaviour or in the supply of food, we need analytical concepts that allow the evaluation of their mutual evolution. Tinkering, as we have shown, can assist us forward in this endeavour. Its adaptive, adjustive character, however, calls for caution. The development of praxis in food services and catering requires critical companions from the transdisciplinary research community. Research can provide systematic knowledge on the impacts of labels and nudges on kitchen praxis. However, research itself also needs to tinker: to learn from the studied experiment in order to guide the next experiment and the development of praxis. This necessitates long-term speculative research strategies. Experiments should be designed so that they can surprise us. In the case of the SYKE restaurant, the persistent use of dairy

caused us to hesitate, as did the freedom offered by the nudges. How far these creative freedoms can take us in sustainable eating requires much more critical attention from the transdisciplinary research in future.

Notes

1. Commitment 2050 is a national instrument that enables various actors to make public, voluntary and concrete commitments to contribute to the implementation of national sustainability goals (Lyytimäki *et al.*, 2019).
2. Compass Group PLC acquired Fazer Food Services in 2020. This occurred after and independently of our experimentation.
3. See <https://www.fazerfoodservices.com/fi/vastuullisuus/> [accessed 1. 4. 2020].
4. Explicated and regulated by the collective labour agreement and labour code.
5. The response rate is calculated from the number of meals sold on that day, which totalled 286. The SYKE headquarters had approximately 500 employees in 2015. The proportion of people who attended lunch corresponded to the national average (Valsta *et al.*, 2018, p. 34).
6. The Finnish Environment Institute (SYKE) has a strong focus on limnology and marine research, which partly explains the interest of SYKE personnel in sustainable sourcing of fish.
7. Consumption of roach and Baltic herring can assist in reducing the nutrient load of Baltic Sea and lakes, which suffer from severe eutrophication.

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