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Supplementing food for health: practices amongst French adults aged 60 to 75 years

Olivier Lepiller^{1,2} · Geneviève Cazes-Valette²

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Abstract

The use of food supplements continues to grow in France, even though it is being discouraged by the main health and medical authorities. The ambiguous definitions surrounding these products make it difficult to measure their consumption. Using a qualitative survey based on interviews ($n = 31$) of consumers aged 60 to 75 years, this paper explores the ways in which this consumption is increasing. It traces the adoption of food supplementation in this age group back to life-course events, relating to health in particular. Using the practice theory, three forms of supplementation are identified according to the norms, products, sources of medical prescription and purposes at play. The first form is dependent on orthodox medical prescription having been taken; the supplements are prescribed by a doctor and considered by the consumer to be almost like medicinal products. The second form is linked to heterodox ‘natural’ therapies; products are most often based on plants and considered to be traditional remedies. The third form is related to a heterodox micronutritional approach, claiming to be scientifically advanced; products are identified as food supplements, and their consumption reflected a strategy of prevention, or even health optimisation in ageing. The affinities between these supplementation forms and the individuals’ social characteristics are discussed. Results suggest that common consumer categories should be better integrated in the measurement of food supplement consumption.

Keywords Food supplements · Supplementation · Consumption · Food and eating · Prescriptions · Dietary norms · Health · Elderly people · Practice theory

✉ Olivier Lepiller
olivier.lepiller@cirad.fr

Geneviève Cazes-Valette
g.cazes-valette@tbs-education.fr

¹ MOISA, Université de Montpellier, CIRAD, 73 rue Jean-François Breton, 34398 Montpellier Cedex 5, France

² Toulouse Business School, 1 Place Alfonse Jourdain, CS 66810, 31068 Toulouse Cedex 7, France

Introduction

The French food supplement¹ market was worth 1.54 billion € in 2015. On the whole, it has been growing for the last 15 years, experiencing only a slight decline from 2008 to 2010, partly due to the economic climate (Le-Bras and Bouarfa 2016). This market is developing without a clear definition (Cynober 2008; Derbré 2010); there is an abundance of products, dosage forms, intended uses and sales arguments. This ambiguity is also due to the complex ways in which consumers identify food supplements (CREDOC 2010; Pilorin and Hébel 2012; Pouchieu et al. 2015). Some are consumed as ‘food supplements’ despite not being identified as such legally, while others that are, are not considered to be ‘food supplements’ by consumers.

A nutritional epidemiological study found that the percentage of food supplements consumption² amongst the French population aged 18 to 79 years was 28.5%. This rate increased by half between 2006 and 2007 and 2014–2015 (ANSES 2017a). Nevertheless, the dominant public health discourse presents the use of supplements as unnecessary for the general public, stating that: ‘Inadequate intakes [...] can be avoided by adequate consumption of common foods, at levels already consumed by a part of the population, without needing to turn to food supplements’ (ANSES 2016: 50). The health authorities are even concerned about the rate at which food supplements consumption is increasing. The French Agency for Food, Environmental and Occupational Health & Safety (ANSES) created a ‘national nutriviigilance scheme’ to ‘monitor the safety’, in practice, of food supplements, energy drinks and novel foods in 2009 (ANSES 2017b).

In particular cases, nutritional supplementation is recognised as part of a prescribed treatment: B9 vitamin in pregnancy, vitamin D in childhood or osteoporosis, vitamin B12 in certain vegetarian diets, and micro- and macronutrient complexes³ in malnutrition. The products prescribed are then assigned to medical categories: they are either medicinal products, medical devices, or oral nutritional supplements.

The medical and health authorities thus distinguish between medicinal products effective in individual cases, when the everyday food consumption is not enough to cover nutritional needs, on the one hand, and ‘food supplements’ that are unnecessary in the general population, on the other hand, if people follow the recommendations of the National Nutritional and Health Programme (PNNS).⁴ In so doing, the authorities

¹ In the legal sense, ‘food supplements are foods intended to supplement a normal diet and that are a concentrated source of nutrients or other substances with a nutritional or physiological effect, alone or in combination, marketed in dose form, namely capsules, pastilles, tablets, pills and other similar forms, sachets of powder, ampoules of liquids, drop dispensing bottles and other similar forms of liquids and powders designed to be taken in measured small unit quantities’ (DGCCRF 2016). This legal definition was included in European legislation in 2002 (Directive 2002/46/EC dated 10 June 2002) and in French law in 2006 (Order No. 2006-352 dated 20 March 2006).

² In the INCA3 study conducted by the French Agency for Food, Environmental and Occupational Health & Safety, people who have consumed such products within the last 12 months are considered to be consumers. The study, the third carried out as part of a reference epidemiological nutritional survey distinguishes between ‘consuming food supplements’ ‘in the general sense’ (food supplements and medicinal products containing nutrients) and consuming food supplements in the regulatory sense (excluding medicinal products containing nutrients)’ (ANSES 2017a).

³ Macronutrients are proteins, fats and carbohydrates. Micronutrients consist of all the nutritional compounds needed in minuscule amounts, such as vitamins, minerals, and trace elements.

⁴ The PNNS establishes the framework for the communication of the public health nutritional policy in France.

define the legitimate conditions for supplementing daily food consumption. This distinction contrasts with actual supplementation practices. The same product, such as vitamin D, may be prescribed as a drug in orthodox medicine,⁵ accessed in self-medication, or advised by a naturopath.

The multiplication, since the 1980s, of commercial messages linking diet and health, is another important contextual element. Importantly, though, opportunities for communication have been significantly restricted since the second half of the 2000s, with a new European regulation on nutritional and health claims,⁶ which now requires claims to be scientifically founded, depriving producers of some of their sales arguments. According to Le-Bras and Bouarfa (2016), this regulation is another reason for the temporary dip in the food supplement market between 2008 and 2010.

This article focuses on food supplementation, or, in other words, the consumption of healthcare dietary products⁷ taken to round off the ordinary food consumption,⁸ by focusing on a group of older people. Its aim is to better understand the ways in which supplementation is growing, by looking at adoption factors, sources of medical prescriptions⁹ and norms. Supplementation practices aim to have an effect on health¹⁰ through the consumption of products that are neither medicinal products nor foodstuffs, meaning that they are not accessed through a medically prescribed treatment nor are they eaten¹¹ or cooked. There is, however, a complex relationship between food supplements, on the one hand, and medicinal products and food, on the other, which this work attempts to grasp. Using a qualitative and comprehensive approach, the variety of supplementation forms was studied by connecting individual life courses and the social history of dietary norms and prescription. The survey was conducted, while considering a wide range of supplements to the everyday food consumption: food supplements in the legal sense in all their dosage forms, phytotherapy and herbal products, and over-the-counter nutritional supplements.

The paper's first section sets out the theoretical framework relied on, namely, the practice theory. The second section presents the three supplementation forms that were identified. The results are discussed in the third section.

⁵ 'Orthodox' refers to the authority of medical institutions that determine the profession's *doxa*, such as the Académie de Médecine. The relationship between conventional/orthodox and alternative/heterodox approaches, which is often confrontational, is inherent to medical history (Lawrence and Weisz 1998), as clearly evidenced by the study of food, eating and dietetics (Rossi and Cohen 2011).

⁶ 'Nutritional and health claims' have been regulated since 2006 by Regulation (EC) No. 1924/2006 of the European Parliament and of the Council.

⁷ 'Dietary' should be understood here in an anthropological sense to refer to the management of food, eating and the diet; it is referring to a system of rules for defining what is good to eat for a range of purposes, including health, personal effectiveness, spiritual belief and performance, and according to categories of eaters, foodstuffs and eater-foodstuff relationships.

⁸ This can be defined as the consumption of foods cooked and eaten according to shared sociocultural codes.

⁹ This paper uses the term 'prescription' in a broader sense than just prescriptions for medicines that doctors write. It refers to the normative messages and discourses that circulate within the public space, which have legitimacy because they are created by people considered experts and that 'focus on issues related to the consequences of consumption' (Plessz et al. 2016, 104).

¹⁰ Practices whose purpose is purely aesthetic or performance related were not included in this study.

¹¹ One 'takes' a food supplement but does not 'eat' it.

Supplementation practices, life trajectories and dietary norms

Supplementation as a practice

The ‘practice theory’ is an approach focusing on practices rather than individuals to study the construction of the social world and its changes. The work of the American social philosopher Schatzki (1996) and the German sociologist Andreas Reckwitz (2002) provides the foundation for the definition of what constitutes a practice, considered to be a set of doings (practical and material activities) and sayings (cognitive and discursive activities) (Dubuisson-Quellier and Plessz 2013). These two groups are connected on several levels: by an understanding, codified know-how, ends and emotions (Schatzki 1996). A practice can be justified, understood and passed on. It never exists in isolation. A change of practice can be understood only in the wider perspective of connected practices, since change happens through the adoption of blocks of practices (Reckwitz 2002). A practice such as a consumption practice takes on different social forms, each ‘recruiting’ socially defined practitioners in a non-random manner (Warde 2005, 2014).

The practice studied here is the dietary supplementation of the everyday food consumption through the consumption of products that are neither drugs nor foods. It is based on dietary knowledge and rules. Its aim is the promotion of health. Emotions are attached to this aim, such as the satisfaction of taking care of oneself. Eating, health and hygiene practices are entangled with supplementation.

Following the approach to food practices proposed by Plessz et al. (2016), supplementation was studied by relating two perspectives: (1) the forms of food supplement consumption; and (2) life trajectories and individual health, eating and supplementation histories.

Supplementation forms and ‘teleo-affective structures’ or ‘standards’

This double perspective is helpful to better understand the ways in which supplementation has been growing for the last 30 years. It identifies what Schatzki (1996) referred to as ‘teleo-affective structures’. This term is formed from the Greek root ‘*telos*’ meaning ends or aims—which can also be found in ‘teleology’—and the Latin root ‘*adfectivus*’ referring to the expression of desire, namely through emotion. Schatzki intended to convey, through this term, the fundamentally normative dimension of practices: individuals are able to assess whether practices have been carried forward (‘performed’). Schatzki also argues that practical action is always motivated towards an end, even when this has not been specifically expressed through clearly stated aims.

Plessz and Gojard (2015) have broken down the concept of teleo-affective structure into three ideas: (1) the aim of a practice is contained in the practice itself rather than only in individual intentions, choices or motives; (2) the performance of a practice is not guided by deliberate behaviour, but by a combination of intentional motives, which are rational in terms of ‘instrumental rationality’ (Weber 1978), and incentives or injunctions, which are not strictly rational in that regard, or which reflect other types of rationalities (such as the desire to conform to social norms); and (3) the system of practice norms, purposes and meanings is structured and organised in terms of opposites and hierarchies.

The British sociologist Alan Warde (2015) uses the word ‘*standard*’ to mean the same as teleo-affective structures. According to Warde, the performance standard of a practice should not be confused with a motive for action, a reason for engagement or a behavioural determinant. Rather, it should be considered to be a key parameter or threshold against, which practitioners measure whether a performance has been satisfactory or not. Individuals measure the efficiency and efficacy of their practices—or a teleo-affective structure—and implement any adjustments while performing them against a standard. During the performance of a practice, standards are usually implicit. They can also be grasped in explicit form through comments and in the knowledge relating to the performance of a practice. As standards define acceptable forms to which a practice should conform, they serve to regulate its performance. Another characteristic of standards is that they can be passed on. According to Warde, such transmission is based, as a minimum, on an informal and shared consensus on the appropriate way in which a practice and its gestures should be performed. It can take on more ‘scholastic’ guises, in books or instruction manuals (Warde 2015, 48). Warde gives the example of recipe books, which codify cooking performance by putting in the public domain formalised technical instructions, but also implicit recommendations on what to eat.

The finalised aspect and the emotional aspect of standards are inherently linked, as shown by the following examples: the guilt felt after failing to follow a restrictive diet; the annoyance of failing at a culinary task, such as achieving, and not exceeding the right caramelisation point; the pleasure of discovering upon eating a melon that it has been well chosen. In these three examples, the most mundane practices give rise to emotions, which relate to the ends to which these are directed: weight loss, making a successful caramel, or the enjoyment of sharing fruit.

Food supplements can be considered to be vehicles of teleo-affective structures or standards.¹² This concept makes it possible to consider the diverse ways in which these products are consumed as well as the varied forms¹³ taken by a single practice (supplementation), and to arrange this diversity in order to make sense of it.

Supplementation and life trajectories

The role of life-course events in adopting or, conversely, giving up certain food and dietary practices has been highlighted in the literature. These ‘turning points’ cause individuals to reconsider their resources, constraints, skills and the norms to which they conform (Plessz et al. 2016). Life events can

¹² To make it easier to understand and following Warde’s example (2015) in the remainder of this article, the word ‘standard’ is used to refer to what Schatzki termed a ‘teleo-affective structure’. A distinction between the two concepts was made by Plessz et al. (2016), but this was not deemed relevant to this article. In short, individual varieties of teleo-affective structures, associated with an individual’s sociality (‘standards’) were distinguished from their collective and public versions (‘prescriptions’).

¹³ The term ‘form’ is important. Practices truly exist only because they are performed, that is to say given a form. This performing actualises and produces a social reality, including practical implications, as does the use of language in some instances (Austin 1962). It enables the conditions of change, since the practical performance (the ‘token’) never fits the reference form exactly (the ‘type’). Teleo-affective structures and standards are the reference forms, in the same way that structure shapes a material. The form of a practice is both the cake and the cake tin, the cheese (‘fromage’ in French language) and its mould (‘forme’ in French).

transform the relationship of individuals with the standards in circulation in the social world, giving rise to different ways in which a given practice can be put into effect (Bisogni et al. 2005; Plessz et al. 2016). There are thus various interpretations—both in the sense of understandings and performances—of a practice, which depend on the individuals' sociality and socio-economic characteristics (Plessz and Gojard 2015).

The notions of 'mode of engagement' and 'degree of commitment' can help refine our understanding of the varied forms a practice can take (Plessz and Gojard 2015). The degree of commitment is, to some extent, quantitative. It refers to the value attached to a practice by the individual and to the level of commitment vested in the performance: a sport can be played more or less regularly or occasionally. The mode of engagement is more qualitative. It refers to the various associations between the ways in which a practice is put into effect on a practical level and their guiding teleo-affective structures: sport can be played to earn a living, to win, to relax, or to engage in fun activities with other people.

Methodology

Semi-directive biographical interviews were conducted (22 with one person, 9 with a couple (see Appendix); 40 people, 25 men and 15 women were interviewed). Twenty-seven interviewees had taken food supplements before; 13 said that they had not. Amongst the 27 consumers, 22 took food supplements regularly (on a continuous basis or during regular cure periods) (Table 1).

To study the diverse supplementation forms in conjunction with the social history of the standards associated with these, and the role of life-course events, older people are advantageous for several reasons. Food supplements (in the broadest sense) are consumed by 31.7% of adults between the ages of 18 and 44, 27.7% of adults aged 45 to 64 years and by 21.9% of those aged 65 to 79 years (ANSES 2017a). The adoption of food supplements by older people offers a clearer perspective on the dissemination pathways of consumption because it is less common in this group. Older people experience events related to ageing such as retirement, widowhood, loss of autonomy, and illness, which have serious consequences in terms of health (Barthe et al. 1988; Drulhe and Sicot 2011; Caradec 2012) and food practices (Devine et al. 1998; Bisogni et al. 2005; Cardon 2009, 2010, 2015). The older people of today have witnessed the development of the food supplements market within their lifetime. They have also

Table 1 Summary of interviewees

Number of interviews	Number of interviewees	Duration	Age
31	40	Av.: 77 min	60 to 78 years + one 51 year—old interviewee (married to a man aged 60). Average age: 67 years
	Not currently living as a couple	Living as a couple	
	12	28	

witnessed the ‘nutritionalisation’¹⁴ process, which refers to the growing importance of health and nutritional objectives in the norms regulating the act of eating (Poulain 2009). Because of their age, it was possible to look back on the interviewees’ life trajectories and relate these to the history of supplementation practices.

The interviews were conducted in the Toulouse (10), Metz (13) and Paris (8) areas. Interviewees were selected from a variety of social backgrounds (from the lower, middle and upper classes) and places of residence (in urban, suburban and rural areas). The first three interviewees from Toulouse and Paris were selected from within the authors’ direct and indirect personal circles. The other interviewees were enrolled on the study using the ‘snowball’ method (Olivier de Sardan 2008). Three interviewees from Metz were selected from amongst the authors’ indirect personal circles. The others were enrolled on the study using the ‘snowball’ method and via clubs and societies contacted to advertise the recruitment of participants on a sociological study on food consumption and health; the clubs and societies offered leisure activities in retirement, or social and cultural events in the community.

The interviews focused on the interviewees’ relationship with food, eating practices and health and how this related to their life trajectories, whom they took medical prescription from and their attitudes towards ageing. Judgements on the food practices-health relationship were collected using projective documents on controversial topics, such as red meat being regarded as a carcinogen by the World Health Organisation, PNNS messages, the links between processed foods and obesity, alternative medicine and the food and eating practices. ‘Food supplements’ were not mentioned initially by the interviewer, who asked questions about what the interviewees had ‘taken, eaten or drunk to stay healthy’. The interviewees were asked this question again, and only then did the interviewer refer specifically to food supplements.

Three products were used to collect the interviewees’ responses. These were selected to represent different standards. *Plantes des articulations* by La Vie Claire, in vial form, belongs to the group of traditional plant remedies. It is sold under the own brand of a long-standing player in the organic foods distribution. *Bion 3 Défense Séniors* by Merck comes in very colourful packaging. It is presented as a ‘health booster’. It is a mixture in pill form of 7 vitamins, 12 minerals and 3 ferments in doses designed to cover daily needs. Its manufacturer is one of the world’s largest pharmaceutical companies. *Ergymag* by Nutergia, a mixture of magnesium, zinc and group B vitamins is sold in a simple-looking pack and is the flagship product of one of the pioneers of the micronutritional market segment in France. The product is intended to convey a specific, targeted and professionally justified efficacy (‘the product is recommended for physical and mental fatigue’).

¹⁴ This is a process that changes the hierarchy of values attached to eating, which include health but also conviviality, sharing, pleasure, cultural identity, and social status. Research on public health (Coveney 2000; Poulain 2009), the acceptance of nutritional norms (Régnier and Masullo 2009; Depecker 2010; Depecker et al. 2013), education and caring for children (Lhuissier 2006; Gojard 2010; Rochedy 2017), and the media and the markets (Belasco 2007; Lepiller 2012, to be published; Clapp and Scrinis 2017) has provided an insight into and discussed the growing importance of health and nutritional objectives.

A thematic analysis of the full transcriptions was carried out independently by both authors. The results were then compared and discussed. Observations were also made during guided visits of home food settings (kitchen, garden), 13 shopping sessions, and while participating in 4 meals.

Three food supplementation forms for health

The survey identified three supplementation forms with separate standards. Each has an ‘additive’—more traditional—expression, in which the supplement is considered to have a direct effect by introducing something that is lacking in the body, and an ‘auxiliary’ expression, by which it is supposed to help the body eliminate toxic substances.

Medically assisted supplementation: ‘the doctor gave me Bion 3’

When asked whether he took any particular products to stay in good health, Mr. Aldo, a retired technical sales person aged 71 living with his partner, replied that he did not, looking a little surprised. This former high-level rugby player considered that he ate well enough not to need any such products. He hardly questioned the healthiness of his food practices, consisting mainly of fresh produce purchased from the market and small food retailers and cooked by his wife. Mr. Aldo said that he had never changed his food practices for health reasons. He said he wasn’t against organic food but thought that ‘it is becoming silly [and] that there is too much publicity about it’, preferring food from ‘small local farmers’ (‘paysan’):

‘What does organic food mean? A farmer who holds himself in high regard cares about the work he does. My father was a small farmer in the country, he cared about his job, but he wasn’t organic, it was natural’.

Mr. Aldo, however, completely agreed that there was a link between industrial processed foods, which he avoided, and obesity.

When asked about alternative medicine, he seemed at first critical, but added:

‘In the fifties, my mother didn’t go to physicians, she cured us with plants, she came from the mountains and she knew about plants. She would very often use plants to treat us’.

Later on during the interview, Mr. Aldo said something surprising. Looking at the *Bion 3* box in front of him, he exclaimed: ‘It reminds me that I’ve forgotten to take them!’ How could he claim at first that he did not take any products for his health and at the same time use *Bion 3* daily? It rapidly became clear why. Mr. Aldo could not report taking any food supplements because he did not consider *Bion 3* to be a food supplement:

‘When I retired, it was like I suddenly relaxed like when a match is over [...] The doctor gave me *Bion 3*’.

M. Aldo, who had been going to the same orthodox allopathic general practitioner for years, changed his habits after experiencing a difficult retirement. In the grip of a lasting depression, he consulted the acupuncturist of his wife, a former nurse who 'is very conscious' about her health.

His usual doctor would probably not have prescribed this type of supplement, the use of which is discouraged in orthodox medicine.¹⁵ Sceptical about alternative therapies, Mr. Aldo, who claimed that he 'did not self-medicate' and always trusted his 'doctor's opinion', said: 'young people go on the Internet to see what people are saying [...]. I think the Internet can be useful, but it can also be dangerous.' On taking advice that he deemed suitably trustworthy, since it came from his wife's doctor, Mr. Aldo was therefore able to think of the supplement as being appropriate against his 'low spirits'. He believed Bion 3 to be less like a food supplement and more like a medicinal product, established as such by having been prescribed by a physician. In addition, Mr. Aldo's supplementing practice resembled how he would take allopathic medicine, by considering it to be a reliable treatment for an identified existing ailment. This form of supplementation intended for the treatment of illness may also be routinised in a more preventative perspective:

'I have been taking two courses of 30 tablets a year [AN: for the last ten years]. When I retired, I felt rather exhausted [...] and the doctor gave me Bion 3 [...], and I recovered quickly'.

Mr. Aldo's initial standards excluded the use of food supplements, deemed to be unnecessary. He did not feel that he could allow himself to take Bion 3; he could only be authorised to do so.¹⁶ The interaction with another medicine than the one usually relied on was made possible by the conjunction of a *turning point* (retirement followed by depression) and the encouragement of his wife.

The product consumed, manufactured by a large pharmaceutical company and marketed since 2003 is not just any product. Having maintained its position amongst the best sellers at pharmacies, and visible in advertisements, the product is considered by Mr. Aldo to be credible, and legitimate as well. Because of these features, Bion 3 is also one of the main candidates for being medically prescribed outside the purview of strict orthodox medicine.

¹⁵ Only nutritional supplements and oral nutritional supplements, i.e. products that do not fall under the legal definition of food supplements, are prescribed by orthodox institutions: folic acid, vitamin D, calcium, and products specifically intended for the treatment of proven or suspected malnutrition. Such products are then considered to be medicinal products, with a scientifically recognised effect and which are indicated in specific diseases. In practice, however, food supplements appear to be prescribed occasionally by orthodox general practitioners. But these tend to be simple products consisting of a single nutrient, which have been used historically or traditionally, such as vitamin C or magnesium, rather than multivitamin and mineral mixes (Touvier et al. 2003).

¹⁶ The pharmacist's authority should also be taken into consideration. A pharmacist can play a role in giving medical advice, taking over from a medical authority once the practice has been adopted. 'Advice from a pharmacist' is believed to play a role in 20.8% of food supplements consumption cases, compared to 33.9% for 'medical prescription' (meaning prescription written by a doctor) and 21% for 'advice from a doctor' (Pouchieu 2014). This result is based on voluntary participation in an on-line survey, but it is useful as a preliminary approximation.

One factor tempered Mr. Aldo's medical legitimism. Although he was initially prescribed the supplements by a doctor, his routinised use of them as seasonal courses of treatment was reminiscent of the folk remedies of his mother, an immigrant from rural Italy, who put her children on 'courses of olive oil, castor oil and fennel'.

This case illustrates the 'successful' adoption of supplementation after a change in the relationship with the usual source of medical advice. Another case exemplifies a 'failed' routinisation. Mrs. Ormot, a retired office administrator in the civil service, aged 65 and living with her partner, showed more concern for healthy eating than Mr. Aldo. On the advice of a member of her family, she reduced her dairy intake to relieve joint pain, for instance. Mrs. Ormot was loyal to orthodox medicine, but her practice was more open to heterodox therapies than Mr. Aldo's was, as she routinely saw a homoeopath in addition to her orthodox general practitioner. Her heterodox practice, however, was far from being adventurous:

I'd like to take food supplements, but I'm afraid to do so. If you're not careful about what you eat... So I'm uneasy about it. [...] An osteopath prescribed some to me once, but it felt like charlatanism, I would have had to buy it on the Internet'. (Mrs Ormot).

This case shows a very minimal practice of heterodox medicine. In the example she recounted, Mrs. Ormot changed her relationship with orthodox medicine and her habits by going to see an osteopath she did not know. The change she would have had to make seemed too much for her, involving unknown sourcing channels, and worries about consuming food supplements without any medical supervision. Her concern can be explained by an unfortunate episode. Noticing that she was putting on weight, Mrs. Ormot went to see a 'nutritionist', 'before the menopause':

'She gave me a seaweed drink. I had an issue with my thyroid after that. Seaweed contains a lot of iodine, and my thyroid started to malfunction, so I'm more cautious now'.

An auxiliary version of medically assisted supplementation can also be observed. Some orthodox general practitioners do not hesitate to instruct their patients to use the products of large pharmaceutical companies to 'boost' their immune systems. They prescribe such products without really believing in them, at their patients' request, with the idea that it 'can't do them any harm' (Peter 2013). In a more formal context, orthodox medicine also uses auxiliary supplementation to prescribe pharmaceutical nutritional supplements to restore the nutritional status of sick patients, e.g. so that they are able to properly metabolise their medication.

Medically assisted supplementation

Standard or telex-affective structure	Supplements are almost like medicinal products and are clearly distinguished from food. It is crucial for supplementation to be medically prescribed. Self-medication is refused.
	Consumers are attached to the orthodox authority of the family general practitioner. They willingly admit to not being competent to manage their health. They trust orthodox medical and health institutions.

Medically assisted supplementation

	Their approach is mainly curative.
Modes of engagement	Engagement may be more or less long-standing. Consumption was initiated on a medical prescription, and may then be decoupled from medical advice in routine use (for the same product). One-off treatment and recurring courses of treatment.
Degrees of commitment	No or almost no information is sought. No or little inclination for independent health management.
Typical product	Food supplements produced by known legitimate manufacturers in the pharmaceutical industry. For example, vitamin C, magnesium, vitamin and mineral mixes, products with a boosting effect' against fatigue.
Associated practices	Consumers do not question their diets from a health perspective. Habitual reliance on orthodox allopathic medicine. Consumers are not very attracted to, and even critical of heterodox medical approaches.

Supplementation inspired by nature: 'I have a pile of books by Paul Carton'

Mr. and Mrs. Narval had a long history of consuming supplementation products, which began as part of an overall lifestyle change. Originally, from the Paris region, the couple moved to the Moselle in the early 1960s. Mr. Narval, a retired skilled worker, aged 78 and living with his partner was offered a job by his brother who had his own business in the area. Mrs. Narval then quit her paid employment. After the accidental death of his brother in 1964, Mr. Narval got a job as a steel worker, while Mrs. Narval 'found a job with an old man who had fought in World War I, and had become vegetarian at that time'. The meeting of this man by the couple marked the beginning of their active engagement with heterodox medical approaches based on naturopathic medicine.¹⁷ But this was not the only cause of the change made by the Narval couple. Mrs. Narval experienced serious health problems at the beginning of the 1970s, which made her more receptive to her employer's ideas¹⁸:

'With everything he said [her employer], the books he gave us, he was a bit like a father or grandfather figure to me.'

Mrs. Narval then became a vegetarian. Despite the incongruity of this food practice in a working-class environment, her husband followed suit: 'We kept it quiet. He came home for lunch'. (Mrs Narval).

¹⁷ Natural medicine emerged in France at the end of the nineteenth century through the influence of movements in Switzerland, Germany and Austria, in a context of tuberculosis (Baubérot 2004). This medicine, critical of the paradigms of thermodynamics and organic chemistry—denounced for their reductive materialism—promotes a holistic vision marked by spirituality. Nature is presented as being a guide to healing (*natura medicatrix*), and the phrase that Hippocrates is supposed to have said, 'Let food be thy medicine', as a maxim. Dr. Paul Carton, a forerunner of vegetarianism and pacifism was a leading figure of this movement (Drouard 1998; Ouedraogo 2001). Naturopathy (Grisoni 2011), alternative dietetics of the second half of the twentieth century (Lepiller 2010, 2012), and most contemporary heterodox medicines (Laplantine and Rabeyron 1987; Rossi and Cohen 2011) take after this tradition.

¹⁸ Health problems are often presented by alternative dieticians themselves as a legitimate cause and motive to engage in the dietary change they advocate and follow (Lepiller 2010).

Mr. Narval related this conversion to something that happened when he was young. When he was serving in the armed forces, he participated in the first French nuclear test in Reggane in 1960. He was traumatised by the experience: ‘I had bruises on my body, I didn’t know [what had caused them]. I had blood tests done and they didn’t find anything, at the time, it was pretty basic.’ At the beginning of the 2000s, he joined the Association des Vétérans des Essais Nucléaires (Nuclear Tests Veterans Association). He was now wondering, even though he was not sure—unlike his wife who was convinced of it—whether his becoming a vegetarian had helped him to ‘reduce the effects of radioactivity’.

For 10 years, the Narvals avoided all foods derived from animal flesh: she was a vegan, he was an ovo-lacto vegetarian. They then adopted a less strict diet, considering that they had lost too much weight. Mrs. Narval was now an ovo-lacto-vegetarian, while Mr. Narval now sometimes ate fish, and even white meats, because as his wife explained without being contradicted by him: ‘He was tempted. [...] It’s good that he eats a bit. When he doesn’t eat any for two weeks, I feel that he needs it.’

This conversion also led the couple, in the 1960s, to become interested in organic food, a novel phenomenon at the time, one which had not yet been recognised by the public authorities (Besson 2011). And since then, Mr. and Mrs. Narval have eaten only organic food, only the historical brands sold in pioneering stores, rejecting any sellout of the original concept, and because of this, they can be considered to be ‘purist’ organic eaters (Lamine 2008).

To stay in good health, they have turned to heterodox approaches, consulting osteopaths, homoeopaths, acupuncturists, but also magnetic healers, energy therapists and bonesetters. The Narvals are very critical of orthodox allopathic medicine and modern agriculture, and reject the ‘chemical compounds’ common to both those fields:

- ‘Mrs Narval: We went back to the doctor [AN: a homoeopath], and he didn’t agree with the cardiologist [AN: who had prescribed anticoagulants]. He gave us Weleda drops.¹⁹ [...]’

- ‘Mr. Narval: When you are in the traditional medical system [AN: i.e. orthodox allopathic medicine], drugs are constantly being thrown at you, it’s systematic. [...] People are being damaged by the medical system, just like farming has been damaged by chemicals.’

The Narvals were used to actively seeking information on food, diet and health. They regularly consulted their abundant collection of books, read specialised journals and magazines and attended conferences, such as a paid conference by Henri Joyeux, the author of books such as *Changer d’alimentation* (Change the way you eat).²⁰

¹⁹ Swiss manufacturer of homoeopathic, organic and natural products, founded in 1921. Weleda advocates the anthroposophic approach of the Austrian Rudolf Steiner, whose legacy can also be found in biodynamic farming (Besson 2011).

²⁰ Henri Joyeux is a retired professor of medicine, oncologist and gastrointestinal surgeon from the Montpellier university hospital. His book has been regularly republished since the 1990s. It is explicitly based on the dietary principles presented in *L’alimentation ou la troisième médecine* by the doctor, surgeon, immunology and organ transplant expert Jean Seignalet, a lecturer in the faculty of medicine of Montpellier (Seignalet 1996). For information on this dietary approach claiming to be ‘hypotoxic’, ‘ancient’ and based on a prehistoric diet (see Lepiller (2010, 2012)). Joyeux is against immunisation, a position which resulted in him being removed from the medical register of the *Ordre des médecins* in 2016. The decision, taken by a regional division of the *Ordre*, has since been overturned by its national body.

Like Mr. Aldo, Mrs. Narval, a retired office administrator, aged 74, did not spontaneously consider the products she took to be food supplements:

- ‘Interviewer: So, what do you call all this [AN: half a dozen products on the table, consisting of powders, capsules and herbal infusions]?’
- ‘Mrs Narval: I’m not sure.
- ‘I.: What do you think of as being food supplements?’
- ‘Mrs Narval: Often, they are tablets, even if they are sold in organic shops. These are capsules.

The history of their practice provides an insight into why they did not consider the products presented on their table to be food supplements. These products were mostly plant-based. They were seen as ‘natural’ and were considered to be traditional remedies as opposed to allopathic medicines based on ‘*chemical compounds*’. The latter were thought by the Narvals to be a treatment for the symptoms of an existing illness, while their own practice was deemed to have the potential to prevent ill health. This required a continuous adjustment of their food practices to suit the body’s needs, to which they claimed to be constantly alert. In an approach strongly inspired by humorism,²¹ the products are consumed to help the body’s defences and prevent unbalances that cause illness. In this respect, food supplements were not an appropriate category.

The products’ dosage form was important; macerates, powders, capsules and herbal infusions were allowed, whereas pills were thought to resemble drugs and ‘chemical compounds’. Supplementation was embodied here by traditional herbal products. Manufacturers were important too. The Narvals consumed only products from long-established manufacturers in the supplementation market, such as the brand Alfred Vogel, named after the Swiss naturopath and herbalist who founded it. Many of these products were ordered in the post from a printed catalogue, since the couple did not use the Internet. Others were made at home, such as ‘*Swedish bitters*’.²² While several of the products considered to be traditional and natural remedies were strongly contrasted with ‘*drugs*’, deemed to be artificial and made from chemical compounds, the act of making this Swedish elixir themselves resembled a culinary practice and suggested a continuum between the category of remedies and the category of foodstuffs, which are in turn systematically considered from a health perspective.

The case of the Narvals exemplified a form of supplementation inspired by nature with a high level of engagement. This radical stance could go as far as to search for alternatives to orthodox prescription medicines:

‘[My mother] used to take a blood pressure drug, she took it for twenty years. Her doctor told her to increase the dose. She suffered episodes of low blood pressure as a result, and she fell and fractured her pelvis. I asked a naturopath to come, who said that she should take Gémotension [AN: a food supplement made from

²¹ A theory known to still inform common representations of food and dietetics today (Lahlou 1998).

²² A macerate of several plants in alcohol, which can be ingested or applied externally.

plant macerates, of the brand La Royale, to be taken instead of the initial medication to lower her mother's blood pressure], and she no longer suffers from high blood pressure.' (Mrs Narval).

Another case illustrates a less radical expression of this form of supplementation. Mrs. Ribeiro, a building caretaker aged 61 years, living with her partner, recently changed her food practices because she had been experiencing joint problems, which were affecting her ability to do her job. As a result of this change made a year ago, she had lost about 20 kg. Mrs. Ribeiro, a Portuguese immigrant from a modest background, was used to cooking hearty dishes, such as stews, egg-rich desserts and cakes, which she continued to make for her husband, a taxi driver, but which she had herself given up, preferring dishes with less meat, fat and sugar and more fish and vegetables. This change, together with physiotherapist consultations and regular swimming, had been informed by the advice of a family member. Mrs. Ribeiro's 30-year-old nephew, who had changed his food practices too after experiencing serious gastric problems, provided her with up-to-date information and dietary advice.

Like the Narvals, Mrs. Ribeiro answered that she did not take any food supplements, her food 'providing everything that she needs'. The plant-based products she showed us, however, were legally regarded as food supplements. Mrs. Ribeiro even planned to buy, following her nephew's advice, 'vitamins to renew body cells': 'at my age, cells are dying, the older you get, the fewer cells you have, so I need to buy all this at the pharmacy to renew the cells'. Mrs. Ribeiro also collected information herself, from less specialised sources than those used by the Narvals: 'I buy *Télépoche*,²³ and sometimes there are things [on healthy food and eating practices] and I keep them [AN: she showed a file of magazine and newspaper cuttings]'

Mrs. Ribeiro's mode of engagement was less radical than that of the Narvals: her supplementation was less conceptual, and its ends were not as clearly stated. She was not observed to be as strongly critical of orthodox medicine and industrial processed foods. Her use of heterodox medical approaches was neither systematic nor strongly asserted. Nevertheless, many of the products she consumed were associated with the standard explicitly informing the Narvals' practice. The commercial suppliers that she used, however, were not the same; these were pharmacies and organic supermarkets rather than historical organic food manufacturers and distributors. In both cases, the dominant products were based on plants. These were considered to be 'natural', traditional and based on folk medicine:

'[AN: concerning an organic nettle tea for rheumatism] I already knew about this from my grandmother. In Portugal, we use this, we had some in the garden, my grandmother used to make such infusions already. It says on the packet that it's good for lots of things. I take this kind of thing' (Mrs Ribeiro).

Supplementation inspired by nature in this less radical incarnation may coexist with other forms of supplementation. For example, while Mrs. Narval reported not being very 'inspired' by Bion 3 and her husband said it '[looked like] a DIY tool', Mrs. Ribeiro said: 'Yes, I saw it on TV [...]. Perhaps when I'm tired, sometimes we don't have enough magnesium or calcium, it can help'.

²³ A popular French magazine on TV programs.

The auxiliary variety of supplementation based on nature was apparent in the so-called traditional remedies deemed to be effective against the poisons of daily life, whether these were inflicted, such as pollution and stress or endured willingly such as excess eating, alcohol, tobacco and other drugs. Supplementation in this case was often seasonal:

‘At the end of winter, I take a course of artichoke and horseradish for the liver, to cleanse the whole digestive and liver systems. And I take supplements to drain excess fluids. [...] These are classic treatments in the spring to cleanse the digestive system.’ (Mrs Corot, a psychologist in a state funded institution, single, aged 67).

These auxiliary practices are not only rooted in folk tradition, but also in the history of medicine and dietetics: before the emergence of biomedicine and organic chemistry in the nineteenth century, depurative cures and remedies were deemed a powerful and legitimate way of promoting health.

Supplementation inspired by nature

Standard or telex-affective structure	Supplements are traditional remedies that are distinguished from medicinal products; they are close to foods, in turn considered to have health properties. Heterodox medical prescription is taken. Self-medication is practised. Consumers are attached to traditional, charismatic prescriptive figures. ‘Ancient’ traditional knowledge is valued. Consumers feel they have useful knowledge to manage their health. They are mistrustful of orthodox medical and health institutions. Their approach combines cure and prevention.
Modes of engagement	Engagement may be more or less long-standing, dating back to the 1960s in some cases. Consumption is not dependent on being prescribed supplements by an orthodox doctor; heterodox medical prescription, information in the press and other media, and sharing knowledge with friends and relatives are all important. Regular, long-term consumption. Regular courses of treatment. Dietary adjustments in accordance with body signals.
Degrees of commitment	Search for information on health and the diet that may be more or less active. Aspiration for independent health management may be more or less strong.
Typical product	Food supplements are produced by historical organic food and heterodox medicine manufacturers. They are based on plants, herbal remedies, and phytotherapy. They are sold in organic food stores, by correspondence or in chemists. Powders, capsules, vials rather than pills.
Associated practices	Consumers question their diets from a health perspective. Criticism of orthodox allopathic medicine may be more or less strong and reasoned. Orthodox medicine is used as little as possible. Heterodox natural therapies are regularly applied, such as natural medicine or naturopathy.

Supplementation guided by micronutrition: ‘With my therapists, I follow a perfectly customised plan’

The third form resembles the second. In their radical incarnations, these supplementation forms strongly criticise orthodox medicine and the pharmaceutical and food industries. However, the third form is different in that it shows a need to engage with what is considered to be cutting-edge scientific and dietary practice.

After a career in a large pharmaceutical company, Mr. Ardin, a company executive aged 61, living with his partner, had recently changed his career path to work in a catering business. He practised several sports regularly, including running, golf, yoga and Pilates, was ‘very careful not to put on weight’ and ‘to maintain a high muscle to body fat ratio’, especially since he explained that he had high blood pressure. This awareness required several changes: giving up cow’s milk and non-fermented dairy products, but eating cheese, using ‘five or six different oils to balance fat intake’, and reducing meat consumption to improve his health and also because his tastes had changed:

‘even though when I was younger, I used to treat myself, gorging on steaks [...], now, red meat doesn’t appeal to me much’.

Mr. Ardin’s comments showed a great deal of reflexive thought about his food and eating practices, which was expressed in a language that came from nutritional science:

‘it’s always about the same principles of eating fatty substances and fruit in the morning, proteins with a carbohydrate portion and a vegetable portion at lunch-time, and at our age, having a light meal in the evenings’.

Since their children had left home, the Ardins no longer bought their food from the supermarket. They preferred organic food stores and small local shops, direct food sourcing and shopping at the town-centre market.

Mr. Ardin and his wife, who suffered from joint problems, regularly ‘consulted’ a naturopath, a homoeopath and a traditional Chinese medicine specialist. These health practitioners were presented as ‘people who, in a way, help us map out how and what we should eat’. Their relationship with these practitioners was reported to be freely chosen. Patients and therapists were on an equal footing:

‘we are very careful to choose people we feel comfortable with, and who are credible. People who are neither fundamentalists nor gurus. [...] With my ..., quote unquote therapists, I am sure that I follow a perfectly customised plan’.

Mr. Ardin claimed to be ‘convinced’ that health problems could be prevented by adjusting his food practices. This required using food supplements, which were clearly identified and distinguishable from medicinal products:

‘The naturopath gave us quite a few food supplements. [...] These are not drugs if you like, but food supplements’.

Mr. Ardin said that unlike medicinal products, food supplements could treat the real causes of diseases, but in a gentle way, whereas drugs were effective in an aggressive manner. They were considered to have an essentially preventative effect. Mr. Ardin took food supplements in the form of a course of treatment or regularly on a long-term basis.

Mr. Ardin's example shows a strong desire for independence in the way he managed his health. It also demonstrates how much this pursuit was paradoxically dependent on a network, the acquisition of knowledge and spending power: it was based on multiple relationships with heterodox health practitioners, the consumption of expensive non-reimbursed products, and constantly being 'vigilant' and looking for information.

This quest for expertise drew on dietary information that claimed to be cutting-edge. In such documentation, supplementation is presented as an effective tool for staying healthy. This standard, which focuses on health optimisation²⁴ through nutritional prevention, is referred to hereinafter as 'micronutritional'. It is linked to several factors in the history of nutrition: (1) new knowledge discovered from the late 1970s on the protective role of certain micronutrients in the onset of a number of aged-related conditions and non-communicable diseases, such as cardiovascular and metabolic diseases, and cancers; (2) the shift of nutrition (Belasco 2007; Poulain 2009; Lepiller 2012, 2013, to be published) and public health in general (Berlivet 2000) towards prevention from the same period; and (3) more recent knowledge on the role of intestinal microbiota in health promotion.²⁵

Heterodox medical approaches, such as 'anti-ageing' or 'functional medicine' are part of this movement.²⁶ A number of pioneers of these approaches were thought of as being highly legitimate, e.g. the American scientist Linus Pauling (1901–1994), one of the first proponents of micronutritional supplementation and the founder of an institute of 'orthomolecular medicine'. He was awarded the Nobel prize twice (in chemistry in 1954 and for his peace activism in 1962). The references most often quoted by the interviewees included the best-seller *Anticancer* by the French neuroscientist Servan-Schreiber (2007).

The aspiration for independence from orthodox medicine sometimes seemed even more radical than in Mr. Ardin. It came out in such instances as strong criticism against orthodox medicine and the pharmaceutical and food industries. This critical mode of engagement, observed in Mr. Estana, a retired executive in the private sector, aged 62

²⁴ 'Self-optimisation' is an increasingly investigated subject in the social sciences, especially in the areas of food and eating, dietetics, sexuality, reproductive health and well-being (Dalgalarondo and Fournier 2017).

²⁵ The intestinal microbiota refers to all the micro-organisms living in the intestinal tract. Knowledge on this subject is a fluctuating scientific front. It has been disseminated, with normative dietary guidelines in a best-seller by a German medical student: *Gut: The Inside Story of Our Body's Most Underrated Organ* (Giulia Enders 2015).

²⁶ While supplementation inspired by nature is rather oriented towards folk healing traditions—which incidentally are reinvented in some cases—the heterodox aspect here goes hand in hand with the construction of a revolutionary, cutting-edge scientific identity (Mykytyn 2006). Besides, these two heterodox approaches are not mutually exclusive, and there may be some crossover between them, such as when new scientific knowledge legitimises age-old practices: this is the case of staples with a long tradition of use, such as turmeric or wine, the consumption of which is now legitimised by knowledge on antioxidants—even if it is now admitted that the negative effect of alcohol challenges the nutritional value in the case of wine. For more information on the relationship between orthodox and heterodox approaches in the medical management of ageing, and the boundary work carried out by American academic gerontologists to protect their legitimacy and position against anti-ageing medicine, see Binstock (2003).

and living with his partner, extended to searching for alternatives to the medication prescribed for chronic conditions:

‘Well, it’s the pharmaceutical industry mafia [AN: on statin-based anticholesterolemic treatments]. [...] I read a book about it by a doctor [AN: Michel de Lorgeril, very critical of orthodox medicine’s anti-cholesterol treatments], who said that it was really bad and stupid. [...] And I saw the cardiologist again a while ago. I said I’m stopping the treatment, and I did. She asked me: ‘Don’t you like drugs?’ I said: ‘No’. Maybe I said it rather forcefully. She said: ‘Then you could try red rice [AN: red yeast rice contains a compound similar to statins]’.

Mr. Estana was critical of Bion 3. He thought that this product ‘really looks like something you buy at the supermarket’, while his wife said, ‘it looks too much like a drug’ (Mrs Estana, a retired executive in the private sector, aged 60 and living with her partner).

This critical dismissal contrasted with the support expressed by Mr. Ardin, who had been consuming Bion 3 daily for years. While Mr. Ardin’s and the Estanas’ supplementation followed similar standards, the mode of engagement of the first was less critical and mistrustful than the second towards producers like Merck, the manufacturer of Bion 3. The Estanas’ practice completely excluded this type of product. Rather than Bion 3, they preferred products they considered to be better targeted at specific problems.²⁷

The modes of engagement with micronutritional supplementation also differed on another level, which was the domain in which their practice was guided, or not, by micronutrition. Some of the interviewees, despite having knowledge, practices and concerns about their food practices and who were potential candidates for having strong affinities with the micronutritional standard, were not food supplements consumers and were even particularly mistrustful of any dietary optimisation using such products. This is because for these interviewees, micronutritional optimisation only applied to the everyday food and cooking practices informed by their knowledge of healthy eating.

One example illustrates this aspect. Mrs. Bolet, a self-employed healthcare practitioner, aged 66 and single, recounted her only instance of supplementation, despite an initial reluctance to take food supplements. It occurred after she experienced a serious health problem requiring antibiotic treatment, which led to other problems:

‘It was a homoeopath and acupuncturist who suggested I should take some. [...] She gave me many food supplements [AN: PiLeJe products]. [...] I stopped them all a year and a half ago, and I feel good. [...] I stopped because I was concerned about the cost involved. It’s not that I can’t afford it, but I was surprised, given that I eat quite a varied food, that it required spending so much money on top of the cost of food’.

²⁷ Bion 3 is marketed on the broad claim that it ‘helps maintain the body’s natural defences and reduce fatigue’ and is often proposed in the self-service aisles of pharmacies. A sales policy relying on professional guidance to a large extent is favoured by producers who are historically close to the micronutritional approach, such as Lescuyer, Nutergia and PiLeJe. Their products are often located on displays behind the counter.

Before becoming ill, Mrs. Bolet's eating habits, informed by her knowledge of micronutrition, were supported by the pursuit of dietary independence and optimisation based only on cooking. The distressing experience she went through caused her to adopt supplementation in spite of this. Although supplementation was eventually given up, a sustained and routine use of supplementation cannot be excluded in other cases. Mrs. Bolet seemed to support the precept that a healthy diet was enough to optimise health. The fragile legitimacy of this maxim depended on how her health evolved.

The case of Mrs. Bolet demonstrates what constitutes an auxiliary supplementation based on micronutritional standards. The consumption of PiLeJe products was introduced following a consultation with a heterodox practitioner to help her body face the side effects of her antibiotic treatment, perceived to be effective against her illness, but also toxic.

The case of Mrs. Nado, a retired PE teacher, aged 68 and single was similar. Mrs. Nado had been treated for and living with hormone-dependent cancer for more than 20 years:

'I'm constantly poisoning myself because I have a chronic condition that can't be cured. [...] When the [AN: liver] malfunction started, I began to look more closely at certain things. I don't like drugs. I take these [AN: a powder to be diluted, "NutriInflam", made from plants and minerals and produced by Metagenics; a plant and "antioxidant complex", Oxytonic by Laboratoire Lescuyer] [...]. It supports the liver function. The poisons I'm taking put a strain on my liver. It was prescribed by my homoeopath.'

The reliance on auxiliary dietary practices has been described, in cancer in particular from the perspective of therapeutic pluralism (Rossi and Cohen 2011). Alongside supplementation, other 'detoxifying' practices such as fasting, meditation or physical exercise may be implemented.

Supplementation guided by micronutrition

Standard or teleo-affective structure	Supplements are a dietary optimisation tool and are distinguished from medicinal products. Heterodox medical prescription is sought, there is an ambition to follow cutting-edge science. Self-medication is practised. Consumers are attached to prescriptive figures who embody a high degree of scientific legitimacy. Traditional knowledge is valued to the extent that it is validated by an approach considered to be scientific. Consumers feel they have useful knowledge to manage their health. They are dismissive of a top-down orthodox medical authority. They are mistrustful of orthodox medical and health institutions. Their approach combines cure and prevention.
Modes of engagement	Consumption is independent of an orthodox doctor's prescription; heterodox medical prescription, information in the press and other media, and sharing knowledge with friends and relatives are all important. Regular, long-term consumption. Regular courses of treatment. Dietary adjustments in accordance with body signals. Criticism of orthodox medicine and the food and pharmaceutical industries may be more or less fierce.
Degrees of commitment	Active search for information on healthy diets. Aspiration for independent health management may be more or less strong. Supplements are not consumed when dietary optimisation is focused solely on food and cooking.

 Supplementation guided by micronutrition

Typical product	Food supplements produced by manufacturers specialised in micronutrition (since the 1990s), bought on-line or at the chemist, are formulated in nutritional doses in order to adjust intake and are targeted according to specific needs diagnosed by healthcare practitioners.
Associated practices	Consumers question their food practices from a health perspective. Criticism of orthodox allopathic medicine may be more or less strong and reasoned. Orthodox medicine is used as little as possible. Heterodox medical natural approaches are regularly followed.

Discussion

Supplementation occurs in many forms

Supplementation amongst older people takes several forms. Each form is associated with distinct products, sources of medical prescription, sourcing channels and standards. Moreover, food supplements are diversely recognised by consumers. In medically assisted supplementation, linked to orthodox medicine, food supplements are consumed provided that they are equated to near medicinal products and prescribed by a doctor. In nature-inspired supplementation linked to a heterodox natural medicine, food supplements are distinguished from medicinal products and are part of a dietary ensemble that includes food and traditional remedies. In micronutritional supplementation, there is the same food supplement/medicinal product distinction, but the ‘food supplement’ category is clearly identified. This identification is guided by heterodox micronutrition, which claims to be cutting-edge.

These multiple forms explain why it is challenging to measure consumption. Questionnaires on consumption could be developed from individual practical classifications relating to spontaneous food supplements definitions, places of purchase, sources of medical prescription, product types, treatment purposes and other criteria. Current consumption or nutritional epidemiological surveys are based instead on categories that are too far removed from actual supplementation practices. Legal categories result from the interplay of political, economic, academic and medical interests and power, and the social history of such processes remains to be written (Bourdieu et al. 2004; Stanziani 2005; Belasco 2007; Bruegel 2013; Depecker et al. 2013; Bentley 2014). Food supplements are an arena where the food and pharmaceutical industries, health insurance systems, pharmacists, supermarkets, medical and health authorities, and folk wisdom and customs may find themselves on opposing sides. Neither entirely medicinal products, nor really foods, occasionally considered to be remedies, they are liminary objects lending themselves to an analysis of these interactions, echoing past conflicts between grocers, pharmacists and apothecaries (Guitard 1968).

The many supplementation forms may also be grasped by looking at the variety of orthodox or heterodox dietary, medical or pharmaceutical prescribing practices. The socio-historical study of prescribing practices would be useful to trace the history of medical practitioners and the development of knowledge of food and health

connections. In this respect, food supplements appear to be particularly good indicators of the changes affecting medicine, health care practitioners and hygiene.

Supplementation adoption factors

This article's approach to take into consideration actual practices, life trajectories and the social dimension of dietary norms has highlighted the factors promoting the adoption of supplementation.

The role of health events

The role of life-course events in changing food and dietary practices has been demonstrated in the literature (Devine et al. 1998; Bisogni et al. 2005; Plessz et al. 2016). This survey brings confirmation and highlights the particular importance of health events. The interviewees often presented these as having triggered their practice. From the age of 60, such events become more frequent and conditions become chronic,²⁸ promoting an 'increased awareness of human finiteness' ('finitude') (Caradec 2012) and causing the loss of autonomy, which lead to a questioning, and even to a forced change of food, health care and hygiene practices (Cardon 2010). Such health events legitimise health management norms, creating a space for supplementation.²⁹

The social affinities of supplementation forms

Health events may lead individuals to become attentive to the standards of a practice they did not previously follow. This is an important driver of practice change, especially since health events are variously interpreted across social backgrounds (Bisogni et al. 2005; Plessz et al. 2016).

The survey did not identify with any degree of certainty any educational, income or occupational characteristics promoting the adoption of *medically assisted supplementation*. However, the literature suggests that gender plays a role. Men are usually less attentive to their bodies and health and are less willing to take care of their well-being than women. They consume fewer food supplements (Auvray and Sermet 2009; Pouchieu 2014; ANSES 2017a) and are less likely to follow heterodox medical approaches (Schraub et al. 2011). Medically assisted supplementation, the most dependent on a doctor's prescription, remains relatively close to orthodox medicine. The product is taken by the individual only if it is recognised as a prescribed quasi-drug. The approach, at least when consumption is initially adopted, is oriented towards treatment rather than prevention. It may be surmised that this practice form is more likely to attract male consumers, as it is established that norms of masculinity encourage men to avoid accessing care unless such care is provided under a medical authority, once they are faced with a health problem. It is also possible that these gendered patterns of use are not as valid for the forms of supplementation less reliant on a

²⁸ In 2015, healthy life expectancy at birth for males was 62.6 years and for females was 63.8 years in France (Insee 2015).

²⁹ 'Staying healthy and staying off illness' is significantly more frequently mentioned by people aged 60 to 79 years than by younger adults as the main purpose of food supplement consumption (INCA2 data reprocessed by the authors: https://www.data.gouv.fr/uploads/resources/Table_indiv_ca.csv).

medical authority, where the medical advice is provided by pharmacists. This behaviour is closer to self-medication, which is known to be more typical of women (Clarke 2015). Taking medical prescription through indirect routes may also be assumed to occur where such medical prescription is provided by relatives or friends who have been prescribed a product through a medical channel (Fainzang 2015).

Supplementation inspired by nature is based on a holistic natural tradition focused on preventative dietetics. On the one hand, it is rooted in rural folk healing practices and the knowledge of wild and cultivated plants. This supplementation is thus related to ordinary people, especially those in rural environments. On the other hand, it is also associated with movements advocating a return to nature (Léger and Hervieu 1979), which have left their mark in the food, dietary and healthcare landscape, leading to an abundance of heterodox medical approaches today (Laplantine and Rabeyron 1987; Grisoni 2011; Rossi and Cohen 2011). Certain sections of the population, especially the middle classes, women and people in creative occupations are particularly likely to adopt supplementation in general, and of the natural type in particular (Dilhuydy 2005; Bégot 2010).

Supplementation guided by micronutrition is connected to dietetics for prevention, and even health optimisation. It claims to be scientific and cutting-edge. Highly educated and high-earning individuals, who can access very expensive health services and products that are not reimbursed are more likely to prefer this form of supplementation. Access to literature on micronutrients may be promoted by the work culture of the intellectual professions. Limited evidence in the literature suggests that the highly educated middle and upper classes are more likely to use micronutritional approaches (Bégot 2010).

The picture of supplementation forms that emerges from this discussion may seem segregated. Individual practices are frequently an amalgamation of several forms, even though individuals were often observed to predominantly follow one or the other of the three standards identified. In particular, natural and micronutritional supplementation forms intermingle easily, since they share the same heterodox identity. Such an amalgamation can also be found amongst practitioners, and it is not unheard of for homeopaths and natural health practitioners to train in micronutrition. Besides, academic nutritional science, naturopathy, alternative natural dietetics and heterodox micronutrition have historically been porous fields (Lepiller 2013).

The role of non-professional medical prescription

To describe the different supplementation forms, we have highlighted the professional sources of medical prescription. The role of self-medication, however, should not be underestimated. This role is part of a broad movement to promote empowerment in health care consumption, even though it is a controlled empowerment (Larramendy and Fleuret 2015). Self-medication is not a personal affair. It often depends on individuals taking medical advice from relatives and friends (Fainzang 2015).

The survey highlighted the role of intra-couple communication. Like the Ardins, the Estanas had both embarked on micronutritional supplementation. Both couples regularly talked about what they had read on the subject and gave each other advice. The Narvals did the same for supplementation inspired by nature. Mr. Aldo's wife's key role in getting him to adopt medically assisted supplementation was highlighted.

Another example shows how couple dynamics can conversely discourage the adoption of supplementation. Mr. Polin, a retired state secondary school teacher, aged 66 years changed his food practices after having been diagnosed with type 2 diabetes. His illness was presented by his partner, Mrs. Radet, a public secondary school teacher aged 64 as being ‘diabetes due to overeating and eating cured meats’, which her partner, who had lost 15 kg and kept the weight off, easily conceded. Mr. Polin’s dietary reform did not include any food supplements. He was very critical instead of the ‘obsessive myth about healthy eating’ and condemned the ‘commercial spin’ surrounding these products. Mrs. Radet, on the other hand, occasionally took plant-based food supplements and herbal infusions to take care of her health. She said that she was careful about what she ate and that ‘her food practices could be improved further’. Once retired, she imagined herself ‘being responsible again for the food shopping’, which her husband was currently in charge of. Mr. Polin, commented, in a slightly mischievous way: ‘I’m happy. It doesn’t make much difference to me. As long as we eat a sufficiently varied, rich food, we will be alright. There is perhaps a cultural difference [AN: Mr Polin is proud of his South-Western France identity, in which eating cured meats and fatty duck plays an important role.]’. Here, couple dynamics cause each partner to become entrenched in their positions.

Besides spouses and partners, friends and relatives play a role in the adoption of food supplements. Mrs. Ribeiro mainly took medical advice from her nephew. Friends may play a role, probably especially when the individuals concerned have health practitioners amongst their friends. This is the case for the Estanas, a highly educated, high-earning couple: ‘Our dentist friends advised us to take this at the time. They told us that they took some on a continuous basis and didn’t feel good when they didn’t. So I did the same and we started to take some as well’ (Mrs Estana).

These observations call for in-depth research into the role of personal social networks in the adoption of supplementation practices, a role which has been emphasised in explaining changes in food, eating and dietary practices (Plessz et al. 2016).

Conclusion

Our findings highlight the strong links that exist between consumption practices and the dietary norms, such links being forged historically within markets, and, at the individual level in response to life events. The first form of supplementation (medically assisted) is part of the currently predominant biomedical tradition; the second (inspired by nature) is the legacy of folk medical knowledge and Hippocratic and Galenic scholarly medicine, while the third (guided by micronutrition) falls within the biochemical and epidemiological knowledge on the protective role of several micronutrients. Our findings invite further research into a social history focusing on dietary standards in conjunction with the construction of markets for healthy foods and lifestyles. In this respect, recent advances in the domain of nutritional genomics should be closely scrutinised (Fournier and Poulain 2017).

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Appendix. Description of interviewees (the grey cells show the interviews carried out with couples)

	Pseudonym	Sex	Age	Marital or civil partnership status	Occupation (and former job)	Consumption of food supplements
1	Aldo	M	71	Living as a couple	Retired (technical sales representative)	Supplementing
2	Ardin	M	61	Living as a couple	Company executive	Supplementing
3	Aubry	M	60	Living as a couple	Job seeker (socio-cultural facilitator, trainer)	Not supplementing
4	Aubry	F	51	Living as a couple	Employee of a particular personal care association	Supplementing
5	Avasse	M	67	Living as a couple	Retired (industrial company director)	Not supplementing
6	Avasse	F	64	Living as a couple	Retired (personal assistant to a company's executive direction)	Supplementing
7	Avoise	M	64	Living as a couple	Self-employed translator	Supplementing
8	Balmel	F	65	Living alone	Retired (public secondary school educational adviser)	Not supplementing
9	Bolet	F	66	Living alone	Self-employed psychiatrist	Supplementing
10	Canal	F	72	Living alone	Retired (sales executive)	Not supplementing
11	Chiellini	F	72	Living alone	Retired (secretary and sales manager in a family business)	Supplementing
12	Corot	F	67	Living alone	Psychologist in a penal institution	Supplementing
13	Domec	M	69	Living alone	Retired (higher education lecturer and consultant)	Supplementing
14	Estana	M	62	Living as a couple	Retired (company executive)	Supplementing
15	Estana	F	60	Living as a couple	Retired (senior officer in the higher education sector)	Supplementing
16	Ferri	F	61	Living as a couple	Company executive	Supplementing
17	Goulard	F	65	Living alone	Retired (technical sales representative)	Not supplementing
18	Guetta	M	61	Living as a couple	Research scientist in the public sector	Not supplementing
19	Guetta	F	61	Living as a couple	Administrative officer in a public research institution	Not supplementing
20	Jaouen	M	63	Living as a couple	Self-employed architect	Not supplementing
21	Joly	F	64	Living alone	Retired (careers adviser)	Supplementing
22	Juniès	M	69	Living as a couple	Retired (self-employed architect)	Supplementing
23	Latour	F	72	Living alone	Retired (biologist, executive in a healthcare company)	Supplementing
24	Minvielle	M	78	Living as a couple	Retired (company executive in the construction industry)	Not supplementing
25	Minvielle	F	77	Living as a couple	Retired (housewife)	Supplementing
26	Modès	F	69	Living alone	Retired (administrative officer in the civil service)	Supplementing
27	Nado	F	68	Living alone	Retired (public secondary school teacher)	Supplementing
28	Nancy	F	65	Living alone	Retired (public primary school teacher)	Supplementing
29	Narval	M	78	Living as a couple	Retired (skilled worker in the metal industry)	Supplementing
30	Narval	F	74	Living as a couple	Retired (housewife and company office administrator)	Supplementing
31	Noël	F	67	Living as a couple	Retired (housewife and childminder)	Supplementing
32	Ormot	F	65	Living as a couple	Retired (office administrator in the civil service)	Supplementing
33	Polin	M	66	Living as a couple	Retired (public secondary school teacher)	Not supplementing
34	Radet	F	64	Living as a couple	Public secondary school teacher	Supplementing
35	Reinauer	M	68	Living as a couple	Retired (company director in the tourism industry)	Not supplementing
36	Reinauer	F	68	Living as a couple	Retired (personal assistant to a company's executive direction)	Supplementing
37	Rémy	M	69	Living as a couple	Retired (construction equipment driver in civil engineering)	Not supplementing
38	Rémy	F	69	Living as a couple	Retired (housewife and childminder)	Not supplementing
39	Ribeiro	F	61	Living as a couple	Building caretaker	Supplementing
40	Sansonnet	F	63	Living as a couple	Retired (personal assistant to a company's executive direction)	Supplementing

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