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Modern science, moral mothers, and mythical nature: a multimodal analysis of cod liver oil marketing in Sweden, 1920–1930

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ABSTRACT
This paper offers the first case study of the marketing of cod liver oil in Sweden (1920–1930), following the discovery of vitamins A and D. Drawing upon a large dataset of cod liver oil advertisements from the Swedish Newspaper Archive, it uses multimodal critical discourse analysis to investigate how language and other semiotic resources (e.g. image, typography, color) work together to convey the benefits of cod liver oil intake. It identifies three overarching themes—scientific rationality, scientific motherhood, and nature—noting how advertisements were aimed squarely at mothers and struck a balance between vitamins as scientifically formulated products and mythical, natural substances to convince them that cod liver oil was necessary for their children. Exploring how cod liver oil was marketed from a historical perspective shows how nutritional research gained prominence and became of increasing importance for marketing, as well as how food, through science, became incorporated into a consumerist lifestyle. It also provides a way to deconstruct contemporary marketing practices, thereby enabling consumers to rethink products framed as indispensable for their health.

KEYWORDS
Advertisements; cod liver oil; marketing; multimodal critical discourse analysis; nature; science; scientific motherhood; Sweden; vitamins

Introduction

In the early twentieth century, scientists and physicians were astounded by the discovery of a new class of substances in food: vitamins. Essential to human growth and health, vitamins transformed the relationship between food and nutrition (Scrinis 2013), enabling canny food marketers to rebrand old products through elaborate advertising campaigns centered around their recently discovered health benefits (Apple 1996). Cod liver oil was particularly targeted, its high levels of vitamins A and D now offering scientific proof of its medicinal worth and providing a new use
value for this otherwise ill-tasting, unpleasant-looking, hard-to-sell product (Banoub 2018).

Consequently, throughout the 1920s, Sweden—like most other Western countries—experienced a cod liver oil “boom” and newspapers became filled with regular articles and advertisements advocating its necessity to maintain a healthy lifestyle (Ajanki 2018). The Swedish public was allured by the duality of vitamins: they were mystical and magical, yet also represented the epitome of modern science and rationality (Apple 1996, 33). Due to its high vitamin content, cod liver oil was sold as a cure for such illnesses as rickets, anemia, and bronchitis, with advertisements claiming that it supported wellbeing. These claims were conveyed through inventive newspaper advertisements, combining selling slogans with images and eye-catching illustrations. As public understanding of science was malleable and shaped strongly by the popular press at this time, the extensive marketing of cod liver oil across local and national newspapers was influential in constructing discourses of truth around the product as a scientifically formulated healthy choice (O’Hagan 2021b). By bringing the focus of food to a micro-level, cod liver oil's nutrients became framed as a key indicator of its healthiness, a phenomenon described by Scrinis (2013) as the “nutritionism paradigm.”

Although the historical use of science in marketing has been well-documented for patent medicines and soap (cf. Hansen 1999; Loeb 2001; Curth 2002; Scott 2015), to date, scant attention has been paid to its application when it comes to foods and how such marketing shapes discourses, beliefs, and behaviors around health and healthy lifestyles (for exceptions, see Nelson, Das, and Ahn 2020; O’Hagan 2021a, 2021b; Eriksson and O’Hagan 2021). Furthermore, despite the strong body of contemporary and historical research on the commercialization of vitamins, most studies do not explore the relationship between science and marketing, or how science is exploited for commercial purposes. Instead, they focus more broadly on the historical development of the vitamin market (Apple 1988, 1996, 2006; Horrocks 1997; Perdiguero-Gil 2012), vitamins as biopolitical objects (Smith 2009) or as magical substances (Falk 1997), (ir)responsible advertising of vitamins (Basch et al. 2015; Elliott 2022), and the link between vitamin advertisements and demand (Eisenberg, Avery, and Cantor 2017). In the context of cod liver oil, only one study has thus far been carried out on marketing (Banoub 2018), using archival research to examine the expansion of the interwar cod liver oil industry in Newfoundland. While all of the above studies are valuable, they predominantly concern North America or Great Britain, thereby providing a limited understanding of the link between science, food marketing, and health (with the exception of Perdiguero-Gil 2012). Until now, Sweden has been widely overlooked in research on vitamins generally, and cod
liver oil specifically, despite being a major global consumer of food supplements (Sundh et al. 2017). Furthermore, although Sweden has a rich historical newspaper archive containing over 1,500 titles from 1645 to the beginning of 2020 (representative of three quarters of all newspapers ever published in the country), this resource has been underutilized by researchers for systematic and reliable historical investigations.

Therefore, this paper, focusing on the marketing of cod liver oil in Sweden in the 1920s and using a dataset of previously unexplored advertisements collected primarily from the country’s two most widely read newspapers (Svenska Dagbladet [SvD] and Dagens Nyheter [DN]), offers a case study of how science—and more specifically the discovery of vitamins—is used in marketing. Through multimodal critical discourse analysis (MCDA) (Ledin and Machin 2018, 2020), we conduct a systematic analysis of how words and images work together to carry meaning and convey the benefits of cod liver oil intake. The analysis identifies three overarching themes that appear as crucial for this marketing—scientific rationality, scientific motherhood, and nature—and explores how they were often co-deployed in advertisements, with marketers squarely targeting middle-class women through a blend of modern scientific rationale and traditional knowledge. Many scholars frame the use of science in marketing as a contemporary phenomenon (for exceptions, see Scrinis 2013; Nestle 2018). However, our study shows that the practice has a far broader historical trajectory, with cod liver oil serving as an early example of how food producers capitalized on scientific discoveries and expertise. Furthermore, we identify many similarities with contemporary food marketing practices, demonstrating that, although stringent regulations are now in place around false advertising, there are still loopholes that can be exploited when it comes to semiotics. Through our historical multimodal perspective, we, thus, trace the origins of how nutritional knowledge became crucial for food marketing strategies and, in doing so, we provide modern-day consumers with critical distance from their current experiences of marketing, giving them more room to reflect on fuzzy references to science and make informed choices about products that are framed as indispensable for their health.

The discovery of vitamins and the commercialization of cod liver oil in Sweden

Before examining cod liver oil advertisements, it is important to understand the broader context in which they developed. For centuries, cod liver oil has played an important role in human nutrition and health, used as a popular folk remedy by fishing families in Northern Europe to soothe aching joints and troublesome skin conditions (Banoub 2018, 3). Throughout
the eighteenth and nineteenth centuries, cod liver oil became increasingly recognized by the medical profession as an effective treatment for scurvy, rickets, beriberi, and tuberculosis. However, nobody could explain what it was about the product that made it effective in combatting these diseases (Apple 1996, 17). Scientists began to conduct research on the biochemical nature of the relationship between nutrition and health, leading to the realization that there was a fifth substance in foods—in addition to proteins, fats, carbohydrates, and salts—necessary for optimal human health (Scrini 2013, 63).

In 1912, Polish biochemist Casimir Funk named this mysterious substance “vitamine”, implying that it was an “amine” (i.e., a nitrogenous organic compound) essential to life.¹ The experiments of Elmer McCollum and Marguerite Davis with cod liver oil in rat diets led to the discovery of vitamin A (then known as Factor A) in 1913. Six years later, Edward Mellanby identified an additional vitamin in cod liver oil associated with its anti-rachitic properties, which McCollum named vitamin D in 1922 (Banoub 2018, 3). Prior to these discoveries, cod liver oil was a hard sell due to its foul taste and dull appearance. Now, it was scientifically proven to have medicinal effects and offered the cheapest and most potent source of vitamins on the market (Swann Harding 1928). This had important implications for the cod liver oil industry.

In Sweden, the popular press immediately reported on the discoveries of vitamins A and D, describing them as “essential life substances” SvD (Anon, 14 November 1922b), while framing cod liver oil as the “growth vitamin” SvD (Anon, 8 March 1923) and the “most empowering remedy” available SvD (Anon, 14 December 1922a). In addition, large pictorial advertisements for cod liver oil were a regular feature in newspapers. Thus, throughout the 1920s, most of the newspaper-reading Swedish public encountered vitamins daily or had a basic knowledge of what they were, even if they did not fully understand them. Apple (1996) and Perdiguer-Gil (2012) have made similar findings in a US and Spanish context, respectively.

One brand dominated the cod liver oil market in Sweden: Möllers. Founded in Norway in 1854, Möllers immediately gained a monopoly because of its pioneering steaming method, which resulted in a purer, lighter, and less foul-smelling form of cod liver oil than other brands. By the time vitamins A and D were discovered, Möllers had been operating for almost 70 years and was a well-established brand name. While there was a number of smaller brands on the market (e.g. Askamin, Vitasan, Gadus), they lacked the longevity and large-scale budget of Möllers and, therefore, failed to keep up with the pace and frequency of Möllers’ marketing campaigns. Nonetheless, all companies regularly produced advertisements throughout the 1920s, their formats echoing those seen across
the world (cf. Apple 1996; Perdiguero-Gil 2012; Banoub 2018). According to Apple (1996, 32), the cod liver oil marketing campaigns of the 1920s were so effective that they established the style and parameters for the next half century of vitamin promotions. As we will see in this paper, a key selling point for manufacturers was to strike a balance between vitamins as scientifically formulated products and mythical, natural substances. This was crucial in convincing mothers in particular that cod liver oil was necessary for them and their families. In doing so, marketers created a demand for the product on the basis that consumers believed it would transform their lives (Church 2000, 625).

**Analyzing cod liver oil advertisements: sources and methodology**

In order to explore the marketing of cod liver oil in Sweden following the discoveries of vitamins A and D, our study draws upon a sample of 65 cod liver oil advertisements published in Swedish newspapers between 1920 and 1930. During this period, the number of cod liver oil brands on the market increased considerably and, with them, came extensive marketing campaigns that tapped into new scientific understandings of their properties and functions (Banoub 2018). The selected advertisements were collected through a manual search of the Swedish National Library's Digital Newspaper Archive using the keywords “torskleverolja” (cod liver oil) and “fiskleverolja” (fish liver oil) and represent the two largest brands, Möllers and Vitasan, and the cod liver oil manufacturers’ association Norsk Torsklevertran. Most of the advertisements come from Sweden's most widely read national newspapers: *SvD* (37) and *DN* (15). Both newspapers are broadsheets based in Stockholm, the former aligned with conservatism and the latter with liberalism. Of the remaining advertisements, five were collected from *Aftonbladet* (a Stockholm-based liberal tabloid), five from *Falun Lanstidning* (a Falun-based conservative broadsheet), and three from *Norrskensflamman* (a Stockholm-based socialist tabloid). Möllers, Vitasan, and Norsk Torsklevertran usually produced one advertisement that was repeated every day over a period of several months in all major Swedish national and local newspapers. This repetition of the same advertisement across newspapers is reflective of the way that the Swedish advertising industry worked at the time: unlike most other Western nations, it was controlled and influenced by a cartel agreement between the Association of Swedish Advertising Agencies and the Association of Swedish Newspaper Publishers (Åström Rudberg 2019, 53). Thus, in order to market a product, brands employed an advertising agency who was responsible for all contact with the newspapers and worked on a commission of 15–20% per advertising space (Arnberg 2019). This meant that the agency earnt money every time an advertisement was published, often leading them to publish
the same advertisement as many times as possible in different newspapers (Åström Rudberg 2019, 53). For this reason, although thousands of cod liver oil advertisements were published between 1920 and 1930, there was very little variation in their content and style. The 65 examples in our dataset have, therefore, been chosen because they represent the principal varieties in use during the ten-year period of study.

We analyze the collected advertisements with multimodal critical discourse analysis [MCDA] (Ledin and Machin 2018, 2020). MCDA is aligned with the theoretical perspective of social semiotics and provides a set of analytical tools to critically interrogate how language and other semiotic resources, such as images, illustrations, colors, and typefaces, shape what we do, how we think, and how we experience the world. In the context of this study, MCDA can unpack how marketers embedded cod liver oil in scientific and medical discourses and how these discourses were made to appear true and scare (female) consumers into taking action to protect their families.

Our approach to MCDA draws particularly on the work of Ledin and Machin (2018; 2020) and concerns the following key elements:

1. language (e.g. vocabulary, grammar, use of metaphor and rhetoric);
2. image (e.g. people, actions, perspectives, angles, distance);
3. color, particularly meaning potentials in terms of emotions, attitudes, and values;
4. typography, especially the cultural connotations of certain typefaces;
5. texture and materiality in terms of their physical and symbolic meanings (e.g. liquidity, viscosity, temperature, relief, density, rigidity)
6. layout and composition (e.g. salience, framing, coordination, hierarchies).

In the first stage of MCDA, the collected advertisements were grouped into three themes based on recurring patterns in their use of language and semiotics, scientific rationality, scientific motherhood, and nature. Here, scientific rationality can be defined as the use of science to legitimize cod liver oil as a health food, while scientific motherhood harnesses the power of expert advice to convince mothers that cod liver oil is necessary to safeguard their families. Nature, on the other hand, promotes a “back to basics” way of living and keeps a halo of “magic” around cod liver oil.

In the second stage—which forms the analysis section of this paper—a selection of prototypical advertisements representative of the three themes were subjected to a detailed MCDA. The arguments made regarding their
use of linguistic and visual cues and how they build credibility around cod liver oil are reflective of the strategies used across all advertisements and are supported by supplementary evidence from the broader dataset. The examples illustrate how Möllers, Vitasan, and Norsk Torsklevertran constructed narratives similar to the ones we see today on healthy eating, drawing upon the power of language and semiotics to form public understanding of cod liver oil and promote it as essential for good health and wellbeing.

**Findings: selling with scientific rationality**

Following the discovery of vitamins, cod liver oil manufacturers could support health claims in advertisements for the first time with references to science and technology, providing a scientific rationality that made the product appear as an astute choice. From the mid-nineteenth century, science had been used in food marketing, influenced by increasingly technologized manufacturing processes and growing public fascination with scientific innovation (O’Hagan 2021b). Thus, by the 1920s, the scientific rationalization of health and wellbeing was firmly established as a method to sell food and, therefore, something that cod liver oil manufacturers were keen to employ in their advertisements.

A key technique to achieve this, which is still used in today’s marketing, was to make explicit references to expertise. These references appear in both personalized and impersonalized forms, the former defined by van Leeuwen (2008, 46) as the use of proper names, personal pronouns, or nouns with the semantic feature of “human” and the latter as the use of qualities or objects typically associated with non-human subjects. In the Vitasan advertisement, dated 1 May 1927, in Figure 1a we see an example of a personalized reference, with the heading “Bottled Sunlight,” followed by “says the American scientist Dr Alfr. F. Hess, Newyork.” The use of a full name and geographical location frames the expert as an identifiable individual, while “scientist” and “Dr” function as honorifics, signaling his expertise and importance (Machin and Mayr 2012, 82). Referring to him as “American” (in a Swedish context) further adds to his elevated status as the USA was then associated with progress and wealth and was a country to which many Swedes emigrated (Akenson 2011). Although the information about Hess’ expertise in this area is not provided and the statement attributed to him (that cod liver oil is “liquid sunshine”) is a promotional and misleading slogan rather than a typical expert assertion, the presentation provides the claims with certainty and reliability (Loeb 1994, 78). The remaining text gives more general information about cod liver oil and its health-providing properties, but is not explicitly linked to Hess. Although Hess is not clearly aligned with this information, the way
that the advertisement is constructed encourages consumers to “connect the dots” and assume that the product is validated by him.

Impersonalized and abstracted references to expertise also frequently recur throughout Möllers advertisements, using lofty terms like “medical science” (SvD, 9 January 1924) or such phrases as “Doctors recommend…” (SvD, 19 October 1929) or “Doctors acknowledge…” (SvD, 7 November

**Figure 1A.** Scientific rationality in cod liver oil advertisements (a) Vitasan, *Svenska Dagbladet*, 1 May 1927 (b) Norsk Torsklevertran, *Svenska Dagbladet*, 7 February 1930.
There are also claims that “recent scientific investigations” have found a “natural explanation for cod liver oil’s effectiveness” (SvD, 21 January 1924). Despite the lack of identifiable references for the research, these statements allow marketers to provide the product with scientific
credibility and imbue its health-providing effects with certainty. Advertisements also combine these references with far-reaching claims about vitamins, describing them as “important nutrients” (ibid) that are “indispensable for the organism” (SvD, 27 January 1925) and without which “nobody can live healthy or well” (SvD, 2 February 1925). Describing vitamins as nutrients not only removes them from the realm of elite science and makes them more accessible to consumers, but it is also a term recognizable enough to allow interpretative flexibility and shaping to one’s own purposes (Vincent 2014, 246). In the case of mothers, for example, it served to alleviate a general anxiety about their children’s diets by emphasizing their nutrition.

In most cod liver oil advertisements, marketers break down the functions of vitamins A and D into simple phrases that a lay audience can understand. Möllers states that cod liver oil “contains two vitamins: one that promotes growth and one that protects against rickets” (SvD, 9 December 1926), while Norsk Torsklevertran explains that “Vitamin A is of the utmost importance for the promotion of growth and the preservation of health. Vitamin D prevents and cures rickets in children. It strengthens bone structure and, like A, also promotes growth” (SvD, 5 February 1930). These simplified explanations of dense information make science more accessible to consumers, while their use of relatable words like “growth” and “rickets” (a major problem in Sweden at the time) persuade mothers to take action to ensure their children’s health. Similarly, marketers often frame cod liver oil as a medicine, either overtly through its branding as “medicinal cod liver oil” (Norsk Torsklevertran, SvD, 7 February 1930) and “for medical use” (Möllers, SvD, 16 March 1923), or covertly through the polysemy of the Swedish word “medel” (Möllers, SvD, 21 January 1924) meaning drug, remedy, or agent. Linking cod liver oil with medical discourse turned the product into a health elixir, thereby desensitizing anxious consumers to considerations of price and quality so long as they thought that their children would be protected (Church 2000, 624). For consumers, the semantic prosody of “medicine” and its associations with disease prevention, healthy bodies, and authority figures automatically created an aura of trust. We will return to these themes in the next section on scientific motherhood.

Another common marketing strategy was to use specific quantities in advertisements to give the impression that cod liver oil has been scientifically measured and approved, thus convincing consumers of its high quality: “doctors advise an appropriate dosage” (Möllers, SvD, 19 October 1929); “small doses prescribed by your doctor” (Möllers, SvD, 3 February 1927); “small doses, big effects” (Möllers, SvD, 30 November 1929). The reference to doctors implies that the product has been medically approved,
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while the medical terms “doses” and “dosages” are reminiscent of instructions that come with prescriptions. However, there are no specific details of who these professionals are, nor what “small” and “appropriate” mean in terms of precise measurements and quantities. Nonetheless, the brands place themselves as expert authorities, giving consumers little room to question their perceived expertise. A clear example of this is a Möllers advertisement (ibid) where consumers are advised that “a dose of one little teaspoon for children, while a tablespoon for adults three times a day is enough to reward health-bringing results.” This type of information comes with associations of exactness that characterize science and medicine, although the category of “children” is wide-ranging and appears as fuzzy here because no age limits for the consumption are provided. This strategy is still a regular feature of marketing, particularly for protein snacks (Chen and Eriksson 2019), organic candy (Fernández-Vázquez 2021), nootropic drinks (Chen and Eriksson 2022), and fruit and vegetables (Nelson, Das, and Ahn 2020).

The emphasis on small doses also suggests the products’ capability and effectiveness. In some advertisements, this is supported by comparisons, such as “contains 2 to 300 times more Vitamin A than natural butter” (Möllers, SvD, 26 January 1926). A similar example can be seen in the Norsk Torsklevertran advertisement in Figure 1b, dated 7 February 1930, which shows two images in square-paneled boxes: the first contains a tiny drop of oil, while the second contains four bottles of milk and three plates stacked with knobs of butter. The accompanying caption informs readers that “a teaspoon of Norwegian medicinal cod liver oil contains more vitamin A and D than even the largest quantity of milk and butter that anyone can consume in a day.” While the paradigms are assumed to be based on a fixed measurement, we have no knowledge of where these figures come from, their relative status, or whether the foods are comparable (Ledin and Machin 2018, 169). Indeed, milk was not even fortified with Vitamin D at this time in Sweden. Nonetheless, the user-friendly visualization can be persuasive for consumers, leading them to believe that the comparisons are based on statistical evidence and that one is a better choice than the other. This remains a key aspect of contemporary food marketing practices (cf. Chen and Eriksson 2019, 2022), often used to circumvent legislation on false advertising that does not provide for semiotic materials or compositional choices (e.g. size of typeface, symbolic meanings of colors and textures, logos).

Marketers also try to convince consumers about the safety of cod liver oil. Vitasan, for example, states that their oil is “a product of Swedish research” and is “subjected to a biological analysis by Swedish scientists who continuously control” (SvD, 1 May 1927) it before placing it on the
market. Here, the impersonalized reference to scientists helps promote the safety of the cod liver oil, while also sustaining the idea that it is made by a technologically advanced process. Advertisements for Möllers also claim that their products are “constantly biologically checked for vitamin quality” (SvD, 26 February 1923) and the “safest remedy” because they contain “the right amount of vitamins” (SvD, 22 November 1926).

The innovativeness of the processes used to produce cod liver oil is also emphasized by marketers to embed the product in modern science and, thus, make a convincing case for its use. Norsk Torsklevertran informs us that its cod liver oil has “up-to-date preparation” (SvD, 26 March 1930), while Vitasan states its oil is “refined by a special method that preserves the oil’s high vitamin activity” (SvD, 1 May 1927). In neither case are details of the specific method included; nonetheless, the emphasis on modern science and its ability to maintain high vitamin content is likely enough to convince consumers of its value. Möllers, on the other hand, uses references to their invention of the steaming process, making their products appear as the result of an innovative production process. Their oil is promoted as “absolutely clean and without additives” and as “fine and well-prepared” (SvD, 14 January 1924). An interesting and recurring feature is the claim that Möllers oil is “hydroxylfri” (free from hydroxyl), a term that frequently collocates with the company name (e.g. Möllers hydroxylfria fiskleverolja). However, what makes the oil free from hydroxyl is not communicated, nor is there any information about what it is or why it is good to consume an oil free from it. Although these buzzwords are unlikely to be understood by most consumers, their scientific language and high modality are convincing and create the impression that cod liver oil is a scientifically formulated product. Similar emphasis on safety and innovation, as well as the use of buzzwords, can be found in today’s food marketing practices, whether for probiotic yoghurt (Koteyko 2009), protein snacks (Chen and Eriksson 2019), or anti-ageing milk (Sau-wa Mak 2021).

*Selling with scientific motherhood*

From the above section, it is apparent that cod liver oil advertisements were largely directed at women— the primary household shoppers and those in charge of caring for the family— urging them to buy the product for the sake of their children’s health (Loeb 1994). Described as “scientific motherhood” by Apple (1995), this strategy dates back to the mid-nineteenth century and positioned women as responsible for their families yet incapable of that responsibility without the intervention of experts. Scientific motherhood was an effective marketing technique because it used scientific
rationale to tap into women’s fears about infant mortality (which was rife at the time), but also their concerns with respectability, convincing them that not to follow the brand’s advice was to be irresponsible and place their child in danger (O’Hagan 2021b).

Many advertisements call out mothers directly in their headlines by making references to children: “Do you want your children to be well?” (Norsk Torsklevertran, SvD, 18 March 1930), “Protect your children immediately!” (Vitasan, Aftonbladet, 2 January 1927); “Children’s growth is important for every mother” (Möllers, SvD, 25 January 1925). They are also warned in straplines that “every mother should do what she can for her child” (Möllers, SvD, 25 January 1925) and that “a wise mother gives her young children cod liver oil” (Vitasan, SvD, 5 June 1927). Although there is no medical evidence to support these bold claims, they rely on the combination of direct address (“your”), strong modal verbs (“need,” “should”, “can”), and matter-of-fact statements (“important for every mother,” “a wise mother…”) to create a sense of urgency, commanding mothers to purchase cod liver oil if they truly care about their children (O’Hagan 2021b). Apple (1995, 19) describes this technique as the “negative appeal” because it emphasizes the dangers to children if cod liver oil is not consumed. This “negative appeal” is further accentuated by accompanying images of pudgy babies (e.g. Figures 2c and 3b) cuddled by doting mothers, serving as “success stories” of cod liver oil and role models to which consumers must aspire. Advertisements in contemporary women’s magazines often use similar strategies, warning women of their “duty” to ensure their children have a healthy diet (cf. Marshall et al. 2014). The benefits of cod liver oil for growth also provided an ideal topic for marketers to exploit in the accompanying text in advertisements, adhering to the “reason why” approach typical of marketing at this time (Apple 1995, 19). The advertisements tell mothers, in highly emotive language, that cod liver oil will “strengthen your children and give them resistance to rickets, scrofula, colds and chlorosis” (Möllers, SvD, 21 January 1924), while also “quickly and safely restoring health to your children” (Möllers, SvD, 9 December 1926) and providing “an abundance of vitamins that promote growth” (Möllers, SvD, 22 November 1926). In some cases, images of nurses pouring out cod liver oil accompany these statements, such as in the Vitasan advertisement in Figure 2a, dated 19 December 1926. The figure imbues the statements with medical authority, making them hard to dispute, even if no studies or experts are cited to support them. Furthermore, using a female, rather than male, authority figure, appeals directly to the target consumers (middle-class women) and creates an affinity around motherhood and childcare grounded in the authority of medicine. Replacing images of mothers with community authority figures
fosters a “gradual realignment of power relationships within the domestic setting,” subtly indicating that mothers should rely on science to carry out their maternal tasks successfully (Apple 1995, 178). In contemporary advertisements, the expert and mother are typically consolidated into one figure. Davis et al. (2022) suggest that this position is a double-edged weapon: it recognizes that women can hold scientific knowledge and are not defined

Figure 2A. Scientific motherhood in cod liver oil advertisements (a) Vitasan, Svenska Dagbladet, 19 December 1926 (b) Möllers, Svenska Dagbladet, 21 January 1924 (c) Möllers, Svenska Dagbladet, 17 February 1927 (d) Möllers, Svenska Dagbladet, 25 January 1925.
by their role as mothers, but it also places them in a position of needing to know everything yet for the sole purpose of motherhood. In the above cases, we see how vitamins are presented as health-giving elixirs: there is no explanation of what they are, only that they are guaranteed to restore health and promote growth. This is further emphasized by statements claiming that children “can become part of the blessings of vitamins” (Möllers, SvD, 18 February 1926) if mothers buy cod liver oil. “Blessings” has a religious connotation, suggesting that vitamins are a gift from above that cannot be explained. In another advertisement, Möllers describes vitamins as a “good gift” that will set children on the “right path of life” (SvD, 24 February 1927), equating cod liver oil with a feeling of euphoria and selling an experience to mothers, rather than just a product (O’Hagan 2021a). We also see bold headlines like “Drink Beauty!” (Möllers, SvD, 14 February 1926), which overexaggerate the potentials of cod liver oil and suggest that it will give consumers “the foundation of beauty” (ibid). In this way, the product is equated to the Fountain of Youth or Elixir of Life, fostering lifestyle aspirations that go far beyond its functional purpose.

Vitamins are also framed in advertisements as “noble commodities” (Möllers, SvD, 29 November 1926), the association between “noble” and high social status linking them to exclusivity and suggesting that mothers who give their children vitamins have a considerable advantage over others. Möllers also often collocate the word “rich” with vitamins, reminding consumers that cod liver oil is a “rich and inexhaustible vitamin
“source” (SvD, 22 November 1926), “rich in vitamin content” (SvD, 21 January 1924), or “full of vitamin richness” (SvD, 7 November 1926). Like “noble,” this adjective acts as a prestige marker, singling out those who take vitamins as part of a select group. Loeb (1994, 55) sees this marketing strategy as a form of “consumerist natural selection” because it
uses subtle cues that advise mothers on how to behave to ensure the future health of the population. Thus, it also taps into the strong link in the public consciousness between health and morality, implying that it is one’s moral duty to be a “strong” citizen and to neglect health through poor diet is selfish. These ideas still form a core part of food marketing today in line with the neoliberal self-care agenda (Andersson 2019; Chen and Eriksson 2022).

Another recurring feature of cod liver oil advertisements is the assertion that children love it so much that “they’ll be asking for it” (Möllers, SvD, 29 November 1926) or “consuming it willingly” (Möllers, Aftonbladet, 19 October 1929). These statements are often accompanied by images of blonde smiling children, dressed in sailor suits, and holding a heaped spoonful of cod liver oil to their mouths, as seen in the advertisement for Möllers, dated 21 January 1924, in Figure 2b. The children are depicted from a full-frontal angle and look directly at viewers in an act of “demand” (Kress and van Leeuwen 2006), creating a visual form of direct address that urges mothers to respond by purchasing cod liver oil for their own children. Often, the images are accompanied by the caption “I eat [brand] cod liver oil.” The use of the first-person declarative portrays the child as capable of making their own decision and offers a direct challenge to any mothers who “prevent” them from being strong. This “fetishization” of supplements in advertisements has been described by Whorton (2000, 98) as a “shameful exploitation” of the juvenile market because it uses claims
of being “tasty” to encourage dosing, thereby creating an unnecessary demand for the product rather than an actual nutritional need. In recent years, the marketing of gummy vitamins has particularly come under fire for this “fetishization” approach (cf. Elliott 2022).

Children also feature heavily in other images in cod liver oil advertisements. However, these are more tied up with fantasy than reality. In the Vitasan advertisement shown in the previous section (Figure 1a), we see three children flying on an oversized spoon. Their dangling legs, wind-tousled hair, and clenched fists create a sense of speed and excitement, drawing parallels to a funfair ride and, therefore, injecting a touch of playfulness into an otherwise dull product (Chen and Eriksson 2019). Similarly, advertisements for Möllers show children holding spoons and hugging oversized fish or standing on top of fish and hooking bottles of cod liver oil from their mouths with fishing rods (Figure 2c, Möllers, SvD, 17 February 1927). In some examples, they are accompanied by their mothers riding on top of whale-like fish breaching out of the water. These images create a feeling of jocularity, high energy, and pleasure, turning the consumption of cod liver oil into an adventure. In other advertisements, the images of children and mothers reflect real-life situations, such as mothers measuring their children against walls, racing them, giving them shoulder rides, or building snowmen (Figure 2d, Möllers, SvD, 25 January 1925). In all of these cases, the children are casually holding up bottles of cod liver oil, implying that its contents are the primary reason why they have grown and have energy to play. The fact that they are depicted near their mothers creates a sense of causality (Ledin and Machin 2020, 210), emphasizing that the consumption of cod liver oil is a collaborative and mutually beneficial process: if mothers do their job correctly and listen to the demands of their children, then they will become healthy.8

**Selling with nature**

Although cod liver oil was associated with science and technological development, and advertisements mainly targeted women as rational subjects responsible for their family’s health, marketers still connected their products to nature. Such strategies worked to suggest the product’s naturalness, even though it was an outcome of a complex production process. They served to naturalize everyday consumption and helped to keep a mythical aura around cod liver oil use, although science had identified the “secret” substances providing it with its healing and health-keeping powers. This seemingly paradoxical strategy was, in fact, a key aspect of early twentieth-century marketing and can be found in advertisements for radium-based products (Eriksson and O’Hagan 2021) and protein foods (O’Hagan 2021a).9
Given that Vitamin D is obtained when the skin is exposed to sunlight, it is unsurprising that sunshine is a common feature of cod liver oil advertisements. Möllers, Norsk Torsklevertran, and Vitasan all use images that show a direct connection between the sun, fish, and cod liver oil, acting as visual cues to signal the product’s naturalness. A case in point is the Möllers advertisement in Figure 3a, dated 25 November 1926, which depicts a fish impaled by a sunbeam and a fancily dressed woman underneath catching a drop of oil in her mouth. Here, the fish acts as a “vector” (Kress and van Leeuwen 2006, 56), illustrating a line of visual narrative that simplifies the complex scientific process of extracting oil from fish and turns it into a magical phenomenon (Ledin and Machin 2018, 169). The accompanying sun carries associations with Vitamin D, as well as health, happiness, and warmth, to depict cod liver oil as a natural and positive element (Eriksson and O’Hagan 2021). The connection is further accentuated by the catchy headline “Drink sun!” and the text block underneath, which offers an easy-to-read explanation of the production process: “Drink it in its most concentrated form: the sea’s vegetable plankton that is processed in the oil extracted from cod’s liver.” Consumers are also told that the cod liver oil is produced “under the most favorable climatic conditions,” but we have no idea what these conditions must be or indeed whether certain conditions are necessary at all. Nonetheless, the high-modality statement sounds convincing and leaves little room for readers to question. These types of phrases and images obscure any manmade aspects of the production process (e.g. fishing, steaming, packaging, exporting), framing cod liver oil as a product that occurs naturally and is, therefore, good for the maintenance of a healthy lifestyle. These mystification and depersonalization strategies are still found today in food marketing for such products as milk (Andersson 2019) and butter (Andersson and Smith 2021).

Another important way of conveying naturalness is through images of babies. This is particularly exemplified in advertisements for Norsk Torsklevertran, such as the one in Figure 3b, dated 5 February 1930, which show a naked baby sitting on a desert island playing with a patch of wildflowers, the sun beating down from above. The baby is portrayed from an oblique angle, with its head down. Kress and van Leeuwen (2006, 119) describe this type of image as an “offer” because it “offers” the represented participant to the readers as a piece of information. Here, we are encouraged to inspect the image and draw meaning from the elements placed alongside one another, interpreting them as a representation of a “return to nature.” The nakedness of the baby and its cherub-like features also act as a symbol of nutritional, physical, and spiritual purity. Therefore, to consume cod liver oil not only offers a “return” to a natural state that is
Figure 3A. Nature in cod liver oil advertisements (a) Möllers, Svenska Dagbladet, 25 November 1926 (b) Norsk Torsklevertran, Svenska Dagbladet, 5 February 1930 (c) Möllers, Svenska Dagbladet, 9 January 1924.
in line with domestic ideals about motherhood and child-rearing, but also promotes the broader belief that it will restore the moral wellbeing of society. Despite depicting the baby surrounded by the sea, fish are curiously
absent from the image. Therefore, the image acts more as a “symbolic suggestive process” (Kress and van Leeuwen 2006, 106), the baby creating a mood rather than a specific narrative about the process of producing cod liver oil. Notwithstanding the absence of fish, the below caption informs us that “cod liver oil is nature’s own remedy against the consequences of lack of sunshine.” The framing of the product as “nature’s own remedy” is highly value-laden, as are the words “consequences” and “lack,” which carry negative semantic prosody. When juxtaposed, the sentence clearly establishes cod liver oil as a method to remain in harmony with nature and keep oneself healthy. This is further emphasized by the text block below, which describes cod liver oil as “a natural food” that is “not artificial” and has an “abundance” of “natural vitamins” that “are supplied to the body in a natural way.” This repetition of “natural” three times (and the use of italics) gives readers no room for doubt about its values.

References to cod liver oil’s naturalness are also supported by links to tradition and its historical use in advertisements. As we saw earlier in this paper, Möllers frequently stress the sophistication of their production process and make it appear as a modern and rational process. However, conversely, they often also refer to their long experience of producing cod liver oil. This is frequently underlined by statements about the oil being produced through “our constantly improved over 70 years, hydroxyl-free method” (SvD, 7 November 1926), which also indicate their persistent work to refine it. Möllers also embed cod liver oil in a broader history

Figure 3C. Continued.
of use by depicting Inuit people huddled together sipping cups of the product (Figure 3c, SvD, 9 January 1924). Showing images of indigenous Arctic tribes gives an aura of authenticity and agelessness to cod liver oil, accentuating its harmony with nature through its longevity as part of a tradition or ritual. Accompanying phrases, such as “an essential food for the people of the Arctic countries” or “a medicine used since ancient times,” further highlight this point, temporarily removing any associations between cod liver oil and science and instead placing it squarely into the context of a “back to basics” way of living (O’Hagan 2021a). Möllers also regularly refer to cod liver oil as “urnäringen” (SvD, 7 November 1926), which can be translated as the “original” or “fundamental” nutrition, thereby suggesting that this nutritional element is ageless and has always been important for nourishment. We see a similar theme at work in Norsk Torkselevertran advertisements, which describe cod liver oil as “Mother Nature's gift to humanity” (SvD, 20 October 1929). Associating the product with a personification of nature constructs a halo of mystery around the oil, subtly directing consumers to interpret the product as life-giving and nurturing. This strategy can also be found in contemporary advertisements for such products as Cocolife coconut water, Santal orange juice, and even Tampax.

Naturalness is also conveyed in advertisements through the frequent description of cod liver oil as having “exquisite whiteness” (SvD, 2 February 1924), white having a long association with purity and often used by food manufacturers at this time to symbolize unprocessed foods (O’Hagan 2020). However, this emphasis on “white” is slightly ironic because the color was only obtained through new manufacturing processes that refined the cod liver oil and made it paler and thinner. Despite this contradiction, readers are likely to draw on their own cultural connotations of white and equate it with purity in all senses of the word, thereby assigning traits to cod liver oil that go beyond its nutritional value. The term “whiteness”, thus, serves to promote the product as highly nutritional and free of artificial ingredients, while also linking it more broadly to a healthy lifestyle and to scientific processing. These values are further accentuated by accompanying images of glistening oil on spoons. Linked to this, advertisements proclaim that the oil is “clean and clear as crystal” (SvD, 7 November 1926), which not only differentiates Möllers’ oil from other producers’ oil (thus assumed to be smelly and foul-tasting), but also connotes it as something valuable yet mysterious. Imbuing products with a sense of value and mystery is still a common contemporary marketing strategy, particularly for skin products (Chen 2015).

While most images in cod liver oil advertisements tend to be of a fantastical nature, some show more realistic interpretations of different stages in the cod liver oil production process—a strategy still used today
in food marketing to signal nature as being “intrinsically good” and making “life easier to humankind” (Andersson 2019). Frequently occurring examples include schools of cod swimming in the sea or hardy fisherman casting their nets to catch fish. In showcasing the natural habitat of the cod and how it is sourced to make cod liver oil, these images provide a sense of simplicity to a relatively complex manufacturing process.

**Conclusion**

Our analysis shows that cod liver oil marketing strategies were reshaped to capitalize on the discoveries of vitamins A and D. Before, the product had been hard to sell due to its unpleasant taste and appearance (cf. Scrinis 2013; Banoub 2018); after the discovery of vitamins, it was scientifically proven to be beneficial for health and marketers were quick to demonstrate this in their advertisements, drawing on tried-and-tested formulas from the longer marketing history of selling with science (cf. O’Hagan 2021a). Despite their seemingly contradictory aims and functions, references to science and nature were co-deployed in advertisements and often worked in complementary ways, balancing modernity and tradition, medicine and naturopathy, wisdom and mystery to persuade anxious mothers that cod liver oil was an essential purchase. On the one hand, advertisements emphasized scientific research as finding a natural explanation for why cod liver oil was so beneficial, supporting these claims with references to personalized and impersonalized scientific expertise, and a vocabulary associated with medicine and medical treatments. On the other hand, cod liver oil was portrayed as an ageless product that offered an alimentary route back to nature, through images of Inuits, naked babies, and fish impaled by sunbeams. At the same time, advertisements employed the concept of scientific motherhood, using direct address, imperatives, modal verbs, and images of smiling children to intimidate mothers into purchasing cod liver oil. Not to do so was to be irresponsible and fail one's family, as well as the “obligation of citizenship” essential to the country’s economic success and social harmony. Together, these strategies did not just tell consumers about cod liver oil’s advantages; they also connoted that its consumption was part of a “good” and healthy way of life (Eriksson and O’Hagan 2021). Thus, we see not only how nutritional research gained prominence and became of increasing importance for public health at this time, but also how food, through science, became incorporated into a thoughtful consumerist lifestyle (i.e., a preoccupation with the acquisition of consumer goods that supposedly improve one's life).
Our study, suggesting that the use of nutritional research and discoveries in marketing dates back to the beginning of the early twentieth century, is in line with claims made by Scrinis (2013) and Nestle (2018) that the food industry has long exploited nutritional science discoveries for its own commercial gain. By drawing comparisons with contemporary marketing practices throughout our analysis, we have taken these claims further, demonstrating how similar strategies still occur and the appropriation of the nutritionism paradigm remains a common practice, even though contemporary food marketing is highly regulated. For instance, a key notion of the EU regulation 1169/2011, which Sweden follows, is that marketing on food packages should “provide a basis for consumers to make informed choices in relation to food they consume” to prevent any practices that may mislead them. Nevertheless, we still find products being sold with weak scientific support, such as collagen supplements, food-grade activated charcoal, and nootropic drinks (Chen and Eriksson 2022), which link science to hopes and promises through creatively designed advertisements or food packaging. This is largely because such regulations do not account for the symbolic uses of colors, shapes, texture, and materiality, nor do they address scientifically-sounding brand names, logos, or slogans/buzzwords that make no specific claims to health (cf. Chen and Eriksson 2019).

Turning specifically to contemporary cod liver oil advertisements, while they no longer target mothers directly, they still strike a balance between science and nature in their arguments, investing food with a moral authority and legitimacy that entices consumers to buy into the lifestyle and cultural value that the product promises (O’Hagan 2021a). For example, Seven Seas and Möllers advertisements describe Omega-3 (discovered in the early 1970s) as both a “brain fuel” and an “ancient superfood,” while images show snowy landscapes and the Northern lights, construing cod liver oil as “magic from the north.” With growing life expectancy and decreasing child mortality, elderly people are now the predominant focus of both brands, encouraged to “stay young at heart” and depicted on swings or rollercoasters.

Thus, we see how contemporary cod liver oil advertisements do not mark a radical break with older marketing practices; rather, they represent the latest in a longer trajectory of patterned practices and uses reflective of the ongoing link between nutritional science and marketing, as well as broader sociocultural and medical developments. Comparisons between other past and present uses of science in advertisements (e.g. margarine, cereal, powdered milk) would further enrich the findings of this paper and shed additional light on our understanding of food marketing from a transhistorical perspective. Furthermore, research that traces the historical origins of seemingly contemporary food trends (e.g. chlorophyll-based
products, protein powder) would also be beneficial in gaining a better understanding of how certain sociocultural ideas around a product emerge, develop, and transform over time. We believe that the knowledge gained through investigating such historical data not only provides crucial historical insights, but also provides us with a critical space to reflect on the veracity of contemporary food marketing.

Notes

1. The name was changed to “vitamin” in 1920 to fit with the standard nomenclature of the Chemical Society and to reflect the fact that not all the substances were amines (Banoub 2018, 3). An alphabetical designation system was also developed, with substances labelled Vitamin A, B, C, etc.

2. Social semiotics is concerned with the relationship between power, ideology, and discourse, defined as a form of knowledge that shapes how people think and act in particular situations (Machin and Mayr 2012). Specifically, it sees sign-making as a social process shaping semiotic resources (e.g. image, color, typography, texture, layout, composition) over time to make meanings that articulate specific ideas and values that underpin how societies operate. These resources have meaning potentials (i.e., communicative affordances or constraints), which are deeply embedded in existing sociocultural norms and sociohistorical contexts (Machin and Mayr 2012, 4).

3. In a similar vein, Möllers advertisements frequently describe cod liver oil as “liquid sunshine”. Both “bottled sunshine” and “liquid sunshine” were also commonly employed in advertisements of the period for radium water and shampoo (Eriksson and O’Hagan 2021). Similar terms continue to be used today in food marketing, i.e., advertisements for Lipton ice tea (“sunshine in a bottle”), Corona beer (“sunshine anytime”), and Tropicana orange juice (“sip your sunshine”).

4. This strategy is still found frequently in contemporary marketing. For example, Sau-wa Mak (2021) found that companies selling anti-ageing milk in Hong Kong provoke feelings of fear among the elderly through medical discourse and emotive words, urging them that the only way to protect their health is by purchasing the product.

5. High doses of cod liver oil can, in fact, be unsafe as they inhibit blood clot formation, which increases the risk of bleeding, causes hypercalcemia, and makes bones more likely to fracture.

6. The two exceptions seem to be in the context of milk powder (Greenaway, Larner, and Le Heron 2002) and commercial baby food (Fuentes and Brembeck 2017), where mothers are still framed as “bad” if they do not follow the advice of experts and purchase these products to help their children’s health.

7. Similar emotional appeals have been found by Scheire (2015) in his study of 1950s fridge advertisements, which often depict children addressing their mothers about the necessity of purchasing a fridge to ensure their good health.

8. Although children are not a major part of cod liver oil advertisements today, they regularly feature in advertisements for gummy vitamins, which reflect similar scenarios to those outlined above, both real life (e.g. family breakfast scenes, playing sports) and fantasy (e.g. transforming into superheroes).

9. Santos (2020) suggests it was effective because it tapped into the tradition of “kitchen physic” (i.e., home cures for illness), thereby invoking feelings of safety and friendliness, yet modernizing and validating these traditions with scientific evidence.
in contemporary marketing, this combination of science and nature is still regularly found (cf. Kenalemang-Palm and Eriksson 2021).

10. Babies are still found frequently in contemporary marketing to convey naturalness. In recent years, they have featured in advertisements for such varied products as Kit Kat, Evian and Vodafone.

11. In more recent years, there has been a marked shift in the associations surrounding white in food marketing. Today, it is more commonly used as a symbol of “refined” foods, stripped of natural elements (e.g. white flour, which is stripped of bran and germ, and is therefore less nutritious than “whole wheat” flour).

12. From 1928 onwards, the Swedish Newspaper Archive shows a marked decline in cod liver oil advertisements and a sharp increase in advertisements for fortified foods. Fortified foods emerged after Adolf Windaus discovered ergosterol—a compound present in fungi that is converted to vitamin D2 when irradiated with ultraviolet light (Banoub 2018, 4). This meant that consumers could now receive all the benefits of cod liver oil, yet concealed within tasty foods like biscuits, chocolate, and cereal rather than a spoonful of ill-tasting liquid.

13. See https://seven-seas.co.uk/ and https://www.mollers.com/

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No potential conflict of interest was reported by the authors.

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