ELSEVIER

Priming shoppers' well-being goal in grocery stores: Moving toward healthier food choices?

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ABSTRACT

At the times of obesity epidemic, innovative ways to nudge food shoppers toward healthier choices are needed. Key ideas from the conceptual metaphor processing, food symbolism and contextual priming literatures are synthetized to argue for the idea that visual, olfactory and gustatory cues can activate shoppers' well-being goal and guide their in-store movements and healthy food purchasing behaviors. Two field experiments, separated by an 8-month interval, are conducted in the same grocery store. The results show that priming the well-being goal in real store can push consumers to move toward spots where healthier options are available – materializing also into greater sales of yogurts, vegetables and heart healthy-labeled products. Counterintuitively, the well-being goal activation possibly first facilitate approaching indulgent foods. Yet, the actual sales of palatable foods such as ice cream and minced beef meat may in fact diminish. This research spurs numerable academic and practical implications.

1. Introduction

At the times of worsening obesity epidemic, we need a deeper understanding of how to nudge food shoppers toward healthier choices. New frameworks have been presented to guide academics, companies and policy-makers in this quest (Turnwald & Crum, 2019; Wansink, 2017). Carrying on this line of research, we concentrate on exploring if healthier food consumption can be encouraged in real grocery stores by priming the motivational goal of well-being.

Recently, a surge of interest has been directed at exploring how exposure to a single sensory cue (e.g. auditory, olfactory or tactile) or multisensory ones affect food consumption behaviors in retail store. For example, Spendrup, Hunter, and Isgren (2016) reported that playing a birdsong on the background of a supermarket strengthened male shoppers' willingness to buy organic carrots. The chocolate scent increased the sales of strawberry chocolate more than the strawberry scent did (Kivioja, 2017). In the online shopping context, a single sensory cue – in comparison to the multisensory one – less effectively facilitated consumers' willingness to pay more for ethical brands (Yoganathan, Osburg, & Akhtar, 2019). Hence, we propose that real world in-store stimuli can act as a potential primer of multiple consumer goals,

including health, hedonism and sustainability (Bauer, Aarestrup, Hansen, & Reisch, 2022).

Theoretically, we wish to contribute to food consumption and behavioral intervention research by combining ideas from the conceptual metaphor processing, contextual goal priming and symbolic food meaning literatures by addressing the following research gaps. First, in general, little is still known about the effects of supermarket in-store placement promotions on customer purchases (Petimar et al., 2023). In particular, the link between activated motivational goals and real-life context has been overlooked (Onwezen, 2023). Second, as we conduct our studies in authentic market conditions, we respond to the call of recognizing the existence and potential role of competing primes such as exposure to marketing cues (Bauer, van der Laan, de Bruijn, & Reisch, 2022), which are often not considered in laboratory experiments. Third, shopper movements such as stopping at certain shelves in real commercial surroundings have practically been ignored in consumer research in spite of their obvious relevance for retail marketing and understanding of in-store food consumption behaviors (De Wijk, Maaskant, Kremer, Holthuysen, & Stijnen, 2018; Van den Bergh, Heuvinck, Schellekens, & Vermeir, 2016). Thus, with our research, we help in filling these gaps in knowledge and answer to the recent calls for

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conducting more field experiments to address actual consumer behaviors (Cozzio, Volgger, Taplin, & Woodside, 2020; Meyer, 2017; Sigurdsson et al., 2020).

We set three objectives for our research. First, based on the literature review, to apply the consumer goal – food symbolism account in conceptualizing the role of concrete sensory cues in triggering shoppers' well-being goal and its effect on in-store movements and purchasing behaviors. Second, to empirically investigate the influence of visual and multisensory well-being goal priming cues such as in-store displays, olfactory ambience and gustatory trialability on actual shopper movements and purchasing behaviors of more or less healthy foods. Our final objective is to critically discuss the potential of in-store goal priming approach in facilitating healthier food consumption both from research and practitioners' perspectives.

Next, we present conceptual underpinnings that guide our empirical studies. Subsequently, the execution and results of two field experiments are reported. We conclude with a discussion dealing with the implications of our research.

2. Conceptual underpinnings: consumer goal – food symbolism (in)congruity

2.1. The definition of well-being goal and the polysemy of food symbols

Consumers' goals are represented in memory as semantic knowledge, but unlike other forms of knowledge such as declarative concepts, they possess motivational properties (Janiszewski & Wyer, 2014). In consumer research, a spectrum of goals and the effects of their activation have attracted attention: health, indulgence/hedonism, status, independence, morality and responsibility to name a few (see e.g. Tal & Wansink, 2015; Lee, Noble, & Biswas, 2018; Kareklas, Muehling, & King, 2019; Huang & Labroo, 2020; Kim, Tanford, & Book, 2021; Onwezen, 2023). We assert that as values represent abstract goals (Baumgartner & Pieters, 2008), Allen, Gupta, and Monnier (2008) theorizing can be adopted to introduce the idea of consumer motivational goal – food product symbolism (in)congruity. In short, this logic posits that after priming a motivational goal, a shopper in a grocery store prefers (rejects) those foods whose symbolism is (in)congruent with it.

When consumers achieve their well-being goals, it results in "a state of flourishing that involves health, happiness and prosperity" (Mick, Pettigrew, Pechmann, & Ozanne, 2012, p. 6). This definition showcases that well-being can be pursued in different ways and for a variety of reasons (Geeroms, Verbeke, & Van Kenhove, 2008). In the realm of food consumption, Puska and Luomala (2016) found that products can be acquired and used because they offer more or less symbolic health benefits such as energy, physical ease, mental satisfaction, outward appearance, self-management, and social responsibility. In a similar vein, Ares et al. (2016) uncovered several dimensions of food-related well-being: physical, intellectual, emotional, social, and spiritual. These notions are congruent with Mick et al.'s (2012) broadly defined well-being goal.

In the food consumption literature, long term well-being/health goal has been contrasted with the fundamental human need for immediate pleasure/hedonism (see e.g. Luomala, Hellén, & Jokitalo, 2018). Interestingly, however, accumulating evidence suggests that these goals do not necessarily contradict but supplement each other. For example, Landry et al. (2018) found commonalities between consumers' associations with healthy and pleasurable eating and Banovic, Aschemann-Witzel, and Deliza (2021) delivered evidence showing that health goals do not always invoke incongruence with taste. Moreover, the well-being goal can be fulfilled not only by healthy or pleasurable eating, but also by engaging in unselfish sustainable behaviors such as consuming organic food (Apaolaza, Hartmann, D'Souza, & Lopez, 2018). This could derive from both selfish pleasurable feelings and altruistic moral benefits consumers gain by engaging in pro-environmental activities, referred to as "warm glow" (Boobalan, Nachimuthu, & Sivakumaran,

2021; Steg, Boldedijk, & Keizer, 2014). Thus, activation of well-being goal can trigger not only healthy, but also hedonic and sustainable behaviors; depending on the key meaning of the goal cue. For instance, if the emotional meanings of well-being are cued, then both healthy and hedonic choices can transpire. Or if the socio-moral meanings are cued, then both healthy and sustainable choices can emerge.

To crown this complexity, a well-being goal pursuit can be satisfied by numerable food consumption behaviors, for example by organic food choices as suggested by Apaolaza et al. (2018) study. From food association and choice motivation studies we know that many, if not most, products carry a host of meanings. To illustrate, organic foods can symbolize health, safety, tastiness, reputation, animal welfare, and environmental friendliness (Luomala, Puska, Lähdesmäki, Siltaoja, & Kurki, 2020) and superfoods health, naturalness, hedonism, identity, tradition, and energy (Rojas-Rivas, Espinoza-Ortega, Thomé-Ortiz, & Moctezuma-Pérez, 2019). Healthy eating in itself invokes a plethora of moral and symbolic perceptions (Bailey, Prichard, Drummond, & Drummond, 2022). Based on this, we propose that practically every food can activate symbolic contents that are (in)congruent with various aspects of the well-being goal. Consequently, predicting which foods consistently either comport or mismatch with it is challenging. This polysemy complicates the application of the consumer goal – food symbolism (in)congruity account in the field settings. Yet, there are products that consumers stereotypically view as healthy (e.g. fruits and vegetables) or indulgent (e.g. ice cream and hamburgers) (Luomala et al., 2018).

2.2. Concrete sensory cues as triggers of consumers' abstract goal pursuits

We suggest that concrete sensory cues can activate more abstract goal attainment attempts. First, the conceptual metaphor research indicates that consumers can link seemingly unrelated concepts (sensory experience and abstractions concerning social phenomena) together, for example connecting warmth with social proximity (Landau, Zhong, & Swanson, 2018) or cold temperature (e.g. in stores) with heightening consumers' status signaling needs (Park & Hadi, 2020). Yang, Deng, and Bhadauria (2020) show how being exposed visually to beauty-related words enhances prosocial consumption – illustrating that consumers' subsequent behavior changed in the metaphor-consistent manner.

Second, priming studies report how environmental cues such as brands, pictures and words inserted in sentences can activate various mental constructs, including goals (Chartrand, Huber, Shiv, & Tanner, 2008; Fitzsimons, Chartrand, & Fitzsimons, 2008; Wang, Minton, & Zhang, 2020). These activated goal attainment concepts can then guide consumer's choice behaviors (Janiszewski & Wyer, 2014). To illustrate, of consumers, subliminally exposed to health-goal priming words (e.g. 'willpower'), 86 % chose the healthier option (granola bar or Sun Chips) while only 12 % chose the less healthy one (conventional potato chips) – these percentages equaled 68 and 32, respectively, in the control condition (Laran, Janiszewski, & Salerno, 2019). Yet, priming an indulgence goal can also lead to leaner food consumption (cf. Steg et al., 2014). After the indulgence goal-priming by an exposure to a scenario embedded with a palatable food picture, 32 % of consumers chose a healthier salad dressing – in contrast to 20 % who selected the unhealthier version (Chen, 2016).

Third, the embodied and referential meaning theory of sounds, scents, shapes, and colors embraces the idea that concrete sensory cues can initiate goal striving episodes. Using such a framework, Kareklas et al. (2019) proved how the color red cued consumers' goal to be independent. Joshi and Kronrod (2020) file evidence for sound symbolism: silent consonants in brand names (e.g., Etopal), compared to voiced consonants (e.g., Edopal), are more effective in conveying environmental friendliness.

Only few field studies have employed a sensory goal priming rationale. Starting with the visuals, gold-colored service props such as bill folders and tablecloths primed status goals and increased tipping in

restaurants (Lee et al., 2018). As regards the auditory cues, Huang and Labroo (2020) showed that higher-pitched music elicited the morality goal boosting and healthier food choices. Tal and Wansink (2015) had shoppers eat samples of apples (cookies) before entering the store – this gustatory sensation primed the health (indulgence) goal and resulted in larger (smaller) fruits and vegetables purchases. In turn, a short-term (<30 s) sensation of cookie scent triggered the indulgence goal in Biswas and Szocs (2019) investigation, increasing the number of unhealthy choices. Finally, multisensory cues (visual and auditory) enhanced vegetarian dish choices and diminished plate waste in a lunch restaurant (Vanhatalo, Liedes, & Pennanen, 2022).

2.3. Development of the conceptualization for the research

We combined these conceptual ideas and empirical findings in order to develop a theoretical formulation for our research. We propose that the well-being goal can be activated in food stores by visual, auditory, olfactory, gustatory, and multisensory cues. In our research, we first prime the well-being goal with visual design tools such digital displays, shelf talkers, floor stickers and shopping basket ads (cf. Roggeveen, Grewal, & Schweiger, 2020; Brečić, Ćorić, Lučić, Gorton, & Filipović, 2021). Second, to accompany visual goal priming, we bring out an ambient olfactory cue (scent of basil) and a gustatory trigger (offering samples of carrots with evocative descriptions). Using scents makes sense in that they are, unlike visual in-store materials, inescapably noticed – shoppers cannot turn off their noses (Sandell, 2019). In turn, tasting foods is a powerful evoker of consumption imagery (e.g. Thomson, Crocker, & Marketo, 2010), especially when offered with goal-suggestive associations (cf. Aydinoglu & Krishna, 2019) or product provenance information (Kustos, Goodman, Jeffery, & Bastian, 2021). Taken together, these steps represent an operationalization of multisensory goal-priming.

In line with Tal and Wansink (2015), we further propose that goal attainment efforts stimulate (inhibit) in-store choices of those food products that transmit (in)congruent symbolism with them – in practice increasing or decreasing sales (Sirgy, 2018). Stöckli, Stämpfli, Messner, and Brunner (2016) demonstrated in their field experiments that visual health-goal primes (posters) increased the sales of healthy snacks from vending machines in comparison to the visual indulgence-goal prime or control conditions. Both pictorial and textual point of sales materials increased the demand of more expensive local foods in a supermarket in Brečić et al. (2021) study. In a similar vein, we surmise that product offerings can emit symbolic messages that are more or less (in)congruent with consumers' activated well-being goal – leading to more or less stops at the shelves carrying them. Detailed shopper movements such as stopping at the shelves represent a new dependent variable (DV) in food consumption research. Researchers have just started to explore them both in real supermarkets and virtual stores (De Wijk et al., 2018; Schnack, Wright, & Holdershaw, 2021). Using floor markings, Van den Bergh et al. (2016) could manipulate shoppers' walking speed. Chen, Burke, Hui, and Leykin (2021) found that shoppers pay more attention to products on their right side when passing through an aisle and that the eye level is not the best-selling position for products. In turn, De Wijk et al. (2018) investigated both the shopper movement and sales data and concluded that their relationship is more complex as one would expect. Thus, more understanding is needed.

3. Overview of the studies

First, we wanted to see if visual well-being goal-primers affect both the shopper movements and the sales of foods with differing symbolism in a grocery store (Study 1). To assess how the effect of multiple sensory cues in activating well-being goal influences the shopper movements and sales, we conducted another field experiment (Study 2) in the same store. Thus, in addition to visual priming stimuli (floor stickers and shopping basket ads), we also used gustatory and olfactory cues

designed to activate the well-being goal. For both studies, we selected target products with well-being goal congruent versus incongruent health images (Study 1: healthy snacks and heart healthy products vs. red meat products; Study 2: organic products vs. calorie-dense products). This was purported to help in evaluating how the degree of (in)congruence between the primed well-being goal and food product symbolism affects shopper movements and purchasing behavior.

The research followed the ethical principles of research with human participants and ethical review in the human sciences in Finland (Finnish National Board on Research Integrity TENK guidelines, 2019). The ethical guidelines of research with human participants include six criteria (deviates from the principle of informed consent, intervenes physical integrity, focuses on minors, exposes participants to exceptionally strong stimuli, involves a risk of causing mental harm, threatens the safety of participants) to evaluate the need for formal ethical evaluation (Finnish National Board on Research Integrity TENK guidelines, 2019, pp. 61–63). In this study case, none of the criteria were met and therefore the need for the formal ethical evaluation was found unnecessary.

4. Study 1: Effects of visual well-being goal priming on in-store movements and food sales

4.1. Study design

Our Study 1 (S1) design is illustrated in Fig. 1. We conducted a field experiment at a small (<200 m^2) city grocery store in Turku, Finland. As we ran S1 in fall, students represented typical customers of this store as it is located nearby university campus areas. The experiment lasted six weeks. The weeks 1–2 acted as an adjustment period – to assure that results would not be driven by the sudden changes in the physical shopping environment. Thus, we did not collect data during this period. During the week 3, we used four digital displays in four locations to prime the well-being goal through a video looped on the digital displays (see, Supplementary material). Our choice to use the digital displays was based on intention to disguise our goal-priming manipulations to appear as the normal marketing activities of the store. In addition to the digital displays, we placed goal-congruent shelf talkers (see Fig. 2 for their content) and recipes (see, Fig. 3) for offer at the entrance and the target shelves. We followed Aydinoglu and Krishna (2019) ideas and used the following evocative expression in the recipes to amplify the well-being goal-priming: "Glowing lentil-chicken soup & Nutritious berry smoothie". The textual elements of the visual materials were presented in Finnish. The weeks 4 and 6 served as control measurements periods. We did not collect data during week 5 as we reasoned that gathering control data on alternating weeks rather than on consecutive weeks heightens the reliability (reduction of likelihood of time-bound idiosyncratic effects, e.g. Father's Day). During weeks 1–2 and 4–6, general marketing material of the supermarket chain was displayed on the screens.

For our shopper movement analysis, we focused on the animal protein (beef, pork, poultry, fish, cold cuts) and the snack product (yogurts, sour milks, quarks, and their oat- and soy-based counterparts) shelves. We selected these products because meat mostly means indulgence – that is, consumers view them as tasty and potentially incongruent with the primed well-being goal (Barone et al., 2021; Piazza et al., 2015) whereas yogurts are more unanimously perceived as healthy and should resemble congruence with the well-being goal (Bimbo et al., 2017). Shopper movement patterns and sales were monitored between 06:30 AM to 10 PM on weekdays, 07:00 AM to 10 PM on Saturdays, and 11:00 AM to 10:00 PM on Sundays.

4.2. Development and pre-test of the well-being goal priming message

First, several alternative versions of visual images and slogans thought to prime the well-being goal were self-generated and peer-
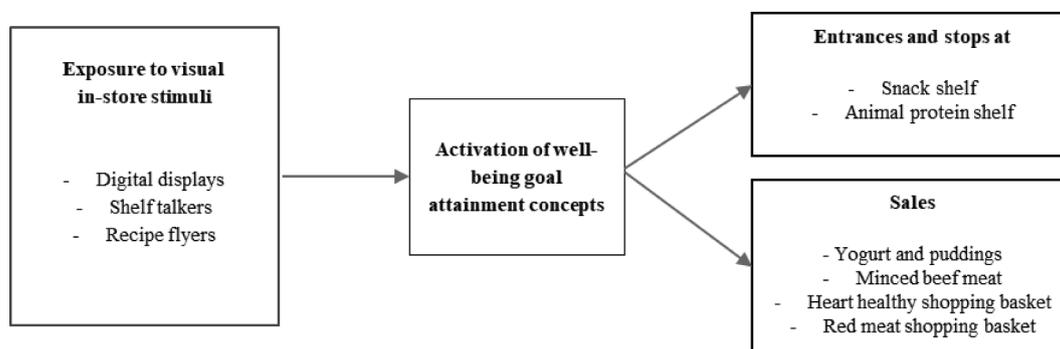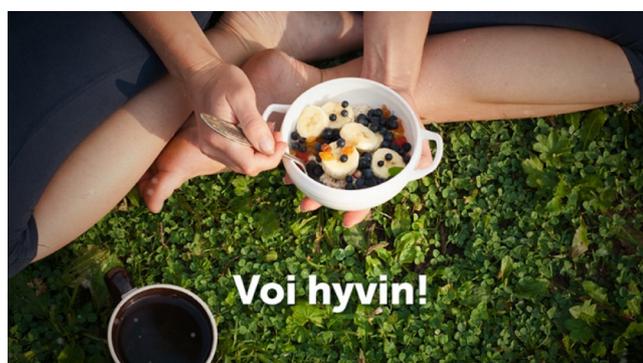
Fig. 1. Study 1 design.

Fig. 2. Visual well-being goal priming stimuli used in shelf talkers. Finnish wording 'Voi hyvin!' translates to 'Feel good!'.

Fig. 3. The recipes offered to the customers.

evaluated. After this, they were developed further into the 20-second video clip (see Supplementary material) in collaboration with a professional ad agency art director. The purpose was to create a subtle prime that is capable of activating the well-being goal without the typical commercial content (i.e. direct references to brand, price, package). Then, an online pre-study with 99 respondents of different age (M = 39.5, SD = 14.2) and gender (males 52%) was conducted to test the feasibility of the final priming stimuli (see Fig. 2).

In the pretest, we first asked participants to express what kind of associations the stimuli brought into their minds. We inductively categorized their responses. The top four included: well-being & taking care of oneself (f = 40); berries, fruits and vitamins (f = 28); pristine nature (f = 25); and healthy diet (f = 21). In addition, they were queried to what extent (1–7) they perceived this message to promote the choice of various food products. We conducted one sample t-tests (using the scale mid-point 4 as a comparison standard) to assess to what extent the symbolism conveyed by the message is congruent with the well-being goal. Participants viewed it to encourage the choices of additives-free foods (t = 4.29, p <.001) and organic foods (t = 2.57, p <.05), but not for instance local foods (t = -3.33, p <.001) or premium foods (t = -3.23, p <.005). In conclusion, we took these results to demonstrate that our message satisfactorily primed the well-being goal in particular and not for example responsibility or status goals.

4.3. Shopper movement tracking technology

Shopper movements were gauged by a depth sensor-based monitoring system that accurately tracks and analyses shopper trajectories, detects stops at the product displays, and provides objective and continuous information on shopper behaviour in the space under surveillance. The system does not rely on any wearable devices for tracking and can scan all shoppers patronizing the store through the sensors installed in the environment. They measure the distance to a variety of surfaces with the help of laser dot patterns that form a depth map – enabling the creation of a 3D model representing the space, human objects, and their movements (Mäkelä, Järvinen, Keränen, & Lindholm, 2014; Vildjiounaite, Mäkelä, Järvinen, Keränen, & Vesa Kyllönen, 2014). The system is not able to identify individuals and thus protects the privacy of shoppers.

Willems, Brengman, and van den Sanden (2017) used a sales funnel logic successfully to analyse the effects of digital point-of-sales communication in a real-world field experiment. We adapted this approach for our shopper movement analysis. In essence, we defined a virtual line at the store entrance to count the total number of shoppers coming in the store. This formed the theoretical maximum for the number of shoppers passing or stopping at the virtual areas determined for the animal protein and snack product shelves. To illustrate, we had the data for the following sales funnel: 1) shoppers coming in the store, 2) proportion of them entering the shelf area, 3) proportion of them stopping at the shelf area, 4) proportion of them buying the product(s).

4.4. Determination of the level of analysis for sales data – creation of food shopping baskets

On a continuum, food sales can be analyzed at the single product level (e.g. Kivioja, 2017) or at the broad category level (e.g. comparing healthy vs. unhealthy foods as in Biswas & Szocs, 2019). The sales of individual products can be negligible in small stores. Thus, our approach lies in the middle of these extremes and was driven by an informed attempt at collecting a bundle of products with predominantly healthy versus indulgent image in one food shopping basket. This strategy complements the sales data collected from our spatially confined shopper movement tracking spots (specific segments of snack and animal protein products).

The first basket includes *heart healthy labeled foods* (in total 44 products, examples include cottage cheese, whole grain pasta, vegetable oil spreads, chicken cuts) as these kinds of front-of-package labels have been shown to help consumers to identify healthy options and increase their product healthiness perceptions (Ikonen, Sotgiu, Aydinli, & Verlegh, 2020). In other words, they can possess symbolic congruence with the well-being goal. The second food shopping basket consists of *red meat products* (in total 29, including mainly pork items such as minced meat, sausages, cold cuts, hams, steaks, fillets). As mentioned, meat usually signals tastiness to consumers (Barone et al., 2021; Piazza et al., 2015). So, this basket may symbolically mismatch with the well-being goal. In any case, it covers meat products more generally than the sales data from the animal protein shopping movement tracking spot alone.

4.5. Results for shopper movements

During the monitoring period, a total of 37 494 shoppers visited the store, averaging 12 498 weekly visits. We based our shopper movement analysis on calculating the conversions along the journey from the store door to the focal shelves: what proportion of customers coming in entered the animal protein or snack shelf; and what proportion of those who entered the shelf area stopped. In practice, we calculated the hourly means of shopper movement metrics in the following way. First, for each hour we divided the number of customers entering the shelves by the total amount of customers (i.e. proportions of customers who entered the focal shelves). After that, the amount of those who stopped was divided by the amount of those who entered (i.e. proportion of those customers who entered and stopped). This procedure was repeated both to control weeks and well-being week. It is to be noted, that as the shopper monitoring system collected data only from specific areas in the store, one customer could have been calculated entering or stopping in the monitoring area multiple times potentially leading to hourly conversions larger than 1.

In the analysis, we contrasted the hourly mean proportions of entrances and stops to the animal protein and snack shelf of the control weeks with those of the well-being week. When technical problems resulted in missing data points during the well-being week, we removed that data input period also from the control data before conducting statistical analyses. This led to some variation in Ns (hours) used in our statistical analyses. We ran unequal variances t-tests to discern the potential differences (using the liberal *p* of 0.1 or less as this is a field experiment) between the control and goal-priming weeks.

To supplement our shopper movement results from the targeted shelves, we used the sales data of yogurts and puddings (high-selling product category in the snack shelf) and minced beef meat packages (high-selling product in the animal protein shelf) to ascertain the correspondence between the area tracked and the items sold there.

Applying the sales funnel logic, we noted a consistent pattern when the entrances, stops, and actual purchases between the control and well-being goal priming weeks are compared. During the well-being week, there were more snack shelf entrances, stops, and sales of snack products (see Table 1 for entrances and stops and Table 2 for snack sales). As

Table 1
Study 1 shopper movement results.

Shopper movements[a]	No goal priming condition (control)	Well-being goal priming condition	T- and p-values
A)			
- Snack shelf entrances[b]	N = 91; M = 0.61; SD = 0.17	N = 91; M = 0.91; SD = 0.91	t = 3.20; p <.01
- Snack shelf stops[c]	N = 91; M = 0.77; SD = 0.14	N = 91; M = 0.80; SD = 0.20	t = 1.40; p =.08
B)			
- Animal protein shelf entrances[b]	N = 59; M = 0.76; SD = 0.30	N = 59; M = 0.87; SD = 0.45	t = 1.67; p =.05
- Animal protein shelf stops[c]	N = 59; M = 0.41; SD = 1.02	N = 59; M = 0.36; SD = 0.30	t = -0.32; p =.37

a = N refers to the number of hours tracked.
b = M denotes the average proportion of all customers who entered the snack shelf per hour.
c = M denotes the average proportion of customers who entered and stopped at the snack shelf per hour.

Table 2
Study 1 sales results.

Condition Food sales[df]	No goal priming condition (control) N = 12 919	Well-being goal priming condition N = 11 657	Z- and p-values
C) Yogurts & puddings	P = 28.30 P = 1.98	P = 30.37 P = 1.45	Z = 3.16; p <.01
D) Minced beef meat packages	P = 9.55 P = 5.56	P = 10.49 P = 5.95	Z = -3.20; p <.01
E) Heart healthy shopping basket			Z = 2.45; p <.01
F) Red meat shopping basket			Z = 1.33; p =.18

d = N refers to the number of shoppers visiting the store during the condition period.
f = P refers to the proportion (in percentages) of shoppers purchasing the product.

regards the animal protein product shelf, our findings were less cohesive. The positive effect of well-being goal-priming on the animal protein product shelf entrances did not convert into a significant impact on stops (Table 1); but the sales of minced beef meat packages plunged (Table 2).

4.6. Results for sales

Next, we analyzed the sales of broader entities capable of transmitting either health or indulgence symbolism: heart healthy labeled and red meat food shopping baskets (all results in Table 2). As we had aggregate sales data only for our analysis, we followed the analytical approach identical to Biswas and Szocs (2019). Our dependent variable was the proportion of shoppers purchasing the product(s) of interest (referred to as P in Tables 2 and 4) during the control (2-week average) vs. the well-being goal prime weeks. We conducted the two-sample test of proportions to determine the statistical significance of detected differences. By having two control week measurements and one-week goal prime exposure, we sought to safeguard the reliability of our field study. In many store experiments, both the control and cue exposure periods can be remarkably short; even one or two days (e.g. Leenders, Smidts, & El Haji, 2019; Biswas & Szocs, 2019). This approach is more susceptible to uncontrollable sources of idiosyncratic variations such as unexpected stock-outs or daily weather conditions. Therefore, we preferred the longer control and manipulation periods; a methodological choice taken also by Herrmann, Zidansek, Sprott, and Spangenberg (2013) and Sandell (2019) in their retail field studies.

We spotted a positive sales effect for the heart healthy food shopping

Table 3
Study 2 shopper movement results.

Shopper movements[a]	No goal priming condition (control)	Well-being goal priming condition	T- and p-values
A)			
- Fruit & veggie island entrances[b]	N = 70; M = 0.59; SD = 0.24	N = 70; M = 0.65; SD = 0.35	t = 1.39; p =.08
- Fruit & veggie island stops[c]	N = 70; M = 1.17; SD = 2.01	N = 70; M = 1.28; SD = 3.02	t = 0.26; p =.40
B)			
- Ice cream freezer entrances[b]	N = 85; M = 0.45, SD = 0.14	N = 85; M = 0.43; SD = 0.10	t = -0.69; p =.25
- Ice cream freezer stops[c]	N = 85; M = 0.72; SD = 0.14	N = 85; M = 0.75; SD = 0.10	t = 1.66; p =.05

a = N refers to the number of hours tracked.
b = M denotes the average proportion of customers who entered the snack shelf per hour.
c = M denotes the average proportion of customers who entered and stopped at the snack shelf per hour.

Table 4
Study 2 sales results.

Condition	No goal priming condition (control)	Well-being goal priming condition	
Food sales[df]	N = 6190	N = 5768	Z- and p-values
C) Organic bananas, lemons & broccoli	P = 2.26	P = 2.39	Z = -0.47; p =.64
D) Ice cream bars, cornets & multi-packages	P = 17.56	P = 12.60	Z = 7.75; p <.01
E) Organic shopping basket	P = 5.35	P = 5.34	Z = 0.98; p =.98
F) Caloric shopping basket	P = 3.89	P = 4.10	Z = 0.55; p =.58

d = N refers to the number of shoppers visiting the store during the condition period.
f = P refers to the proportion (in percentages) of shoppers purchasing the product.

basket (Table 2). During the well-being goal prime week, the sales of this basket rose compared to the control weeks. On the other hand, for the red meat shopping basket, we recorded an insignificant difference in sales.

On the whole, these results qualify as a piece of evidence for the ability of the activated goals to affect how shoppers' movement in a real grocery store. We demonstrated that shoppers' routing and stopping behaviors can change after exposing them to the visual well-being goal priming cues. Moreover, in the case of foods with the positive health image, these changes could be logically related to shifts in actual sales.

This raises the question: how can the effect be replicated with other foods with healthy and indulgent image? Moreover, will multisensory well-being goal priming make a difference? We set out to tackle these questions in S2.

5. Study 2: Effects of multisensory well-being goal priming on in-store movements and food sales

5.1. Study design

For S2, we carried on our collaboration with the same store. After an 8-month break, we conducted another field experiment. Our Study 2 design is illustrated in Fig. 4. Due to the evidence pointing to the greater efficiency of multisensory cues in affecting consumers' willingness to pay and purchase intentions in e-tailing as well as actual purchases in real stores (Helmefalk & Berndt, 2018; Helmefalk, 2019; Mishra, Shukla, Rana, & Dwivedi, 2021; Yoganathan et al., 2019), we decided to test this idea. In our research context, this meant multisensory well-being goal priming stimuli. To accompany our visual goal primes, gustatory and olfactory cues were introduced. Perceived congruence between cross-modal sensory cues have repeatedly been shown to affect the nature and intensity of consumer responses (Gvili, Levy, & Zwilling, 2018). Thus, we took steps to reconcile their symbolic compatibility with each other so that they would function in unison to activate the well-being goal.

This time, the shopper movements and sales were monitored between 06:30 AM to 10 PM on weekdays, 07:00 AM to 10 PM on Saturdays, and 11:00 AM to 10:00 PM on Sundays. The data collection occurred during a 3-week period – week 1: control condition measurement; week 2: no measurement; week 3: experimental condition measurement.

5.2. Development of multisensory well-being goal priming stimuli

The key point was to disguise our well-being goal priming manipulation to appear as the normal marketing activities of the store. We stuck to applying the same visual goal priming content as in S1 (Fig. 2). However, due to store management's decision to discontinue using digital displays as an in-store marketing device, our visual communication medium changed to floor stickers (Fig. 5) and advertisements fastened on shopping carts and baskets (Fig. 6).

At the outset, we sought to find particular foods (offered as taste samples after entering the store) and scents that reasonably well fit symbolically together with our visual well-being goal prime. The associations consumers attach to three seasonal food products (strawberries, carrots, raspberries) were scoured in a pre-test (N = 59, 42 females; 17 males; age range 24–68). Carrots emerged as the most viable candidate for the taste sample offerings. The one sample t-tests revealed that carrots are perceived as healthier (scale 1–7) than either strawberries
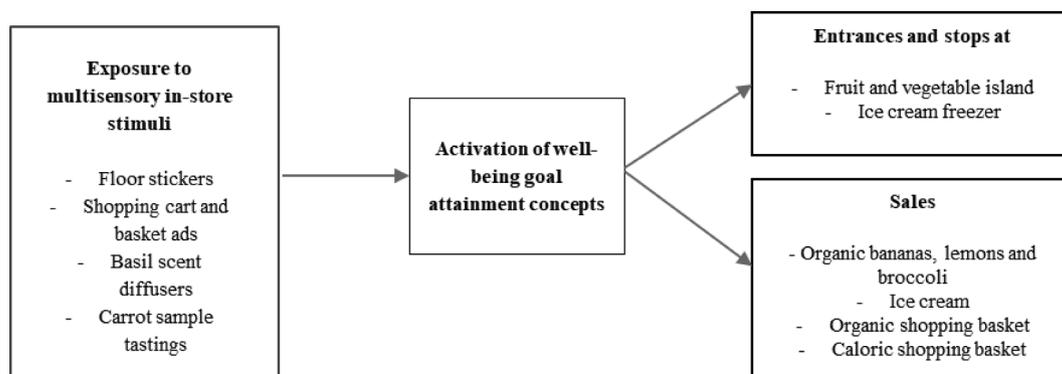

Fig. 4. Study 2 design.

Fig. 5. Floor sticker used in the study. Finnish wording 'Voi hyvin!' translates to 'Feel good!'.

(M_{carrot} = 6.28 vs. $M_{strawberry}$ = 6.02; t = 1.98; p =.05) or raspberries (M_{carrot} = 6.28 vs. $M_{raspberry}$ = 6.02; t = 1.95; p =.06). These results suggest that carrot symbolism best resonates with the well-being goal, even though strawberries and raspberries fare almost equally well.

Consequently, we chose to offer samples of carrots to trigger the well-being goal. In practice, we set up a stand (Fig. 7), at very close proximity to the entrance in the main corridor of the store, which the customers could not miss during the store visit. We followed Aydinoglu and Krishna (2019) ideas and trained our assistant to vocalize carefully designed evocative scripts when he offered the food samples to shoppers. This served to standardize the customer encounters and to strengthen the priming of the well-being goal. The script read as follows: "Carrot is a domestic health bomb! It contains a lot of micronutrients such as beta-carotene. In the human system, the beta-carotene transforms into the vitamin A. It is needed to maintain the immunity system and good eyesight.".

We collaborated with a commercial scent marketing company in order to identify the most appropriate odor. After discussions with the company experts, we narrowed the initial ten scents to six: green apple, basil, green leaves, strawberries, orange, and red rose. We then conducted a pre-test (N = 22, scale 1–7) with adult consumers to determine

scents' likeability and associations with health (index of lightness, vitality, healthiness, well-being). After deliberation we selected the basil scent to facilitate the well-being goal activation. First, the basil scent possessed the strongest health associations (M_{basil} = 4.61; $M_{green leaves}$ = 4.55; $M_{red rose}$ = 4.45; M_{orange} = 4.02; $M_{strawberry}$ = 3.61 $M_{green apple}$ = 3.14). Second, in terms of pleasantness, it was rated above the scale midpoint and among the top three (M_{basil} = 4.40; $M_{strawberry}$ = 4.91; $M_{green leaves}$ = 4.90; M_{orange} = 4.36; $M_{red rose}$ = 4.00; $M_{green apple}$ = 3.64). We deemed that the basil scent satisfactorily supplements the other two sensory cues already aligned to symbolically cohere with the well-being goal.

In the store, three electrostatic aroma diffusers were used to ooze the scents around the premises. Prior to the actual well-being goal priming week, a small-scale test was conducted to find the appropriate intensity level for the scent. In practice, we experimented with the two scent levels and briefly collected shoppers' experiences as they exited. Under the mild intensity trial (N = 21), only three (14 %) shoppers commented the prevalence of smell after being queried if they noted something out of the ordinary during their store visit. Under the high intensity trial (N = 27), the share of shoppers noticing the scent was greater (N = 7; 26 %). Leenders et al. (2019) results from a field experiment – showing that a higher intensity scents drive positive store evaluations, prolonged visits and greater sales – guided us to use the stronger intensity of the scent as in our experiment.

5.3. Results for shopper movements

Data collection for S2 occurred during the summer, when many of the city-dwellers were either traveling or holiday-making and university students working off the campus areas. This resulted in a smaller number of shoppers visiting the store ($N_{control}$ = 6190 vs. $N_{well-being}$ = 5768); equating roughly 40 % of that of S1.

Applying the same technology as in S1, we tracked shopper movements at two locations: at the fruit & veggie island (congruence with the well-being goal) and at the ice cream freezer (incongruence with the well-being goal). Fruit and vegetables typically symbolize health and ice cream indulgence for consumers (Da Silva et al., 2014; Verain, Sijtsema,

Fig. 6. Advertisements fastened on shopping carts (on the left) and baskets (on the right). Finnish wording 'Voi hyvin!' translates to 'Feel good!'.

Fig. 7. Carrot sample tasting stand (on the left) and location of the stand in the store (on the right).

& Antonides, 2016). Unfortunately, the availability and locations of many items at the vegetables and fruit island varied greatly – even on the daily basis. Consequently, we decided to augment the shopper movement analysis at the island by recording the sales data of organic bananas, lemons and broccolis as they were rare examples of products occupying the same place on the island throughout the experiment. As we have stated before, the correspondence between the area tracked and the items sold there is crucial. Moreover, consumers strongly connect organic foods with healthfulness, even though also to some extent with good taste (Danner & Menapace, 2020). Shopper movement analysis at the ice cream freezer was more straightforward. The same products were available at the freezer during the whole study.

On the whole, the vegetable and fruit island did not deliver clear-cut results. During the well-being week, there were more vegetable and fruit island entrances, but that did not influence stops (Table 3), or sales (Table 4). As regards our results from the ice cream freezer, there were no differences in entrances between the control and the goal priming weeks (Table 3). Counterintuitively, shoppers appeared to make more stops at the ice cream freezer (Table 3) during the well-being goal priming week, but nevertheless the sales went down (Table 4).

5.4. Results for sales

As in S1, we wanted to examine how the sales data of a more general food shopping baskets vary. As we tracked the sales of organic bananas, lemons, and broccoli in our shopper movement analysis, we decided to create a broader *organic food* shopping basket for the sales data analysis. It consisted of 21 products (e.g. juices, milk and soy drinks, brans, eggs). As mentioned, this basket probably falls more on the healthy than unhealthy side in consumers' minds (Danner & Menapace, 2020; Luomala, Puska, Lähdesmäki, Siltaoja, & Kurki, 2020), thus congruence with the well-being goal can be expected. To create an antithesis for it, that is also consistent with ice cream indulgence, we formed a *caloric food* shopping basket. We selected 11 products which energy content exceeded 300 kcal / 100 g for this basket (e.g. nuts, chips, chocolate, blue cheese, doughnuts). These products can be regarded to represent vice foods (Ketron, Naletelich, & Migliorati, 2021), assumingly incongruent with the well-being goal.

Our food shopping basket analysis followed the same logic as in S1. When comparing the relative proportions of the food basket sales between the control and well-being goal priming week, we did not find any significant differences. The sales of the organic food shopping basket that presumably represent more accurately health than indulgence, remained in practice at the same level on both of the weeks (Table 4). The caloric food shopping basket sales, in the presence of multisensory well-being goal prime, stayed unaffected as well (Table 4).

Table 5 summarizes our findings from S1 and S2 as a whole. If we view the results for the foods predominantly conveying health symbolism, then a coherent pattern emerges. In 5 out of 8 possible cases, a positive congruence effect can be identified. In three cases no effect is visible. This implies that priming the well-being goal in real stores has the potential to push consumers to move toward spots where healthier options are available – materializing also into greater sales.

The picture with the foods more likely to transmit indulgence symbolism is less evident. Four out of eight effects can be identified, but two of them are positive (more entrances and stops) and two negative (less sales).

Table 5
Summary of the findings.

Well-being goal priming stimuli	Foods conveying health symbolism	Foods conveying indulgence symbolism
S1: Visual	a) Snack shelf movement data- more entrances- more stops- more sales (yogurts, puddings) b) Heart healthy food shopping basket sales data- more sales	a) Animal protein shelf movement data- more entrances- stops unaffected- less sales (minced beef meat) b) Red meat shopping basket sales data- sales unaffected
S2: Multisensory - visual - gustatory - olfactory	a) Vegetable and fruit island movement data- more entrances- stops unaffected- sales unaffected (organic bananas, lemons, broccoli) b) Organic food shopping basket sales data- sales unaffected	a) Ice cream freezer movement data- entrances unaffected- more stops- less sales (bars, cornets, multi-packages) b) Caloric food shopping basket sales data- sales unaffected

Turning the consideration angle from the vertical to horizontal, Table 5 suggests that as a goal-priming approach, visuals seem to outperform multisensory cues. The former produced six effects while the latter only three. We interpret and make sense of these observations next.

6. Discussion

The present study represents a conceptual advancement in understanding the consumer goal – food product symbolism (in)congruity influences in healthy food shopping behavior. Moreover, our empirical findings qualify as the first piece of evidence for the ability of the visual and multisensory cues to activate abstract goal to affect how shoppers move in a real grocery store and what they buy. Our research spurs numerable implications and future research suggestions. These will be tackled in the following; starting with the elaboration of the theoretical implications.

6.1. Theoretical implications

Our results suggest that priming of motivational well-being goal possesses potential in facilitating healthy food consumption behaviors. We propose that yogurts and puddings, vegetables and fruits, and heart healthy-labeled foods carry symbolic meanings (e.g. energy, physical balance, self-management) that "guide" shoppers whose well-being goal has been activated to approach and buy them. The positive effects we found for these products imply that they are symbolically congruent with the well-being goal. This corroborates the literature we used to select these products for the analysis (Bimbo et al., 2017; Ikonen et al., 2020; Verain et al., 2016). On the other hand, we could not report any positive congruence effects for organic foods, even though they supposedly represent health for many consumers (Danner & Menapace, 2020). This may be attributed to the product-specific nature of the olfactory and gustatory stimuli used (basil scent and carrot samples) – reducing their perceived congruence (and influence potential) with the organic foods we studied (cf. Gvili et al., 2018). In fact, Motoki, Nakahara, and Velasco (2023) demonstrated that consumers associate sincere food brands with sweet taste and that perceived congruence mediates this effect.

As regards the existence of the incongruity effects, we need to be more cautious. Even though they can be expected to emerge both on the conceptual and empirical grounds (Paasovaara, Luomala, Pohjanheimo, & Sandell, 2012), we can deliver only moderate support (mostly nonsignificant impacts for indulgence-symbolizing foods). In fact, our findings suggest that after the well-being goal priming, shoppers tend to move toward predominantly indulgent foods such as animal protein products and ice cream (Barone et al., 2021; Da Silva et al., 2014; Piazza et al., 2015) – a sign that can be construed as a congruence effect. Yet, the sales of minced beef packages and ice cream sank that in fact indicates the occurrence of incongruence. At the same time, the sales of more broadly defined red meat and caloric food shopping baskets remained unaffected. Perhaps initially shoppers were drawn to places where palatable foods are sold as the mere exposure to the goal activation stimuli vicariously fulfilled their well-being goal – giving them a moral license to indulge (Wilcox, Vallen, Block, & Fitzsimons, 2009). However, after some time (e.g. 30 s or more) shoppers' reward system may have become satiated by just being around palatable foods (Biswas & Szocs, 2019). If they do not exit the store, they, in a state of reward system satiation, still remain exposed to the priming stimuli and consequently the well-being goal can get reactivated. This may orient their attention toward goal-consistent means and away from goal-inconsistent ones encountered in the environment – serving only to reinforce the well-being goal (Chae, Yoon, Baskin, & Zhu, 2023; Laran et al., 2019). The validity of our interpretation of these findings warrants further investigation.

More generally and in line with the recent developments in the

conceptual metaphor processing, symbolic food meaning and contextual priming literatures, our results (especially in S1) hint support to the idea that sensory stimulation such as visual, olfactory and gustatory cues potentially activate abstract goals and guide consumers' healthy food behaviors – including in-store movements and purchasing. Indeed, a growing body of research suggests that (consumer) goals can be instantiated by exposures to subtle or consciously undetectable stimuli – leading to behavioral effects. Weingarten et al. (2016) *meta*-analysis files a small but robust behavioral goal priming effect caused by exposure to incidentally presented words (e.g. compete, affiliate). Even more importantly, there is now solid proof for the ability of goal primes (e.g. a photo of a woman winning a race) to affect concrete behaviors (e.g. job performance) in real-life settings (e.g. organizations) (Chen, Latham, Piccolo, & Itzchakov, 2021). Vecchio and Cavallo (2019) review focused specifically on evaluating the effectiveness of nudging in increasing healthy food choices - concluding that over 80 % of empirical studies report positive outcomes.

Theoretically, it is always important to consider alternative explanations for the results. Situated conceptualizations have emerged to allow understanding and explanation of when and why priming goals have behavioral effects in various social domains (Papies, 2016). We apply some of these insights to tackle this issue in the context of our research.

Perhaps the most well-established aspect of situational conceptualization pertains to who is being primed. Goals are not equally important to all individuals or consumers and thus, priming cannot be expected to ensue behavioral changes for those who do not value the goal in question. For example, weight control cues (e.g. exposure to thin models, low calorie foods) can trigger controlled eating behaviors, but the effect is largest among those with the strongest dieting goals (Buckland, Er, Redpath, & Beaulieu, 2018). Brečić et al. (2021) found that the effectiveness of local food primes varied significantly across consumer groups – being highest for health- and taste-oriented segments. As we conducted S1 in fall, the typical shoppers included university students, whereas we ran S2 in summer when average city-dwellers make up the key clientele. It is possible that these shopper groups do not appreciate the well-being goal in the same way or that they attach distinguishable meanings to the foods we targeted – reducing the comparability of the results of S1 and S2.

Another factor that can play a role in regulating how goal triggers function is the priming method. Odor primes often operate initially nonconsciously, but sustained exposure increases the likelihood of more conscious processes such as cognitive control responses to kick in (Morquecho-Campos, de Graaf, & Boesveldt, 2021; Morquecho-Campos, Hellmich, Zwart, de Graaf, & Boesveldt, 2022). According to Chen et al. (2021), in comparison to linguistic primes, visual ones fare better. The potential of multimodal cues has broadly started to interest academics. Within the consumer research realm, support for the greater effectiveness of multisensory vis-à-vis single-modal cues in enhancing product experiences and in-store purchasing behaviors has been reported (Helmefalk, 2019; Yoganathan et al., 2019). Mishra et al. (2021) showed that multisensory electronic interface leads to a better use experience of hedonic products. In S1, we relied on visual goal-priming vehicle (digital displays, shelf-talkers, recipes) while in S2 we deployed multisensory goal primes (combining visual, olfactory, and gustatory cues). In our research, the former seemed more effective. All in all, these implications call for a conceptualization that brings together the elements and processes needed to master what various goals, stimuli purported to prime them, and products and behaviors presented as a way to attain them mean, to whom and for how long.

6.2. Study limitations and future research suggestions

As always, no study is perfect – as is the case with ours. First, as our research is an unobtrusive field experiment, we cannot verify that it is the consumer goal – food symbolism (in)congruities that really drive the

effects. More controlled experiments including measurements of goal salience and food meanings could be conducted to ascertain this. Thus, our study is limited in that we cannot know, if the well-being goal really was primed in the store. For instance, when Desmichel and Kocher (2020) demonstrated that hedonic goals, when activated, decrease consumers' brand comparisons in multi- but not in single-brand stores, the study participants were presented explicit items measuring the level of goal activation. These kinds of manipulation check measurements are a standard procedure in many controlled experiments. However, in our case it was not possible to do without revealing to customers that a study is in fact underway in the store and consequently undermining the ecological validity of our research approach (unobtrusive field experiment). Thus, combining both approaches would be optimal in further research.

Second, we collected data on one (small) grocery store only on two different occasions. Even though this decision somewhat helps to standardize the multitude of potentially confounding factors, it obviously hampers the generalization of our findings to concern other types of stores. Yet, we dare to question Roggeveen, Nordfält, and Grewal (2016) assertions that in small grocery stores digital displays and especially when they show non-price content do not influence sales (see also Brečić et al., 2021; Bauer, Aarestrup, et al., 2022). As we demonstrated, also visual and to lesser extent multisensory cues can work in influencing shoppers' consumption behaviors. More studies, employing more diverse range of goal-priming devices and time frames should be conducted in various types of retail and restaurant environments to establish the boundaries of this influence strategy.

Third, the interim between the S1 and S2 equaled eight months. In practice, this meant that our visual goal-priming medium changed and that the majority of the S2 participants probably consisted of summer holiday-makers. Holidays typically improve people's mood and make them to behave more impulsively and hedonically (Lahav, Shavit, & Benzion, 2018). In other words, the S2-shoppers could have followed a more lenient food purchasing and eating regime than the S1-shoppers.

Fourth, gauging shopper movements as shelf area entrances and stops admittedly provides a rather narrow outlook on all actions transpiring at grocery stores. More specific motions such as shoppers' gaze fixations, emotional states (see e.g. Chen et al., 2021; Garaus, Wagner, & Rainer, 2021) and hand reaches for the specific products from the shelf would provide important additional information concerning the effectiveness of goal-priming efforts within stores. In our animal protein shelf tracking spot, certain chicken and fish products were for sale too. This can confound things here as white meat and fish cue far more health associations that red meat does (Possidonio, Prada, Graca, & Piazza, 2021). With the gaze fixation or hand reach data, we would have been able to eliminate this source of potential error. The advances in cost-effective human behaviour measurement solutions create new possibilities for the next generation consumer research that can combine objective quantitative movement patterns with qualitative understanding of meanings of priming stimuli.

Fifth, our two studies were not identical in terms of the tracked shelf areas and products used for the sales analyses. In the first study, the area under tracking included snack products (healthy) and animal protein products (unhealthy) and sales of heart-healthy foods versus red meat products were observed. In the second study, we tracked different areas (fruit & veggie island and ice cream freezer) and monitored organic versus calorie-dense product sales. This limits the comparability of our studies and constrains the conclusions made on the effectiveness of single versus multi-sensory priming, especially in the case of food sales. The heart-healthy products most likely are perceived explicitly healthy, while the organic products can carry several other meanings. Thus, the future studies should take this into account and aim for more robust/controlled study designs.

Besides promoting consumer health and well-being, encouraging more sustainable food choices is of paramount importance. Hence, future research should address, if shoppers' responsibility goal can be activated to steer their purchase behaviour toward more environment- and climate-friendly direction. Kristensson, Wästlund, and Söderlund (2017) presented the customers written questions such as "Are you going to buy bananas? We have environment-friendly labelled and non-environment friendly bananas right over there" and found that merely asking enhance sustainable choices. They explained these results by resorting to the semantic (but not goal) priming theory. Sigurdsson et al. (2020) discovered that social influence cues in the store (e.g. shelf tag "Top seller") increased fish purchasing. It is possible that they succeeded in activating shoppers' goal to conform to others' sustainable actions. Bauer, Aarestrup, et al. (2022) documented a small increase in fruit and vegetable consumption as a result of a nudging intervention and believe that supermarkets could play a more active role in fostering a sustainable food transition by employing "nudges for good".

6.3. Conclusions and managerial implications

Consumers strive towards making healthy food choices. In this study, we argue that visual, olfactory and gustatory cues can activate shoppers' well-being goal and guide their in-store movements and healthy food purchasing behaviours. We tested the assumption in two field experiments in a supermarket. Visual well-being goal priming (in comparison to control) in Study 1 yielded more snack shelf entrances and stops along with the increased sales for yogurts, puddings, and heart-healthy labelled products. In Study 2, we primed well-being goal with multisensory cues (visual, olfactory, gustatory). The results showed that during the priming condition (in comparison to control), customers made more entrances to fruit and veggie island within the store. However, no differences were observed in food sales.

During both studies, we monitored customers' movements around goal-incongruent food shelves (S1: animal protein shelves, S2: ice cream freezer) and food purchases (S1: beef minced meat and larger red meat shopping basket, S2: ice cream and larger caloric foods shopping basket) as well. In S1, customers made more entrances to animal protein shelves, but the minced beef meat sales dropped while the larger red meat shopping basket sales remained unchanged. We found similar pattern in S2, customers stopped more often in the ice cream freezer, but the ice cream sales decreased. The larger caloric shopping basket sales did not change. To sum up, the results from our two field experiments partially supported the assumption that well-being goal priming can have potential to facilitate healthier food choices and also affect the in-store movements.

Our results deserve some discussion from the managerial perspective. They show that even though there are many in-store marketing tools to use, it is challenging to predict which of those actually work in the way management wishes. To help to deal with this riddle, we offer two managerial insights. First, even subtle cues (i.e. in our case 20-second video looping on digital displays) had the capability to prime shoppers' abstract goals. Creative design of product packages (Van Ooijen, Fransen, Verlegh, & Smit, 2017), point-of-purchase materials (Hagen, 2021), and even shopping equipment (Estes & Streicher, 2022) to experiment how they affect sales of various products can prove worthwhile. Naturally, development and management of a successful goal-priming process and protocol require efforts and probably trial-and-error learning. However, recent conceptualizations such as Grewal, Noble, Roggeveen, and Nordfalt (2020) framework for understanding new in-store technology infusions can assist in this. Technological advancements, including more sophisticated and interactive digital price tags, scent machines, smart shelves, augmented and virtual reality solutions, and service robots, enable the creation of more local and individualized goal-priming constellations within stores. These new technologies can provide tools for following the effects of goal-priming activities in real time and with great precision.

Second, retail managers should continuously monitor the meanings consumers attach to the products on sale as the incongruence between the focal goal activated and the product symbolism can backfire and

suppress the sales. This analysis can sometimes produce startling insights. For example, Wang et al. (2020) discovered that priming the sense of power led to more healthy food choices, especially among those with low socio-economic status. In turn, in Farmer, Breazeale, Stevens, and Waites (2017) study, the sustainability information on snack foods ushered consumers to eat less (i.e. more healthily). Interestingly, even hedonically evocative names (presumably congruent with indulgence goal) can catalyse healthy food choices (Turnwald & Crum, 2019).

CRediT authorship contribution statement

Harri T. Luomala: Conceptualization, Methodology, Formal analysis, Writing – original draft, Funding acquisition, Project administration. **Sari Järvinen:** Conceptualization, Methodology, Investigation, Formal analysis, Writing – original draft, Funding acquisition, Project administration. **Johannes Peltola:** Conceptualization, Methodology, Writing – review & editing. **Kyösti Pennanen:** Formal analysis, Writing – review & editing. **Jenniina Sihvonen:** Conceptualization, Methodology, Investigation, Formal analysis, Writing – original draft.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Data availability

Data will be made available on request.

Data availability

Data will be made available on request.

Appendix A. Supplementary material

Supplementary data to this article can be found online at https://doi.org/10.1016/j.foodqual.2023.104882.

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