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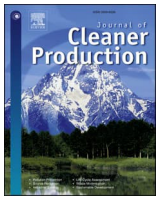

From trash to table: Understanding stigma in sustainable food consumption

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HIGHLIGHTS

- Examines Finnish media narratives that stigmatize roach as a trash fish.
- Demonstrates consumer stigma associated with roach as a food ingredient.
- Tests whether a celebrity chef can shift perceptions of a stigmatized food.
- Highlights the need for cultural reframing to support acceptance of low-valued fish.

1. Introduction

The industrialized production and processing of food are rife with environmental and ethical issues (e.g., Lang and Heasman, 2015). Accordingly, there has recently emerged a vast discussion and debate regarding the possibilities of changing food consumption and production habits particularly in Western societies. For example, the planetary health diet, emphasizing primarily plant-based foods while allowing modest amounts of animal products, was developed to promote both human health and environmental sustainability (Willett et al., 2019). While this framework highlights a substantial reduction in the consumption of conventional animal proteins such as beef and pork, it also opens opportunities for more sustainable sources of animal protein.

One potential pathway toward more sustainable animal-protein consumption lies in the use of under-utilized fish species, often stigmatized as "trash fish". The term typically refers to species caught as by-catch that hold low market value (Laamiri et al., 2015). Consumers frequently associate these fish with negative stereotypes regarding taste, sensory qualities and convenience (Badr et al., 2015), even though taste tests show that products made from such species can be highly palatable (Branciari et al., 2017). Some species are further stigmatized because their consumption is linked to poverty (Hamada, 2012). As a result, introducing these fish as alternative protein sources is challenging, since the acceptance of sustainable options depends heavily on whether consumers perceive them as "normal" (Rettie et al., 2014). We therefore suggest that the trash-fish stigma constrains both the range of products manufacturers are willing to develop and consumers' ability to make informed, sustainable choices (see Ellis et al., 2019; Greenacre et al., 2016; Ndichu and Rittenburg, 2016).

In this study, we examine possibilities for reduction of the stigma associated with trash fish to enhance understanding of the role of stigma in sustainable food consumption. We understand stigma as "a mark placed on a person, place, technology, or product associated with a particular attribute that identifies it as different and deviant, flawed or undesirable" (Kasperson et al., 2001, 19). While being essentially a social construction, what is stigmatized varies across time, place and group (Meisenbach, 2010). Thus, stigmas mirror culture and society and are not necessarily permanent but more likely in constant flux (Coleman, 1986). Consequently, some deviant consumption practices and products that were once marginal and stigmatized can become ordinary consumption choices over time. However, in the field of consumer research, the extant research on stigmatized products and the processes of stigma transformation are still scarce (Bailey and Waronska, 2015; Rocha and Veloso, 2024).

We focus on stigma transformation by studying the formation of the stigma of trash fish and examining the role of celebrity endorsers in the stigma reduction. Celebrity endorsers have been found to generate favorable attitudinal and behavioral responses among consumers (e.g., Lane and Fisher, 2015; Amos et al., 2008). In the context of food, celebrity chefs can be socially and culturally influential endorsers who have the power to determine legitimate taste (Bourdieu, 1984), and who therefore may strongly affect identifications and practices among

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consumers (Lane and Fisher, 2015). The role of celebrity chefs in normalizing the perceptions of stigmatized food products has rarely been examined (one exception being Greenacre et al., 2016). Accordingly, our objective is to find out whether the endorsement of a celebrity chef affects consumers' perceptions on roach (*Rutilus rutilus*), which is generally considered to be trash fish in the Finnish context (Hannikainen, 2023).

Our empirical data are threefold, combining media data, quantitative consumer survey results and quantitative data gathered through an experiment. The three datasets function as parallel sources of evidence, each addressing a different dimension of the research problem. By combining these datasets, we examine whether roach is framed as a stigmatized trash fish and how such stigma is constructed (media data), whether stigmatization is reflected in consumers' perceptions of roach as a food ingredient (consumer survey) and how celebrity endorsement influences consumers' perceptions of roach dishes (experiment). Our study contributes to the discussion on food stigma formation and the effectiveness of celebrity chef endorsements in reshaping consumer perceptions. The findings highlight the role of environmental and socio-economic narratives in sustaining food stigma, positioning roach as not only undesirable but also as a symbol of wider social issues.

2. From stigmatized to normal through celebrity endorsement

Traditionally, stigma has been understood as a physical mark or personal attribute used to reject or exclude individuals from a wider community. Goffman (1963) conceptualized stigma as arising from physical deformities, character flaws or tribal identities. More broadly, stigmatization results from social comparison and functions as a mechanism for assigning a tainted or spoiled identity (Hudson, 2008; Link and Phelan, 2001). It operates as a power process in which an attribute deemed deviant triggers negative judgements and marginalization from full social acceptance. Deviance, central to stigma, is defined in relation to what is considered normal. Rettie et al. (2014) distinguish between descriptive and normative understandings of normality; in stigmatization, these become blurred so that what is normal becomes prescriptive and what is not becomes deviant (Rettie et al., 2014; Hudson, 2008).

In consumer behavior studies, stigma has been extended to products based on their cultural and social meanings (Vaes, 2014; Ellen and Bone, 2008). Accordingly, we understand stigmatized products similar to Bailey and Waronska (2015, 219) as "products whose distribution and sale are legal, but whose purchase, use, and disposal take place in a social context marked possible by anxiety, controversy, embarrassment, risk of disapproval, shame, or unease, primarily on the part of the purchasing or consuming party". Food, however, represents a distinct category of stigmatized products because of its close connection to the body, health, and culturally embedded systems of classification (e.g., Fischler, 1988). Food consumption is governed not only by individual preferences but also by shared norms concerning edibility, purity, and appropriateness (e.g., Higgs, 2015; Pliner and Salvy, 2006). As a result, food evaluations often involve social, moral, and sensory dimensions, making food particularly susceptible to processes of stigmatization (Higgs, 2015; Fallon and Rozin, 1983).

Product-related stigma is not inherent to the product but reflects exaggerated negative interpretations, which in food contexts often diverge from expert assessments (Ellen and Bone, 2008; Greenacre et al., 2016). Essentialist beliefs about food shape—such as viewing misshapen produce as fundamentally flawed—can drive rejection (Gomez et al., 2024; Spielmann et al., 2024). Genetically modified foods or ingredients like monosodium glutamate may also be stigmatized due to prejudices about taste or healthiness despite scientific evidence of safety (Ellen and Bone, 2008; Greenacre et al., 2016). Affective responses, particularly disgust, may further shape food rejection. Disgust, often described as the "yuck factor", acts as a rapid, intuitive mechanism that can override deliberative assessments of safety, quality, or sustainability (Rozin and Fallon, 1987). These responses are culturally learned (Fischler, 1988; Caplan, 2013). Foods may therefore be rejected not because they pose objective risks but because they evoke association with contamination, decay, or social undesirability (Caplan, 2013). While disgust alone does not constitute stigma, it reinforces negative meanings and social distancing from particular foods and their consumers.

When related to a product, stigmatization refers to unwarranted interpretations of the product attributes and social consequences of its use being much more damaging to the product demand than misleading marketplace information (Ellen and Bone, 2008). The stigmatizing attributes related to a product are namely transferred to the person consuming the product (Jain et al., 2019). Thus, according to Vaes (2014), product-related stigma can initiate a stigmatization process in which people externalize the stigma meanings, making them perceptible to the product user. While individuals purposely strive to maintain a positive social identity, they will distance themselves from products that might threaten their self-identity and to avoid a negative self-concept (Banister and Hogg, 2004). Accordingly, responsible consumers may be subject to ambivalent stereotypes that can reduce their appeal as role models and even provoke negative reactions such as exclusion or contempt, ultimately limiting the broader adoption of sustainable consumption (Antonetti and Maklan, 2016; Malila et al., 2025). Extending beyond these individual-level identity processes, food-related stigma is closely linked to broader systems of social differentiation and the construction of taste hierarchies (Bourdieu, 1984). Certain foods become associated with low status, necessity, or lack of refinement, while others are valorized as markers of distinction and cultural capital (ibid.). These hierarchies are historically contingent yet persistent, shaping not only preferences but also perceptions of legitimacy and desirability (Johnston and Baumann, 2015). In this sense, stigma attached to particular foods may reflect wider social anxieties related to class, identity, and belonging rather than intrinsic qualities of the food itself.

In this study, our interest extends beyond the stigmatization of trash fish and its consequences to the potential processes of stigma reduction—understood as the transformation of a stigmatized attribute from deviance toward normality (Warren, 1980). Because stigma is socially constructed and culturally contingent, it is not inherently permanent. However, changing the status of a stigmatized product is far from straightforward, as it involves "a particular form of struggle over difference through which new consumption norms get constructed" (Sandikci and Ger, 2010, 18). Research on product-related stigmas highlights the role of communicative practices in this transformation (e.g., Ndichu and Rittenburg, 2016; Jain et al., 2019) Importantly, these processes are intertwined with the (re)production of power relations (Sandikci and Ger, 2010). As Link and Phelan (2001) argue, meaningful change must ultimately confront the root causes of stigma: either by shifting the deeply held beliefs of powerful groups that drive negative labelling or by altering the conditions that allow these groups to impose their interpretations as dominant. Prior research has examined stigma in relation to issues such as health risks, technological interventions, or product appearance (Ellen and Bone, 2008; Greenacre et al., 2016). Much less attention, however, has been given to foods whose stigma stems primarily from cultural hierarchies and socially constructed meanings rather than perceived risk or functional inferiority. This gap is particularly important for understanding how stigmas attached to underutilized or low-value species might be challenged or reduced, especially when these products carry ecological and nutritional benefits that remain overshadowed by culturally embedded perceptions.

Previous research shows that the cultural and social influence of celebrity chefs in shaping consumers' perceptions of legitimate taste has grown substantially (e.g., Phillipov and Gale, 2018; Powell and Prasad, 2010). Celebrity chefs, especially those familiar from television, often combine the roles of journalist, activist and even parental authority into a single charismatic persona (Scholes, 2011, 45). Through this position, they can both democratize food knowledge and practices and simultaneously steer consumers toward particular foods, cooking styles and

purchasing habits (Abbots, 2015, 234). In this sense, celebrity chefs act as intermediaries who construct meanings around what constitutes appropriate consumer choices (Powell and Prasad, 2010, 113). Their cultural and political authority has also been shown to enhance the differentiation of products in crowded food markets, whether referring to kitchen equipment or raw ingredients (Powell and Prasad, 2010). Beyond this broader cultural influence, research on endorsement provides a more fine-grained account of how celebrity figures shape consumer responses at the level of specific products.

At the level of individual products, research on food endorsement suggests that celebrity figures can shape consumer perceptions by transferring culturally assigned meanings—such as expertise, authenticity, status or aspirational lifestyles—to the products they promote (McCracken, 1989; Wang and Liu, 2023). This meaning-transfer process has been shown to influence beliefs, attitudes and behavioral intentions across a range of food contexts (Wong et al., 2020; Najar et al., 2024). Endorsement effects also hinge on consumers' ability to identify with the endorser, which can enhance the perceived legitimacy and desirability of the promoted product (Carlson et al., 2020; Simon and Cambefort, 2025). These mechanisms help explain why celebrity chefs could contribute to reframing negatively perceived food. In fact, Huo et al. (2022) showed that information indicating that a restaurant is owned by a celebrity chef can enhance consumers' attitudes and purchase intentions toward it.

Although celebrity chefs have been examined as "moral entrepreneurs" seeking to shift institutionalized food practices toward more sustainable directions (e.g., Hollows and Jones, 2010), their potential role in reducing stigma remains under-explored. One exception is Greenacre et al. (2016), who investigated whether the destigmatization of monosodium glutamate could be advanced through factual information or the emotional appeal of a celebrity chef; in that case, information proved more effective. While this offers an interesting entry point into the role of celebrity chefs in destigmatization, we argue that these findings may not translate directly to the context of trash fish. The stigma surrounding monosodium glutamate is rooted in health and safety concerns, whereas trash fish are not typically stigmatized on the basis of health risks. Instead, their stigma appears to stem from cultural anxieties related to social differentiation (e.g., Hamada, 2012).

Taken together, these theoretical perspectives guide our three-part empirical design. Study 1 examines whether roach is stigmatized in Finnish public discourse and identifies the arguments through which this stigma is constructed. This qualitative analysis does not aim to quantify narratives; rather, it provides the contextual foundation for the subsequent studies. Study 2 investigates whether the stigma is reflected in consumers' food-related evaluations when making everyday choices. Study 3 then tests whether stigmatized perceptions can be shifted through celebrity endorsement, allowing us to assess whether a culturally authoritative intermediary can contribute to stigma reduction. This sequential design enables us to trace how food-related stigma is formed, how it manifests in consumer perceptions, and whether it can be meaningfully transformed.

3. Study 1: The stigmatization of roach in the Finnish media

3.1. Empirical data and data analysis

In this research, the (de)stigmatization of trash fish was examined through the case of roach, one of the most common wild fish species in Finland (after European perch and pike). Although roach does not tolerate acidic waters well, it thrives in a wide range of aquatic environments and is found in both lakes and coastal areas. Historically, roach was widely consumed in Finnish agrarian society, but its reputation declined with industrialization and urbanization, becoming increasingly associated with the stigmatizing label of "trash fish" (Hannikainen, 2023). This suggests that the stigmatization of roach is rooted in its historical reclassification during Finland's modernization process. As consumption of more expensive imported fish came to signal cultural capital and social status, roach was relegated to a lower symbolic position (see Lindblom and Mustonen, 2015).

The first dataset was gathered to examine the arguments used to stigmatize roach as trash fish in the Finnish context. We chose to examine the stigmatizing arguments through media analysis since previous studies have shown that media has an important role in stigmatization through its power in creating and maintaining stereotypes, thus shaping consumer perceptions (Siltaoja et al., 2020). Similarly, transitions concerning what people consider normal may be stimulated by the media (Rettie et al., 2014). Accordingly, we gathered media data that covered newspaper articles related to roach from the largest morning subscription newspaper in Finland, namely Helsingin Sanomat (HS). The newspaper was chosen due to its broad circulation and, thus, its ability to reach people and act as an opinion leader. However, it needs to be highlighted that while media discourse is an influential arena for the (re) production of stigma, it is only one contributing factor among broader cultural, historical, and socio-economic processes that shape perceptions of roach.

The media material covers the years 1990–2018. Public debate on eutrophication in Finland intensified in the early 1990s, giving rise to a contemporary discourse in which some fish species became symbolically associated with environmental degradation and low value. Accordingly, 1990 provides a natural starting point for examining the emergence of contemporary stigma. The end point of 2018 aligns with the timing of our consumer survey, ensuring that the media analysis captures the discursive context preceding the consumer perceptions examined in Study 2. The media data included altogether 234 newspaper articles in which roach was mentioned. In the first phase of the qualitative thematic analysis, we examined how each article framed roach and identified commonalities and differences in language use. This resulted in 12 categories: eutrophication of waterways (66), pollution (12), acidification (5), animal welfare and ethics (5), fishing competitions, prices and record catches (22), fishing stories (28), food recipes (11), human food (52), professional fishing (8), species characteristics and spread (11), animal food (10) and other (4). We then reread the articles in each category to identify negative (stigmatizing) language and discrediting associations, paying attention also to implicit meanings conveyed through contextual associations (see Purcell et al., 2014). Based on this analysis, the articles were classified as stigmatizing (99), neutral (87) or positive (49). The categorization of articles into stigmatizing, neutral and positive frames was conducted collaboratively by the three first authors. All articles were read and discussed jointly, and classifications were reached through consensus. This iterative approach ensured shared interpretation of the categories. Fig. 1 illustrates the annual fluctuation across these groups. Despite considerable year-to-year variation, the Fig. 1 suggests a visible increase in positive articles after 2008; however, this observation is descriptive and not based on statistical trend analysis.

As a result, a total of 99 media texts were analyzed for their relevance to stigmatization themes. These texts fall into categories such as eutrophication, pollution, the spread and characteristics of different fish species, fishing stories, professional fishing and animal food. The analysis focused on identifying discursive patterns, framing strategies and language choices that contributed to stigmatization. Each text was systematically and inductively examined for recurrent metaphors, evaluative terms and narrative structures that portrayed roach in a negative or marginalizing light, paying particular attention to how the texts reinforced stereotypes.

3.2. Results

The dominant framework through which roach was stigmatized in the media concerned the eutrophication of waterways. Roach, often labelled as trash fish or less valuable fish, was portrayed as benefiting from eutrophication at the expense of more "valuable" species. Media

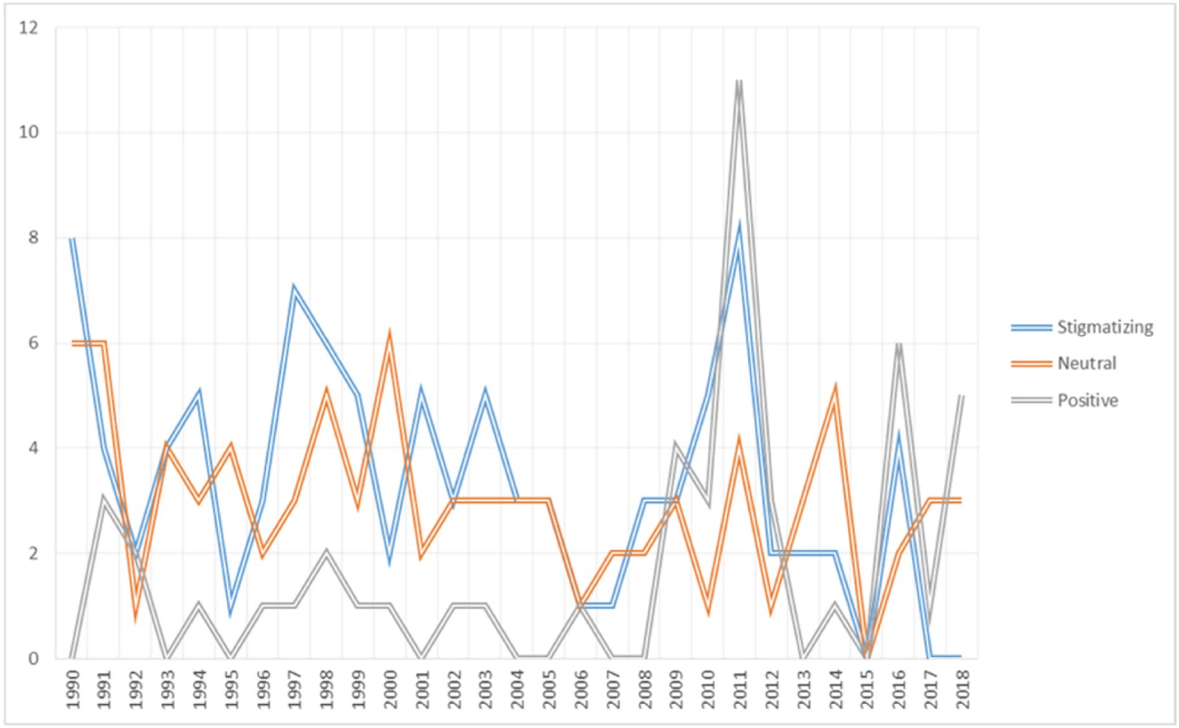

Fig. 1. The annual division of the newspaper articles in three categories (number of articles).

texts described situations where "*roach has taken over a lake, the valuable fish disappeared and the balance in the lake was disturbed*" (HS 20.8.1990). While depicted as a resilient species, roach was simultaneously framed as partly responsible for deteriorating water conditions. Although industry, agriculture, community waste and climate change are typically identified as the main drivers of eutrophication, the proliferation of roach and other so-called trash fish was also presented as a contributing factor, for instance by increasing phosphorus levels. As one article noted, "*The researchers encourage effective roach fishing but still admit that roach is not solely responsible for the blooming algae in the lakes nor the oxygen deficiency, even though it has a major role to play in it*" (HS 12.5.1999). Another text elaborated: "*While trying to find something to eat, these red-eyed fishes stir the sludge and release eutrophic nutrients … So it's no wonder that people are trying to get rid of them*" (HS 12.5.1990). Similarly, a later article stated that "*A lake full of roach could be described as a piggery*" (HS 9.10.2000). Overall, roach was consistently framed as an environmental problem.

Accordingly, the majority of media texts concentrating on eutrophication described the efforts to fish roach (as well as other trash fish) with seine and fyke nets in order to improve the ecological condition of the waterways. Usually, some numeric data were attached to advance the point of view, like "*Last summer the professional fishers succeeded to remove 165 000 kilos of roach from Vesijärvi*" (HS 12.5.1990). In relation to the fishing operations, it was often reported that: "*When the number of roach decreases, the water starts to become clear and there is more living space for those fish that are important for people, like perch, pike and pike perch*" (HS 28.11.1994). As the media texts show, in the context of eutrophication, the stories often included normative arguments where some fish species were rated as more important or valuable than roach.

After being caught, roach became a different kind of problem, as media texts often highlighted difficulties in finding uses for large catches. For instance, one article noted that "*Last year the trawled trash fish, mainly roach and European smelt, were delivered to a refuse dump*" (HS 25.6.1990). When roach were discussed in connection with eutrophication, they were rarely framed as human food. Instead, they were commonly described as feed for fur animals: "*Approximately 100 tons of roach were fished from Isojoki over four weeks … The majority of the catch went to fur animal farms*" (HS 30.11.1991). Yet even this use was often deemed economically unviable: "*There was no point in delivering the catch for the mink fee to a fur farm since the price paid to the fisher would not have* covered *the delivery costs*" (HS 30.11.2011). In some cases, large catches were used as fertilizer (HS 24.10.2009). Overall, the media texts underscored that, despite the widely acknowledged importance of improving waterways, "*the utilization of less valuable fish is still a problem*" (HS 11.3.1993).

Most of the fishing stories were neutral, as roach were mentioned as part of the catch. Still, in some texts (7/28), negative, stigmatizing arguments were associated with roach when fishers described their hobbies. Accordingly, roach were considered not suitable as human food but referred to as "*cat food*" (HS 2.8.1991), an "*undesirable catch*" (HS 25.10.1996) and "*trash*" (HS 20.11.2003). For example, one of the hobby fishers stated, "*I have got a lot of whitefish and burbot. But the trash fish, like roach and ides, I leave for the sea eagles*" (HS 4.2.2009). Similarly, the stories of professional fishers included stigmatization of roach as trash (5/8). These stories further highlighted the time and other resources wasted on roach, described here by one of the professional fishers as follows: "*It takes an unreasonably long time to separate the valued fish from the trash fish, like roach and other small fish, which don't provide any economic income*" (HS 8.6.2010).

In addition to fishing stories, there were several other articles representing roach as either trash fish or "unsuitable for humans" and thus proper for minks, seals and cormorants. In one case, roach was considered to be ostracized even by other animals. Accordingly, the article describes an industrial process of refining roach for a cat food product. However, the process did not lead to a commercially viable product, as the taste of the food was not appealing to the cats.

> *The process of refining roach to cat food ended miserably. [Firm name] ended the experiment after receiving a few hundred kilograms of roach, which was added to cat food in small amounts. … The routinized cat jury was provided some roach products to taste. Cats found the taste of the food odd. 'It [cat food] had a stuffy smell', said the product group manager. … Cats prefer Baltic herring and rainbow trout to roach.* (HS 5.10.1997)

In summary, stigmatizing arguments presented in the newspaper articles refer to roach as trash fish and are less valuable compared to other fish species, unsuitable or ineligible as human food, sometimes even for domestic animals, and considered a waste of resources. Instead, roach are depicted to play an important role in causing or enhancing environmental problems in waterways and are best utilized as animal feed or raw material for biofuel, thus revealing both environmental and socio-economic considerations in the discourse surrounding roach.

4. Study 2: Consumer perceptions of roach as a food ingredient

4.1. Empirical data and data analysis

The second dataset was gathered to examine how the existing stigma is reflected in consumers' perceptions of roach as a food ingredient. The consumer perceptions were studied through an e-survey conducted by a national consultant company in May 2018 using their consumer panel, which included 15 000 Finnish households. Before the data collection, the e-questionnaires were tested with a smaller sample group (n = 20) in March 2018. The final sample (n = 412) was taken from respondents over 18 years old, in a way that the respondents were divided into three age groups (18–34 years, 35–54 years and over 54 years) that were balanced in the data. The sample was 60 per cent female.

To examine consumer perceptions, two identical questionnaires were created: one focusing on roach (n = 211) and the other, serving as a control group, on chicken (n = 201). Chicken was selected because its consumption in Finland has risen despite an overall decline in meat consumption (MTK, 2019), making it a familiar, everyday protein source. Food perceptions were measured using a slightly modified version of the Eating Motivation Survey (TEMS) by Renner et al. (2012). TEMS was selected because it provides a theoretically grounded and empirically validated framework for examining a broad spectrum of food-related motives, including functional, symbolic, and emotional dimensions. In doing so, it captures a wider range of fundamental meanings of food than, for example, the Food Choice Questionnaire (see e.g., Onwezen et al., 2019) or the Meaning of Food in Life Questionnaire (see e.g., Arbit et al., 2017). The multidimensional structure of TEMS aligns closely with our research focus on the meanings and attitudes associated with food. Moreover, TEMS has been applied in a range of studies and cultural contexts, including Finland, where it has produced coherent and interpretable results (Vainio et al., 2016; Matilainen et al., 2024), supporting its suitability for the present study. The questionnaire was adapted by replacing first-person with third-person pronouns to reduce socially desirable responses, using two items per motive, and omitting the original factors need/hunger, pleasure and habit while adding ethicality. The final set of motives included taste/liking, affect regulation, health, tradition, sociability, price, naturalness, visual appeal/appearance, weight management, societal norms, impression management (social image), convenience and ethicality, each applied to dishes prepared from either roach or chicken.

We further measured how consumers' perceptions towards roach and chicken (control group) influence their emotional responses towards people who consume food products made of either of those raw materials. The BIAS Map proposes that people's evaluations of social groups systematically give rise to specific emotional reactions, which in turn shape behavioral tendencies toward those groups (e.g., Malila et al., 2025). Accordingly, we modified the measure developed by Ivens et al. (2015) and asked to what extent respondents believed an average Finnish consumer feels admiration, contempt, pity, or envy towards people who consume roach or chicken food products. Finally, we included questions related to the respondents' demographic characteristics.

We started the statistical data analysis by comparing the two samples (Pearson's Chi-Square -test) to confirm the similarity of the respondent groups related to both food ingredients. There was no statistical difference on the distribution of the basic background variables such as age (p = 0,883), gender (p = 0,934), place of resident (rural-urban) (p = 0,532) and the size of household (p = 0,621). As we did not find any significant differences related to the demographic characteristics of the two respondent groups, it can be argued that the samples are comparable. Each factor indicating a different motive for a food choice was measured using two statements rated on a seven-point Likert scale. As two items -measurement was applied, the Spearman-Brown coefficient was utilized to analyze the construct reliability (Eisinga et al., 2013) with 0.6 as a threshold for the reliability (Brunsø et al., 2004). Due to the poor construct reliability (see Table 1), the factor societal norms was analyzed using only a single item (marked with * in the results). We judged that the low reliability was at least partly attributable to translation issues, as some statements were difficult to translate in a way that preserved their intended meaning for respondents. The retained item was selected based on the clarity and comprehensibility of its translated wording. For the statistical analysis, the normality of the variables was checked using the Shapiro-Wilkes test. As it revealed that the variables did not follow the normal distribution, the differences between the groups (roach and chicken) were analyzed using the independent samples Mann-Whitney *U* test (Nachar, 2008). The statistical analysis was made using the SPSS version 25 -program.

4.2. Results

While the newspaper analysis demonstrated the discursive stigma associated with roach, we now turn to examine whether stigmatization exists on consumers' perceptions – more specifically their food consumption motivations. Accordingly, we deepen our analysis on stigmatization based on an assumption that consumption is a realm where power is both perpetuated and challenged as people can and do use consumption practices to produce what is regarded to be normal food (see Sandikci and Ger, 2010).

One way to define what is considered normal in food consumption is to examine the motives that guide everyday eating behaviour (Renner et al., 2012). Our results show that consumers viewed chicken more favourably than roach: it was perceived as tastier, healthier and more convenient, and thus more accessible (see Table 2). Chicken was also considered better for regulating emotions, more traditional and sociable, and more affordable. In addition, it was seen as more suitable for weight management, more appealing in appearance, and more effective for impression management, while aligning more closely with prevailing social norms. Thus, according to the results, chicken received higher scores on most food-consumption motives. Roach outperformed chicken only on naturalness and ethicality, meaning consumers viewed it as a more natural and ethically preferable option. All differences between

Table 1
Reliability analysis (Spearman-Brown coefficient) of factors indicating different motives for food consumption.

Food consumption motives	Spearman-Brown coefficient/roach
Taste/liking (Delicious + Tasty)	0.851
Health (Nutritious + Healthy)	0.603
Convenience (Effortless + Easy to prepare)	0.841
Affect regulation (Mood-lifting + Affects mood)	0.784
Tradition (Traditional + Familiar)	0.695
Sociability (Suitable for shared moments + Encourages socializing)	0.833
Price (Affordable + Good value for money)	0.760
Naturalness (Natural + Free from additives)	0.651
Societal norms (Socially acceptable)	0.349
Visual appeal (Visually appealing + Pleasant appearance)	0.862
Weight management (Helps maintain weight + Low-calorie)	0.769
Ethicality (Environmentally friendly + Ethical)	0.784
Impression management (Trendy + Makes an impression on others)	0.750

Table 2
The means and statistics on food consumption motives regarding roach and chicken, measured by Likert's seven point -scale.

	Roach (n = 211), mean	Chicken (n = 201), mean	p (Mann-Whitney)
Taste	3.55	5.41	<0.001
Health	4.59	5.47	<0.001
Convenience	3.50	5.49	<0.001
Affect regulation	3.20	4.34	<0.001
Tradition	3.93	5.14	<0.001
Sociability	3.47	5.46	<0.001
Price	4.68	5.38	<0.001
Naturalness	4.98	4.64	0.001
Societal norms *)	4.72	5.52	<0.001
Appearance	3.15	4.82	<0.001
Weight management	4.53	5.31	<0.001
Ethicality	4.91	4.16	<0.001
Impression management	3.45	4.01	<0.001

the two ingredients were statistically significant. These findings point to a central tension: although sustainability-oriented foods like roach may resonate with emerging ethical values, they remain marginal in everyday eating because they conflict with entrenched notions of what counts as "normal" or desirable food.

When further examining the differences between these two food ingredients, we found that devaluation of roach was based above all, on consumers' perceptions of its convenience, taste, sociability and appearance (see Table 2). Accordingly, roach was not considered as convenient as chicken, signifying that roach is difficult to purchase, and its preparation is time consuming and difficult. Similarly, consumers doubted the taste of roach and its visual appearance. They also questioned the sociability of roach as a food ingredient which encompasses the social reasons for choosing to consume a specific food.

Our findings show that demographic factors—particularly age—shape how consumers perceive specific foods such as roach (see Fig. 2). Younger participants expressed more positive attitudes toward roach than older respondents, with statistically significant differences in taste, convenience, affect regulation, tradition, sociability, appearance and perceived social norms. This suggests that younger consumers are more open to alternative foods, consistent with earlier research highlighting their greater emphasis on short-term benefits and social image. Older consumers, by contrast, were more sceptical of roach, especially regarding its convenience and social acceptability, although they rated its ethicality higher than younger participants. These results illustrate how food preferences evolve across age groups and underscore the importance of demographic variation in shaping food perceptions. In contrast, gender differences were minimal: men and women evaluated roach similarly, except that women considered it more traditional ($p < 0.001$, Mann–Whitney) and healthier ($p = 0.022$, Mann–Whitney) than men.

When assessing attitudes towards others who favour either chicken- or roach-based food (using the scale by Ivens et al., 2015), a statistically significant difference emerged only for the construct "pity" ($p = 0.013$, Mann-Whitney; see Fig. 3). Respondents felt more pity towards individuals who preferred roach-based food. In contrast, other constructs – envy, contempt and admiration – did not differ significantly between the two food preferences. This finding suggests that, while roach consumption may not provoke overt contempt or admiration, it is still socially marked by subtle stigmatization. The association with pity implies a perception of roach eaters as lacking status, choice or normalcy, reinforcing existing social barriers to its acceptance. The respondents' age did not have any impact on the attitudes towards other consumers. However, in general, men seemed to feel more pity towards roach consumers than women ($p = 0.045$, Mann-Whitney).

5. Study 3. Impact of celebrity endorsement on the perceptions of a roach dish

5.1. Empirical data and analysis

The third dataset was gathered to examine how a celebrity chef influences consumers' perceptions of a roach dish. In collecting the data, we utilized the idea of stimulus-based data gathering, i.e., the idea of a "role-playing method" (Eskola, 1998). The respondents were given a fictional menu for a restaurant accompanied with a short setting of the scene and a survey. To elicit and examine the effect a celebrity chef has

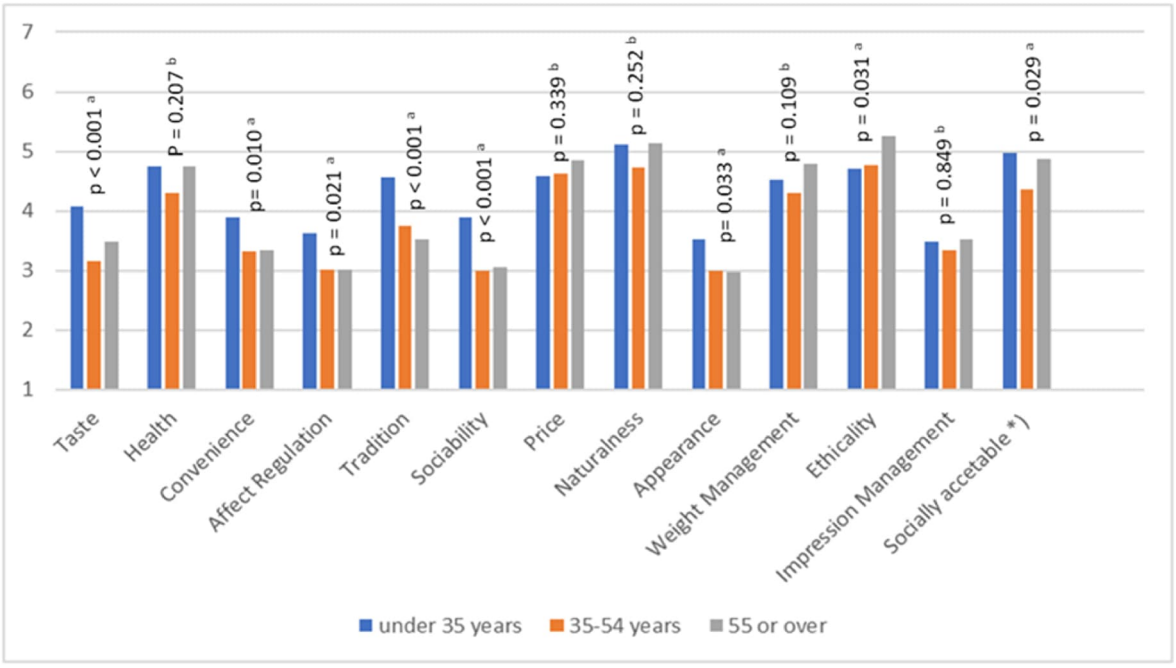

Fig. 2. Food consumption motives of different age groups. The Y-axis presents the Likert's seven point -scale from 1 (not at all associated with the food material in question) to 7 (strongly associated with the food material in question). ([a] = statistical significant difference, [b] = statistically not significant difference).

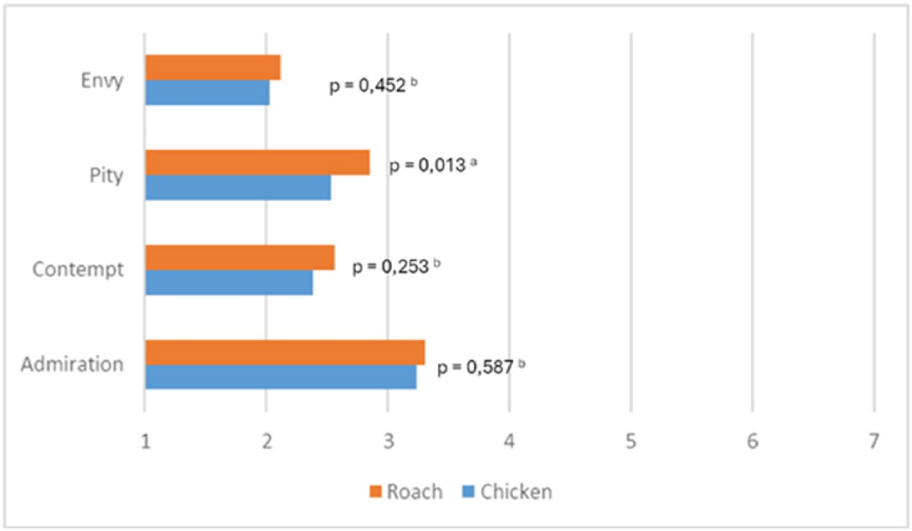

Fig. 3. The attitudes towards consumers favoring roach compared to the consumers favoring chicken. The x-axis presents Likert's seven point -scale from 1 (not at all associated with the food material in question) to 7 (strongly associated with the food material in question). ([a] = statistical significant difference, [b] = statistically not significant difference).

on the respondents' opinions of a roach dish, half of the respondents received a menu with a photograph of a celebrity chef well known in Finland (i.e. own television shows, cookery books, award-winning restaurants), while the other half received a menu with no photograph. Prior experimental work shows that even minimal celebrity cues—such as a familiar chef's image or a message attributed to them—can shape how consumers interpret food-related information (Greenacre et al., 2016). These findings suggest that brief visual cues can activate pre-existing associations that guide interpretation, supporting the use of a single image of a widely recognized chef in our experimental design.

Each menu featured six main courses, including one roach dish and one chicken dish (the latter serving as the control). After reading the menu, respondents completed a questionnaire containing the same set of food-consumption motive items used in the second study. They were asked, for example: "The restaurant in question serves a roach dish as a main course. How well do the following statements describe the roach dish?" To avoid drawing attention to roach as the focal item, a parallel set of questions was also asked about a pork dish included on the menu. Control-group respondents answered the same questions regarding chicken and pork. In addition to filler items (e.g., satisfaction with the restaurant and likelihood of recommending it), the questionnaire included demographic questions. The effectiveness of the celebrity chef prime was assessed by asking all respondents whether they had heard of the chef (familiarity) and how highly they rated his professional skills (appreciation).

The food consumption motives were measured in the same way as in the second dataset, using a slightly modified version of the Eating Motivation Survey developed by Renner et al. (2012). To accommodate the broad scope of the survey and reduce respondent fatigue during face-to-face data collection (Ghafourifard, 2024), several motivation constructs were measured with single-item indicators (marked with * in the results). This approach aligns with prior work in consumer behaviour and food marketing, where brevity is often necessary in large-scale or online surveys (e.g., Fuchs and Diamantopoulos, 2009). Single-item measures were used only for constructs that are conceptually narrow, concrete and easily interpretable. In addition, a background variable for "food involvement" was created, drawing on scales developed by Hartel (2006), Lofgren (2013) and Lane and Fisher (2015).

The data (n = 297) were gathered in a university library in the summer of 2018. They include 149 respondents that were primed with the celebrity chef photograph and 148 respondents that were not primed. Of the respondents, 67 percent were female (n = 195). The majority of the respondents were 35 years or older (50 per cent), 24 per cent were 25–29 years old, 14 per cent 30–34 years old and 12 per cent were under 24 years old. For the statistical analysis, the reliability of the used constructs indicating different food consumption motives measured using two items was checked using the Spearman-Brown coefficient. One construct, price, did not reach the acceptable level in the test and was, thus, removed from further analysis. All the others varied between 0.634 and 0.903 (see Table 3). The normality of the variables was checked using the Shapiro-Wilkes test. As it revealed that these variables did not follow the normal distribution, the independent sample Mann-Whitney *U* test was chosen to analyze the differences between the groups.

5.2. Results

In the third phase of the study, we investigated whether priming with a celebrity chef could influence respondents' perceptions of the stigmatized food item, roach. To ensure the effectiveness of the prime, participants were asked whether they were familiar with the chef and how they rated his professional competence. Of the total sample, 74.8

Table 3
The reliability of the motives for food consumption. As Item "price" did not reach the threshold (0,6) it was removed from the further analysis.

Food consumption motives	Spearman-Brown coefficient/roach
Taste (Delicious + Tasty)	0.882
Health (Nutritious + Healthy)	0.701
Convenience (Effortless)	measured with one item
Affect regulation (Mood-lifting)	measured with one item
Tradition (Traditional + Familiar)	0.634
Sociability (Suitable for shared moments + Encourages socializing)	0.814
Price (Affordable + Good value for money)	0.428 (removed from further anaysis)
Naturalness (Free from additives)	measured with one item
Societal norms (Socially acceptable)	measured with one item
Weight management (Helps maintain weight + Low-calorie)	0.649
Ethicality (Environmentally friendly + Ethical)	0.903
Visual appeal (Visually appealing + Pleasant appearance)	0.868
Impression management (Trendy + Makes an impression on others)	0.700

per cent reported being familiar with the chef. To maintain the integrity of the priming effect, only these respondents (n = 217) were included in the subsequent analysis. Among them, 96.7 per cent rated the chef as highly skilled, suggesting that the prime was credible. This approach aligns with priming theory, which posits that familiar and positively evaluated stimuli are more likely to activate relevant associations and influence attitudes.

When comparing food consumption motives related to roach, priming with the celebrity chef appeared to exert some influence – albeit marginal – on the constructs of convenience (measured with a single item; p = 0.003, Mann-Whitney) and impression management (p = 0.055, Mann-Whitney; see Fig. 4). This supports the idea that celebrity endorsement may subtly improve perceptions of stigmatized foods by enhancing their social appeal and perceived ease of use. Interestingly, other key motives such as taste, tradition, appearance and naturalness remained largely unchanged, suggesting that priming alone may not be sufficient to shift deeper or more emotionally anchored beliefs.

To assess whether the priming effects were specific to a stigmatized food item, we applied the same priming procedure to chicken (n = 215). Unlike the results for roach, no statistically significant differences emerged across any of the food-consumption motives after priming with the celebrity chef. This suggests that celebrity endorsement may exert a stronger influence when the food in question deviates from normative dietary expectations or carries social stigma. In other words, the effectiveness of priming appears contingent on an existing perception gap: endorsements may help narrow that gap primarily when the food is unfamiliar, unconventional or negatively stereotyped, as in the case of roach. This interpretation aligns with theories of social norm activation and source credibility, which argue that respected endorsers are most persuasive when consumers face uncertainty or social risk in their choices (cf. Hovland and Weiss, 1951). For widely accepted foods like chicken, which already occupy a normalized position in everyday diets, the added value of endorsement is minimal.

For further analysis, we constructed a “food involvement” variable capturing respondents' engagement with food-related discussions, media and cooking. The five-item scale demonstrated good internal consistency (Cronbach's α = 0.802). Respondents were then divided at the median score (2.8) into food enthusiasts and non-enthusiasts. No significant differences emerged between these groups across the food-consumption motives. However, among food enthusiasts primed with the celebrity chef image, the sociability motive for roach was rated marginally higher (p = 0.083) than among respondents less interested in food. When the analysis was restricted to the upper quartile of food involvement (scores >3.7), the effect became statistically significant: primed respondents rated the sociability of roach higher than their counterparts (p = 0.003). These results suggest that the influence of the celebrity chef image may be moderated by respondents' level of food involvement.

Gender also shaped how the celebrity chef influenced food consumption motives. Among men, no differences emerged, but women rated sociability (p = 0.008), appearance (p = 0.017) and convenience (p = 0.002) higher when the questionnaire included the chef's image. Respondents over 35 likewise rated impression management higher (p = 0.048) when primed with the image. These results suggest that women may be more sensitive to the prime, possibly because they are more likely to watch cooking shows and thus more familiar with the chef.

6. Discussion and conclusions

In this study, we sought to examine the role of celebrity chef endorsement in shaping consumer perceptions of roach, a fish typically viewed as a trash fish in Finland. To address this, we employed a three-part empirical design. The media analysis provided insight into how roach is framed and stigmatized in public discourse, identifying the arguments that contribute to its negative reputation. The consumer survey offered a means to assess how strongly the stigma depicted in the media is mirrored in consumers’ perceptions of roach as a food product. Lastly, the experimental data enabled us to assess the impact of celebrity chef endorsements on these perceptions, offering a controlled test of how external influences can mitigate the food stigma.

Media representations of roach in Finland illustrate how food stigmas are socially constructed (Ibrahim and Howarth, 2016). Rather than

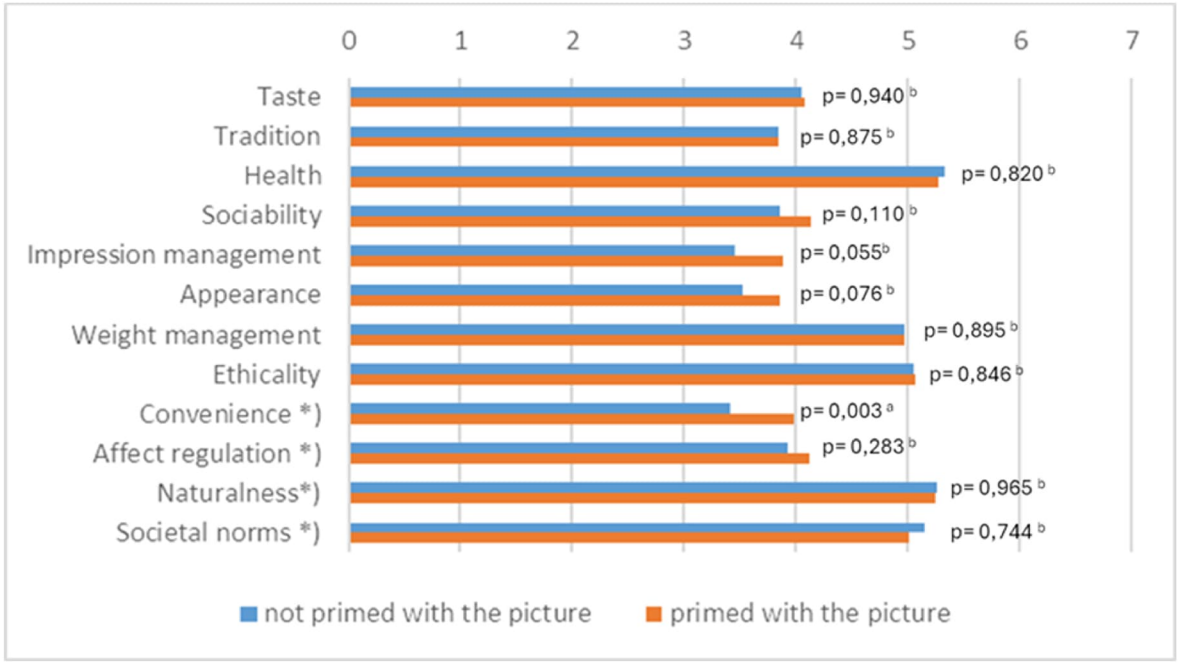

Fig. 4. The impact of a celebrity chef on the food consumption motives related to roach (n = 217). The x-axis presents Likert's seven point -scale from 1 (not at all associated with the food material in question) to 7 (strongly associated with the food material in question). ([a] = statistical significant difference, [b] = statistically not significant difference).

being assessed on nutritional, roach is discursively framed as a problem (Greenacre et al., 2016) - an unwanted by-product of environmental degradation and a symbol of failure, excess and waste. The consumer data on food choice motives echo this framing: just as newspapers portrayed roach as ecologically problematic and socially devalued, consumers perceived it as inconvenient, less tasty, visually unappealing and socially unsuitable. These parallels suggest that media stigmatization resonates in individual motivations, reinforcing the idea that roach is not "normal" food. Furthermore, expressions of pity toward roach consumers indicate that stigma extends beyond the product to the people who eat it (Jain et al., 2019; Vaes, 2014). This highlights how food choices reproduce symbolic boundaries and support Sandikci and Ger's (2010) argument that consumption is a site where power and resistance are negotiated.

The connection between our consumer perception study and the third study on stigma reduction through celebrity chefs lies in examining how external influences can shift deeply rooted, stigma-linked perceptions. The third study tested whether a celebrity chef could help reduce the stigma surrounding roach by "validating" it as a legitimate ingredient. The results only partially supported our hypothesis and, given the narrow scope of the intervention, both geographically and in terms of its design, they should be interpreted as exploratory. Within this context, the endorsement produced modest and context-specific effects, indicating that the impact of celebrity chefs is contingent on factors such as cultural positioning, communication format, and audience characteristics. The borderline significant change concerned impression management, implying that consumers may have been motivated by the social desirability of aligning with a high-status figure, though this was insufficient to shift overall perceptions. Among "food enthusiasts", however, the chef more clearly increased the perceived social desirability of roach. This shows that consumer segments respond differently to stigma-reduction strategies—an aspect often overlooked in research on product-related stigmatization (Schröppel et al., 2021). High-status chefs may influence groups that view them as credible experts (Park et al., 2022), whereas many consumers value everyday foods for ease of use, familiarity and sustainability. Thus, strategies to reshape product valuation must also address mundane, practical aspects of consumption, including pricing, to be effective.

We suggest that the stigma surrounding roach as a trash fish is deeply embedded in environmental and socio-economic discourses, making it difficult for interventions such as celebrity chef endorsement to shift consumer perceptions. Unlike stigmas that target specific groups, such as those linked to halal foods (Sandikci et al., 2024), roach is marked as broadly undesirable and tied to negative associations unrelated to its culinary qualities (see also Park et al., 2022). As a result, the stigma reflects wider societal concerns rather than the product's inherent potential, complicating efforts to reclassify roach as legitimate food. This aligns with research showing that effective stigma reduction must address structural causes rather than surface-level perceptions (Link and Phelan, 2001). Our findings extend product-related stigma research by demonstrating that food stigma can be driven primarily by symbolic and status-laden associations rather than by perceived risk or functional inferiority (Ellen and Bone, 2008). In the case of roach, disgust responses appear culturally learned rather than sensory (Fischler, 1988; Caplan, 2013), reinforcing Douglas's (1966) argument that food rejection reflects broader systems of purity, pollution and social order.

Reducing the stigma surrounding historically marginalized products often requires interventions that extend beyond changing individual attitudes. One effective approach is renaming or rebranding, which can distance products from negative associations and create more positive connotations (Siltaoja et al., 2020). Such symbolic reframing is particularly relevant when stigma is rooted in cultural narratives rather than sensory or safety concerns. In Finland, for example, there is growing interest in replacing the term särki (roach) with järvikala ("lake fish") to avoid negative connotations and highlight the culinary value of local species. This strategy aims to position these fish more positively within both traditional and modern cuisine. Accordingly, comprehensive approaches such as renaming and rebranding can play a crucial role in reducing stigma, supporting sustainability goals, and increasing consumer acceptance of alternative food sources.

These reframing strategies can be strengthened through coordinated policy and industry action. Public authorities can support renaming efforts by integrating new terminology into dietary guidelines, procurement standards, and communication campaigns, thereby signalling institutional legitimacy. Educational settings, including school meal programs, can build familiarity through early and repeated exposure. Industry actors can reinforce the reframed identity by adopting consistent naming across packaging, menus, and retail environments. Experiential interventions—such as tastings, chef-led demonstrations, and in-store materials—can further counter stigma by providing sensory and narrative evidence. Together, these strategies illustrate how renaming and rebranding can contribute to broader destigmatization processes. As Sandikci and Ger (2010) note, stigma reduction requires sustained cultural work rather than isolated promotional efforts. Coordinated action across policy, education, and industry can therefore help reshape the symbolic status of underutilized species and support more sustainable food choices.

Our study further demonstrates that stigma can create substantial barriers to the adoption of food products that would otherwise support more sustainable and diversified food systems. When negative perceptions become entrenched, they shape consumer decision making in ways that suppress demand for ecologically abundant or underutilized species, thereby constraining the effective use of available biological resources (de Boer and Aiking, 2021; Günden et al., 2024). This dynamic aligns with research showing that social meanings and taste hierarchies can limit the uptake of sustainable foods even when their environmental or nutritional benefits are well established (e.g., Koch et al., 2021; Markowski and Roxburgh, 2019). By restricting the valorization of edible and nutritionally valuable species, stigma contributes to inefficiencies in food provisioning and reinforces selective consumption patterns that privilege familiar or symbolically valued options over equally viable alternatives. In this sense, our findings extend work on sustainable food transitions by demonstrating that cultural and symbolic barriers can be as consequential as infrastructural or informational constraints in shaping the uptake of ecologically beneficial foods (e.g., Polyportis et al., 2025). Addressing such barriers is therefore essential for broadening dietary repertoires, reducing pressure on overexploited stocks, and supporting more resilient and equitable food system transformations.

Beyond demonstrating the system-level consequences of stigma, our study also clarifies the mechanisms through which stigma forms and persists. Cultural institutions play a central role in establishing and reproducing the norms, behavioral cues, and social codes that anchor negative perceptions of certain foods (Vaes, 2014; Schröppel et al., 2021). Our findings suggest that these cultural logics can outweigh health-, ethical-, or sustainability-based arguments, thereby limiting the effectiveness of interventions that rely solely on informational or value-based appeals. This helps explain why no single stigma-reduction strategy is universally effective: durable change requires approaches that simultaneously target cultural meanings, social norms, and consumer-facing practices.

Despite offering valuable initial insights, this study has limitations. The media analysis drew on a selective sample of Finnish newspaper articles, which may restrict the generalizability of the findings to broader media environments. The consumer survey was conducted among members of a food panel who are likely more interested in and knowledgeable about food-related issues than the general population, meaning the sample may not fully represent Finnish consumers. In addition, women were more strongly represented in the sample, which may influence the distribution of attitudes observed and should be considered when interpreting the results. Finally, given the geographically specific sample and the short-term nature of the celebrity-chef

intervention, the findings should be viewed as exploratory evidence of endorsement effects rather than a definitive assessment.

Taken together, these limitations point to several important directions for future research. While our study showed that celebrity endorsement can shift perceptions among some consumers, particularly those already engaged with food culture, other consumer groups may respond to different forms of stigma reduction. Future research could therefore examine whether longer-term exposure, repeated interventions, or experiential formats (e.g., tasting events, cooking workshops), as well as alternative strategies such as retail-based nudges, or food education, enhance effectiveness of stigma reduction by engaging diverse consumer segments. Incorporating more diverse media sources, applying segment-specific stigma-reduction strategies, and integrating qualitative methods could also provide a more nuanced understanding of attitudes toward stigmatized foods. These approaches would improve the transferability of findings across contexts and support comparative or cross-cultural analyses in future research.

Beyond these future research needs, it is important to note that although our results are shaped by the Finnish cultural setting, the underlying mechanism aligns with broader processes documented in studies of food stigma and celebrity influence. The mechanisms identified here—media-driven framing, culturally learned stigma, and class-based taste hierarchies—are not unique to Finland and similarly shape perceptions of other low-status or underutilized species. Thus, while the symbolic meanings attached to roach are context-specific, the broader stigma dynamics and the challenges of stigma reduction identified in this study may be transferable to other geographical settings and food categories.

Ethical approval and informed consent statements

Ethics board approval was not required for this study, as it did not meet the criteria for mandatory review outlined in the Finnish National Board on Research Integrity (TENK) guidelines (2019).

Consent for publication

The study was conducted in full accordance with all TENK ethical principles for research with human participants, including informed consent, voluntary participation, and data protection.

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CRediT authorship contribution statement

Merja Lähdesmäki: Conceptualization, Data curation, Formal analysis, Funding acquisition, Investigation, Methodology, Project administration, Resources, Writing – original draft. **Anne Matilainen:** Conceptualization, Formal analysis, Writing – original draft. **Leena Viitaharju:** Conceptualization, Data curation, Methodology. **Marjo Siltaoja:** Conceptualization, Data curation, Funding acquisition, Methodology. **Harri Luomala:** Conceptualization, Methodology. **Sami Kurki:** Conceptualization, Formal analysis, Methodology.

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

The data supporting the findings of this study are available from the first author upon reasonable request.

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