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A mixed methods evaluation of the implementation of national school food standards in UK secondary schools guided by Normalization Process Theory

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Abstract

Background

Previous research has revealed incomplete implementation of the national school food standards (SFS) in secondary schools in England. Normalization Process Theory (NPT) offers a framework for assessing the implementation and embedding of new interventions. We aimed to use NPT to understand school staff perspectives on SFS implementation in secondary schools.

Methods

A mixed methods study comprising a cross-sectional survey and qualitative interviews with staff in secondary schools in England. We used NPT to frame survey questions and interview topic guides. Interview transcripts were thematically analysed. Descriptive survey results and qualitative themes were integrated and mapped onto NPT constructs using a joint display.

Results

Staff from 32 schools completed the survey (n = 181, 52% response) and 21 participants from four schools completed interviews. Qualitative analysis resulted in 10 sub-themes within four over-arching NPT constructs. Coherence (construct 1): SFS supported menu planning, however, there was dissonance between SFS requirements and the contextual factors influencing school food provision. Half of survey respondents reported understanding what is required of them in relation to SFS implementation. Cognitive participation (construct 2): was generally low, especially in senior leadership and governors. Collective action (construct 3): survey data suggested that school teams did not work well together to implement the SFS, however qualitative data indicated some potentially supportive actions e.g. external support, resource allocation, shared motivations and open communication. Reflexive monitoring (construct 4): SFS were considered worthwhile, but there was an absence of monitoring.

Conclusions

Use of mixed methods integration within a NPT framework identified factors that support or restrict implementation of the SFS in secondary schools. Challenges include the influence of competing decision drivers and low staff legitimation, whilst supportive actions include linking school food to salient issues for schools, assignment of responsibility and resources, providing training and support, and systematic monitoring.

Trial registration:

ISRCTN 68757496 (registered 17 October 2019).

Contributions to the literature

- We use Normalization Process Theory to understand how in secondary schools in England implement school food policy.
- We identify barriers that could be addressed to improve implementation, e.g. low levels of engagement, misinterpretation, perceived incompatibility of some standards within secondary school contexts, and beliefs about the role of schools.
- We highlight levers for improved implementation, including linking school food to salient issues for schools, assigning responsibility and resources appropriately; training and support for staff, and introducing systematic monitoring.
- Greater consideration of how national school food policy can operate within, and support other priorities and demands upon secondary schools is required.

1. Background

Schools are widely recognised as an important setting for promoting health and wellbeing (1), and play an important role in supporting the nutritional intake of adolescents (2). In UK secondary schools, pupils typically consume at least one meal at school, providing an opportunity for dietary intervention. Quality standards for school food provision aim to ensure that the foods and drinks pupils consume at school are balanced and nutritious, and have been adopted by many high-income countries largely in response to rising obesity rates (3). The current school food standards (SFS) for England were introduced in 2015 as a legal requirement for state-funded schools, except for academies/free schools established between 2010 and 2014. However, these exempt schools were encouraged to voluntarily comply (4, 5). School governing bodies have a responsibility for ensuring that the SFS are met (5, 6), but despite their legislative status, there are no formal monitoring arrangements for compliance (7).

Evaluation of school food quality standards in the UK and globally have highlighted issues with comprehension, compliance and monitoring (8–11). In secondary schools, there is evidence of suboptimal food provision in terms of health and nutrition (12, 13). An evaluation of the current SFS in secondary schools in England showed that schools were compliant with only 64% of standards on average, and lower compliance with standards limiting the provision of energy dense foods and drinks that are high in fats and sugars (14). No studies have explored the factors affecting implementation from the perspectives of school stakeholders.

Normalization process theory (NPT) is a tool to support understanding of how ways of working are implemented, embedded, and integrated into an environment, and thus what changes may be needed to support sustainability (15). NPT comprises four constructs (each with four sub-constructs); coherence, cognitive participation, collective action, and reflexive monitoring (Table 1). These constructs are used to

understand the ways in which people work around a set of practices such as providing school food to meet the SFS.

Table 1
Overview of NPT constructs and sub-constructs, adapted from May et al., 2009 (16)

Construct	Subconstruct	Short description
Coherence – How do people work together in everyday settings to understand and plan the activities that need to be accomplished to put an intervention and its components into practice?	Differentiation	How do people distinguish interventions and their components from their current ways of working?
	Communal specification	How do people collectively agree about the purpose of interventions and their components?
	Individual specification	How do people individually understand what interventions and their components require of them?
	Internalisation	How do people construct potential value of interventions and their components for their work?
Cognitive Participation - How do people work together to create networks of participation and communities of practice around interventions and their components?	Initiation	How do key individuals drive interventions and their components forward?
	Enrolment	How do people join in with interventions and their components?
	Legitimation	How do people agree that interventions and their components are the right thing to do and should be part of their work?
	Activation	How do people continue to support interventions and their components?
Collective Action - How do people work together to enact interventions and their components?	Interactional workability	How do people do the work required by interventions and their components?
	Relational integration	How does using interventions and their components affect the confidence that people have in each other?
	Skill-set workability	How is the work of interventions and their components appropriately allocated to people?

Construct	Subconstruct	Short description
	Contextual integration	How is the work of interventions and their components supported by host organizations?
Reflexive Monitoring - How do people work together to appraise interventions and their components?	Systematisation	How do people access information about the effects of interventions and their components?
	Communal appraisal	How do people collectively assess interventions and their components as worthwhile?
	Individual appraisal	How do people individually assess interventions and their components as worthwhile?
	Reconfiguration	How do people modify their work in response to their appraisal of interventions and their components?

In this study we aimed to apply NPT as a novel approach to examining implementation of the SFS within secondary schools in England, enabling exploration of the kinds of 'work' necessary to implement the SFS; how and what resources for SFS implementation are mobilised; and what mechanisms lead to variations in SFS implementation processes. The implementation of the SFS at a school-level involves multiple stakeholders, so we captured perspectives of school leaders, teachers, governors and caterers.

2. Methods

2.1. Study design

Data were collected as part of the FUEL study (17), which used a convergent parallel mixed methods study design (18) to explore food in secondary schools, comprising two phases: 1) cross-sectional assessment of national school food policy implementation, including the SFS, and pupil outcomes; and 2) a qualitative case study (19, 20) using multiple parallel case sites (schools), to explore multiple perspectives around school food policy implementation within specific school contexts. The current study describes analysis of data from both phases relating to SFS implementation. The qualitative aspect was intended to gain a detailed understanding of the more generalisable findings established from the survey data. The design is outlined in supplementary file 1.

2.2. Recruitment and consent

Thirty-six secondary school academies and free schools in the West Midlands, UK, were recruited to the FUEL study between October 2019 and April 2022, the sampling approach is described in the published study protocol (17). Participating schools were asked to identify school staff/governors with roles

relating to school food provision, SFS implementation, and/or the food environment or curriculum to participate in a survey. Four case study schools were recruited in 2021-22 from phase one of the FUEL study, with a sampling approach to ensure representation of schools with a high proportion of pupils eligible for Free School Meals (FSM; in the UK, pupils from families with low incomes are eligible to receive FSM) and a mixture of schools based on SFS mandated/non-mandated status (non-mandated schools were those that are legally exempt from the SFS) and catering provision model (external catering contractors and in-house catering teams). School staff/governors with roles related to school food (as above) were invited to qualitative interviews, aiming for 4–6 participants per school. Informed, written consent was obtained from all participants.

2.3. Data collection

The survey was completed online or on paper (supplementary file 2) and included questions about implementation and embedding of the SFS within the school, adapted from the Normalisation Measure Development (NoMAD) survey instrument, underpinned by NPT (21, 22).

Interviews were face-to-face at the school or via video/telephone. All researchers involved in interviewing (MM, AD, RA, LK) were female and employed as Research Fellows/Associates at the time of data collection, and three were experienced in qualitative interviewing. All interviews were guided by a topic guide (supplementary file 3) and audio-recorded.

2.4. Data Analysis

Data relating to the adapted NoMAD questions were extracted from staff/governor surveys. The proportion of respondents who answered ‘strongly agree’/‘agree’ were combined to represent staff agreement with statements.

Interview audio-recordings were transcribed verbatim. Coding was completed by two researchers (MM, AD) in NVivo v12 (23). Thematic analysis was conducted using the Framework approach (24), with thematic summaries generated for each case school, which were compared and examined in relation to NPT constructs in a cross-case analysis. Analysis was grounded in constructivism, which is compatible within a qualitative case study design (25).

2.5. Analytical integration

Merged integration of the qualitative and quantitative data analysis was achieved through a joint display table (26), with qualitative sub-themes and survey data organised by NPT constructs and presented in columns, with a final column providing a combined interpretation. This considered the extent to which the qualitative and survey data converged or diverged. The themes identified during qualitative analysis were used to group the data presented in this integration.

3. Results

3.1. Participant characteristics

Of 36 schools taking part in the FUEL study, 32 invited staff members to the survey and 181 staff/governors participated (52% response). Characteristics of schools are presented in supplementary file 4. For the qualitative case study, four of 16 invited schools participated (25% response rate), and 21 staff/governors participated in interviews. Case study school characteristics and survey and interview participant characteristics are described in Tables 2 and 3. The average duration of interviews was 35 minutes (range: 16–80 minutes).

Table 2
Characteristics of qualitative case sites

School 1	SFS status	% FSM[1]	IDACI decile for school[2]	Catering Provision	Compliance with SFS[3] (%)	Number of participants
	Mandated	**High**	**3**	**External**	**53**	**6**
School 2	Not mandated	Low	3	In-house	70	6
School 3	Not mandated	High	5	External	65	4
School 4	Mandated	High	8	In-house	65	4

Legend: [1]% pupils eligible for Free School Meals classified as high/low based on above/below national average (27); [2]Income Deprivation Affecting Children Index (1 = most deprived, 10 = least deprived) based on school postcode (28); [3]school food standards, based on assessment from FUEL Study (29).

Table 3
Respondent characteristics for staff surveys and qualitative interviews.

Characteristic	Survey; n (%)	Interviews; n (%)
Staff group	**(n = 181)**	**(n = 21)**
Catering	57 (31.5)	4 (19.0)
Senior leadership team	45 (24.9)	8 (38.1)
Teacher	41 (22.7)	6 (28.6)
Governor	38 (21.0)	3 (14.3)
Gender	**(n = 179)**	**(n = 21)**
Male	51 (28.5)	9 (42.9)
Female	124 (71.5)	12 (57.1)
Age (years)	**(n = 180)**	n/a
18–29	11 (6.1)	
30–49	94 (52.2)	
50–64	65 (36.1)	
65+	10 (5.6)	
Years worked at school	**(n = 175)**	**(n = 20)**
< 2	42 (23.5)	2 (10.0)
3–5	40 (22.3)	9 (45.0)
6–10	38 (21.2)	5 (25.0)
> 10	59 (33.0)	4 (20.0)

3.2. Awareness, involvement, and familiarity with SFS

Table 4 presents survey data on staff/governor awareness and involvement with the SFS. Catering staff had the highest awareness of and involvement in implementation (78.9% and 64.4% respectively), whilst teachers had the lowest levels of awareness (65.9%). No governors in the sample reported involvement in implementation or oversight of the SFS in their schools.

Table 4
Survey results relating to SFS awareness amongst school staff/governors

Aware of SFS; n (%)	All school respondents (n = 181)	Catering staff (n = 57)	Senior Leadership Team members (n = 45)	Teachers (n = 41)	Governors (n = 38)
	133 (79.2) (n = 168)	**45 (78.9)**	**35 (77.8)**	**27 (65.9)**	**26 (68.4)**
Perceived implementation in school; n (%)	89 (67.9) (n = 131)	33 (73.3) (n = 45)	28 (80.0) (n = 35)	13 (48.1) (n = 27)	15 (57.7) (n = 26)
Involved in implementation/ oversight of SFS; n (%)	45 (39.5) (n = 115)	29 (64.4) (n = 45)	11 (31.4) (n = 35)	4 (14.8) (n = 27)	0 (0.0) (n = 26)

3.3. Implementation of the SFS linked to NPT constructs

Table 5 displays the level of agreement with NoMAD statements, and responses regarding applicability to their role. Survey responses by staff groupings are presented in supplementary file 5.

Table 5
Survey responses to NoMAD statements

NPT Construct/question	**Survey responses**		
Coherence	*Number of respondents*	*Seen as applicable to their role; n (%)*	*Agree / Strongly agree; n (%)*
There is a shared understanding among staff of the purpose of the SFS *(Communal specification)*	119	114 (95.8)	43 (36.1)
Things would be different if the SFS were not in place *(Differentiation)*	119	114 (95.8)	34 (28.6)
I understand what is required of me in relation to implementation of the SFS *(Individual Specification)*	118	106 (89.8)	61 (51.7)
I can see how the SFS have the potential to benefit me or my work *(Internalisation)*	119	108 (90.8)	71 (59.7)
Cognitive participation	*Number of respondents*	*Seen as applicable to their role %*	*Agree / Strongly agree %*
There are key people who drive the implementation of the SFS forward and get others involved *(Initiation)*	118	115 (97.5)	73 (61.9)
I believe that implementing the SFS is a legitimate part of my role *(Legitimation)*	117	100 (85.5)	63 (53.8)
I'm open to working with colleagues in new ways to implement the SFS *(Enrolment)*	118	109 (92.4)	98 (83.1)
I will continue to support the implementation of the SFS *(Activation)*	119	113 (95.0)	104 (87.4)
Collective action	*Number of respondents*	*Seen as applicable to their role %*	*Agree / Strongly agree %*
The implementation/ delivery of the SFS creates additional work for me (*Interactional workability)*	115	95 (82.6)	30 (26.1)
Everyone works well together to implement/deliver the SFS *(Relational integration)*	114	105 (92.1)	56 (49.1)
Work is assigned to those with the appropriate skills/ roles to implement the SFS *(Skill-set workability)*	114	104 (91.2)	64 (56.1)
There is a lack of resources to support the implementation of the SFS *(Contextual Integration)*	115	106 (92.2)	12 (10.4)

NPT Construct/question	Survey responses		
Reflexive monitoring	*Number of respondents*	*Seen as applicable to their role %*	*Agree / Strongly agree %*
I believe that the SFS are worthwhile *(Systematisation)*	113	111 (98.2)	99 (87.6)
All staff agree that the SFS are worthwhile *(Communal appraisal)*	112	110 (98.2)	48 (42.9)
The SFS have had a positive effect on me/my work *(Individual appraisal)*	113	98 (86.7)	39 (34.5)
Feedback about how the school implements/delivers the SFS can be used to improve this in the future *(Reconfiguration)*	113	108 (95.6)	78 (69.0)

Qualitative analysis resulted in 10 cross-case sub-themes within the four over-arching NPT constructs. Survey data were integrated with qualitative findings (Table 6).

3.3.1. Theme 1: Coherence – Making sense of the SFS

Sub-theme 1a: Perceived value of SFS

59.7% of survey respondents said they could see how the SFS had the potential to benefit them and their work, indicating moderate levels of *internalisation* for the SFS overall. There was evidence of the SFS being used to support menu design, decision-making, and conversations about school food between school staff, and with pupils.

School staff saw the value of school food in relation to children's health, well-being, behaviour and success. However, these perceived benefits related to a general concept of 'healthy school food' and addressing student hunger, rather than being linked specifically with SFS implementation. This was countered with a perception that the school had a limited role in student dietary intakes, within the wider contexts of family, the local areas in which students live, and the macro-level food system.

"We only represent a small proportion of their day I suppose is the issue isn't it? It's what happens when they go home" Teacher

Coupled with the survey findings that only 28.6% of respondents believed things would be different if the SFS were not in place, this is indicative of low levels of *differentiation* between the SFS and other sets of practices relating to the provision of healthy school food. *Differentiation* was particularly low for governors (8.0%) and teachers (18.2%).

Sub-theme 1b: Dissonance between SFS requirements and reality of school food

When staff tried to make sense of the SFS, there was clear dissonance between the requirement to meet the SFS and the perceived reality of school food provision, where multiple factors were influential e.g. meeting financial targets, increasing uptake, minimising waste. The data indicate these competing factors may have had more salience with catering teams than the requirement to meet the SFS, effectively de-valuing SFS-implementation.

“I think it’s a combination of trying to meet what they should have, so the food standards, but also you have to also give them something they’re actually going to want to eat as well. So I think it’s a really hard balance for the canteen” Teacher

Non-compliance with specific standards related to the ways in which pupils purchase food. For example, pupils were seen to purchase/eat their lunch at break time, so it felt incongruous to have different sets of standards for both time periods (there are specific requirements relating to school lunch and food served at other times). Staff did not always see the value of specific standards, particularly when they conflicted with perceived student preferences (e.g. standards around oily fish provision), which lead to selective compliance, and is indicative of low levels of *internalisation* for some elements of the SFS.

Only around half of survey respondents (51.7%) agreed that they understood what was required of them in relation to the SFS, and this lack of *individual specification* may have contributed to a sense of dissonance. However *individual specification* was relatively high for catering staff, with 77.5% understanding the requirements of the SFS in relation to their role, whilst being lower for SLT members (45.9%), teachers (28.5%) and governors (20.0%) (supplementary file 5).

There was a sense from catering teams that there was an acceptable level of flexibility in applying the SFS, despite an understanding of the legal requirement, whilst senior leadership/governors assumed that caterers were fully compliant. Only 36.1% of respondents agreed that there was a shared understanding amongst staff in their school about the purpose of the SFS, reflecting that *communal specification* (building a shared understanding) was low.

3.3.2. Theme 2: Cognitive participation – The relational work around the SFS

Sub-theme 2a: Linking school food to school values and ethos

There were high levels of support for continued implementation of the SFS, with 83.1% of staff being open to working with colleagues in new ways to implement the SFS, and 87.4% stating that they would continue to support implementation. The qualitative data indicate that schools engaged well with school food where there was a clear link to the wider school ethos/values, for example, ‘the whole child’, ‘learning for life’ or being a ‘healthy school’, as there was a clear narrative for active engagement on school food.

"The ethos is about family, so it’s about promoting good healthy food, but doing it in a way that is… in a way that you would at home, so sitting down together with people, sharing food together." Teacher

However, this did not always relate to improved compliance with the SFS, and this may depend on the nature of the school ethos. For example, the focus for one site was on the social elements of eating, rather than healthy eating (see sub-theme 4a).

Sub-theme 2b: Catering arrangements and engagement with the SFS

The level of cognitive participation appeared to vary based on catering arrangements i.e. whether provision was external (by a contracted catering provider) or in-house (catering staff employed by the school). For external catering providers, there appeared to be relatively low levels of *enrolment* in using the SFS since menus were planned centrally by the provider, and there were restrictions on which suppliers could be used. Catering teams assumed compliance with the SFS, so long as the planned menus and approved suppliers were used.

For in-house provision, *enrolment* in school food appeared high amongst catering teams, who used the SFS directly in menu planning and selecting food and drink products.

“I found it [the SFS] really useful when I first come, because though we were using a standard at [previous school details redacted], it was a catering company that you did what they wanted you to do you, see. So I found it really useful, and I do try and do what I can on it.” Catering manager

Sub-theme 2c: Leadership and oversight on school food

61.9% of all staff felt that there were key people in their school that drove the implementation of the SFS forward. The case study data provide additional insights, indicating that in some schools, individuals within senior leadership appeared to have a key role in driving the SFS forward (*initiation*), and that this was more likely to be the case when designated roles on school food were assigned, providing a stronger sense of *legitimation*:

“I have read a lot of the government documents on what we can have and what we can, the healthy eating and the School Food Standards etc, and all of those things from gov.uk, so been through all of those documents. That was particularly important when we got the vending machines to make sure they were stocked properly and appropriately.” Senior leader

This contrasted somewhat with the survey data where only 56.3% of senior leaders saw SFS implementation as a legitimate part of their role (supplementary file 5).

Low levels of *legitimation* were apparent for governors with only 33.0% considering oversight on SFS implementation a legitimate part of their role. The qualitative data indicate that governors saw their role as one of broad oversight on school food, including monitoring school meal uptake and financial performance, rather than SFS implementation. For some, this related to a perceived delegation of this duty to an external catering provider:

“We pay [catering provider] contractually at a level which gives us the assurance, hopefully, that they provide what is appropriate and that which conforms to government guidelines in terms of school provision in the UK.” Governor

In principle, SLT and governors were supportive of the continued implementation of the SFS (*activation*). In the qualitative data, there were examples of senior leaders incorporating (or planning to) the SFS into catering agreements.

3.3.3. Theme 3: Collective action – The operational work to implement the SFS

Sub-theme 3a: Interactions on school food and contextual support

Less than half (49.1%) of survey respondents felt that everyone worked well together to implement the SFS and just over half (56.1%) felt that work was assigned to the correct staff. This contrasted with the case study data, with good working relationships around school food and healthy eating actions apparent across all sites. However, there was variation in the survey responses according to group, with 83.3% of caterers feeling that everyone worked well together versus 5% of teachers. This variation may relate to the extent of involvement in implementation, with caterers having the most day-to-day interactions on SFS implementation. In case study schools, caterers and senior leaders reported that they worked well with colleagues on implementation (*relational workability*) when there was open communication, high levels of trust and shared motivations within catering teams and across schools and caterers, for example:

“But it’s just talking basically. We all get on really well, we’re a really good team, and if they have got any suggestions or if they don’t think something is right they can come to me and say, “I don’t think we should be doing this [name],” and I would listen…” But yeah it’s just verbally, experience, chitchat, and what we would want our kids to eat or not eat.” Catering manager

In the case study schools, staff felt supported on school food and healthy eating actions due to the availability of resources, which is consistent with the survey finding that only 10.4% of staff felt there were not enough resources to help implement the SFS. Interviewees were particularly positive in sites where new investments had been made, or where there was a designated lead for school food (examples of *contextual integration*). Staff in these schools demonstrated the relational work required for high cognitive participation, for example involving others (“the whole school”) and interacting with catering teams, which had positive results for the perceived ease with which implementation was achieved.

“Like [the Assistant Head] he knows a lot about it [the SFS], so he encourages it as well, so it’s quite easy really, because the school is involved in the menus as much as I am as well” Catering manager

Sub-theme 3b: Engagement with external programmes to support actions on healthy eating

One school with apparent high cognitive participation, as well as relatively high compliance with the SFS (70%, Table 2), had been engaged in an external programme to support SFS implementation. In this school, relational work appeared to have been high for the duration of the programme, for example internal meetings between caterers and senior leadership to monitor compliance. The programme appeared to provide a framework for *contextual integration*, resulting in school-wide support actions e.g. integrating kitchen staff within food education practices; and a policy on not using sweets as rewards. Processes that were put in place to support implementation (via engagement with the programme) included sharing examples of success from other schools and virtual support. There appeared to be an improved commitment/motivation to healthy eating actions through this programme.

“It raised the profile of food and healthy eating for sure, and it involved a lot of students personally, that was lovely, got them talking about it, and it got them quite energised about wanting to be involved in things.” Governor

Sub-theme 3c: Misinterpretation of the SFS and mistrust in external providers

Difficulties in SFS implementation were exacerbated by some misinterpretation of the standards, e.g. a belief that standards only applied to lunchtime and confusion over definitions of foods and permitted frequency.

“Within the nutrition cycle, sausages are only once every three weeks, and there are children that do have a sausage bap every day. So really we do need to look, and I am really aware, at alternatives. But breaktime isn’t part of the nutritional standards, because the nutritional standards is just at lunchtime, am I right in thinking that?” Senior leader

In two schools, senior leaders expressed mistrust in products being marketed as ‘compliant’ by suppliers, and felt that despite being labelled as such, they appeared to be high in sugar. In addition, in some schools there were tensions between school staff/governors and catering providers relating to a lack of trust and perceived profit motives, which led to a perception that this compromised the provision of healthy school food.

3.3.4. Theme 4: Reflexive monitoring – Appraising the SFS

Sub-theme 4a: Monitoring/appraisal on school food, food education and the SFS

Schools made use of feedback to evaluate and/or improve school food, including input from pupils, staff, and parents. Feedback on school food and food education was generally seen as valuable, and informal and formal mechanisms were apparent e.g. engaging school councils, pupil surveys, suggestion cards and informal conversations with pupils.

However, feedback was aimed at improving school food service rather than implementation of SFS. Evidence of reflexive monitoring on SFS implementation was largely absent from the data. Participants did not note any facilitators that supported the ownership and embedding of actions to meet the SFS,

and there did not appear to be any opportunities for systematic feedback on the impact of the SFS on students' dietary choices. Only 34.5% of survey respondents felt the SFS had a positive effect on their work, demonstrating a potential lack of *individual appraisal* of their impact, although 64.8% of caterers felt that the SFS had positive effect on their work, suggesting some positive appraisal by the group most involved in implementation.

There was some evidence of informal appraisal of school food that related to the perceived positive influence of healthy eating upon student outcomes, including behaviour and attainment, which was a commonly held belief. This finding was supported by survey data indicating that 87.6% of respondents felt that the SFS were worthwhile, with high levels of agreement across all groups.

In contrast, in the case study data, there was a perception that healthy eating efforts may conflict with efforts to improve food security/address hunger i.e. healthy food may be unappealing to adolescents and drive away those who are reliant on school food as a main meal of the day.

"So I think it's a really hard balance for the canteen to offer things that are, have those key nutrients in, have what they need, are giving them a good diet, particularly for the students where that might be their only hot meal of the day, but equally if the canteen serves up things that is not appealing to them they are not going to have anything to eat." Teacher

Despite a lack of SFS-specific appraisal, it was clear that *reconfiguration* was taking place. Schools were conceptualising the SFS within a broader framework of factors that influence school food (highlighted in sub-theme 1b). For some schools, this resulted in selectively disregarding some elements of the SFS, as they were seen to not be suited to the school context. For example, at one site with 53% compliance with the SFS (Table 2), commitment to a specific model of lunch service was prioritised over meeting some aspects of the SFS.

"Not everything is approved [by the] government, because that doesn't fit with the school's [model of] service, so." Catering manager

Sub-theme 4b: The potential value of action planning, goal setting and monitoring

One school used school meal uptake as a metric to monitor and improve school food. Actions taken in this school involved undertaking an audit and creating a school food action plan. Strategies implemented had included reviewing SFS compliance, pupil and parent engagement via questionnaire and a 'school food champions' group. This work was felt to be worthwhile, with the school seeing marked increases in school meal take-up amongst disadvantaged pupils in particular, and it was believed to "energise" the student body. These strategies provide examples of *communal appraisal*. However, it was noted to be a large amount of work for this staff member, which was largely mitigated by their enjoyment/personal interest, but was difficult to sustain.

"I think really I was really pleased with how it went, but I suppose one of the challenges was me doing it on top of the job, because it did take a lot of time, but I found that it was quite an exciting process to be

involved in.” Governor

In the same school, SFS implementation had been incorporated into performance management for the Catering Manager as a means of *individual appraisal* around the SFS, which led to identification of a need for additional training. As a result, the school invested in SFS training for the catering team. This school had comparatively high compliance with the SFS (70%, Table 2).

The survey data suggest high levels of support for introducing more opportunities for appraisal and feedback on the SFS, with 69.0% stating that feedback about how their school implements/delivers the SFS could be used to improve their implementation in the future.

Table 6
Joint display table: Mixed methods analytical integration of survey and interview data linked to NPT constructs

	Summary of qualitative findings	Summary of survey findings	Integration (convergence/divergence)
Theme 1: Coherence – making sense of the School Food Standards			
a) Perceptions on the value of SFS	• SFS seen to support menu planning and decision-making on school food • School staff see the value of school food in relation to children's health but believe the school's role is limited	• 59.7% said they could see how the SFS had the potential to benefit them and their work. • 28.6% felt things in their school would be different if the SFS were not in place. • 40.0% of catering staff agreed with this statement compared to 8.0% of governors and 18.2% of teachers.	• Convergence: High internalisation / valuing of the SFS; low levels of differentiation from other healthy school food practices
b) Dissonance between SFS requirements and reality of school food	• Presence of other competing factors that drove some decision making around school food • Flexibility and compromise when planning to implement the SFS • Divergence in beliefs around compliance between catering teams and school leaders	• 51.7% understood what is required of them in relation to the SFS. • 77.5% catering staff understood the requirements of the SFS in relation to their role, while 45.9% of SLT members, 28.5% of teachers and 20.0% of governors did. • 36.1% agreed that there was a shared understanding amongst staff in their school about the	• Convergence: Low levels of individual and communal specification, particularly amongst non-catering staff

	Summary of qualitative findings	Summary of survey findings	Integration (convergence/divergence)
Theme 1: Coherence – making sense of the School Food Standards			
		purpose of the SFS	
Theme 2: Cognitive participation—investing in the SFS			
a) Linking school food to school values and ethos	• Schools engaged with school food when it was linked to the school's wider ethos/values	• 83.1% of staff were open to working with colleagues in new ways to implement the SFS • 87.4% would continue to support the implementation of the SFS.	• Convergence: Activation and enrolment was supported by linking school food to the wider school ethos.
b) Catering arrangements and engagement with the SFS	• In-house catering teams used the SFS directly in menu planning and selecting food and drink products (indicating enrolment); external catering teams assumed compliance as menus were centrally planned	• Differences in response based on catering arrangements were not explored	• n/a
c) Leadership and oversight on school food	• Active engagement with the SFS was apparent where senior leaders had designated roles for school food • Governors did not see SFS oversight as part of the role	• 61.9% of all staff felt that there were key people in their school that drove the implementation of the SFS forward. • 53.8% staff agreed that implementing the SFS was a legitimate part of their role. • 76.9% of caterers viewed the SFS as a legitimate part of their role versus 56.3% of SLT and 33.3% of governors	• Divergence: Survey data indicate moderate levels of legitimation amongst senior leaders. Evidence of SLT legitimation in qualitative data, although most apparent when there was a designated lead for school food. • Convergence: Low levels of legitimation by governors lead to low levels of cognitive participation

	Summary of qualitative findings	Summary of survey findings	Integration (convergence/divergence)
Theme 1: Coherence – making sense of the School Food Standards			
Theme 3: Collective action—implementing the SFS			
a) Interactions on school food and contextual support	• Open communication and shared motivations around school food gave a perception of good working relationships around school food and healthy eating actions • School staff reported having the support and resources to do their work on school food • Where high levels of investment were apparent, there was a renewed motivation / commitment to healthy eating	• 49.1% felt that everyone worked well together to implement the SFS • 56.1% felt work was assigned to the correct staff • Only 10.4% of staff felt there were not enough resources to help implement the SFS .	• Divergence: Survey data indicate moderate levels of collective action, whilst qualitative data indicate that interactional and relational workability are occurring in some schools as a result of high levels of trust and support • Convergence: Contextual integration in relation to resource allocation is apparent.
b) Engagement with external programmes to support actions on healthy eating	• Engagement with external programmes appeared to enhance commitment/motivation towards healthy eating actions and	• Related to one school, survey responses were not explored at an individual case level	• n/a
c) Misinterpretations of SFS and mistrust in external providers	• Misinterpretation of SFS contributed to non-compliance • Mistrust in suppliers in relation to products marketed as 'school-compliant' and in catering providers relating to perceived motives	• 31.6% of caterers felt like the SFS created extra work for them	• Divergence: Survey data indicate interactional workability but qualitative data surfaces issues around low confidence in SFS and a lack of underpinning knowledge required for efficient and effective implementation of the SFS
Theme 4: Reflexive monitoring – regaining ownership and embedding changes			
a) Monitoring / appraisal on school food, food education and the SFS	• Formal and informal feedback on school food was collected, but rarely related specifically to SFS implementation • Linking appraisal of SFS to metrics on well-being, academic performance and reducing inequalities may have salience for schools	• 87.6% of survey respondents felt that the SFS were worthwhile. • Only 34.5% felt the SFS had a positive effect on their work	• Convergence: Individual and communal appraisal relating to SFS specifically was variable across groups. Despite this, systemisation was high and linked to salient issues for schools.

	Summary of qualitative findings	Summary of survey findings	Integration (convergence/divergence)
Theme 1: Coherence – making sense of the School Food Standards			
	• Informal reconfiguration of the SFS was taking place on the basis of contextualising the SFS within a broader framework of factors that influence school food, contributing to non-compliance	• Caterers rated the effect of the SFS upon their work more positively (64.8%) than SLT (29.1%), teachers (20%) and governors (8.0%)	
b) The potential value of action planning, goal setting and monitoring	• Having a monitoring infrastructure, specialist lead(s), targets and commitments ensured reflexive work takes place • Reliance on individuals limits longevity of changes • Performance management of staff or service viewed as an opportunity to review SFS compliance	• 69.0% felt that feedback could be used to aid implementation of the SFS in the future	• Convergence: Support for monitoring was strong. Qualitative data indicate that monitoring metrics were used for communal appraisal and were a motivating factor for sustaining work on healthy eating. Performance management was used positively as a means of individual appraisal on SFS.

4. Discussion

4.1. Consideration of findings

Through a mixed methods integration within a NPT framework, we have highlighted several factors that support or restrict implementation of the SFS in secondary schools.

Coherence

The presence of competing factors, such as maintaining financial viability of a service, increasing the school meal uptake, and minimising food waste by providing the most popular foods, as well as a belief in the limited role of schools in impacting upon adolescent dietary behaviours, were influential in reducing implementation of the SFS. Similar concerns have been observed in other country contexts in which quality standards exist (10). The current study found that these concerns impacted on how schools translated SFS implementation within secondary school contexts. Similar dissonance between ‘ideal’ and ‘real’ conditions for implementation of diet-related initiatives has been highlighted in other research in schools and other settings (30–33).

Cognitive participation

Having a designated lead for school food within senior leadership was highlighted as a supportive factor in increasing cognitive engagement. Having clear delineation of roles and responsibilities relating to policy implementation, supported by training, was also seen as a key facilitator in other countries implementing school food quality standards such as Mexico and Canada (10). Designated roles were apparent in two case schools, however our survey data indicated that senior leadership engagement is generally low. The lowest levels of legitimation were observed in governors, despite the English government delegating responsibility for ensuring compliance to school governing bodies (5). In schools with external catering contracts, this was partially due to the assumption that the provider was solely responsible for implementation. Similar findings on low cognitive participation by management have been observed consistently in other studies (7, 12, 34) and draws parallels with other settings (31). This study found that linking school food with the overall school ethos and values could positively influence schools' engagement with the SFS, particularly if this was framed around being a 'healthy' school.

Collective action

Our mixed methods integration revealed contrasting findings relating to collective action, with survey data suggesting that school teams did not work well together to implement the SFS, whilst the qualitative data suggested the presence of good working relationships around school food and healthy eating actions. This may be due to selection bias within our case study sample. The qualitative data provide an opportunity to identify what worked well to achieve collective action for these schools. Engagement with an external programme and adequate resource allocation were two key contributors to increased contextual integration; whilst having a sense of shared motivations and open communication were seen to increase interactional and relational workability. Having sufficient support to implement interventions and policies is seen as important throughout the literature (31, 33–35), especially when there are new ways of working to be learnt. A lack of detailed knowledge of the policy, which has also been reported in other research (10, 31, 33), may contribute to ineffective implementation. Implementation was further impeded in some schools by a lack of trust of external catering companies and their perceived motives. Tensions between different stakeholders involved in implementation of policy has also been previously reported (31, 34).

Reflexive monitoring

As identified in other implementation studies (31, 34, 36), there appeared to be a lack of systematic and formal assessment, preventing reflexive monitoring. In their research on implementation of universal free school meals in Scotland, Chambers et al. (34) found that monitoring data was centred around meal uptake, and missed an opportunity to measure wider and longer-term impacts of school food, which could potentially improve the extent to which staff considered implementation worthwhile. In the current study, the potential impact of food provision upon educational performance also appeared highly important. Some staff reflected on the potential incompatibility of SFS implementation with concerns around child hunger and food insecurity. It was clear that schools were adapting the implementation of SFS to suit their own settings, which has also been reported in studies examining food-based policy (31,

34). In one school, action planning and goal setting was used to support monitoring, and data were viewed as a motivating factor for sustained work on healthy eating. Engagement with an external programme provided a framework for monitoring within this school. Performance management for catering staff also provided an opportunity for action-planning and addressing issues contributing to non-compliance. There is currently no formal system of SFS monitoring within schools in England, however, a pilot was completed 2024 in 18 Local Authorities to assess compliance and identify supportive interventions for individual schools (37).

4.2. Policy implications

In England, as in other countries, there is variation in schools' compliance with national school food standards, particularly in secondary schools (10, 14). We have identified supportive factors that represent good practice examples in aiding the implementation and embedding of quality standards in secondary schools, including linking healthy school food to the wider values and ethos of schools and to salient issues for schools; designated school food roles within senior leadership; engagement with external support programmes; and incorporation of monitoring into staff performance management. The study has also highlighted potential restrictive factors that could be addressed to improve implementation. The most pertinent of these is consideration of how school food policy can operate within and/or support other priorities for school food e.g. financial viability. Studies in other countries, such as the US, have found no evidence of substantial impact of the implementation of quality standards upon revenue losses (10) but catering providers may need reassurances. Policy adaptation may also be required to better suit the secondary school context of food provision. Alongside this, other actions may help to overcome barriers to implementation, such as monitoring structures; provision of training and clear guidance; and linking oversight to the school governor role. Some of these issues were highlighted in a 2022 white paper (38), which outlined actions that align well with those identified in this research, including the pilot programme for monitoring SFS compliance, as well as a training programme for school governors and academy trusts on a whole school approach to food (39). Valuable learning may be achieved from evaluation of these and of existing programmes/policies in other nations, e.g. Scotland (7, 10). Evaluation of the SFS compliance pilot (37) indicated the feasibility of a monitoring programme, but highlighted inconsistencies in how specific standards were understood, and variability in schools' engagement with the feedback provided. We have highlighted a need to support schools in interpreting standards, and in action planning and allocation of resources to ensure any monitoring results in improvements to food provision. Importantly, the SFS compliance pilot (37) focused on the lunch period, whilst our findings indicate the importance of monitoring provision outside of lunch, given student dietary patterns and misunderstanding around the application of the standards outside of lunch. This research reiterates the importance of understanding interactions and negotiations between those implementing policy and real-world contexts for achieving effective policy implementation (40). The findings will be valuable in supporting the design of revised school food standards in England (41). School nutrition policies are used globally, with 93 countries implementing legislation, compulsory standards or guidance on school food and beverages (42). Contextual influences on adoption and

implementation of these policies have been documented (10, 35). The findings here add to this existing knowledge and provide valuable learning for those countries wishing to introduce or improve the implementation of national school food standards.

4.2.1. Strengths and limitations

Use of a mixed methods approach allowed for broad assessment of implementation practices across a large and representative sample of schools, as well as in-depth exploration of the day-to-day embedding of school food policy and the contextual factors influencing this through qualitative investigation. Analytical integration of these data drew on existing approaches (26, 43), and provided a means of identifying convergence or divergence within the data. Our methods and interpretation of findings were underpinned by NPT, an established framework for understanding the dynamics of implementing and embedding interventions. Application of this framework allowed linking of the realities of SFS implementation to theoretical propositions, to disassemble the implementation process into its constituent components and identify factors that were preventing effective implementation.

However, we had a low response rate to surveys from school stakeholders, particularly from governors, limiting our ability to assess implementation of the SFS in some schools and adequately compare groups. This may have introduced bias in the survey sample since those schools/groups with low response may differ from those with high response rates. Our data were collected at single time points in each school. Longitudinal data collection may have enabled greater understanding of the initial implementation, embedding and sustainment of the policy over time.

5. Conclusions

This study provides important evidence on the current implementation of the SFS within secondary schools in England, identifying factors contributing to successful implementation and areas requiring further development or support. Improvements in coherence of the SFS related to the secondary school context, as well as support for reflexive monitoring of the standards by both schools and other authorities, are key areas of focus to improve future implementation of school food quality standards.

Abbreviations

BME
Black or minority ethnic groups
EAL
English as an additional language
FSM
Free School Meals
IDACI
Index of deprivation affecting children index

NoMAD
Normalisation MeAsure Development questionnaire
NPT
Normalisation Process Theory
SFS
School food standards
UK
United Kingdom

Declarations

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Competing interests statement

MP and PA received support from the National Institute of Health and Care Research (NIHR) Public Health Programme (17/92/39) for the submitted work. The funders had no role in the collection, analysis, interpretation of data, writing of the report, or decision to submit the article for publication. The views expressed are those of the author(s) and not necessarily those of the NIHR or the Department of Health and Social Care.

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Ethics approval, consent to participate and consent for publication

This study was conducted in accordance with the ethical principles for medical research involving human participants outlined in the Declaration of Helsinki. For both study components, participants received information sheets prior to participation informed consent was gained prior to survey/interview.

Participants provided consent for inclusion of their pseudonymised data in academic reports. Ethical approval was obtained from the University of Birmingham Ethical Review Committee (ERN_18-1738).

Availability of data and materials

The anonymised datasets generated and/or analysed during the current study are available from the corresponding author on reasonable request.

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The grant applicants designed the study, and the funders approved the protocol. The funders had no role in the collection, analysis, interpretation of data, writing of the report, or decision to submit the article for publication.

Authors' contributions

MP (MBChB, PhD) and PA (MBChB, MD) conceived of the research. MM (PhD), AD (PhD), RA (PhD) and LK (RD) were involved in data collection and analysis. MM and AD drafted the manuscript. All authors read and approved the final manuscript.

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