

Integrating perspectives on consumer perceptions for food safety, nutrition and waste – *the role of capability and opportunity*

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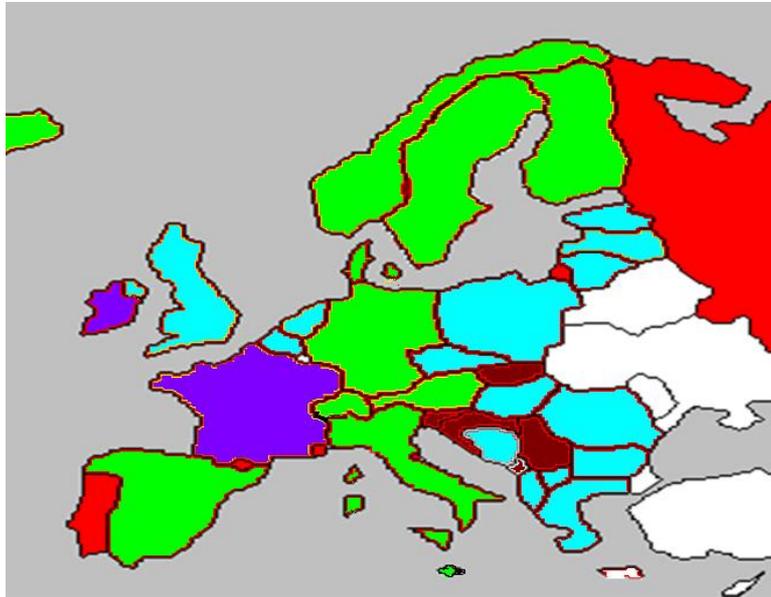


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Decisions (FOOD): Integrating Perspectives on
Consumers' Perceptions of Food Safety, Nutrition and Waste
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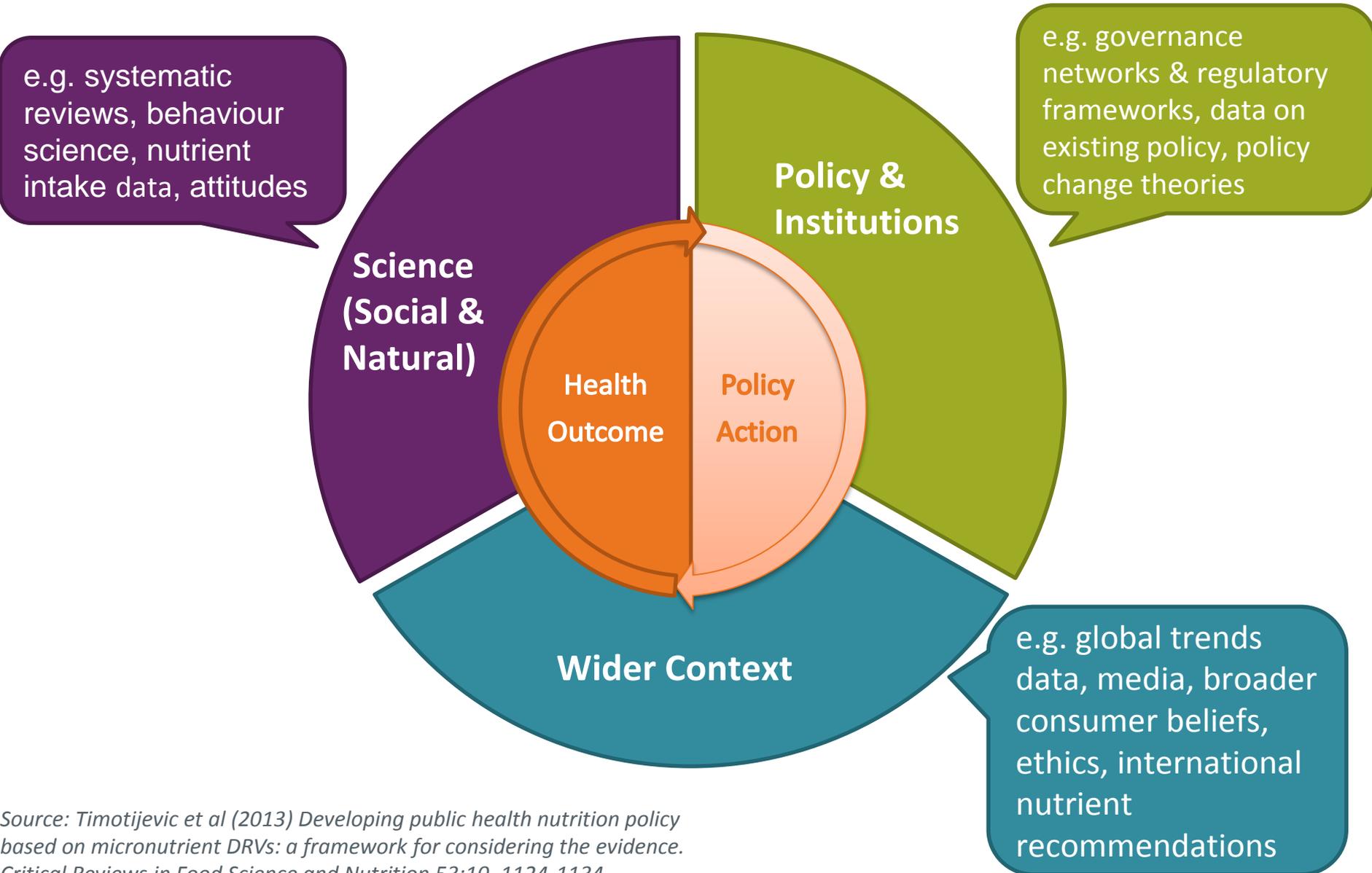
Dietary guidance

Are food safety, nutrition and waste combined?

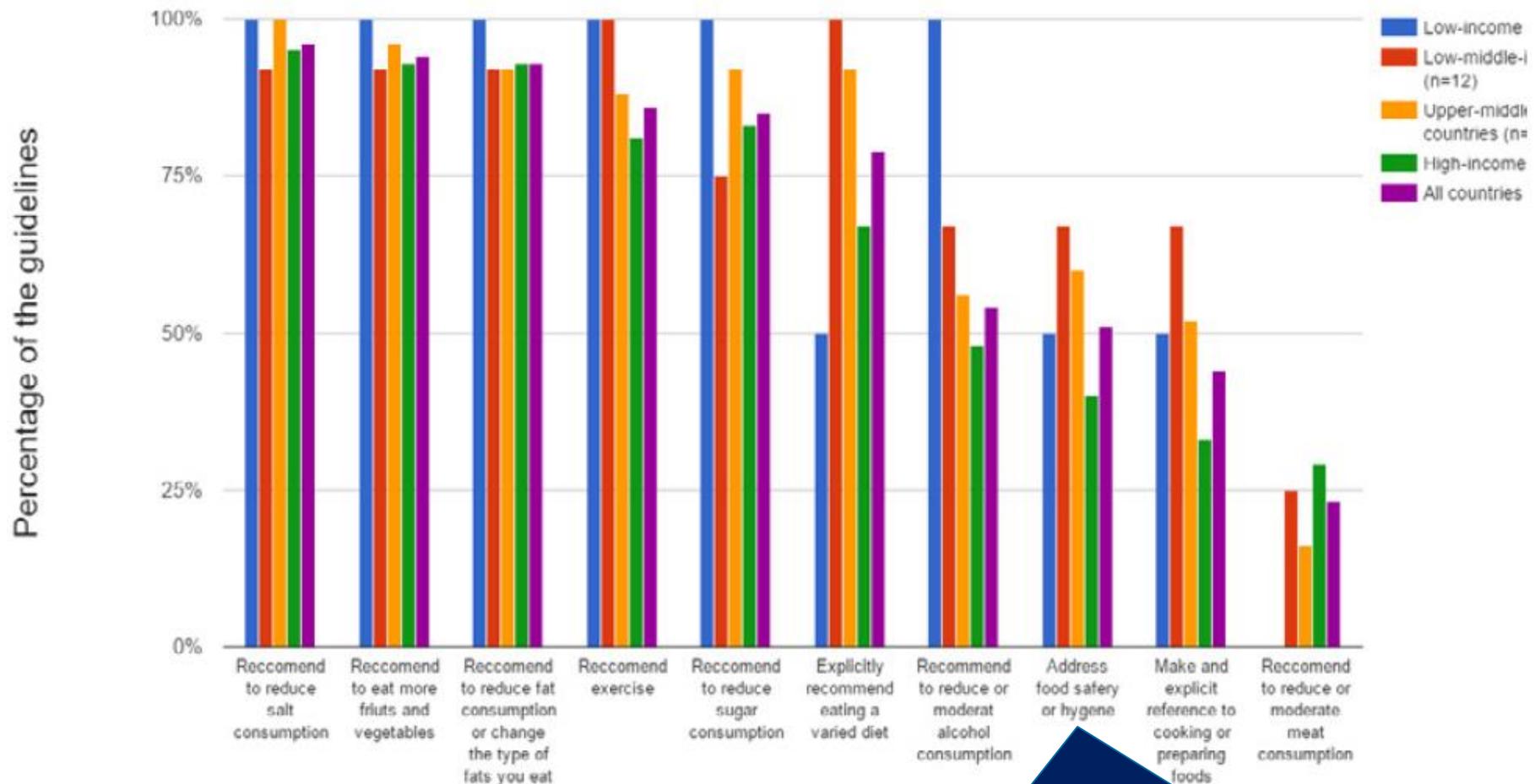
Differing statutory and legal roles across Europe



- Nutrient recommendations typically developed by *Scientific Advisory Bodies*
- Groups through which expert advice enters the political process and can be established institutions, short term commissions, ad hoc and standing committees and informal network of experts
- “Boundary organisation” that feeds technical recommendations into policy development process
- Crucial in the development of public health nutrition policy
- WHO (2008): link between the existence of *Scientific Advisory Bodies* for nutrition and nutrition policy implementation



Most common messages in national dietary guidelines by income level



e.g. reference to prevalence foodborne diseases or simply the way government departments are organised

Main messages in national dietary guidelines that include sustainability

	Germany	Brazil	Sweden	Qatar
Fruit and Vegetables	<p>Choose mainly plant-based foods.</p> <p>Enjoy 5 portions of fruit and vegetables daily.</p>	<p>Eat foods mainly of plant origin.</p> <p>Chose seasonal and locally grown produce.</p>	<p>Eat lots of fruit and vegetables (at least 500g per day)</p> <p>Choose high fibre vegetables.</p>	<p>Eat vegetables with most meals, including snacks.</p> <p>Aim for 3-5 servings of vegetables and 2-4 of fruits every day.</p>
Meat	<p>Eat meat in moderation.</p> <p>White meat is healthier than red meat.</p>	<p>Try to restrict the amount of red meat.</p>	<p>Eat less red and processed meat (no more than 500 grams of cooked meat a week).</p> <p>Only a small amount of this should be processed.</p>	<p>Choose lean cuts of meat.</p> <p>Limit red meat (500g per week)</p> <p>Avoid processed meats.</p>
Processed food		<p>Limit the consumption of processed foods and avoid ultra-processed foods.</p>		<p>Eat less fast foods and processed foods.</p>

Main messages in national dietary guidelines that include sustainability

	Germany	Brazil	Sweden	Qatar
Dairy	<p>Consume milk and dairy products daily.</p> <p>Choose low fat.</p>	<p>Milk drinks and yogurts that have been sweetened, coloured and flavoured are ultra-processed foods, and as such should be avoided.</p>	<p>Choose low-fat, unsweetened products enriched with vitamin D.</p>	<p>Consume milk and dairy products daily.</p> <p>Choose low fat. If you do not drink milk or eat dairy products, choose other calcium and vitamin D rich foods (e.g. fortified soy drinks, almonds, chickpeas).</p>
Fat and oil	<p>Fat and fatty foods in moderation.</p> <p>Choose fats and oils from vegetable origins.</p>	<p>In moderation.</p>	<p>Choose healthy oils when cooking, such as rapeseed oil or liquid fats made from rapeseed oil, and healthy sandwich spreads.</p>	<p>Avoid saturated fat and hydrogenated or trans fat.</p> <p>Use healthy vegetable oils such as olive, corn and sunflower in moderation.</p>

Main messages in national dietary guidelines that include sustainability

	Germany	Brazil	Sweden	Qatar
Fish	Once to twice a week		<p>Eat fish and shellfish two to three times a week.</p> <p>Vary your intake of fatty and low-fat varieties and choose eco-labelled seafood.</p>	At least twice a week.
Behavioural advice	<p>Preferably cook foods on low heat, for a short time, using little amount of water and fat.</p> <p>Use fresh ingredients whenever possible (this helps to reduce unnecessary packaging waste).</p> <p>Take your time and enjoy eating.</p>	<p>Eat regularly and carefully in appropriate environments and, whenever possible, in company.</p> <p>Develop, exercise and share cooking skills.</p> <p>Plan your time to make food and eating important in your life.</p> <p>Be wary of food advertising and marketing.</p>	<p>Try to maintain energy balance by eating just the right amount.</p>	<p>Build and model healthy patterns for your family:</p> <ul style="list-style-type: none"> • Keep regular hours for meals. • Eat at least one meal together daily with family. • Be a role model for your children when it comes to healthy eating and physical activity

Eatwell Guide

Check the label on packaged foods

Each serving (150g) contains

Energy 1046kJ 250kcal	Fat 3.0g LOW	Saturated 1.3g LOW	Sugars 34g HIGH	Salt 0.9g MED
13%	4%	7%	38%	15%

of an adult's reference intake

Typical values (as sold) per 100g: 697kJ/ 167kcal

Choose foods lower in fat, salt and sugars

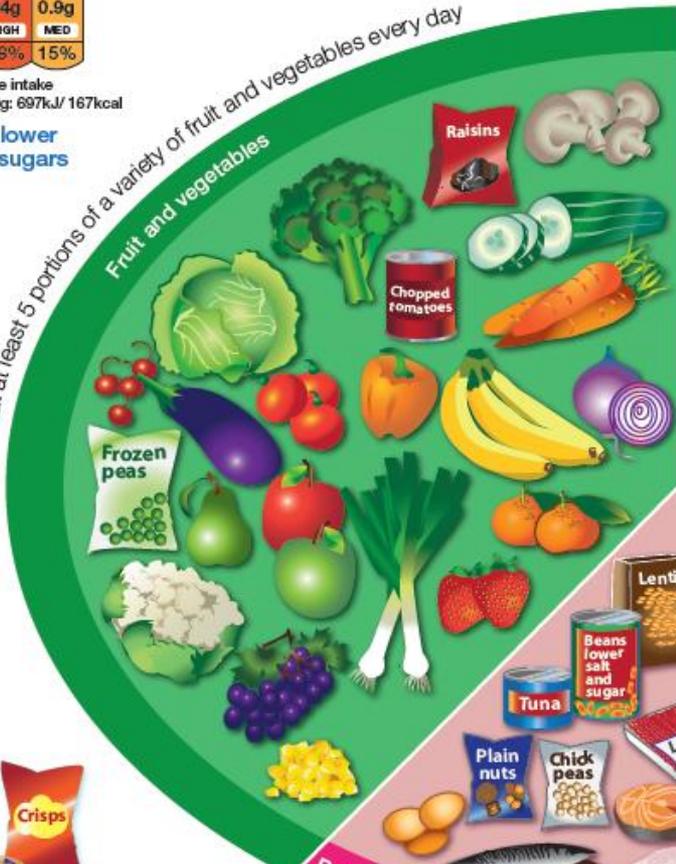
Use the Eatwell Guide to help you get a balance of healthier and more sustainable food. It shows how much of what you eat overall should come from each food group.



Water, lower fat milk, sugar-free drinks including tea and coffee all count.

Limit fruit juice and/or smoothies to a total of 150ml a day.

Eat at least 5 portions of a variety of fruit and vegetables every day



Choose wholegrain or higher fibre versions with less added fat, salt and sugar



Beans, pulses, fish, eggs, meat and other proteins



Dairy and alternatives



Choose unsaturated oils and use in small amounts



Eat less often and in small amounts

Per day 2000kcal 2500kcal = ALL FOOD + ALL DRINKS

Food and cooking skills – scope for change?

- Healthful shopping
- Sustainable eating behaviour
- What are cooking and food skills?
- Content of successful cooking skills and dietary behaviour change and interventions contain
- Cooking and food skills
 - Barriers and facilitators to cooking from ‘scratch’ using basic or raw ingredients
 - Learning cooking skills at different ages

Healthful shopping

- Aim: to explore consumers' perceptions of a healthful shop and identify barriers to conducting a healthful shop
- Northern Ireland and Republic of Ireland
- Data collection method: **n=50**
Accompanied regular shop

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Let's talk about health: shoppers' discourse regarding health while food shopping

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Abstract

Objective: The present study aimed to examine the role of health in consumers' food purchasing decisions through investigating the nature of people's discourse regarding health while conducting their food shopping.

Design: The study employed the think-aloud technique as part of an accompanied shop. All mentions of health and terms relating to health were identified from the data set. Inductive thematic analysis was conducted to examine how health was talked about in relation to people's food choice decisions.

Setting: Supermarkets in Dublin, Republic of Ireland and Belfast, Northern Ireland.

Subjects: Participants (n 50) were aged over 18 years and represented the main household shopper.

Results: Responsibility for others and the perceived need to illicit strict control to avoid 'unhealthy' food selections played a dominant role in how health was talked about during the accompanied shop. Consequently healthy shopping was viewed as difficult and effort was required to make the healthy choice, with shoppers relating to product-based inferences to support their decisions.

Conclusions: This qualitative exploration has provided evidence of a number of factors influencing the consideration of health during consumers' food shopping. These results highlight opportunities for stakeholders such as public health bodies and the food industry to explore further ways to help enable consumers make healthy food choices.

Keywords
Health
Shopping
Supermarket
Food
Behaviour

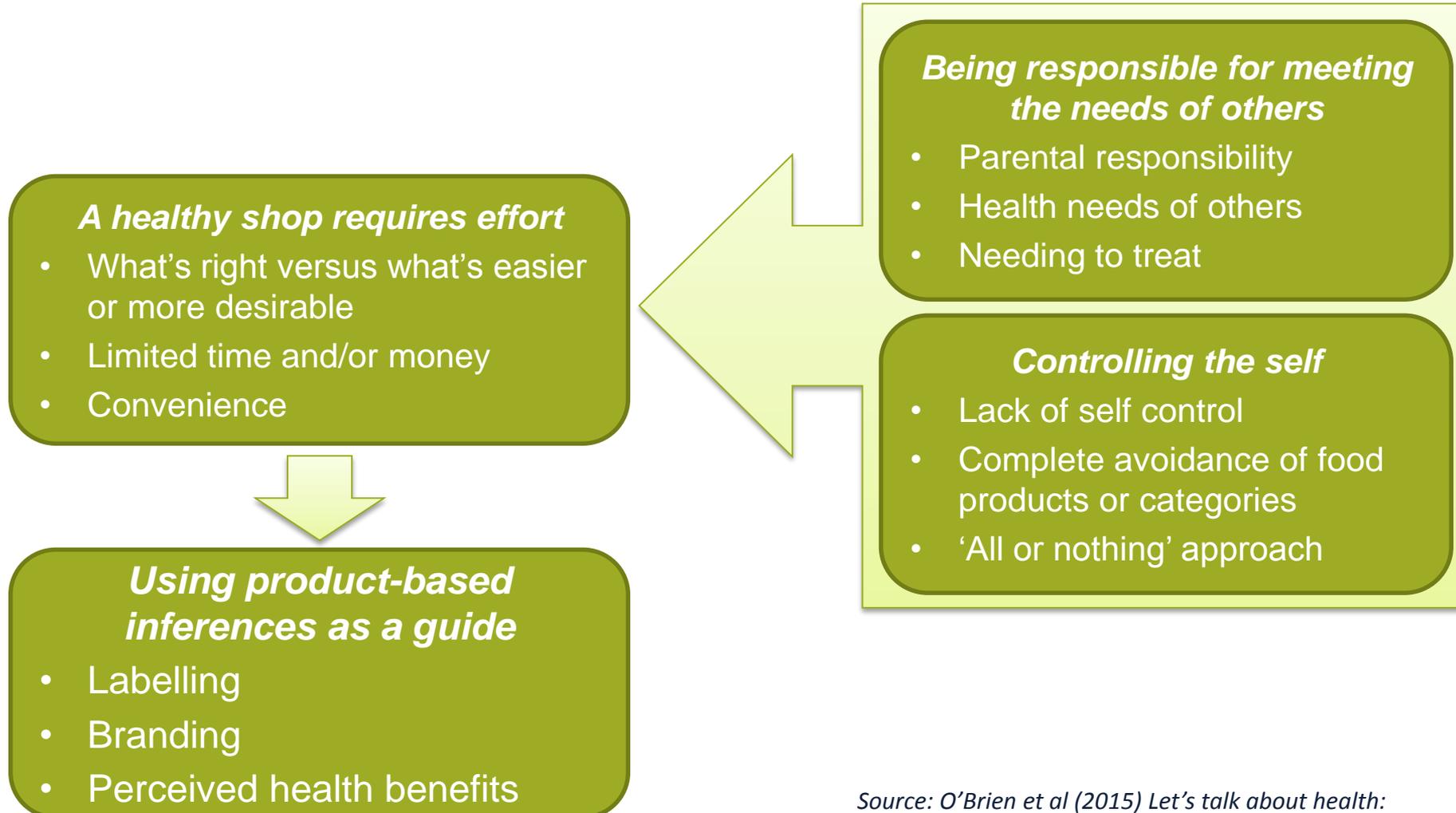
The link between diet and health is well established^(1,2), with nutrition recognised as a major modifiable determinant of chronic disease⁽³⁾. Despite this, the rates of non-communicable chronic diseases^(4,5), including overweight and obesity^(6,7), are increasing globally. Although population awareness of the link between poor dietary practices and poor health outcomes exists^(8,9), this is often not reflected in behaviour^(10,11). Research has reported that consumers face difficulty in translating their understanding of health into healthful food purchases^(12–14), with consumers facing trade-offs between different values each time they choose a food⁽¹⁵⁾. Food choice is influenced by a myriad of competing, accommodating and negotiating factors^(16,17) involving individual ideals, social relationships and food contexts⁽¹⁸⁾, all of which have been widely documented in the literature^(19–22).

While health is frequently mentioned as a consideration in food choice behaviour, its impact and importance have

been under-researched^(23–26). Health has been described as having heterogeneous dimensions in personal food systems⁽¹⁷⁾. In order to explore the role of health in consumer food choice, it is important to consider lay health theories⁽²⁷⁾ and the belief systems surrounding understandings of the meaning, motivations and importance of health to people^(28,29). Individual diversity regarding health has led to the identification of numerous themes defining health, from a 'modern way of life' to 'a functional ability'⁽³⁰⁾. Similarly, during the food decision-making process, the value of health differs between consumers⁽³¹⁾. Health consciousness^(29,31), health involvement^(32,33), health concern^(30,34) and nutrition self-efficacy^(31,35,36) have all been shown to affect the purchase of healthy food items and the motives behind individuals' behaviour. There is however limited research to date that explores the influence of health on food choice in a shopping context.

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How health is represented in consumers' food purchasing decisions



Source: O'Brien et al (2015) *Let's talk about health: Interpretation of shopper's discourse regarding health while conducting a grocery shop*. Public Health Nutrition

Barriers to conducting a healthful shop

- barriers to healthful shopping:
 - lack of self-efficacy in choosing, preparing and cooking healthful foods
 - *Ability to manage time*
 - *Ability to manage money*
 - *Ability to prepare and cook healthful foods*
 - *Ability to choose healthful foods*
 - conflicting needs when satisfying self and others
- Whilst the importance of healthy eating was recognised, consumers were unaware how internal and external cues impacted on carrying out a healthful shop

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Research report

Healthful grocery shopping. Perceptions and barriers[☆]

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ABSTRACT

While there is evidence of the factors influencing the healthfulness of consumers' food choice, little is known about how consumers perceive the healthfulness of their shopping. This study aimed to explore consumers' perceptions of, and identify barriers to, conducting a healthful shop. Using a qualitative approach, consisting of an accompanied shop and post-shop telephone interview, 50 grocery shoppers were recruited. Results showed that consumers used three criteria to identify a healthful shop: (1) inclusion of healthful foods; (2) avoidance or restriction of particular foods; and (3) achieving a balance between healthful and unhealthy foods. Those who take a balanced approach employ a more holistic approach to their diet while those who avoid or include specific foods may be setting criteria to purchase only certain types of food. The effectiveness of any of these strategies in improving healthfulness is still unclear and requires further investigation. Two barriers to healthful shopping were: (i) lack of self-efficacy in choosing, preparing and cooking healthful foods and (ii) conflicting needs when satisfying self and others. This highlights the need for interventions targeted at building key food skills and for manufacturers to make healthful choices more appealing.

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Introduction

Current dietary recommendations promote healthful eating by encouraging variety and balance with a view to achieving the Recommended Daily Allowances of nutrients. Pictorial educational tools such as *The Eatwell Plate* (UK) (Food Standards Agency, 2007) and *the Food Pyramid* (Ireland) (Department of Health, 2005) are intended to help consumers to understand the concept of a balanced diet. Despite widespread consumer awareness of what constitutes healthful eating, the rate of diet-related chronic illnesses continues to rise, indicating that appropriate knowledge does not necessarily translate into corresponding behaviour (Brug, 2008; Dube & Cantin, 2000; Wiggins, 2004; Young & Swinburn, 2002). Furthermore, in a recent review on food-based dietary guidelines, Brown et al. (2011) highlighted that there was limited evidence in the literature on the benefits of such guidelines to consumers for healthy eating objectives. While some consumers may use these guidelines subconsciously Lobstein and Davies (2009) stated that, "when questioned, consumers will usually claim to understand what is or is not healthy, but they acknowledge confusion about how to put generalised dietary advice into practice" (p. 331). This highlights a disconnection between knowing what should be eaten and how to achieve this. While there is a lot of evidence of how various factors influence the healthfulness of consumers' food choice (Clanz, Baur, Malbach, Goldberg & Snyder, 1998; Robinson, Lahteenmaki, & Tuorila, 1999; Stepcoe, Pollard, & Wardle, 1995; Yu-Hua, 2008), relatively little is known about how consumers perceive the healthfulness of their food shopping and how they might subsequently embark on achieving a healthful shop.

Previous research highlights the difficulties shoppers face in making healthful food selections. Dietary guidelines are not specifically structured or disseminated to enable consumers to put them into practice for shopping in-store (Clanz & Mullis, 1988; Wiggins, 2004). Furthermore, understanding grocery shopping behaviour is an important prerequisite to facilitate modifying food choice (Ramsley et al., 2003; Yoo et al., 2006). The super market is a key component in the chain of events that influences both the individual and household food intake (Thompson, Cummins, Brown, &

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Characterizing product decisions (%)

Type of decision	Accompanied shop n=2424
Price	35.5
Preference	29.5
Appearance	22.8
Placement	20.0
Who eats	19.0
Familiarity	19.7
Availability	8.9
Packaging preference	8.2
Plans and inspiration	9.3
Reference to pantry	11.2
Quality	8.3
Health	6.6
Convenience	5.9

Type of decision	Accompanied shop n=2424
Conscious decision-making	4.8
Nutrients	4.3
Shopping experience	4.2
How it will be used	3.0
Unavailability	3.3
Boring/interesting	3.1
Cooking time	1.6
Speciality e.g. artisan	2.6
Ingredients	2.7
Stated barriers	2.4
Treat - people	1.4
Cooking method	1.5

Sustainable eating behaviour scales

Name of the Scale	Source	Items	
Index of sustainability of food practices	Tobler et al (2011) <i>Appetite</i>	Buy regional (local) food Avoid products with excessive packaging Buy organic food Eat only seasonal fruit and vegetables Eat meat at most twice a week or little at a time Avoid food products that were imported by airplane	
Sustainable food behavior	Verain et al (2015) <i>Appetite</i>	Buying organic meat Buying organic fruits and vegetables Buying organic dairy Buying free range meat Buying products with a sustainability label	Eating smaller portions of meat Eating less Eating less dairy Eating smaller portions of meat One meat free day a week
Green Eating behaviour Scale	Monroe et al (2015) <i>Public Health Nutrition</i>	Choosing locally grown products Shopping at farmers' markets Choosing organic or fair-trade foods and beverages Selecting meats that are raised without antibiotics or hormones Frequency of purchasing meat or poultry labelled 'free range'	
Green Eating behaviour scale (original)	Weller et al. (2014) <i>Journal of Nutrition Education and Behavior</i>	Locally grown foods are grown within 100 miles from your location. Based on this, how often do you eat locally grown foods? When is season, how often do you shop at farmer's markets? How often do you choose foods that are labelled USDA organic? How often do you select meats, poultry and dairy products that are raised without antibiotics or hormones? How often do you select food or beverages that are labelled fair-trade certified? How often do you buy meat or poultry labelled 'free range' or cage free?	

Young consumers' attitudes and behaviour towards sustainable and healthy eating

Studies

- 1) Qualitative longitudinal research to explore openness to adopting sustainable healthy eating behaviour
- 2) Qualitative research with the objective to develop a sustainable healthy eating behaviour index
- 3) Randomised controlled trial to describe consumers' reactions on interactive tailored messages about sustainable healthy eating

Sustainable healthy eating index (29 items)

- Healthy and balanced diet
- Use of quality labels (regional and organic)
- Meat reduction
- Selection of local food
- Choice of low fat food products
- Avoidance of food waste
- Purchase and consumption of food products that respect animal welfare
- Seasonal food

Pieniak et al. BMC Public Health (2016) 16:577
DOI 10.1186/s12889-016-3260-1

BMC Public Health

STUDY PROTOCOL

Open Access

Sustainable healthy eating behaviour of young adults: towards a novel methodological approach



Zuzanna Pieniak^{1*}, Sylwia Żakowska-Biemans², Eliza Kostyra³ and Monique Raats⁴

Abstract

Background: Food, nutrition and health policy makers are poised with two pertinent issues more than any other: obesity and climate change. Consumer research has focused primarily on specific areas of sustainable food, such as organic food, local or traditional food, meat substitution and/or reduction. More holistic view of sustainable healthy eating behaviour has received less attention, albeit that more research is emerging in this area.

Methods/design: This study protocol that aims to investigate young consumers' attitudes and behaviour towards sustainable and healthy eating by applying a multidisciplinary approach, taking into account economical, marketing, public health and environmental related issues. In order to achieve this goal, consumers' reactions on interactive tailored informational messages about sustainable from social, environmental and economical point of view, as well as healthy eating behaviour in a group of young adults will be investigated using randomized controlled trial. To undertake the objective, the empirical research is divided into three studies: 1) Qualitative longitudinal research to explore openness to adopting sustainable healthy eating behaviour; 2) Qualitative research with the objective to develop a sustainable healthy eating behaviour index; and 3) Randomised controlled trial to describe consumers' reactions on interactive tailored messages about sustainable healthy eating in young consumers.

Discussion: To our knowledge, this is the first randomised controlled trial to test the young adults reactions to interactive tailor made messages on sustainable healthy eating using mobile smartphone app. Mobile applications designed to deliver intervention offer new possibilities to influence young adults behaviour in relation to diet and sustainability. Therefore, the study will provide valuable insights into drivers of change towards more environmentally sustainable and healthy eating behaviours.

Trial registration: NCT02776410 registered May 16, 2016.

Background

Currently, food, nutrition and health policy makers are poised with two pertinent issues more than any other: obesity and climate change [1, 2]. According to the World Health Organization [3] overweight-related problems occur more often than malnutrition. Convincing evidence exist linking obesity and poor diet with cardiovascular diseases, cancer and diabetes [4, 5]. In addition to the challenge for overweight-related problems, the policy makers also need to consider the impact of the diet/overconsumption on the environment. The environmental

contribution of the food sector to total greenhouse gas emissions (GHGE) is estimated at 15 to 31 % [6, 7]. GHGEs of different food groups vary widely; nevertheless meat and dairy make the greatest part to GHGEs in the diet [8, 9].

At present, literature on consumer behaviour is trying to apply a multidisciplinary approach, taking into account economical, marketing, public health and environmental related issues. Consumer research has previously focused on specific areas of sustainable food, such as organic food [10, 11], local or traditional food [12–14], ethical food purchases [15, 16] meat substitution and meat reduction [17–20]. Additionally, consumer attitudes, perception and behaviour towards healthy eating have been widely explored [21, 22]. However, a more holistic view of sustainable

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Common components relating to the measurement of cooking skills and food skills



	Cooking Skills	Food Skills	External
Food preparation and cooking frequency (type of cooking, peeling veg etc.)	13		
General cooking confidence/cooking ability	12		
Meal patterns (frequency of breakfast, lunch, dinner, eating out etc.)			11
Cooking attitudes/enjoyment of cooking			9
Planning food shopping/writing lists		8	
Health consciousness relating to choosing foods and feeding others		4	4
Typical food selection (e.g. pasta, rice, chips, fruit and vegetables etc.)			7
Purchasing and shopping behaviours (frequency of reading food labels etc.)		6	
Confidence/ability to cook specific meals	6		
Confidence/ability with specific cooking techniques (knife skills, baking, frying, etc.)	6		
Menu planning behaviours (frequency of planning menus/meals)		5	
Food safety and hygiene practices/behaviours (frequency of hand-washing, thawing food correctly etc.)		5	

n=frequency measured in 26 studies

Common components relating to the measurement of cooking skills and food skills

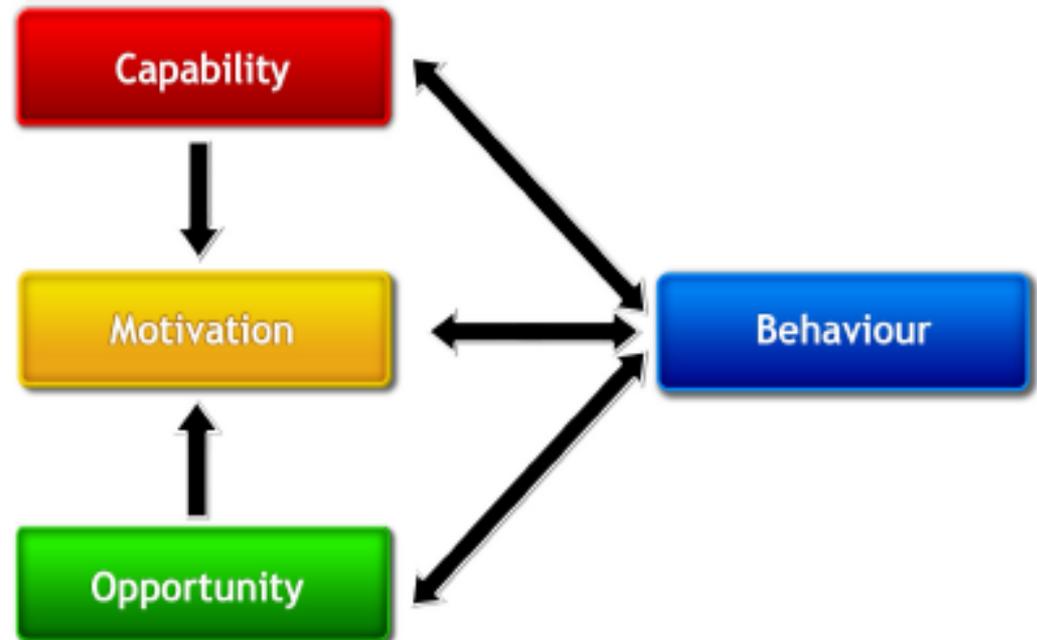
	Cooking Skills	Food Skills	External
Confidence/self-efficacy in choosing and preparing healthy and nutritious foods (e.g. fruit and vegetables)		5	
Confidence/ability to cook specific foods (e.g. chicken, meat, vegetables, etc.)	4		
Budgeting for food, comparing prices and using coupons etc.		4	
Barriers to cooking and food choices (e.g. time, equipment, resources)			4
Cooking practices (type of cooking oil, adding salt etc.)	3		
Confidence following a recipe	3		
Food preparation complexity (types of ingredients, number of ingredients in a recipe, etc.)	3		
Source of learning to cook			3
Frequency of recipe use	3		
Food management (ensuring food lasts for week/month etc.)	2	2	
Responsibility for cooking and shopping			2
Advance planning and food preparation behaviours (specifically pre- part-preparing/cooking meals)		2	

n=frequency measured in 26 studies

Behaviour change interventions

COM-B Behavioural system

- physical
 - psychological (the capacity to engage in the necessary thought processes - comprehension, reasoning)
- reflective processes (involving evaluations and plans)
 - automatic processes (involving emotions and impulses that arise from associative learning and/or innate dispositions)
- physical (afforded by the environment)
 - social (afforded by the cultural milieu that dictates the way that we think about things (e.g., the words and concepts that make up our language))



Source: Michie et al (2011) The Behaviour Change Wheel: a new method for characterising and designing behaviour change interventions. *Implementation Science*

Successful cooking skills and dietary behaviour change interventions contain

Education

Increasing knowledge or understanding

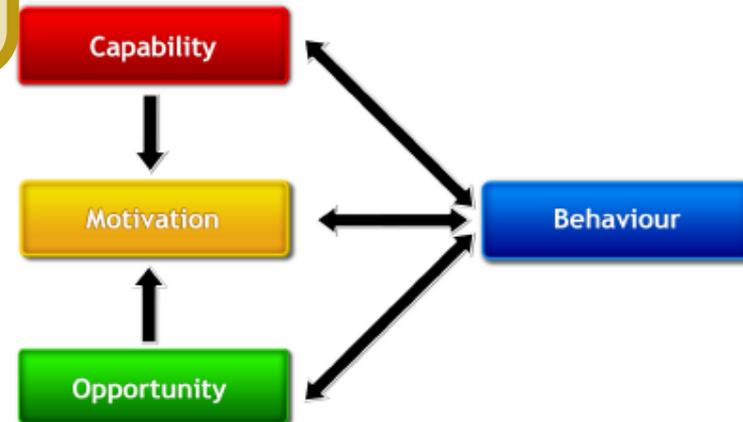
- *Information on the consequences of the behaviour in general*
- *Instruction on how to perform the behaviour*
- *Information on the consequences of the behaviour tailored to the individual*
- *Set graded tasks*

Training

Imparting skills

- *Prompt practice*

- **Physical**
- **Psychological**
the capacity to engage in the necessary thought processes - comprehension, reasoning
- **Reflective processes**
involving evaluations and plans
- **Automatic processes**
involving emotions and impulses that arise from associative learning and/or innate dispositions
- **Physical**
afforded by the environment
- **Social**
afforded by the cultural milieu that dictates the way that we think about things (e.g., the words and concepts that make up our language)



Successful cooking skills and dietary behaviour change interventions contain

Enablement

Increasing means/reducing barriers to increase capability or opportunity

- *Barrier identification*
- *Information on when and where to perform the behaviour*

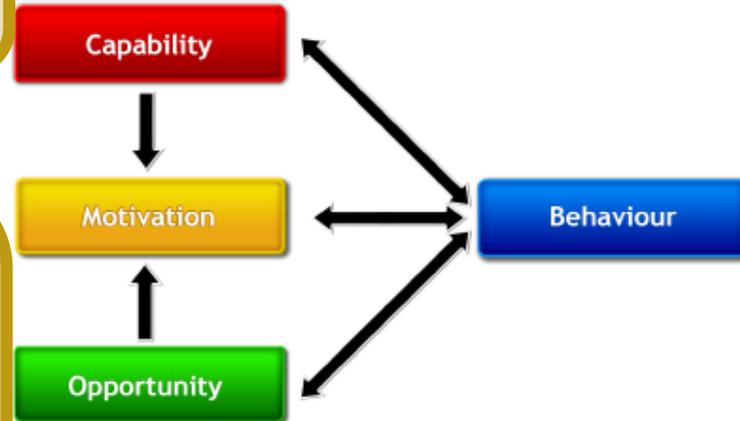
- Physical
- Psychological
the capacity to engage in the necessary thought processes - comprehension, reasoning

- Reflective processes
involving evaluations and plans

- Automatic processes
involving emotions and impulses that arise from associative learning and/or innate dispositions

- Physical
afforded by the environment

- Social
afforded by the cultural milieu that dictates the way that we think about things (e.g., the words and concepts that make up our language)



Barriers and facilitators to cooking from 'scratch' using basic or raw ingredients

A qualitative interview study

27 semi-structured interviews were conducted with participants (aged 18-58 years) living on the Island of Ireland (NI and ROI)

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 **Appetite** 

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Barriers and facilitators to cooking from 'scratch' using basic or raw ingredients: A qualitative interview study  CrossMark

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Perceptions of 'cooking from scratch'

Perceived ability	Personal definition
1 = very poor	"If you were making your own sauces, all like fresh food, using actual spices, I would consider made from scratch meals obviously the healthiest."
3	"I suppose in the traditional meaning it is totally everything, practically growing your own, but I think times have moved on. I think cooking from scratch is...it's actually washing the vegetables, getting the earth off them and peeling them and cutting them yourself, it's more vegetables, maybe with chicken, I do buy whole chickens but chicken fillets are easier, I tend to go for ones that are marinated so that's really convenience too, I wouldn't be marinating."
5	"Cooking from scratch means opening the jar and putting it into the saucepan, adding my own blend of herbs and spices to it, making the meatballs, I make the meatballs from scratch and then putting the pasta on."
7 = very good	"Anything that can easily be made from the raw ingredients, I'd still assume like vegetable stock or chicken stock or pasta to be from scratch even though in the past I have made these from flour and wheat and that but I'd still kind of dub these essentials as allowing to be from scratch. For example bolognese ... I could just buy a jar of Dolmio and that would be seen as cooking a meal but in my eyes it's not from scratch. From scratch is the main portion of the meal should come from raw ingredients with the minimum amount of pre-made ingredient, for example pasta takes quite a while to make from fresh so I use just a bag of that."

Facilitators and barriers to cooking from 'scratch' using basic or raw ingredients



Future interventions should focus on:

- practical sessions to increase self-efficacy in cooking skills
- highlight the importance of planning ahead
- teach methods such as batch cooking with basic ingredients and freezing

Learning cooking skills at different ages

A cross-sectional study

Survey of a nationally representative sample of 1049 adults aged 20–60 years from the Island of Ireland (NI and ROI)

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RESEARCH

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Learning cooking skills at different ages: a cross-sectional study



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The top five stated sources from where cooking skills were learnt:

- Mother (60.1 %)
- A different relative (16.2 %)
- Friends (13.6 %)
- Secondary School (9.3 %)
- Food Packet (7.1 %)

People stating mother as only source of cooking skills had significantly better outcomes on:

- Cooking confidence
- Number of cooking skills
- Cooking Creativity
- Cooking Identity
- Eating Choice Index (discriminates healthy and unhealthy eating behaviours)
- Consumption of fried food
- Consumption of takeaway
- Consumption of takeaway style food from shops
- Portions of fruit per day
- Portions of veg per day

Positive associations of learning cooking skills as a child or teenager

Compared to adult-learners, child- and teen-learners reported higher levels of:

- cooking creativity
- cooking identity

Compared to adult-learners, child-learners:

- spent more time in food preparation (both weekday and weekend)
- reported less food waste
- consumed less takeaways
- consumed less takeaway convenience food from the supermarket and shops
- ate more fruit

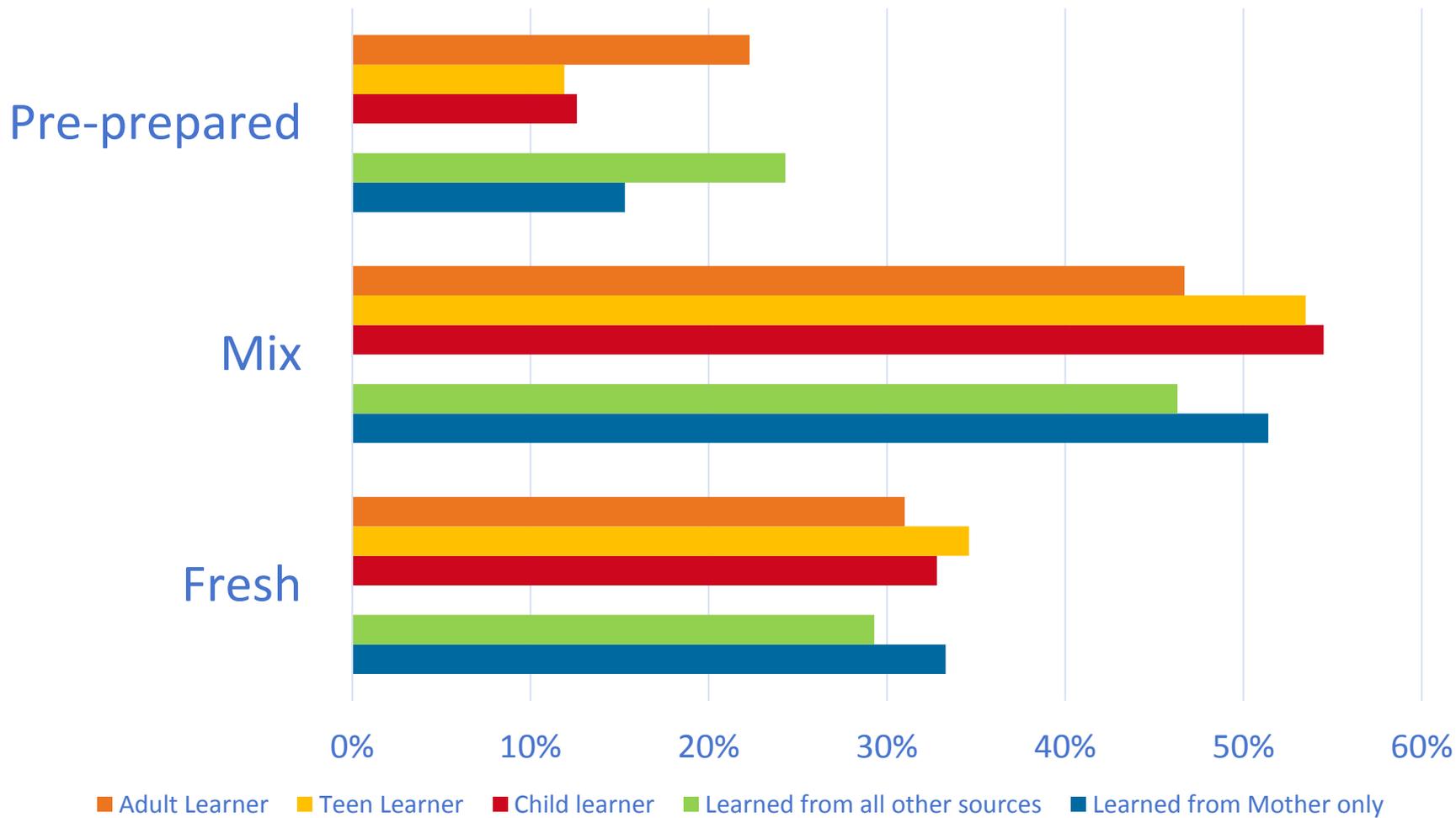
Compared to adult- and teen-learners, child-learners had significantly better scores in:

- food management
- food waste reduction

Compared to adult-learners, teen-learners had:

- greater cooking confidence
- greater food skills confidence
- used more food skills
- were more open to new food
- had a higher Food Safety knowledge
- consumed less fried food, biscuits, chocolate or savoury foods

Differences in the type of ingredients used

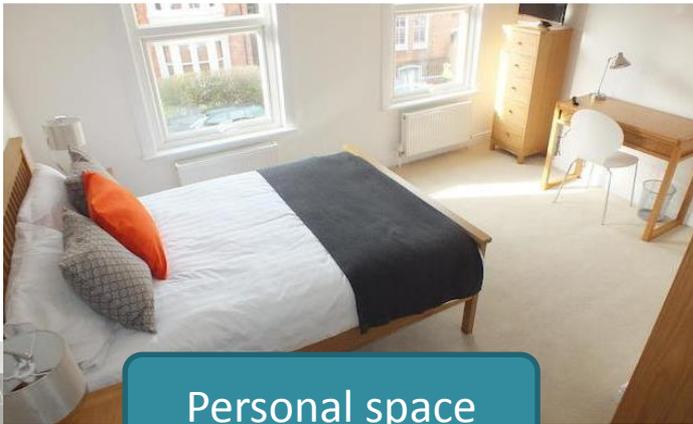


Food space – impact on food safety, nutrition and waste

Example of urban rental accommodation

Urban living – what are home food spaces?

- Work frequently demands greater mobility and nomadism, thus influencing people's lifestyles and consumption models.
- Increasing numbers of people work far from "home", using small residential units for (parts of) the working week and returning "home" at (some) weekends.



Personal space



Shared space

- 6 bedroom, all with en-suite, shared house with shared facilities
- kitchen facilities are shared as is the communal area and garden
- fully fitted shared kitchen with appliances
- communal dining area & communal garden
- £750 per calendar month

Urban living – Expectations of food-related resources?

What food-related resources can a tenant expect to have?

What are a landlord's responsibilities with regard to providing food-related resources?

Cooking facilities?

Storage facilities?

Waste facilities?



- A conveniently located bedsit with cooking facilities in the room and use of a shared bathroom.
- No parking but only a 5 minute walk to Town Centre.
- £425pm Including All Bills. Deposit £637.50 Agency fee: £100 per applicant.
- Full references required, a guarantor may be required and is subject to referencing and agency fee.

Consequences of transient populations?



THE RECYCLING RATE FOR 2015/16
WAS 33 PER CENT

IT NEEDS TO BE AT 50 PER CENT
BY 2020 OR THE COUNCIL WILL
BE HIT WITH "HEFTY FINES"

0:38 / 1:09

**EVERYTHING YOU NEED TO KNOW
ABOUT BIN COLLECTION CHANGES**

RECYCLING BINS WILL NOT BE
COLLECTED IF THEY CONTAIN:

- PLASTIC BAGS
- YOGHURT POTS
- MEAT TRAYS
- BUTTER TUBS
- GLASS BOTTLES AND JARS
- TEXTILES
- FOOD WASTE

1:03 / 1:09

**EVERYTHING YOU NEED TO KNOW
ABOUT BIN COLLECTION CHANGES**

CHANGES WILL INCLUDE:

- A CLOSED BIN POLICY
- EXCESS WASTE WILL NOT BE COLLECTED
- ONE BIN ONLY POLICY
- COLLECTION TO INCREASE BY NEARLY 2,500 HOMES IN NEXT THREE YEARS
- ALL TO COME INTO FORCE BY

0:32 / 1:09

**EVERYTHING YOU NEED TO KNOW
ABOUT BIN COLLECTION CHANGES**



Food | Consumer | Health
Designing a world-class infrastructure to facilitate research

Presenter: First name | Last name

Date: DD|MM|YY

Occasion: Occasion info

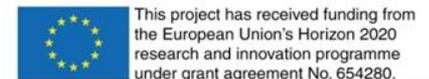
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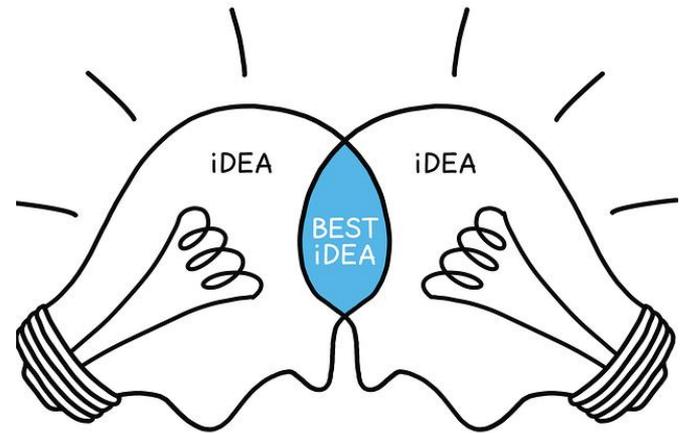
Coordinated by Wageningen Economic Research:



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Problem → Potential

- Existing datasets not sufficient for understanding consumer behaviour, product development, public health policies
- Every day, consumers & businesses generate “big data”
- Potential to link & analyse data & respond to societal challenges



Phase 3

Design of the research
infrastructure

ICT, Business model,
Governance, Ethics

needs ↑
↓ output



needs ↑
↓ output

Phase 1

Data generated
by consumers

Purchase, Preparation,
Consumption

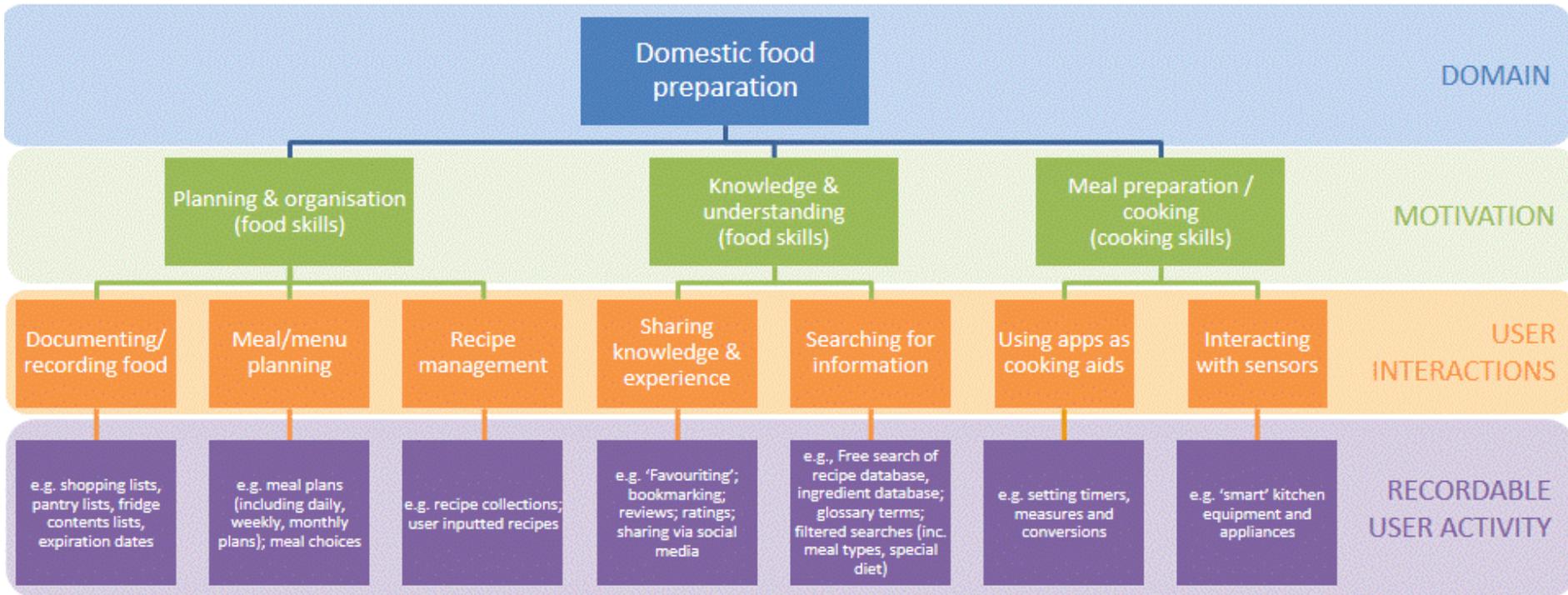


Phase 2

Connecting business
and research
generated data

Business, Existing
research infrastructures

What kind of recordable activity relates to food preparation?

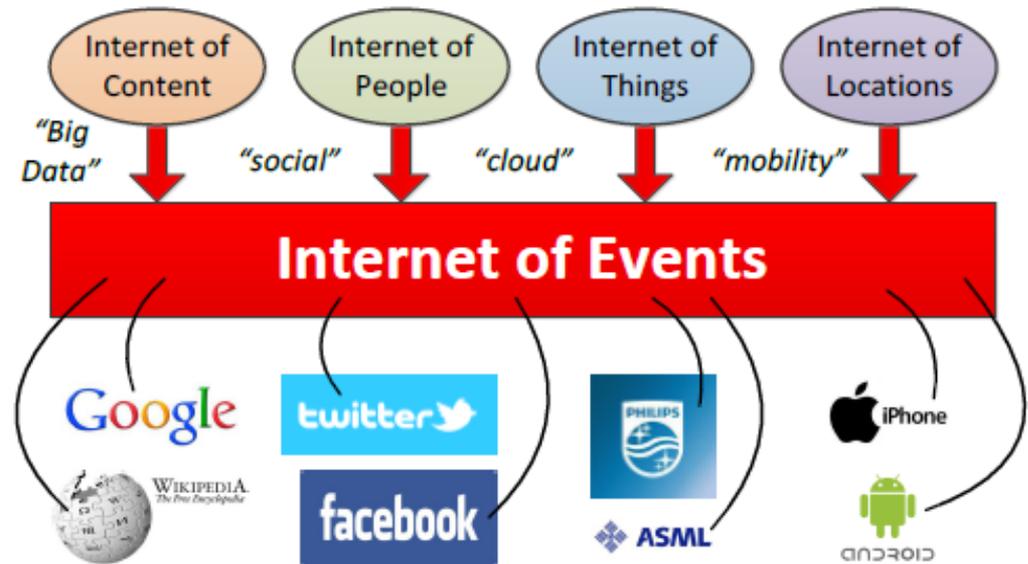


The Internet of Content (IoC): all information created by humans to increase knowledge on particular subjects (e.g. traditional web pages, articles, encyclopedia like Wikipedia, YouTube, e-books, newsfeeds, etc.)

The Internet of People (IoP): all data related to social interaction (e.g. e-mail, Facebook, Twitter, forums, LinkedIn, etc.)

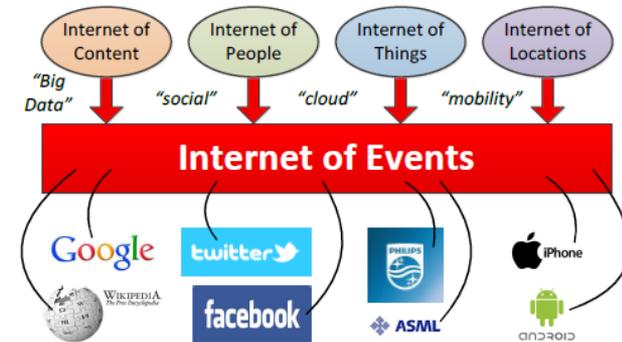
The Internet of Things (IoT): all physical objects connected to the network (e.g. all things that have a unique id and a presence in an internetlike structure. Things may have an internet connection or tagged using RadioFrequency Identification (RFID), Near Field Communication (NFC), etc.)

The Internet of Locations (IoL): refers to all data that have a spatial dimension. With the uptake of mobile devices (e.g., smartphones) more and more events have geospatial attributes.



Source: van der Aalst (2014) Data scientist: The engineer of the future. *WMP - Enterprise Interoperability VI*

- most important source of information
- may be “life events”, “machine events”, or both
- may take place inside
 - a machine (e.g., an X-ray machine or baggage handling system)
 - an enterprise information system (e.g., order placed by a customer)
 - a hospital (e.g., the analysis of a blood sample)
 - a social network (e.g., exchanging e-mails or Twitter messages)
 - a transportation system (e.g., checking in, buying a ticket), etc.



Data science questions

Reporting: What happened?

Diagnosis: Why did it happen?

Prediction: What will happen?

Recommendation: What is the best that can happen?

Source: van der Aalst (2014) Data scientist: The engineer of the future. *WMP - Enterprise Interoperability VI*

Acknowledgements



Good days and bad days: an investigation of the habits of shoppers when they do or don't buy healthy foods

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The impact of cooking and related food skills on healthiness of diets

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Young consumers' attitudes and behaviour towards sustainable and healthy eating

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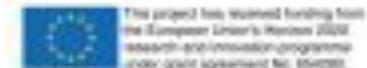
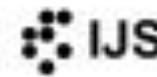


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