



Research report

Defining food literacy and its components [☆]Helen Anna Vidgen ^{a,*}, Danielle Gallegos ^b^a School of Exercise and Nutrition Sciences, Faculty of Health, Queensland University of Technology, Victoria Park Rd, Kelvin Grove, Queensland 4059, Australia^b School of Exercise and Nutrition Sciences, Faculty of Health, Queensland University of Technology, Australia

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ABSTRACT

Food literacy has emerged as a term to describe the everyday practicalities associated with healthy eating. The term is increasingly used in policy, practice, research and by the public; however, there is no shared understanding of its meaning. The purpose of this research was to develop a definition of food literacy which was informed by the identification of its components. This was considered from two perspectives: that of food experts which aimed to reflect the intention of existing policy and investment, and that of individuals, who could be considered experts in the everyday practicalities of food provisioning and consumption. Given that food literacy is likely to be highly contextual, this second study focused on disadvantaged young people living in an urban area who were responsible for feeding themselves. The Expert Study used a Delphi methodology (round one $n = 43$). The Young People's Study used semi-structured, life-course interviews ($n = 37$). Constructivist Grounded Theory was used to analyse results. This included constant comparison of data within and between studies. From this, eleven components of food literacy were identified which fell into the domains of: planning and management; selection; preparation; and eating. These were used to develop a definition for the term "food literacy".

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Introduction

Food is essential for healthy growth and development and has an important role to play in enhancing the quality of life, particularly in the prevention and management of many chronic conditions (World Health Organisation, 2004). Chronic disease prevention requires consistency in both selection of appropriate food and long-term maintenance of healthy habits. The unprecedented increase in diet-related disease has been linked to poor eating habits and a perceived diminishing understanding and skill set around food and its use (Berry, 1990; Bifulco & Caruso, 2007; International Union of Nutrition Sciences, 2005; Lang & Caraher, 2001). However, globally, the food system and the relationship of the individual to that system, continues to change and grow in com-

plexity (Lang, 2003). Individuals must adequately navigate the complex food system to ensure food intake contributes to health.

Consistent diet quality can be difficult to achieve. Food and eating are part of everyday life and hence respond to, and are challenged by, daily changes in individual, household, community, national and global environments (Bisogni, Jastran, Shen, & Devine, 2005; Devine, Connors, Bisogni, & Sobal, 1998; Poulain, 2002; Schubert, 2008; Visser, 1986; Wills, 2005). Maintenance of diet quality requires regular revision and adaptation of food habits in response to these changes. "Food literacy" has emerged as a term to describe the everyday practicalities associated with navigating the food system and using it in order to ensure a regular food intake that is consistent with nutrition recommendations. Its appearance coincides with an increase in the general term "literacy", which is increasingly used to describe the knowledge and skills needed to navigate a range of other societal systems such as health, technology and finance (Frisch, Camerini, Diviani, & Schulz, 2012; Goldney, Fisher, Dal Grande, & Taylor, 2005; Nutbeam, 2008; Organisation for Economic Co-operation and Development).

The emergence of this term may relate to the inadequacy of existing measures to capture the complexity of knowledge, skills and behaviours used to meet day-to-day food needs. Measures tend to either focus on just one element, such as cooking, food skills, eating competence, nutrition knowledge or food preparation (Byrd-Bredbenner, 2004; Caraher, Dixon, Lang, & Carr-Hill, 1999;

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Devine, Farrell, & Hartman, 2005; Fordyce Voorham, 2011; Larson, Perry, Story, & Neumark-Sztainer, 2006; Parmenter & Wardle, 1999; Satter, 2007) or have been developed to describe consumer behaviour for food marketers rather than to describe protective or risk factors for health (Bell & Marshall, 2003; Scholderer, Brunso, Bredahl, & Grunert, 2004). In addition, these measures are based on constructs which individual researchers consider to be relevant, rather than necessarily the targeted individual. Differences between expert and client perceptions of health “problems” are well established (Bond, 2007; Lupton, 2003). It is likely that expert and client identification of enabling and protective factors for diet, such as food literacy, would also differ. Exploring the lived experience of feeding oneself would more accurately reflect individuals’ responses to social and environmental changes in food and eating.

“Food literacy” as a term is increasingly used in policy, practice, research and in the public arena, however, there is no shared understanding of its meaning. In some cases the term “food literacy” is used explicitly, in others it is implicit with the provision of a list of food skills, knowledge and behaviours. Implied components vary greatly and include the language of food, knowledge of its origins, neophilia, food preparation and sustainability (BEST Institut für berufsbezogene Weiterbildung und Personal training, 2006; Department of Agriculture Fisheries and Forestry, 2013; Department of Health, 2010, 2011; European Union Committee, 2011; Gale Smith, 2009; Glickman, Parker, Sim, Del Valle Cook, & Miller, 2012; Kolasa, Peery, Harris, & Shovelin, 2001; National Health and Medical Research Council, 2013; Prime Minister's Science Engineering and Innovation Council, 2010; Public Health Association of Australia, 2009; Queensland Public Health Forum, 2009; Rawl, Kolasa, Lee, & Whetstone, 2007; Reisch, Lorek, & Bietz, 2011; Vandebroek, Goossens, & Clemens, 2007). Practitioners are intuitively working more in the everyday practicalities of using food to meet nutrition guidelines through a closer connection with food. Yet there is little agreement on the set of knowledge and skills required or indeed what the end goal might be. A shared understanding is important in guiding efforts and investment at individual, community and population levels.

The aim of this research was to develop a definition of food literacy, informed by the identification of its components. This was considered from two perspectives: that of food experts which aimed to reflect the intention of existing policy and investment; and that of individuals who could be considered experts in the everyday practicalities of feeding themselves using young people and disadvantage as a case study. Data between and within studies was used to develop a definition for food literacy and identify its components. This method allowed the construct of food literacy to be explored from multiple perspectives in order to empirically define it.

The need for this research emerged from nutrition professionals who were already working in areas which they considered might contribute to food literacy. They were interested in gathering evidence to clarify what their work should focus on and why. The nutritional quality of dietary intake, therefore, was the primary outcome of interest for this research. The design and analysis have been framed within this context. Food literacy is likely to contribute to outcomes beyond nutrition. However, while some of these have been addressed in this research, the design did not allow for them to be fully explored.

Methods

This research was composed of two studies; the Expert Study and the Young People Study. The design allowed food literacy and its components to be comprehensively examined from multiple viewpoints. Figure 1 describes the sequence of these studies,

the interaction between them and the use of Constructivist Grounded Theory (Charmaz, 2006). As the figure shows, the Expert Study occurred first. From this study, an agreed “expert” definition was developed and food literacy components were proposed. These findings formed the framework for a review of interventions and series of peer debriefings to test their face validity (Cullerton, Vidgen, & Gallegos, 2012; Vidgen, 2011; Vidgen & Gallegos, 2011). The Young People Study occurred concurrently with this review. Data from the Young People Study was analysed independently of the results of the Expert Study. Results were again presented at peer meetings (Vidgen & Gallegos, 2012a, 2012b; Vidgen, Gallegos, & Caraher, 2012). The dotted arrows in Fig. 1 communicate the iterative nature of this research design. Definitive conclusions were not drawn at the end of each study, rather, data from each study were re-examined and compared prior to the development of a final definition and set of components.

The Expert Study

The first study examined Australian food experts’ understanding of the term food literacy. A three round Delphi was used to explore the level of consistency and consensus in this understanding (de Villiers, de Villiers, & Kent, 2005; Keeney, Hasson, & McKenna, 2001).

Multiple strategies were used to determine the sampling criteria and select participants for the Expert Study. The sequence of these strategies and an overview of the Delphi process are shown in Fig. 2. Informed by key themes represented in the literature, a research advisory team composed of researchers and practitioners from youth, education, health, community and welfare sectors brainstormed who they considered food experts. Secondly, delegates of Home Economics and Health Promotion conferences attending a session on food literacy were surveyed regarding who they thought should be consulted in developing a definition of food literacy. This information was used by a selection panel made up of the primary researcher, her supervisors and a health department senior public health nutritionist, to develop a sampling matrix and list of prospective participants. The sample was made up of participants from nutrition, education, gastronomy, welfare, food production and food industry sectors. Within each of these sectors, the sample included those working in research, practice, policy and advocacy settings. Participants came from all Australian states and territories, had several years’ experience in their field and included people working with Aboriginal and Torres Strait Islanders. During their round one interview, participants were also asked who else they thought should be included in the study. This was used to both confirm the existing participant list and as snowballing to populate areas in the matrix in which the selection panel had been unable to identify suitable individuals.

The first round of the Delphi was a semi-structured telephone interview with the identified food experts. All interviews were conducted by the primary researcher. The average interview duration was 35 min with the range being 19–61 min. They were audio-recorded and later transcribed. These experts were asked: what they thought were the knowledge and skills needed to use foods to meet individual needs, how these were different or similar to those needed to meet nutrition needs; and the applicability of a health literacy continuum to describe these (Nutbeam, 2000). They were then asked about their use and understanding of the term “food literacy”. Round one data was analysed qualitatively using Constructivist Grounded Theory, that is, codes emerged from the data rather than being predetermined (Charmaz, 2006). All interviews were analysed by the first author. Ten percent, or one interview from each sector group, was also coded by the second author then compared and discussed. Themes that emerged for the second author were highly comparable to those identified by the first

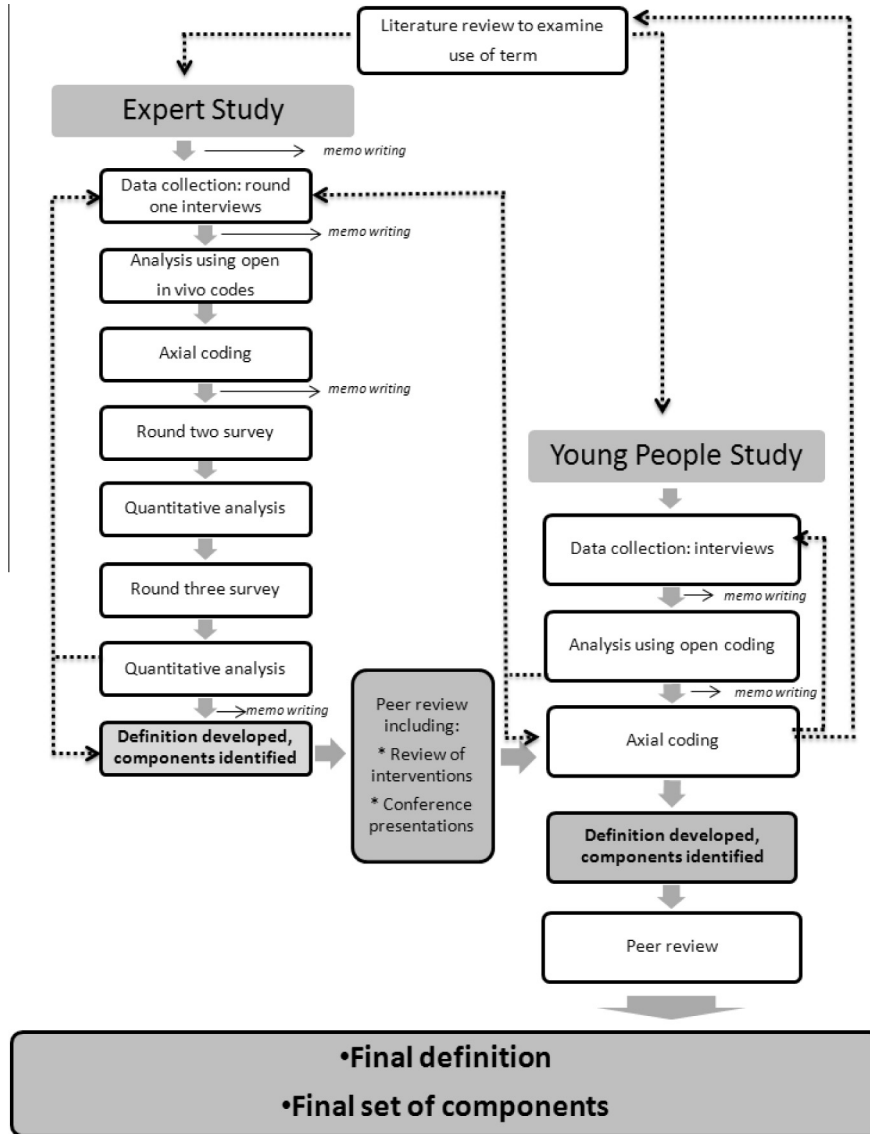


Fig. 1. Research design.

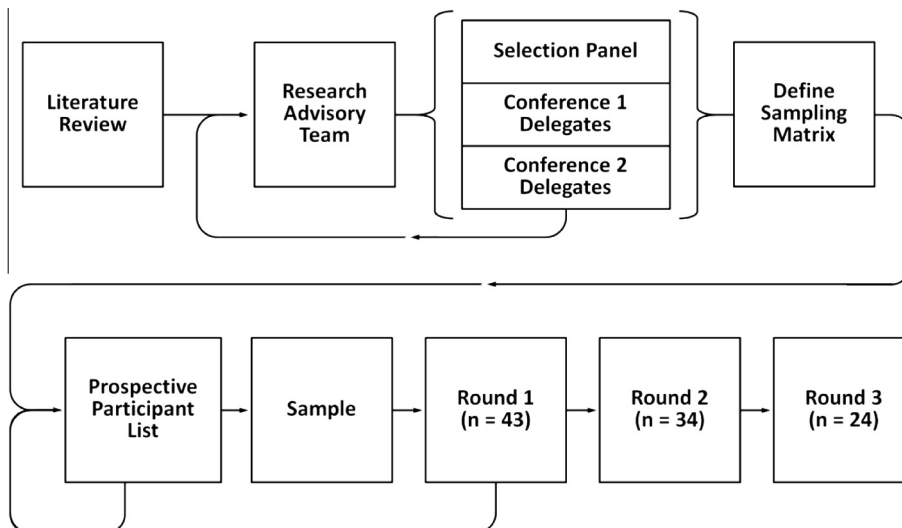


Fig. 2. The process used to identify participants and gather data in the Expert Study.

author. The second author highlighted text that she was able to categorise into codes named by the first author. No additional codes were identified. Data were coded using *in vivo* codes. The relationship between these codes was explored and grouped using axial coding (Charmaz, 2006). These themes were used to generate the round two survey.

In round two, participants were asked to register their level of agreement with various definitions of food literacy and its potential components as either “irrelevant”, “core”(need to know), or “desirable” (nice to know). This was done to both determine the extent to which the term was commonly understood and, if not understood, to register participants’ views on what it might include. Consensus was defined a priori as a minimum of 75% of participants registering the same response to a statement. Those components which achieved consensus as being “core” elements of food literacy were included in the first model. Those that achieved 50–74% consensus were re-presented in round three. In this third survey participants were asked to categorise these remaining components as “core” or “non-core”. Consensus was again defined as at least 75%. The definition, components and their domains, were presented at various practitioner meetings and used in a review of interventions to assess their reliability and interpretation (Cullerton et al., 2012; Vidgen, 2011; Vidgen & Gallegos, 2012b).

The Young People Study

A second study was conducted to explore the scope of meaning for the term “food literacy” by identifying its potential components from the perspective of people aged 16–25 years living in an urban area who were responsible for feeding themselves. The study involved face-to-face semi-structured interviews.

All participants lived in Brisbane, a capital city in Australia. They were purposefully selected to examine differences across disadvantage, gender and culture. Sample size was determined by theoretical saturation that is, when no new themes or data emerged (Rice & Ezzy, 1999). Thirty-seven people were interviewed.

Dimensions of disadvantage which were examined include highest completed level of education, source of income, place of usual residence, connection to family and participation in schooling, employment or training. Place of usual residence was categorised using the SEIFA (Socio Economic Index For Areas) Index of Relative Socio-economic Advantage and Disadvantage at the postal area level (Pink, 2008). Participants were categorised according to SEIFA quintiles. This Australian index is derived from census data and is used to rank geographical areas. It is regularly used to identify priority areas for government investment and to target service delivery.

In partnership with youth service delivery agencies, six recruitment sites were used to sample young people across a spectrum of disadvantage. The study collected the views of young people experiencing homelessness, young people marginalized through education, those living and working in an area of relative disadvantage (as defined by SEIFA) as well as university students and graduates, representing the more advantaged end of the spectrum. These agencies were consulted throughout the research design, implementation and reporting. Recruitment sites were: an inner-city drop-in centre providing meals for under 25 year olds; an inner-city flexible learning centre for 15–25 year olds; a flexible learning centre for 13–18 year olds in an area of high relative disadvantage in an outer metropolitan area; a worksite in an area of high relative disadvantage in an outer metropolitan area; students attending classes at a university business school; and clients of a community organisation. Participants were primarily engaged through these settings, however, where this did not yield a sufficient sample, peer recruitment was used.

Participants were asked a range of questions about their day-to-day experience of feeding themselves. Interviews used a life-course approach to capture the temporal dimension of potential risk and protective factors, and to help participants tell their story using a narrative (Ben-Shlomo & Kuh, 2002; Devine, 2005; Devine et al., 1998). Young people were asked when they were first responsible for feeding themselves, different living arrangements and how food and eating differed between these. They were asked who they learnt about food from, including their participation in structured programs such as cooking classes at school. This was used to examine why, where and how their relationship with food had developed. Participants were asked about their usual dietary intake and what they had eaten over the previous 24 h or the previous day, whatever was easiest for them to recall. The purpose of this question was mainly to provide a platform for further discussion about food purchasing, preparation, and eating but also gave an approximate measure of diet quality. As the collection of food intake data was not for the purposes of undertaking a rigorous dietary analysis, usual methods for diet history taking, such as prompting and checklists were not applied. Diets were analysed to determine if each of the Australian Guide to Healthy Eating core food groups were usually eaten each day (Kellert, Smith, & Schmerlaib, 1998). Inclusion of each food group each day was considered to be an approximate measure of a young person who was more likely to have a healthy food intake.

Questions regarding usual dietary intake were used to more deeply examine the skills and knowledge used in feeding themselves, if participants thought they were “good with food”, who they thought of as being “good with food” and why. Participants were asked demographic questions, if they had ever run out of money for food and their coping strategies regarding this, where they placed nutrition in their decision-making and the potential relationship between nutrition and “being good with food” as a proxy meaning for “food literacy”. In taking an assets-based approach, participants who confidently used food to consistently meet their needs and those that valued nutrition, were asked more about these aspects.

All interviews were conducted by the primary researcher in a private space with no other individuals present. The average interview duration was around 20 min with the range being from 9 to 45 min. All participants were given a \$30 supermarket voucher as compensation for their time. Interviews were audio-recorded and later transcribed. Transcripts were made available to participants for their records. Pseudonyms were assigned to each participant. Participants were not told that the interviewer was a nutritionist, however, they were aware that the research was being conducted on behalf of the University Faculty of Health and the State Health Department.

Combining data sets

The final development of a definition of food literacy and identification of its components occurred once both studies had been completed. The Young People Study was the last to be conducted. Themes and codes that emerged from these interviews were considered against the results of the Expert Study. This was done to examine their relevance to this population, and individuals, rather than experts, more broadly. Additional codes were added as required. Where these codes from the Young People Study aligned with the findings of the Expert Study, its language was used. In this way, the results of the Young People Study were used to “validate” the findings of the Expert Study. The views of young people, particularly those experiencing disadvantage were privileged above that of Expert Study participants.

Practitioner and peer debriefing revealed that the components and domains identified in the Expert Study were ambiguous and

open to interpretation, compromising their use in practice. As a result, it was important that final results at the completion of this research, delivered a succinct list of clear, potentially measurable components. Components were condensed to a practical and useable number of variables by examining the consistency between components identified by both studies, between participant groups in the Young People Study and by focusing on those elements peers found ambiguous. This process included the re-examination of the Expert Study data.

Both studies were approved by the Queensland University of Technology Human Research Ethics Committee. All participants gave informed consent prior to their participation in the studies.

Results

Fifty-two people were contacted to participate in the Expert Study. Of these, 43 participated in round one (response rate 82.7%). The nine non-participants either declined to participate or were not available at the time of the interview. Thirty-four round one participants also participated in round two. Twenty-four participated in all three rounds. All sectors participated in all three rounds.

Thirty-seven people were interviewed in the Young People Study. Interviewees were aged between 16 and 25 years (mean = 19.8, median = 19). The sample was diverse with respect to age, gender, culture, living arrangements and level of disadvantage. [Table 1](#) details this diversity. Recruitment sites provided access to clients as expected, for example homeless young people

Table 1
Characteristics of participants in the Young People's Study ($n = 37$, age range 16–25 years, mean age = 19.8 years).

Characteristic	Participants (n)
Gender	
Male	15
Female	22
Primary source of income	
Nil	5
Government social security payment e.g. unemployment benefits	16
Parents	2
Wages	14
Highest level of education	
<year 10	3
Year 10 (typically approx 15 years of age)	10
Year 11	8
Year 12 (typically approx 17 years of age)	7
Certificate	2
University degree or above	7
Engagement in schooling	
Disengaged	7
Re-engaged	14
Completed	16
Living arrangement	
Homeless	6
Share house	15
Parent(s)/grandparent(s)	11
Alone or alone with dependent children	5
SEIFA (Index of Relative Socio-economic Advantage and Disadvantage) quintile	
Lowest	5
Second	6
Third	2
Fourth	5
Highest	13
Unclassifiable due to homelessness	6

SEIFA (Socio Economic Index For Areas).

were most highly represented in the sample recruited through the drop-in centre. Markers of advantage and disadvantage were clustered. For example all participants recruited through the university school of business also lived in an area in the highest level of relative advantage, and young people who had not completed year 12 were also less likely to be deriving an income from wages.

Defining food literacy

Defining food literacy and identifying its components was an iterative process. At different times throughout the research each informed the other. The Expert Study began with a definition and then isolated components. The Young People Study worked backwards from examining components and their enactment to develop a definition.

Results of the Expert Study indicated that the term “food literacy” was not as widely used as its inclusion in policy and strategy documents would imply. However, when asked what they understood the term to mean, experts predominantly considered it to describe the empowerment of individuals to determine their food intake. Expressed by one food expert as:

Those knowledge, skills and attitudes to be able to call the shots for the food that they eat.

In the Young People Study, participants were asked to describe someone who was “good with food” and what they thought being “good with food” meant. Their conceptualisations also included the themes of empowerment and self-determination. In this quote, Amy reflects on a period of living in a household with heavy drug use to describe why she thinks she is “good with food”.

I love food. I've been in a situation with my ex-partner where other things have come before food and I was not very happy in that situation. I was not satisfied with the way I was living. So I got out of there for that reason. Food comes first.

Participants in both studies acknowledged that the focus on knowledge, skills and behaviours did not diminish the significance of broader environmental factors which impact on food intake, but rather, developing food literacy could decrease one's vulnerability to the obesogenic environment.

The results from these studies, together with a review of the use of the term in contemporary literature, were used to formulate the following definition.

Food literacy is the scaffolding that empowers individuals, households, communities or nations to protect diet quality through change and strengthen dietary resilience over time. It is composed of a collection of inter-related knowledge, skills and behaviours required to plan, manage, select, prepare and eat food to meet needs and determine intake

This can simply be interpreted as the tools needed for a healthy lifelong relationship with food.

Components of food literacy

Data from both studies was used to isolate components of food literacy. The components of food literacy could be considered descriptors of food literacy. In both studies, food literacy was found to be highly contextual. That is, the nature of each component and its importance relative to other components was contextually driven. Determinants of this context are many and include the social determinants of health (Marmot & Wilkinson, 2006). Results also revealed that it was unlikely that an individual would demonstrate all components of food literacy simultaneously or all of the time. That is, all components may not always be present in every

individual but each is an important piece of scaffolding strengthening one's relationship with food. Conversely, when a component is missing, the relationship with food will be weaker and less able to respond to change.

Eighty potential components emerged in the analysis of round one expert interviews. Axial coding was applied to group these into eight domains of: access; planning and management; selection; knowing where food comes from; preparation; eating; nutrition; and language (Charmaz, 2006). When this list of potential components was presented to the food experts in round two of the Delphi study, only six components within these domains were identified as "core" (that is, essential). When those not achieving consensus were again presented in the final Delphi round, only one more component was added. These are shown in Table 2.

Interview data from the Young People's Study were coded and then compared with data from the Expert Study as described in the methodology. This combined data resulted in the identification of eleven components of food literacy presented in figure three. They were grouped into four domains: planning and management; selection; preparation; and eating. These components predomi-

nantly represent consistencies in data from both studies. Differences in the perspectives of experts and young people are highlighted in the following descriptions of each component domain.

Planning and management

In the Young People's Study planning and management emerged as strong themes when participants reflected on unsatisfactory food arrangements in various households they had lived in. Food experts discussed the relationship between planning and meeting nutrition guidelines particularly in a food environment in which unhealthy options are more readily available than healthy options.

The three components within this domain (refer to Fig. 3) describe making time for food and eating, having a plan to ensure this happens, and having the skills to construct a feasible plan that is capable of delivering an expected outcome. As with components across all four domains, the exact elements of these components will be contextually driven. The following interview excerpts from

Table 2
Components of food literacy derived from *in vivo* codes which at least 75% of food experts identified as being "core".

- Being able to access food through some source on a regular basis with very limited resources
- Being able to choose foods that are within your skill set and available time
- Being able to understand what's in a product and how to store and use it
- Knowledge of some basic commodities and how to prepare them
- Knowing how to prepare some food from all of the food groups, e.g. how to prepare meat, how to cook pasta, how to prepare vegetables and then there are spin offs from there
- Being able to confidently use common pieces of kitchen equipment such as a stove top, oven, microwave, can opener and saucepans
- Enough food hygiene so that you don't poison anyone

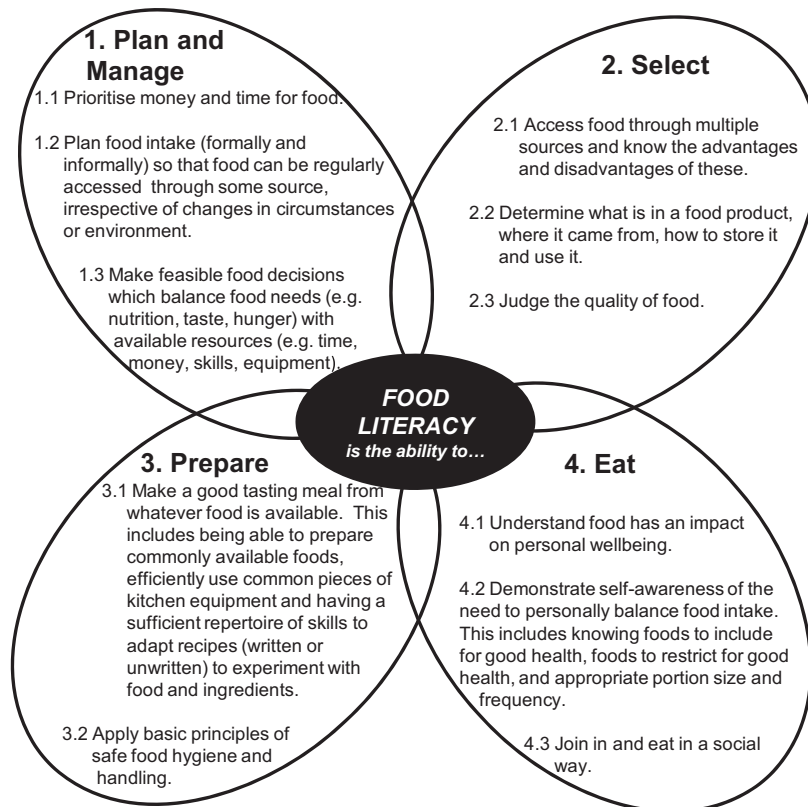


Fig. 3. The eleven components of food literacy derived from the Expert and Young People's Studies.

the Young People's Study are taken from participants along a continuum of disadvantage. They demonstrate the contextual nature of each component and the complexity of establishing a definitive measurable outcome.

Julia, 16, lives under a bridge and has been homeless on and off for the past 2 years primarily in response to her mother's mental illness. She has no income but demonstrates a high level of planning and management to use a range of food sources (for example, food aid, soup kitchen, donations, and vouchers) to consistently eat foods from each of the core food groups daily. Here she describes how she spends a food voucher when she happens to receive one:

I try to get things like – I get some bread because you know that it will last at least – tonight's meal and then maybe tomorrow, toast for breakfast. Some sausages, just sausages for everyone. I try to get things that – will last or feed people. We have a kitchen and stuff at our place. Last night we go to like to Roma Street or to Southbank (large public parks), they have barbecues and stuff like that.I try to get meat, more meat than anything, meat, and bread, because they'll eat it. Yeah. I like seafood salad, I'll get myself seafood salad. Ham sandwiches, try and get some tomatoes or something like that just to mix it up a bit.....I make sure I have enough because there's a – there's a lot of us, oh well not – a lot of us, but a lot of people live under the bridge, easy 20 sometimes and we all kind of care about each other, so I always make sure everyone is fed.

Angelica, now 20, left her parental home for the first time as a pregnant 15 year old. Here she reflects on the development of her planning and management skills and their relationship to her food intake:

When I first used to go to the shops, I used to just get things – "I'm going to make this, I'm going to make that". And half the time, I never made it. You have to really think about if you're actually going to be able to make a roast on Wednesday at 5 o'clock in the afternoon to have for dinner. Do you know what I mean? Because I used to do that; and I'd get home at six and try and make a really nice dinner. And I would be trying to keep Ruby awake and everyone's hungry. Now I cook really basic and easy meals, that take 10 minutes. Like pasta or even Chicken Tonight. I guess a lot of my meals are pretty similar in the way they always have rice or pasta and meat in them. Or if they're not like a dish like that, I'll have lamb chops with potatoes and – yeah. So I always have the same things in my cupboard; I've always got vegies and potatoes and pasta packets and stuff like that. All the sides that I can put with something or the jars for the flavours of something that I want to make. I guess for me it's organisation. Because when I'm not organised a big thing doesn't go well. And I end up eating noodles at 8 o'clock.

For Aiden, a 24 year old employed university graduate, living in an inner-city suburb close to shops, these planning and management components predominantly related to time rather than money.

I try and do, like, a shop on the Sunday afternoon – evening – and try and just get, like, about three days' worth just so the weeks' sort of planned. I live just, you know, 15 metres from the grocery store I usually just get stuff after gym in the evening for dinner, that sort of thing – top up. I try and think, like, on the Sunday, okay I'll cook this on the Monday night; this on the Tuesday and I'll have that for left-over, that sort of thing for lunch the next day, so yeah, I try and plan a few nights ahead

All three participants planned for better diet quality and managed their resources to successfully implement their plan, however, the skills required to do so differed according to their context.

Selection

The components within this domain (refer to Fig. 3) refer to the selection of grocery items (for example, choosing apples) and food service items (for example, choosing between takeaway food options). The selection of food was referred to much more often in the Expert Study than in the Young People Study. Knowing where food came from, including the understanding of food labelling information, and the skills needed to select foods emerged as a strong theme in the analysis of round one interviews in the Delphi study of Australian food experts. In the subsequent two rounds of the study, participants still identified these elements as being relevant but they failed to reach a level of consensus to be considered core components of food literacy. Young people appeared to be aware that information was available regarding the origins of food and its characteristics; however, they rarely sourced this information as they tended not to eat outside their usual routine or repertoire. Most young people had a standard repertoire of foods from which they chose. The criteria used to determine what these foods were differed, but included; convenience, taste, shelf life, comfort, equipment and skills. These criteria did not appear to be related to level of disadvantage, although the foods considered to meet these criteria did, for example, a convenience food for a university student may have included restaurant meals, whereas it was more likely to be instant noodles for a disadvantaged young person.

Silke, 17, was one of the only participants who proactively spoke about what was in food. She had been responsible for feeding herself and sometimes others in the family since she was eleven. She was used to changing environments as she estimates moving home around 40 times. She and her sister tended to rely on pre-made foods in feeding themselves and their family. As she had been feeding her family from such a young age, it may be that these foods were within her capability at that time and later remained to become a part of her standard repertoire. When asked about her food intake in the previous 24 h, Silke had a schnitzel for dinner and was asked if her sister had bought it already made or crumbed it herself. Her response demonstrates that even as one of the most "conscious consumers" interviewed, her knowledge of food origins was limited, particularly against the standards expressed in the Expert Study.

You can make them yourself? Yeah, she bought it. I didn't know you could make them. That's pretty cool.

While all domains of food literacy are inter-related, it is likely that the capacity to select food, particularly prepared foods, is highly related to individual's experience in preparing food.

Component 2.1 of food literacy includes being aware of the influence of the local food environment on food selection as described by Riahanon who describes differences in her childhood food environment in a small town to moving to an urban area;

in Lowood we were too far away from Maccas (McDonalds) to be able to get it. Now we're just around the corner, we can walk to Maccas. We eat it all the time. It's awful.

Preparation

Experts and young people identified that the ability to prepare foods was an essential life skill and therefore a component of food literacy. Most agreed the level of ability only needed to be "basic", however, conceptualisations of "basic" differed. In the Expert Study, the ability to prepare food was described more in terms of being able to control food intake be that for nutrition or cost. For young people, taste was a significant factor in food choice. The motivation to prepare food was linked to the ability to prepare

“good tasting” food. Similarly, in their conceptualisation of someone who was “good with food”, being able to make food that tasted good was a strong theme, implying that the level of preparation would need to extend beyond “basic” as Aiden describes.

It doesn't have to be like, you don't have to cook a three course meal. But just to be able to sustain and be somewhat interesting rather than putting a bowl, you know, a can of baked beans in the microwave and with a slice of toast for dinner, you know.

Figure 3 lists the two components which make up this domain. The terms “meal” and “good tasting” were largely individualised. These terms took on a broad range of meaning, however, no attempt was made to define them as this was irrelevant to their relationship with healthy eating. Component 3.1 refers to “common” foods and kitchen equipment in acknowledgement of the contextual nature of this. That is, food literacy includes adapting to the local food environment in order to maintain diet quality through change, including times when resources are restricted. Here Tyler, 16 is asked to think of someone who he considers is “good with food”. He describes his friend’s mother with whom he is currently living. She is feeding three young people in her home using her welfare payment:

She'll cook up some spaghetti chops and get the cans of spaghetti, heat that – there up, and mix it all in together and it tastes really mad. She can work with anything and make a really mad meal.

Similarly, Sharni talks about her experience of living in shared youth accommodation where the food budget was limited:

Sometimes, me and my youth worker, we'd just go to the fridge at the end of the week and we were like, “What will we have?” And we'd just throw together two minute noodles with frozen vegies and lentils and just experiment.

In the Expert Study, participants referred to the importance of knowing how to prepare foods from each of the core food groups, however, this categorisation of foods, although understood, was not used by young people and so using it in this component was not considered appropriate.

Eating

This domain includes three components related to both the act of eating and its consequences (refer to Fig. 3). Nutrition can be considered to be both a component and a potential outcome of food literacy. In both the Expert Study and the Young People Study, conceptualisations of being “good with food” or “what you need to know and understand about food to be able to use it to meet your needs”, included nutrition. Nutrition knowledge was not identified as a core element of food literacy in the final round of the Expert Study and analysis from round one interviews indicates that most experts considered that an overall concept of the balance of foods was more important than more detailed information. Nutritionists in the Expert Study were more likely to consider that detailed information was not required than non-nutritionists. In both studies, participants considered there were two main elements to nutrition knowledge; (i) an understanding of the effects of healthy eating and (ii) an understanding of what healthy eating means.

Those young people who said they considered nutrition when making food choices discussed its importance on wellbeing. They discussed personal short-term effects such as mental health, “*feeling heavy or gross*” and longer term health, for example, “*most Aboriginal people have fairly bad health so it's sort of encouraged me to look at what I eat*”. Overall, however, participants predominantly related nutrition to obesity prevention rather than overall wellbeing and did not link the use of food guides such as the

Australian Guide to Healthy Eating or the Healthy Eating Pyramid to making eating decisions. Jewel, for example, has been homeless for several years and actively distanced himself from health advice:

I'm the total opposite to healthy. I know what's healthy. I know how to eat healthy. I choose not to.

However, when asked about the foods he typically steals he prioritised foods that nourished him rather than junk food:

I take the same stuff every time; chicken, mayonnaise, bread, butter. When you steal, steal for what you need, not for what you want. Something that you really, really, need, then yeah, I'll steal. But if it's something small it's like I'm hungry I want some chips or I want some chocolate, no.

Across all participant groups, nutrition was considered from a punitive, obesity prevention perspective, rather than a health promoting, nourishing perspective.

Component 4.3 in this domain of food literacy is concerned with commensal eating. This was a very strong theme in interviews, with all participant groups acknowledging that being “good with food” included being able to socialize with food. This was strongly linked with pleasure. Participants frequently described sharing a meal as being an important part of eating. Similarly, eating alone was usually viewed unfavourably.

Here Lucy, 16, talks about the pleasure of sharing a meal. She compares eating at her parental home to a share house with her friend, his girlfriend and her mother the year previously. She did not enjoy the experience and later returned to her parental home.

At home we always ate at the table unless it was something like pizza or hotdogs. In the share house.... Well they didn't – we didn't even have a table. It was such a big change, it was horrible. You just pretty much ate whenever you felt like eating.

Young people who did not typically eat commensally in their parental home sometimes found it difficult to do so now with others which impacted on their ability to make social connections. Participants who enjoyed sharing meals also tended to prioritise food in their lives (Component 1.1) and plan their food intake, demonstrating the relationship between components. For individuals and families experiencing disadvantage, the ability to prepare and share food was described by service providers in the Expert Study as being associated with a feeling of being in control of their lives and their capacity to care for others.

Discussion

In defining food literacy and identifying its components, this study provides an insight into the everyday practicalities of meeting nutrition recommendations. Recent nutrition policies and plans have identified that supporting individuals, households, communities and nations to develop these skills, knowledge and behaviours may be important in halting the rise in diet-related disease and improve our relationship with food. While other studies have conceptualised pathways and determinants of food choice (Bisogni et al., 2005; Costa, Schoolmeester, Dekker, & Jongen, 2007; Schubert, 2008; Sobal, 2006), this research extends this, to more deeply identify specific knowledge, skills and behaviours that could be used to guide practice and investment. The contextual and inter-related nature of components means practitioners need not necessarily work on all components at once. In its original conceptualisation, the identification of a quantifiable set of food literacy competencies that could be measured across individuals and populations, was an expected outcome of this research. The results, however, highlighted the significance of context, which complicates the development of a measure. A range of existing measures may be

useful in measuring individual components, however, this requires further investigation (Anderson, Bell, Adamson, & Moynihan, 2002; Bell & Marshall, 2003; Parmenter & Wardle, 1999; Wrieden et al., 2007).

This study has conceptualised food literacy as supporting resilience. Broader conceptualisations of resilience acknowledge that it too, is dynamic rather than being a fixed attribute. It is a process shaped by social context (Rutter, 2012). Rutter defines resilience as “a reduced vulnerability to environmental risk experiences, the overcoming of stress or adversity or a relatively good outcome despite risk experiences” p. 336 (2012). In defining food literacy as protecting diet quality through change and strengthening dietary resilience over time, it too has to be conceptualised as dynamic. This also presents challenges for gathering the evidence to examine its relationship with healthy eating. The term “food literacy” now defined by its components, is useful in describing the complex related set of skills, knowledge and behaviours needed in the everyday practicalities of meeting nutrition recommendations. Previous research may have oversimplified these by focusing on only some elements such as cooking, meal preparation or nutrition knowledge, and failed to capture the totality of this concern and in so doing potentially underestimated its importance in influencing food intake (Crawford, Ball, Mishra, Salmon, & Timperio, 2007; Larson et al., 2006; Smith et al., 2011; Winkler & Turrell, 2009).

The findings of this research are consistent with more modern conceptualisations of literacies, for example, health literacy, in extending beyond language and recognising their multidimensional and contextual nature (Frisch et al., 2012). A recent review of these literacies, their definitions and components revealed that the nature of the components identified in this study are consistent with those identified in other literacies in that they include functional literacy, factual and procedural knowledge, awareness and critical dimensions (Frisch et al., 2012).

Strengths and limitations

A strength of this research is that it explored food literacy from the perspective of food experts and individuals. The Delphi methodology was useful in gathering the views of a diverse group of participants without the dominance of any one individual, profession, setting or sector that might occur in a face-to-face process. The iterative nature of the Delphi method helped to quantify support and agreement, exposed participants to alternate view points; and allowed them time to reconsider their responses and the extent to which they shared the views of others. However, the repetitive nature of this method required a significant time commitment from participants, who, as food experts, were typically time poor. This affected response rates. Additionally, while *in vivo* codes were used to retain the voice of experts, in some cases it resulted in statements that were difficult to interpret or contained more than one concept. This may have affected participants' ability to register their level of agreement and so affected the capacity for the group to reach consensus.

The study of individuals was focused on young people experiencing disadvantage. While a valuable insight was gained into this group, it is unclear if findings are transferrable across a whole population. The semi-structured nature of interviews and the extremity of living conditions of some participants meant that imprecise dietary intake data was gathered. This limited its analysis and alignment with food literacy components. More rigorous collection of dietary intake information, however, would have potentially biased the collection of data regarding food and eating behaviours. The method was successful in contributing the voice of young people across the spectrum of disadvantage and advantage to the conceptualisation of food literacy. The privileging of this contribution over that of experts in the analysis has resulted in a scope of

meaning of the term and its components which more accurately reflects the lived experience of food and eating.

Conclusion

This research helps to define the scope of meaning of the term “food literacy”. To our knowledge, it is the first time the term has been empirically defined and analysed. Consistent, commonly understood terminology supports effective comparison of research to help build the evidence, facilitate communication, inform practice and increase awareness and activity in an issue. The development, analysis and reporting of this research has been informed by practitioners from a range of sectors. Their active contribution has resulted in findings that will help inform practice and investment by providing a common language to describe the scope of interventions. The broad conceptualisation of food literacy to include national, community/organisational, household and individual applications, re-enforces that environmental factors and individual behaviour are interdependent. This conceptualisation is useful in considering the range of existing food literacy efforts and their potential role in empowering nations, communities, households and individuals to determine diet quality. While this study is focused on nutrition, benefits of improved food literacy are likely to extend well beyond this. More research is needed to examine the relationship between food literacy and healthy eating more broadly including food security, social connectedness and ecological sustainability.

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