Pre-adolescent children's understanding of health and being healthy: A multidimensional perspective from the UK

Abstract

Purpose – We applied a multidimensional conceptual lens that incorporated physical, emotional, social, intellectual, and spiritual health dimensions to explore pre-adolescent children's understanding of health and being healthy.

Design/methodology/approach – Forty-six children aged 9-11 years old completed a short questionnaire about their understanding of health and what it means to be healthy. Data analysis was completed through a deductive analysis applying a multidimensional conceptual lens and an inductive thematic analysis of the content of children's responses to each question.

Findings – The analysis of children's understandings of health and being healthy both revealed five common themes: Being Well, Physically Active, Fit, and Healthy; Healthy Eating and Body Composition; Physical Activity Examples; Physical Activity Characteristics; and Unsure or Ambiguous. An additional theme of Social and Emotional emerged for children's understanding of what it means to be healthy. Across both questions the majority of responses reflected the physical dimension of health, with only a few references to the social and emotional dimensions. There was no evidence of the intellectual or spiritual dimensions of health in children's responses to either question.

Practical implications – Our data suggest that the plateau in adolescent UK children's trajectory of understandings originates earlier in childhood, with children aged 9-11 years showing a similarly limited understanding of health and being healthy as UK early and middle adolescents (12-15 years). Moreover, this focus on the physical dimension is narrower than previously considered as it is restricted to the movement category of this dimension only.

Originality/value – Our findings have implications for the timing and focus of health education interventions for children.

Keywords: health, children, school health promotion, health education, knowledge

Article Type: Research paper

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Introduction

Research into children's understanding of health has been motivated by a desire to help young people make informed decisions about their lifestyles and improve health education programmes. Yet, despite this aspiration, children's understanding appears to have changed little over the last 40 years. Worldwide evidence indicates that young people consistently report narrow and confused understandings throughout childhood which overemphasise the physical dimension of health (Burrows, Wright, & McCormack, 2009; Daigle, Herbert, & Humphries, 2007; Eiser, Patterson, & Eiser, 1983; Harris, Cale, Duncombe, & Musson, 2018; Lee & MacDonald, 2010; Myant & Williams, 2005; Natapoff, 1978; Schmidt & Frohling, 2000). Research from the UK, suggests that there may be a plateau in understanding during early and middle adolescence (12-15 years; Harris et al., 2018). However, we know little about what pre-adolescent (9-11 years) children in the UK understand about health, which is critical to assessing the trajectory of understanding. We need to ascertain whether the early and middle adolescence period is a plateau in understanding or part of a longer trajectory of limited and confused understanding. It is, perhaps, surprising given the widely accepted view of health as a multidimensional construct (see Hjelm, 2010) that such narrow views of health are reported by young people. In this paper we address several limitations in the research evidence by applying a multidimensional conceptual lens to explore pre-adolescent children's understanding of health in a UK sample. Identifying what children know about health prior to adolescence will help inform the timing and focus of health education interventions to support young people in developing their health literacy.

Health: A Multidimensional Concept

Health has been considered from a multidimensional perspective from as early as the 1940s when the World Health Organization's (WHO) landmark definition of health was published. This definition proposed a holistic view of health; it went beyond the focus on a person's physical body or the absence of disease and introduced the notions of social and mental well-being to health. It was an early step towards an integration of a biopsychosocial view of health with the traditional medical model and to linking health with well-being. Since this time, the holistic view of health has been developed further, with other multidimensional views of health being acknowledged within the literature (Donatelle, 2006; Edlin & Golanty, 2007; Hales, 2009, Hjelm, 2010; Insel & Roth, 2004). These views of health have commonly included at least five interacting and overlapping dimensions: physical, social, emotional, intellectual, and spiritual. While some authors have also included environmental health (Donatelle, 2006, Hales, 2009; Insel & Roth, 2004) and occupational health (Edlin & Golanty, 2007) as additional dimensions, Hjelm (2010) argues that they overlap to such an extent with the other dimensions that they are not distinctive enough as separate dimensions. He contends that environmental health is akin to social and spiritual health and occupational health to social, intellectual and emotional health; and thus presents five dimensions in his conceptual model.

In outlining his conceptual model, Hjelm (2010) provides a broad understanding of how each dimension has been defined, described, and represented within the literature before presenting his models for each dimension of health. His first dimension is physical health, which is represented by three aspects; movement, thought, and procreation. A physically healthy person is able to move themselves and manipulate objects, they are able to engage in effective thought so that they can move their body and control bodily functions, and are able to reproduce. The next dimension is social health and is represented by four aspects; context, dialogue, empathy, and intimacy. Interdependence is an important part of social health. A socially healthy individual has supportive relationships with those around them and shows a

concern for others, is able to adapt to changes within relationships and communicate effectively, and experiences intimate and trusting relationships. The third dimension presented by Hjelm (2010) is emotional health which is represented by four aspects; mindfulness of emotions, experiencing the spectrum of emotions, regulation and self-control of emotions, and utilisation of emotions. An emotionally healthy person is able to recognise their emotions when they are felt, can experience a range of emotions, realises that their emotions have consequences, and seeks to use them in ways that facilitate rather than hinder their life, relationships, and personal goals. These three dimensions represent those from WHOs landmark definition of health, however, Hjelm (2010) also includes intellectual and spiritual dimensions in his model of health.

Intellectual health is represented by the acquisition, comprehension, and application of knowledge (Hjelm, 2010). An intellectually healthy person is able to think and learn, they can accumulate discrete facts but also form concepts and principles, can understand and provide a context to the information acquired, and then apply this information to analyse situations and make connections and consider consequences and alternatives. Lastly, Hjelm (2010) incorporates the dimension of spiritual health, which consists of three components; character and virtue, meaning and purpose, and connectedness. A spiritually healthy individual recognises a purpose in life and that there is something greater than themselves which gives meaning to their life, they care about and feel a sense of belonging and connectedness to the world around them, and their concerns promote a need to behave appropriately and honestly.

The conceptual model proposed by Hjelm (2010) views each dimension of health as important for the individual and suggests that when all dimensions are functioning well, they contribute to the individual experiencing their highest level of health. However, the fluidity of health is also recognised in that at any one time, one or more dimensions can be impaired and affect the health of the individual. Equally, changes in one dimension can impact on other

dimensions. We believe that this dynamic, multidimensional view of health is important for enabling young people to be able to engage in self-care and make informed choices about, and for, their health both now and in the future. Yet despite the longstanding interest in children's understanding of health and the established history of a multidimensional conceptualisation of health, research has typically failed to go beyond a trichotomous conceptual lens.

Children's Understanding of Health

At school in the UK, children aged 9-11 years learn about a broad range of health-related issues and topics, which cover many of the dimensions of health (Council for the Curriculum, Examinations and Assessment [CCEA], 2007; Department for Education [DfE], 2013; Education Scotland [ES], 2021; Welsh Assembly Government [WAG], 2008). A wide variety of school subjects are involved with the teaching of health (e.g., Science, Physical Education, Design and Technology, and Personal, Social, Health and Economic Education [PSHE]) and while most of the topics at this age are centred on the physical dimension of health (e.g., body functions, exercise and physical activity, diet and food, and hygiene), there are many topics and issues that relate to the other dimensions of health. Examples of such topics include the following: empathy and relationships (social health); moral and spiritual development (spiritual health); mental health and well-being (emotional health); and making healthy choices (intellectual health) (CCEA, 2007; DfE, 2013; ES, 2021; WAG, 2008).

However, a critical mass of literature on children's understanding of health suggests that children have a limited, reductive view of health that is dominated by the physical dimension and characterised by inaccuracies and inconsistencies (see Burrows & Wright, 2010; Harris et al., 2018). Interestingly though, much of this research has been situated within the global crisis about obesity and inactivity in children and within the context of sport and physical education (Brusseau, Kulinna, & Cothran, 2011; Burrows et al., 2009; Daigle et al., 2007; Powell & Fitzpatrick, 2015; Wright & Burrows, 2004), which themselves lend a corporeal lens

to the context of understanding health. Consequently, researchers in this literature have been interested in a range of physical concepts in their attempt to understand what children know about health. In addition to direct questions about what does health mean and what does it mean to be healthy, researchers have also explored children's understanding of terms such as fitness (Placek et al., 2001; Harris, 1993, 1994; Harris et al., 2018), physical activity, exercise, or being active (Brusseau et al., 2011; Harris et al., 2018; MacDougall, Schiller & Darbyshire, 2004; Sleap & Wormold, 2001; Trost et al., 2000), as well as their health-related fitness knowledge (Hoppel & Graham, 1995; Keating, Harrison, Dauenhauer, Chen, & Guan, 2009; Kulinna, 2004) and knowledge of physical activity guidelines (Roth & Stamatakis, 2010). These concepts are undoubtedly located within the physical dimension of health but from Hjelm's (2010) perspective these concepts are associated with only the movement element of this dimension. Moreover, any reference to the multidimensionality of health within this research has been associated with the WHOs definition of health rather than broader models of health (Donatelle, 2006; Edlin & Golanty, 2007; Hales, 2009, Hjelm, 2010; Insel & Roth, 2004). It would, therefore, appear from this literature that not only is children's understanding of health limited and dominated by the physical dimension but also the context and focus of a significant amount of research that purports to explore children's understanding of health.

Nevertheless, within this literature, evidence focusing on exploring the concept of health specifically shows that across the world children have consistently demonstrated a preoccupation with diet and exercise as a means to being healthy and have confused aspects of fitness, appearance, the body, and weight with being healthy at all stages of childhood (e.g., Burrows, 2010; Harris et al., 2018; Rail, 2009; Wright & Macdonald, 2010). Researchers in the UK (Harris, 1993; 1994; Harris et al., 2018), Canada (Rail, 2009), the US (Brusseau et al., 2011; Placek et al., 2001), New Zealand (Burrows et al., 2009) and Australia (Lee & MacDonald, 2010; Wright, MacDonald, & Groom, 2003) have all reported that the corporeal

focus and dominance of the physical dimension as well as inconsistencies and conceptual confusion are evident at both early and late adolescence. Interestingly, evidence from the UK suggests that there may be a plateau in early and middle adolescents' understandings of health as children aged 12 to 15 years reported similarly narrow views, misunderstandings, and misconceptions of health (Harris et al., 2018). This is notable as the developmental literature suggests that understandings of health should increase in sophistication and accuracy with age (Backett & Davidson, 1992; Myant & Williams, 2005). Yet such development appears to be missing and if we are to intervene to improve young people's understanding of health we need to know when this *apparent* plateau in understanding begins. We currently have little, if any, data to know when this phenomenon occurs as there is no evidence, within this physically contextualised literature, on UK children's understanding of health prior to adolescence.

Worldwide literature (Burrows, 2010; Burrows, Wright, & Jungersen-Smith, 2002; Burrows, Wright, & McCormack, 2009), however, has shown similarly limited understandings of health in younger children, with a dominance of the physical dimension, diet, and exercise. In New Zealand, expected developmental changes in understanding were observed, with children aged 11-12 years providing more holistic and detailed understandings, including more references to social and emotional health and the consequences of behaviours, compared to children aged 8-9 years (Burrows, 2010; Burrows et al., 2009). This is an intriguing perspective on the use of the term 'holistic', as the authors reported a dominance of responses in the physical dimension, with most about diet and exercise (70%) and less than 5% of responses being associated with social and emotional aspects (Burrows et al., 2009). Although, comparably their view is more holistic than those aged 8-9 years old, 11-12 year olds still reported a narrow view of health in relation to both the landmark definition of WHO and with regards to authors who have proposed five or more dimensions of health (Donatelle, 2006; Edlin & Golanty, 2007; Hjelm, 2010; Insel & Roth, 2004).

Beyond this physically contextualised literature, the developmental psychology literature has focused more explicitly on younger and older children's (i.e., early and middle childhood; 4-12 years) understanding of health in both UK and international samples (Eiser et al., 1983; Knighting, Rowa-Dewar, Malcolm, Kearney, & Gibson, 2010; Myant & Williams, 2005; Natapoff, 1978; Piko & Bak, 2006; Schmidt & Frohling, 2000). Even though similar findings regarding the dominance of diet and exercise as a means to being healthy are also evident (Eiser et al., 1983, Knighting et al., 2010; Natapoff, 1978; Piko & Bak, 2006; Schmidt & Frohling, 2000) and that the, albeit few references to psychological aspects of health disappeared from age 7 through to 12 (Myant & Williams, 2005), this literature appears to take a more optimistic view of children's understanding of health. It focuses on what children know, how their understanding increases in sophistication and accuracy with age (Backett & Davidson, 1992; Myant & Williams, 2005; Schmidt & Frohling, 2000) and rarely, if ever, describes it as limited or reductive. As with the previous literature, very few studies in this area situate their research within a definition or model of health even though they are seeking to explore children's understanding of health. One exception to this is the study by Piko and Bak (2006) who, akin to the physically contextualised literature, used WHOs definition of health to conclude that 8-11 year old Hungarian children reported a multidimensional perspective on health. This was despite similar findings being evident with an obvious dominance of the physical dimension and limited references to social and emotional health. Nevertheless, regardless of this overall more optimistic view, there is little, if any, research that has embraced a multidimensional conceptual lens that goes beyond the trichotomous dimensions to analysing children's understanding of health.

The Present Study

The aim of the present study was to explore what pre-adolescent children knew about health and being healthy and apply a broad multidimensional conceptual lens to this understanding.

Focusing on UK children aged 9-11 years we were interested in the content of their responses to questions about what the term health meant and what it meant to be healthy. We used a two phase approach to our study, firstly, using an inductive approach, we sought to discover what understandings of health emerged in children's responses. We then used a deductive approach to apply Hjelm's (2010) conceptual model of health to explore the multidimensionality of pre-adolescent children's understandings of health. In light of the UK evidence (Harris et al., 2018) which shows that misunderstandings and a dominance of the physical dimension of health exists in adolescent samples, we did not expect pre-adolescent children to demonstrate a multidimensional understanding of health. It was likely that their understandings would also be dominated by the physical domain and a focus on diet and exercise. However, as understanding is argued to develop in accuracy and sophistication with age (Backett & Davidson, 1992; Myant & Williams, 2005; Schmidt & Frohling, 2000) it is important to explore what understanding is evident at pre-adolescence so that we can ascertain whether this appears to develop or stagnate during the adolescent years. This data is critical to informing the content and timing of health education programmes for young people and ensure their transition to being health literate adults.

Method

Sample and Procedures

Forty-six students (males $n = 25$; females $n = 21$) from two classes in a state primary school located in East England, United Kingdom participated in the study. Students were recruited from school years five ($n = 21$) and six ($n = 25$) and were aged nine to eleven years old ($M = 10.1$ years, $SD = 0.73$ years). Although ethnicity data was not formally recorded, the majority were White British. Participants were being taught in mixed ability, mixed sex classes at the time of data collection (March) and had been taught by the teacher since the start of the school year (September).

Procedures followed the guidelines of the British Psychological Society and were approved by the ethical advisory committee of the lead authors' institution. Consent for the school and class to participate in the study was sought from the head teacher and class teachers. Following which a trained research assistant visited the school to speak with the class teachers and students about the research project and answer any questions. Parental information sheets and consent forms were distributed by the class teachers. Parents were given a two-week period to return the consent form to the teacher if they wished for their child to participate in the study. For those students whose parents agreed they could participate in the study an informed assent process was completed on the day of data collection to allow individual students to opt-in or out of participating in the study, irrespective of parental consent being given.

Data was collected during a normal classroom lesson. Topics or subjects that may have involved content about health and a focus on the body such as science or physical education were avoided to remove any potential bias towards the physical dimension of health. The research assistant introduced the students to the purpose of the study and highlighted that: 1) participation in the study was voluntary; 2) they could withdraw at any time before submission of the anonymous questionnaire; 3) they could stop at any time; and 4) choose not to answer a question if they did not want to. Students were reminded there were no right or wrong answers and that all answers would be anonymous and remain confidential. Any questions the students had were answered by the research assistant who was also available to help students with reading the questions. The questionnaires were given out by the research assistant and children were given as much time as they wanted to answer the questions with most children completing the questionnaire within 15 minutes. Students who had not been given parental consent to participate in the project or who had not given informed assent completed a normal classroom activity with the teacher while the data was being collected.

Measures

A short questionnaire was created for children to record their responses to two questions about health. Students provided demographic information such as their age, year group, and gender and completed two open-ended questions: 1) Write down what you think the term 'health' means; and 2) Write down what you think it means to be healthy. Students were told that answers could be presented as words, sentences, or with images to accompany them if they wished. All students chose to provide their responses as words or sentences.

Data Analysis

Responses for each participant were collated into a raw data sheet for each question by the third author with separate sheets created for the overall sample, by gender, and by year group. The first part of the data analysis involved an inductive approach and followed the six thematic analysis principles of Braun and Clarke (2006). Each question was analysed separately at the overall, gender, and year group levels. Responses were read and re-read to create familiarisation with the data and to identify the patterns of responses that were emerging. Based on these pattern of responses, preliminary codes were assigned to the data that described the content of the children's responses to the question. Following which these preliminary codes were grouped together into candidate themes which depicted significant characteristics of the data and represented higher-order patterns in the data (Braun, Clarke, & Weate, 2016). The themes were named and reviewed in relation to the extracts that would exemplify them. To ensure trustworthiness of the data, the second author completed a review of the data analysis by reading the raw data, checking the assigned code, and the higher-order thematic grouping. Discussions between the two authors resulted in either consensus regarding the coding and thematic content or changes until consensus was reached. The first author provided a review of the final codes and themes.

The second phase of the data analysis took a deductive approach using Hjelm's (2010) conceptual model to explore pre-adolescent children's understanding of health. The third

author coded the responses of the children according to the sub-categories and dimensions of health outlined in the model. As with phase 1, the second author provided a review of the analysis and the first author a final review of codes and themes to ensure the trustworthiness of the data. The meaning units used to illustrate the themes and sub-themes in our analysis were selected across different participants.

Results

Understandings of Health: A Multidimensional Perspective

In the deductive phase of analysis, of the 69 statements generated by children in response to what the term 'health' meant, 56 could be coded for their content in relation to Hjelm's (2010) multidimensional model of health. The 13 statements made by children that did not relate to health could, therefore, not be scrutinised using Hjelm's multidimensional model of health and were removed from the deductive phase of the analysis. All 56 statements that could be analysed were coded as belonging to the physical dimension of health and were specifically considered to be part of the movement sub-category of this dimension.

Exploring Understandings of Physical Health

In the inductive phase of the analysis, a total of 69 statements for the question about what the term health meant were coded for their content. These statements resulted in 13 lower-order codes being generated that represented five higher-order themes: 1) Being well, physically active, fit, and healthy; 2) Healthy eating and body composition; 3) Physical activity examples; 4) Physical activity characteristics and; 5) Unsure or ambiguous. There were some observable differences (>5%) in the responses of males and females and in children in Year 5 and Year 6 to this question, these are detailed where appropriate in our analysis [1].

Theme: Being Well, Physically Active, Fit, and Healthy

The majority (42%) of statements coded referred to this thematic category with 79.8% of children's responses in this theme including ideas that were related only to this theme. Nearly

half (48.7%) of all Year 6 children's statements were related to this theme compared to a third (33.3%) of Year 5 children's.

The most popular reference was to *physical health* (14.5%), of these responses 80% were provided by Year 6 children with these showing a greater focus on the body than Year 5 children. Example responses included, 'if your body is ok or not', '…what's inside you', 'to look after you and your body', 'be good to your body' and '…how your body is coping'. The Year 5 responses were to some extent different to these, being quite superficial referring to 'it means like physical health', while another made a specific, but not elaborate, reference to hygiene in their response.

Being well, an absence of illness or disease accounted for 8.7% of responses in this thematic category, of which two thirds (66.7%) of responses were made by Year 6 children. They referred to being 'fit and well', 'your medical and body health', 'to be medically well', and 'health is basically just what helps you to live because if your [*sic*] not healthy it increases your chance to get disease'. Year 5 children referred to 'not being ill' and 'being in good health and well'.

Within this theme children also referred to *being physically fit* (7.2%) and being *active* (7.2%) with 60% of responses in each code being generated by Year 6 children. Children referred to terms such as 'staying fit…', 'to keep your body fit…', and 'getting fit and healthy' and phrasing such as 'staying active' or 'keep yourself active' to help explain what they understood by the term health.

Other references included to the general idea of *well-being* (2.9%), 'it means that you are well-being and eating a balance of sugar and fruit and veg' and 'health means how your well-being and body is doing so if you have a healthy body you might not have a healthy well-being'. A specific *physical attribute* (1.4%) was mentioned by one Year 5 child, 'I think it means how much strength you have'.

Theme: Healthy Eating and Body Composition

This was the second most popular theme (30.4%) for children's responses to what they understood by the term health, with 65% of children's responses in this theme also including ideas that were related to other themes too. Year 5 children (40%) were more likely than Year 6 children (21.3%) to refer to this theme to help them explain what they understood by the term health.

Most of the statements in this theme referred to *healthy eating and a balanced diet* (29%), with 60% of these being generated by Year 5 children. There were limited differences in the phrasing or content of the statements with both year groups having both general and specific statements about diet and food. For example, general references included to 'eat good food', 'eating salad', 'eating the right things', and 'eat healthy' or 'don't eat junk food' while more specific references referred to 'eat good foods like vegetables', 'eat healthy food and not bad food like crisps and chocolate', 'it's when you don't eat lots of sweets but more veg than usual', and 'eating a balance of sugar and fruit and veg'.

Year 6 children's responses referred to the amount of food that should be eaten, for example 'eating the right amount of fruit and vegetables', and 'eat the right foods like fruit and vegetables often.' One Year 5 child alluded to water in their answer, alongside reference to the nutrients of food but could not articulate it clearly 'health means what your food is high in health or low in health same with water…'.

The other category in this theme that emerged was *body weight and composition* (1.4%). This was only mentioned by one Year 6 student who described the term health as 'having a good weight and not being fat'.

Theme: Physical Activity Examples

The third theme that emerged reflected 8.7% of the content of children's responses to what they understood by the term health. Females (11.8%) generated more physical activity

examples than males (5.7%) in their responses to help explain what they understood by the term health. Common responses included generic references to 'exercise' or 'sport' with only one specific example of 'running' provided.

Theme: Physical Activity Characteristics

A fourth theme that represented more specific characteristics of physical activity also emerged (5.8%). There were references to the *frequency and time element* (4.3%) of physical activity in relation to their understanding of health. However, these were non-specific references such as '…and do a fair time of exercise to keep your body in a healthy state', 'how much exercise or physical activity you do to keep healthy', and 'where you do lots of sport so your (sic) healthy…' The idea of *being outdoors* (Also within this theme was the idea of *being outdoors* (1.4%) also featured in this theme, although this was a generic comment about health being about 'going outside and doing stuff'.

Theme: Unsure or Ambiguous

The final theme contained 13% of children's responses, with 4.3% of responses stating that they explicitly did not know what health meant and 8.7% providing ambiguous responses. Year 6 and male children were more likely to say that they were unsure what the term health meant, while Year 5 and male children were more likely to provide an ambiguous answer. These latter responses included those that could be considered tautological, for example 'it means being healthy and not unhealthy' or used the term healthy without further elaboration, for example 'I think it means to stay healthy', '…what's inside you and your life and being healthy' or 'health is being healthy or however you would describe it'. They also included responses in which the coders could not clearly discern a category or focus such as, 'it means you don't treat yourself badly' or 'living well'.

Understanding Being Healthy: A Multidimensional Perspective

In this deductive phase of analysis, of the 85 statements generated by children in response to what it means to be healthy 71 could be coded for their content in relation to Hjelm's (2010) multidimensional model of health. The physical dimension dominated with 97.2% of responses, while the emotional and social dimensions reflected 1.4% each. All of the statements coded as the physical dimension of health were specifically considered to be part of the movement sub-category of this dimension.

Exploring Physical, Social, and Emotional Understandings of Being Healthy

In the inductive phase of the analysis, a total of 85 statements were coded for the content of children's responses to the question about what it meant to be healthy. These statements resulted in 13 lower-order codes being generated that represented six higher-order themes: 1) Healthy eating and body composition; 2) Physical activity examples; 3) Being well, physically active, fit, and healthy; 4) Physical activity characteristics; 5) Unsure or ambiguous and; 6) Social and emotional. There were some observable differences (>5%) in the responses of males and females and in children in Year 5 and Year 6 to this question, these are detailed where appropriate in our analysis.

Theme: Healthy Eating and Body Composition

This was the most popular theme (45.9%) for children's responses to what it means to be healthy, with 68.6% of these responses also containing reference to ideas associated with other themes with half of these (51.4%) being about doing exercise or being active. Over half (55.8%) of the responses from males to this question contained ideas relating to this theme compared to approximately a third (35.7%) of females.

Most of the statements in this theme referred to *healthy eating and a balanced diet* (41.2%), with males generating 60% of all responses. The statements contained both general and specific statements about diet and food. A common general response was to 'eat good foods' or to have a good diet or eat healthy foods. Children also provided examples of food to

help illustrate what they understood about what it means to be healthy. Fruit, vegetables, and salad were commonly mentioned, but also other specific foods or descriptions of food such as '…having your 5 a day', 'to not have lots of fat in your food', '…if you are not eating a lot of sugar and to eat vegetables and healthy food', 'don't eat junk food', or 'to eat healthy food such as vegetable, rice, curry, and more'. One child phrased it as to 'eat disgusting food'.

Some references were made to the amount or balance of food through statements such as '…to have a balanced diet', 'eating the correct amount of each food groups' or '…the right nutrients and vitamins that you need'. One child mentioned protein and minerals, '…if you are unhealthy this means you are not eating enough protein…. Protein is very good for health and minerals is good for your bones and keeps your body healthy.' While another child was able to articulate the need for balance in the diet through the description, 'You need to eat carrots and you can still eat other treats like chocolate and hot-dogs. But stay healthy (not all the time)'.

Other statements in this theme focused on *body weight and composition* (4.7%), with males providing 75% of these responses. They referred to 'having a good body', 'having a good weight and not being fat', and 'it's good to be healthy because you won't be fat'.

Theme: Physical Activity Examples

The second theme that emerged reflected 20% of the content of children's responses to what it means to be healthy. Year 5 children (23.7%) generated slightly more responses in this theme than Year 6 children (17%). Both year groups mostly referred to 'doing exercise', one child provided an example such as '…going to the gym'.

Theme: Being Well, Physically Active, Fit, and Healthy

This was the third most popular theme (14.2%). Year 6 children (19.1%) were more likely than Year 5 children (7.9%) to generate responses in this theme, as were females (21.4%) when compared to males (7%). Responses in this theme referred to *being active* (4.7%) through use

of generic phrase such as 'to be active' and *being physically fit* (4.7%), for example 'keeping fit', '…and your body is fit', and '…stay very fit'.

Other references in this theme were to *being well, an absence of illness or disease* (3.5%), with statements such as 'to be medically well', and 'not being ill' and to *physical health* (1.2%), for example 'to be healthy means your body is fine, your health is high and your heart is normal'.

Theme: Physical Activity Characteristics

A fourth theme that represented more specific characteristics of physical activity also emerged (11.8%). References in this category reflected a focus on the *frequency and time element* (8.2%) such as '…and do a fair time.', '…doing enough exercise' or '…doing lots of exercise' or *being outdoors* (3.5%), 'to go outside'.

Theme: Unsure or Ambiguous

The fifth theme contained 5.9% of children's responses, with 1.2% of responses stating that they explicitly did not know what health meant and 4.7% providing ambiguous responses. These latter responses included things such as 'to do healthy things' or '…doing good things for your body'. Females provided all of the unsure responses to the question and 75% (n = 3) of the ambiguous responses.

Theme: Social and Emotional

The final theme that emerged contained 2.4% of the responses to what it means to be healthy. Two children included this theme in their response with one referring to 'making friends…' and the other 'it means you are happy…'.

Discussion

The current study explored UK pre-adolescent children's understandings about health and being healthy and situated these within a quintuple multidimensional conceptual lens. We established that a plateau in children's understanding about health may begin as early as pre-

adolescence. Children aged 9-11 years old demonstrated a limited understanding of health and what it means to be healthy that was consistent with understandings seen in early and middle adolescents in the UK (Harris et al., 2018) and younger samples worldwide (Burrows, 2010; Burrows et al., 2009; Piko & Bak, 2006). Moreover, we established that pre-adolescent children exhibited narrow views about health and being healthy in relation to established multidimensional conceptual models. We, therefore, develop the current literature on children's understanding of health by: (1) establishing that pre-adolescents' multidimensional understanding of health is limited not only to the physical domain but specifically to the movement category of this dimension of health; and 2) identifying the first evidence in a UK sample that the *apparent* plateau of understanding seen in adolescence extends to pre-adolescence.

Applying Hjelm's Multidimensional Model of Health

The application of Hjelm's (2010) multidimensional model of health demonstrates that the concerns around young people's limited understanding of health is a more substantial issue than previously considered. Our data shows that children's views about physical health are even narrower as they were confined to a focus on the movement category within this dimension. Although emotional and social dimensions of health did appear in the pre-adolescent's responses about being healthy, we contend that this did not constitute enough to conclude that our pre-adolescents demonstrated a multidimensional or holistic understanding of what it means to be healthy.

Our findings are consistent with previous research (Burrows et al., 2009; Harris et al., 2018; Pika & Bak, 2006) which interestingly do use descriptions of 'more holistic' or 'multidimensional' understandings to describe similar findings. Future research in the area should be cautious about using such descriptions when evidence of multidimensionality is limited, and it should move beyond WHOs definition of health to consider children's

understanding of health. We suggest that a broad and wide-ranging understanding of health can only be beneficial to young people and their future health and lifestyle choices. An understanding of health that goes beyond the physical and incorporates more than just behaviours such as diet and exercise that are used to manipulate weight is needed. We want children's understanding of health to reflect more than the currently prevalent healthism discourse (Clark, 2018; Crawford, 1980; Gray, MacIsaac, & Jess, 2015). To achieve this, health education curriculums and health promotion campaigns need to broaden and strengthen their messages across the dimensions of health to overcome this prevalent healthism discourse. Moreover, social agents involved in developing children's understanding of health need to consider a multidimensional perspective of health when supporting children to understand about health, what it means to be healthy, and the lifestyle choices they make.

Children's Understanding of Health: Trajectories and Plateau

Our data suggests that the *apparent* plateau in understanding observed in adolescent samples (Harris et al., 2018) is a more worrying issue than previously identified. The descriptions and ideas about health and being healthy of the children in our study show a similarity with those of early, middle, and late adolescents (12-18 years) in the extant literature (Burrows et al., 2009; Harris et al., 2018; Lee & McDonald, 2010). From a developmental perspective one would expect to see young people's understandings of health increase in sophistication and accuracy across the pre-adolescent to adolescent years (Backett & Davidson, 1992; Myant & Williams, 2005; Schmidt & Frohling, 2000). However, this difference was not evident when comparing our data to previous literature. Future longitudinal studies are needed to corroborate and explore this finding by examining the trajectories of children's understandings of health across childhood.

Additionally, it appears that Year 6 may be a critical time for our young people in their understandings of health. Year 6 children (aged 10-11 years) were more likely to make an

explicit reference to 'the body' when describing their understanding of health but such references were not explicit in Year 5 children's descriptions about health. This parallels the findings from previous research in this area where this emphasis is also evident (Burrows & Wright, 2004; Harris et al., 2018). Years 5 and 6 (aged 9-11 years) may, therefore, be an important stage at which to intervene to counteract the start of this explicit emphasis on the body and its association with health. One such intervention could be through what is taught in schools as current UK curricula may be contributing to such a focus on the body. For example, the National Curriculum in England Science Programme of Study (POS) for Year 6 children uses phrasing that emphasises a focus on the body in relation to health through learning about how things (diet, exercise, drugs, and lifestyle) affect how their body functions and what they can do to keep their body healthy (Department for Education, 2013). While we appreciate that this is an important area of learning about health it may be contributing to the corporeal focus of health demonstrated in these pre-adolescent children. Schools may want to consider introducing additional learning in relation to topics which focus on some of the other dimensions of health (i.e., emotional, social, spiritual, and intellectual health) to redress the balance; thereby, emphasising a holistic approach to health education.

Interestingly, the same POS also identifies drugs and lifestyle alongside diet and exercise as key areas of learning, yet pre-adolescent children identified only diet and exercise as the main behaviours that were associated with health and being healthy. This parallels the data on adolescent children (Harris et al., 2018) and further emphasises the limited development in young people's understandings of health and the extension of a plateau in understanding to an earlier point in childhood. It is perhaps not surprising that diet and exercise feature in children's understanding so strongly as they are the prominent aspects of the Change4Life (Chalkley & Milton, 2021) social marketing campaign to tackle obesity. While it is important that children understand the importance of diet and exercise for their health, this

seems to be at the expense of other areas of health. Even if other aspects of health are being taught as part of the POS they are not at the forefront of young people's thinking about health and being healthy. Moreover, this focus on diet and exercise in relation to health may have a detrimental effect as a preoccupation with diet and exercise is known to be a characteristic of individuals with eating disorders (Larson, 1989; Worobey & Schoenfeld, 1999), which have a peak period of onset during the adolescent years (Stice, Marti, & Rohde, 2013).

Furthermore, even though diet and exercise were a dominant feature of children's understanding about health, our data suggests that what pre-adolescents' know about diet and exercise could be considered superficial and potentially problematic. For example, some children were able to identify the need to eat a balanced diet, yet they did this by using descriptions which indicated that food has a moral value (Jutel, 2005). These descriptions reflected their understanding of healthy versus unhealthy foods such as eating the right foods or good foods and avoiding bad foods. While it is argued that labels such as these are designed to help individuals make appropriate choices when it comes to their diet, the application of the labels to foods enables the individual to choose their food based on the individual food rather than the larger context of their diet and lifestyle. For example, considering aspects such as what have I eaten today, how active have I been, and what is the nutritional value of this food in my total nutritional intake for today. Moreover, the labelling of foods in this way may also lead to future problems and long-term issues with dieting and weight (Julia et al., 2021; Jutel, 2005). It can promote a negative relationship with food, in that food becomes something that helps the individual to feel good or bad about themselves by whether they have eaten 'good or bad foods' or encourages them to crave foods that are often restricted as they have been labelled as 'bad' (Julia et al., 2021; Jutel, 2005). We need to consider how the curriculum can support what we want our children to learn about their health, being healthy and how they make choices about their diet and other health behaviours.

Our data shows that pre-adolescent children were able to recognise the need to be active as part of health and being healthy, but they were unable to provide specific examples of how much activity they should do. Where the frequency or time element was identified it was often in relation to 'lots' with no specific details of either frequency or time. This is perhaps not surprising since previous research on children's understanding of the physical activity recommendations in England found that only 11% of 11-15 year olds knew how much physical activity they should do (Roth & Stamatakis, 2010). Yet it indicates that key messages from campaigns such as Change4Life may not be at the forefront of young people's minds. In light of the continued concerns over the decline in adolescents' physical activity levels and the associated consequences (WHO, 2020), it would seem important for pre-adolescents to know they should be active for an average of at least 60 minutes per day across the week and to be able to articulate this in relation to their health and being healthy (Department of Health and Social Care [DHSC], 2019). This is particularly so for girls who in previous research demonstrated a positive relationship between knowledge of the guidelines and meeting the guidelines (Roth & Stamatakis, 2010). Interestingly, despite the increased focus on the effects of sedentary behaviour on health in recent years and their inclusion in the physical activity guidelines for children of this age (DHSC, 2019), no references to the need to avoid sitting for prolonged periods were made by the pre-adolescent children in the study. This guidance on physical activity and sedentary behaviour is important for young people to know as they approach adolescence so that they can make informed choices about their lifestyle.

Conclusion, Limitations and Future Research

This study makes an important and unique contribution to the health education literature by providing an insight into pre-adolescent children's understanding of health and being healthy. However, further research is needed to corroborate and extend these findings. Future research may also wish to address the limitations of the current study which include its cross-sectional

design and focus on a single point in childhood. Although, our findings suggest that the *apparent* plateau in children's understanding of health extends into pre-adolescence (9-11 years) further work is needed in establishing children's understanding of health and what it means to be healthy in early childhood (4-8 years). We would recommend that future research efforts using a multidimensional conceptual lens explores children's understanding of health in this age range using appropriate research methods for collecting this data (e.g., visual, audio, and kinaesthetic techniques). Moreover, longitudinal research is needed to explore changes in individuals understanding across childhood and the factors associated with both positive and negative changes in children's understandings. These will seek to ascertain whether the *apparent* plateau in children's understanding of health begins to develop during this earlier age range (i.e., 8 years and below). Present findings also suggest that children's understanding of health is limited to the movement category of the physical dimension of health. These empirical findings require verification in larger samples, so that the content and timing of effective health education programmes can be developed. There is also a need for research to go beyond WEIRD (Western, educated, industrialised, rich, and democratic) populations (Rad, Martingano, & Ginges, 2018). Such endeavours will collectively assist in supporting children across the world to develop a holistic multidimensional perspective of health and enable their transition to health literate adults.

Endnote

[1] We highlight observable differences in the percentages for males and females or Year 5 and Year 6 children when the difference between the percentages for the categories was greater than 5%.

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