

# **Habit Formation in Exercise and Eating Behaviours for Young Children**

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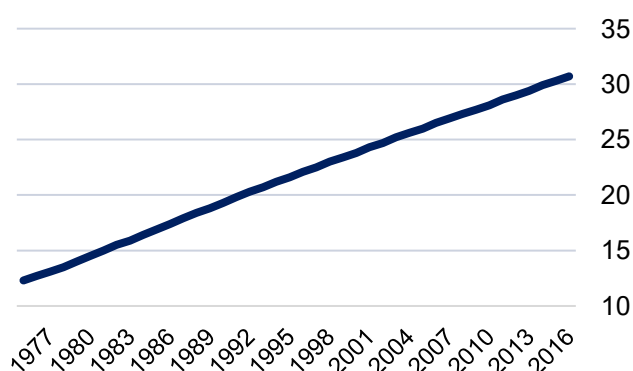


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# Background

The health of young people is a valuable topic with regard to disease prevention and quality of life throughout adolescence and adulthood. Eating and exercise habits, and what ultimately influences them, play a huge role in determining a young person's present and future health. Acquiring a better understanding of what these habits are and how we can influence and improve them, will aid in ensuring the health of young people and help reduce potential disease risk, related to a poor diet and lack of exercise.

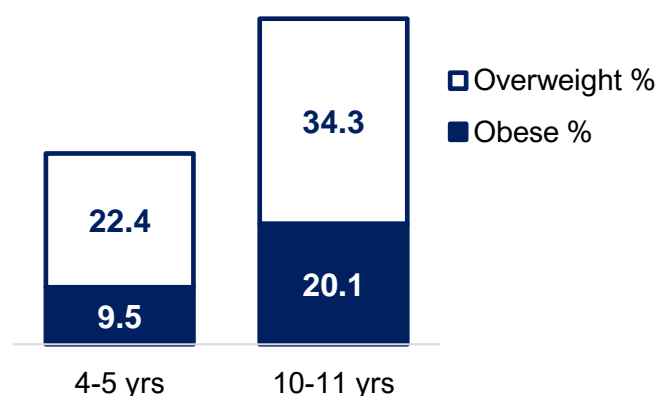
One major health related issue for children is obesity, as it has been shown to be a strong indicator of adult obesity (Simmonds et al., 2015), with a 41% risk of becoming obese in adulthood if that person is obese at the age of 7 and 75% risk at the age of 12 (Rome, 2011). Adult obesity increases the risk of a multitude of diseases (Styne et al., 2017; Blüher, 2019), and cardiometabolic diseases can manifest much earlier in adolescence as a result of childhood obesity (Weihrauch-Blüher, Schwarz and Klusmann, 2019). Childhood obesity rates have continued to rise over 40 years throughout Europe, and on average the prevalence of overweight or obese children has increased by 18.5% from 1975 to 2016 (**Figure 1**). In more recent years the prevalence in younger populations who are either obese or overweight within the UK specifically, stands at around an average of 28% (**Figure 2**), with the rest of Europe showing similar rates (**Figure 3**). De Onis, Blössner and Borghi (2010) highlight the need for effective interventions starting as early as infancy to reverse the predicted trends.

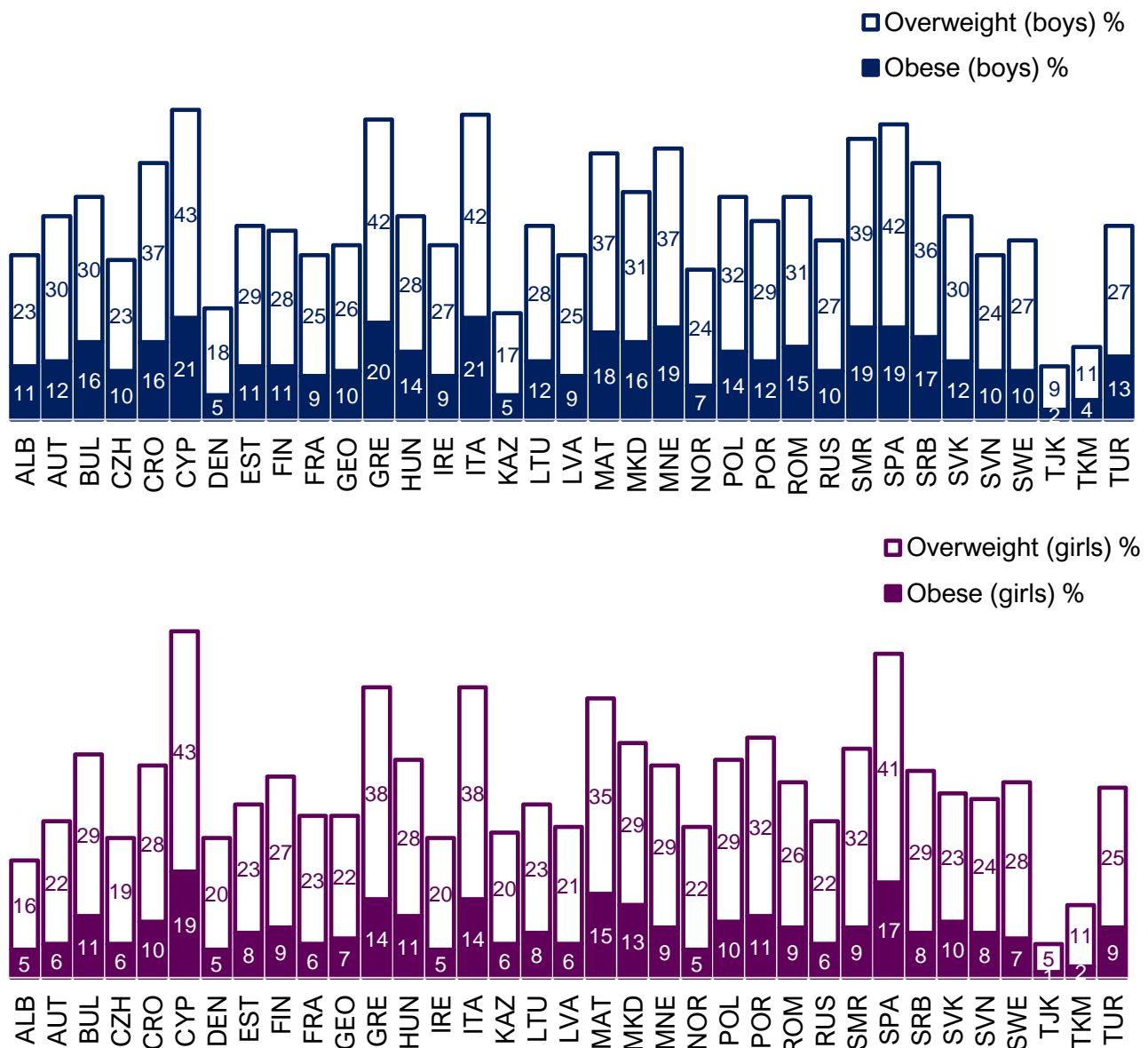


**Figure 1.** Average prevalence (%) of children who are overweight aged 5-9 years across countries in the European union over 41 years. Data compiled from the Global Health Observatory data repository (World Health Organisation, 2016)

BMI > +1 standard deviations above the median - crude estimate %

**Figure 2.** Obesity and overweight prevalence among children aged 4-5 and 10-11 years in reception and year 6 in England schools. Data taken from a report that is in part with the National Child Measurement Programme (NCMP) over the 2017-2018 school year (NHS, 2018).



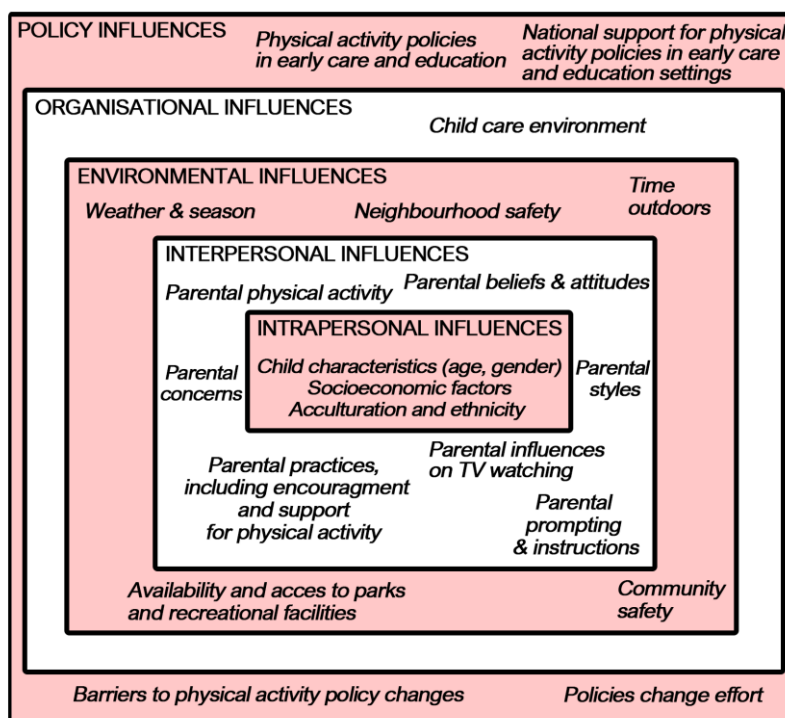


**Figure 3.** Obesity and overweight prevalence among children aged 6-9 years across countries in the European Union (excluding the United Kingdom and Germany who do not take part in this surveillance system and conduct their own). Data taken from a report done by the Childhood Obesity Surveillance Initiative (COSI) over 2015-2017 (World Health Organisation/COSI, 2018).

Improving a child's eating and activity behaviour is not only beneficial in terms of reducing obesity and related disease risk, but it's vital to ensure that they are avoiding undernutrition. Childhood undernutrition and subsequent nutritional deficiencies have been shown to negatively impact a child's growth (Black et al., 2013) and neurocognitive development (Nyaradi et al., 2013). Furthermore, ensuring physical activity is sufficient in early life has been shown to be important in improving fine and gross motor skills, self-perceived competence and self-esteem (Emck et al., 2009). Physical activity in sports and games provide opportunities to learn skills in leadership and social inclusion (Hansen, Larson and Dworkin, 2003; Bailey, 2005), which is also essential for a developing young person.

# Early Life Influences – Physical Activity

Children's physical activity behaviours can be influenced by a number of factors, a social ecological model (**Figure 4**) outlined in a review by Lindsay, Greaney, Wallington, Mesa & Salas (2017) illustrates how different levels of influences can affect physical activity and sedentary behaviour in children.



**Figure 4.** Influences on physical activity and sedentary behaviours of children organised within the social ecological model (Lindsay, Greaney, Wallington, Mesa & Salas, 2017).

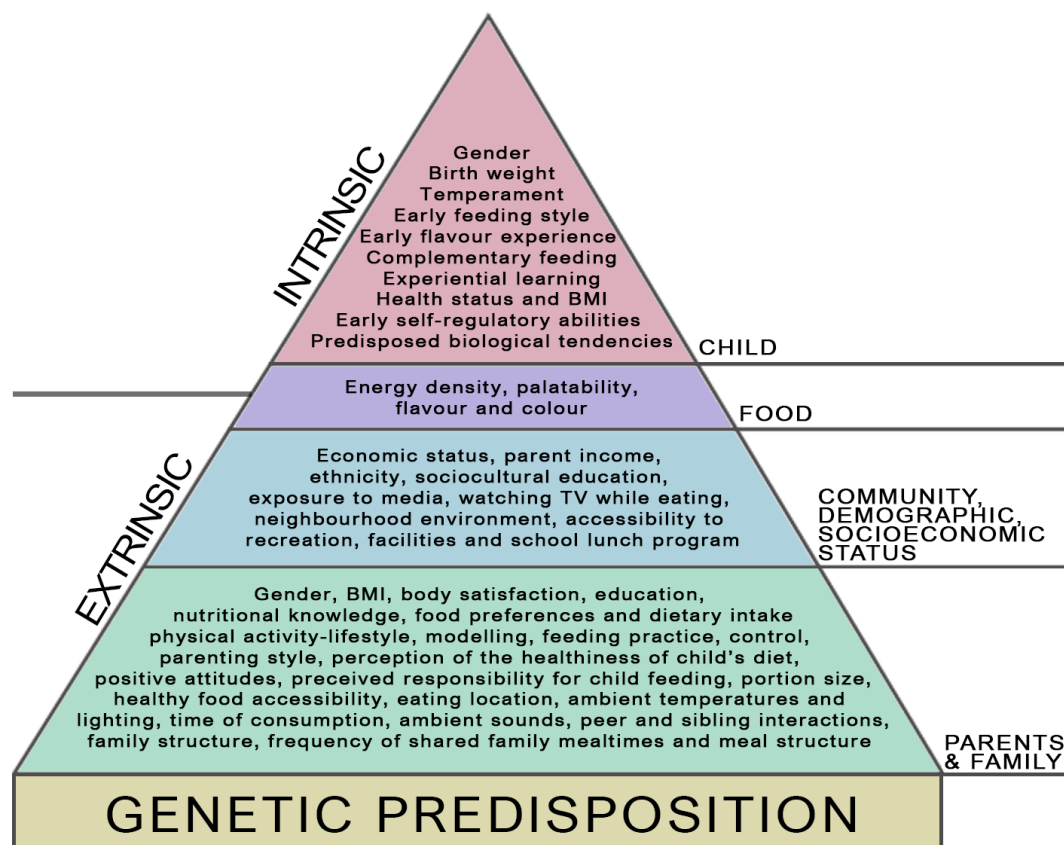
Influences of a child's physical activity behaviour can start as early as pregnancy. A study by Mattocks et al., (2007) found that parents' physical activity during pregnancy and early in the child's life was associated with the child's physical activity at the ages on 11-12 years. Prenatal nutrition has also been shown to have an influence on children's physical activity habits, such in the case of the Dutch famine where total calories were limited but dietary fat was high in relation to other macronutrients. Offspring of the mothers exposed to the Dutch famine were reported to have reduced rates of physical activity (Lussana et al., 2008; Stein, Rundle, Wada, Goldbohm & Lumey, 2009).

Early life influences such as gender exist, boys have been shown to be more physically active than girls (Finn, Johannsen & Specker, 2002; Pate, 2004). Boys with siblings were also more physically active than boys with no siblings due to less time watching TV and girls from single parent families spent significantly more time watching TV than girls from two-parent families (Bagley, Salmon & Crawford, 2006).

Parental activity level was strongly correlated to child activity level, with parental sedentary behaviours reflecting in their behaviour (Ruiz, Gesell, Buchowski, Lambert & Barkin, 2011). Similar findings were found by Carson, Stearns & Janssen (2015), they found that parents in the lowest quartile of physical activity were 2.77 times more likely to have a child in the lowest quartile of physical activity compared with parents in the highest quartile of physical activity. Parents who held the view that physical activity was important, they knew physical activity recommendations and had positive associations with exercise have been found to have children engage with higher levels of physical activity (Zecevic, Tremblay, Lovsin & Michel, 2010; Sawyer et al., 2014). Adversely, concerns over children's safety by parents related to the neighbourhood and community (crime and traffic) has been reported to influence physical activity negatively (Dwyer, Higgs, Hardy & Baur, 2008).

# Early Life Influences – Healthy Eating

Children's eating behaviours are influenced by many factors that can be defined as either intrinsic (e.g. genetics, age and gender) or extrinsic (e.g. parents, society and community), an overview of these are outlined in **Figure 5**.



**Figure 5.** Environmental factors that influence child eating behaviour. Derived and adapted from De Cosmi, Scaglioni and Agostoni, (2017)

## Parents & Family

### Exposure

Parents and family play the greatest role in setting and influencing a child's eating behaviour within the early years of their life, especially in the case of the mother where in utero, the development of gustatory and olfactory systems are being formed. Flavours and subsequent food preferences are learned in part, from the mother's diet via the amniotic fluid, this continues after the child is born during breast feeding (Ventura and Worobey, 2013).

Exposure to solid food, with new tastes and textures after the months following breast feeding are also important in shaping and forming the child's future food preferences and eating behaviour (Harris, 2008). Food exposure is primarily dictated by parental control and food availability in the home (Brown et al., 2008), different practices related to parental control, have been shown to be stronger predictors than others, in influencing eating behaviour.

## Availability & Accessibility

Availability of food, which would include the food that parents buy from the shops and make available to the child within home is strongly related to their eating behaviours and subsequent food consumption. Campbell et al., (2007) found that availability of unhealthy food within the home was positively correlated with sweet and savoury snacks and high-energy fluid consumption. Other studies showed that the availability of healthy food within the home was positively correlated with a healthier diet within the children of the home (van der Horst et al., 2006; Couch, Glanz, Zhou, Sallis & Saelens, 2014)

Accessibility is different to availability as its described in a paper by Hearn et al (1998): “Whether the foods are prepared, presented, and/or maintained in a form that enables or encourages children to eat them”. This is an important aspect related to parenting and food, healthy foods must not only be made available to the child but should be enjoyed as well. A meta-analysis by Yee, Lwin and Ho (2017) reported that food accessibility had a positive influence on healthy food consumption, this relationship was found by other researches as well (van der Horst et al., 2006; Ong, Ullah, Magarey, Miller & Leslie, 2016).

## Rewards

Unhealthy foods like sweets or junk food that are used as rewards for good behaviour or achievement have been shown to adversely affect eating behaviours and habits by causing an increase in preference for the reward and reward sensitivity itself (Rollins et al., 2014). This effect is more pronounced in boys who have a high reward sensitivity (Lu et al., 2015). Using preferred foods or treats to reward a child for eating healthier foods or foods they dislike has been shown to cause a negative shift in preference (Birch, Marlin and Rotter, 1984) and that using food as a reward resulted in the devaluation of the target food relative to the reward food (Newman and Taylor, 1992). Roberts, Marx and Musher-Eizenman (2018) also reported that using food as a reward for food increased a child's neophobia or picky-eating habits compared to using a tangible or non-food reward.

Non-food based rewards to encourage or shape healthy eating behaviours has been shown to have more promising results. Remington et al (2011) showed that children who received exposure plus a tangible reward increased their intake of a target vegetable significantly more than the control group. Other studies have shown similar results whilst using non-food rewards such as stickers to incentivise vegetable and fruit intake (Corsini et al., 2011; Horne et al., 2011).

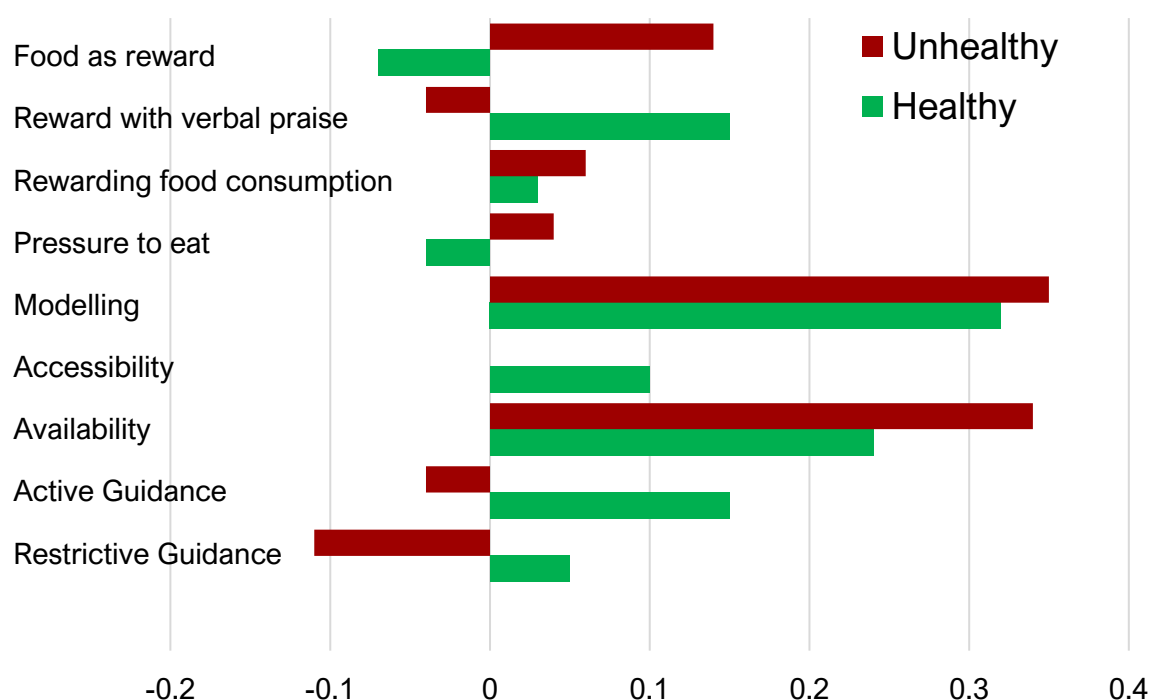
## Pressure to Eat

Pressuring children to eat healthier food has been shown to often lead to overeating, a dislike in healthier foods and an interest in forbidden foods (Scaglioni, Salvioni and Galimberti, 2008). Birch et al (2001) also stated that restriction and pressure to eat can impede the development of adequate self-control of eating in children. Mixed results have been shown related to restrictive guidance, some studies demonstrated that it can be helpful in controlling healthy eating habits, whilst others did not, but Yee, Lwin and Ho (2017) highlighted in their meta-analysis that it is age dependent. Other studies agree that pressuring a child to eat specific foods is not an effective strategy for promoting healthy eating in children, rather a focus on setting an example as a good role model by improving one's own diet containing many fruits and vegetables that the child can imitate is a better method (Orlet Fisher et al., 2002; Galloway et al., 2005).

## Modelling

Parental modelling, which is a parent's ability to influence their children with their own eating behaviours and consumption, has been shown to influence children's food consumption either in a negative or positive way (Palfreyman, Haycraft & Meyer, 2015). This is because the influence of modelling is food dependant, if the parent eats healthy food and sets a good example, this will then be more likely reflected in the child's eating behaviour. This is also true with unhealthy food, where a parent's unhealthy diet will be reflected in their children's (Brown, 2004; Campbell et al., 2007).

Yee, Lwin and Ho (2017) looked at many of the parental practices that are commonly employed to influence the promotion and prevention of different food consumption behaviours in children. They found similar results that are common in previous studies that were discussed above. The parental predictors associated with healthy and unhealthy food consumption can be seen in **Figure 6**. Practices that are both weak predictors (negative values) of healthy food consumption and strong predictors (positive values) of unhealthy food consumption should be avoided if the goal is to improve the child's eating habits (e.g. *Food as reward*, *Pressure to eat*). Practices that are both strong predictors of healthy food consumption and weak predictors of unhealthy food consumption should be adopted if the goal is to improve the child's eating habits (e.g. *Reward as verbal praise*, *Active guidance*, *Restrictive guidance*). Practices that are strong predictors in both healthy and unhealthy food consumption can be dependent on food type (e.g. *Modelling*, *Availability*).



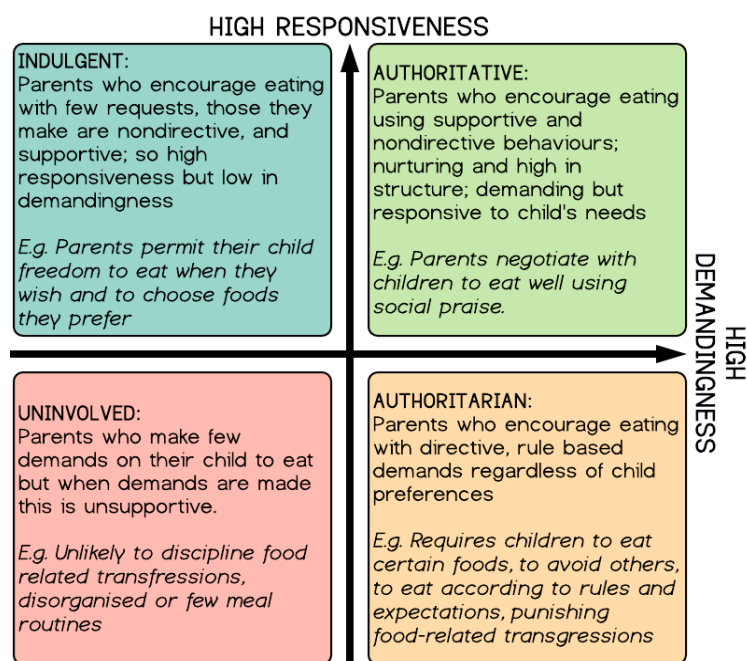
**Figure 6.** Parental predictors of unhealthy and healthy food consumption in children (Yee, Lwin and Ho, 2017).



## Feeding Styles

Parental feeding styles are not goal orientated behaviours such as food parenting practices as discussed previously (e.g. using food as a reward), feeding styles deal with parent-child interactions in a general sense and act as the emotional environment during a meal (Vollmer, 2019). Food parenting practices occur in the context of a parents feeding style (Vollmer & Mobley, 2013). There are four categories in respect to feeding styles that have been laid out in the literature: authoritative (high demands on child's eating, high responsiveness to child's wants/needs), authoritarian (high demands on child's eating, low responsiveness to child's wants/needs), indulgent (low demands on child's eating, high responsiveness to child's wants/needs), and uninvolved (low demands on child's eating, low responsiveness to child's wants/needs) (Vollmer, 2019). These feeding styles have been associated with child dietary behaviours, authoritative parents which have high levels of maternal sensitivity and expectations for self-control, was associated the most with lower rates of childhood obesity (Rhee, 2006) and healthy food intake in children (Patrick, Nicklas, Hughes & Morales, 2005; van der Horst & Sleddens, 2017).

In contrast authoritarian parents which have high demands for self-control, but low levels of sensitivity were associated the most with higher rates of childhood obesity (Rhee, 2006) and negative associations with children's food intake (van der Horst & Sleddens, 2017). Other styles such as uninvolved/neglectful parents which have low demands for self-control and low levels of sensitivity have been linked with lower intakes of fruits and vegetables in children (Franchini, Póinhos, Klepp & de Almeida, 2011; Rodenburg, Oenema, Kremers & van de Mheen, 2012). Indulgent/permissive parents, which have low demands for self-control and high levels of sensitivity have been associated with higher rates of childhood obesity (El-Behadli, Sharp, Hughes, Obasi & Nicklas, 2015) lower rates of fruits and vegetables (Hoerr et al., 2009) and higher rates of low-nutrient-dense foods (Hennessy, Hughes, Goldberg, Hyatt & Economos, 2012). An overview of the feeding styles can be seen in **Figure 7**.



**Figure 7.** Four parental feeding styles and the relation to responsiveness and demandingness (Shloim, Edelson, Martin & Hetherington, 2015)



## Socioeconomic

The socioeconomic status of the family can greatly influence food availability which we already know is a strong predictor of food consumption, studies that have compared children from families of varying socioeconomic statuses have found disparities in eating behaviours. Studies have also shown that countries with a lower socioeconomic status were strongly linked to unhealthy dietary patterns in children (Fernández-Alvira et al., 2014; Manyanga et al., 2017), whilst countries with a higher socioeconomic status were associated with higher fruit and/or vegetable consumption, diet quality, and diversity (Mayén et al., 2014).

Parents with a greater education and income have been shown to have a significantly positive impact on children's daily breakfast and fruit consumption compared with lower socioeconomic families (Petrauskienė, Žaltauskė and Albavičiūtė, 2015). Teaching strategies that promote healthy eating has been shown to improve healthy eating behaviours in children (Dudley, Cotton and Peralta, 2015), highlighting the lack of adequate nutritional education to be a contributory factor that may influence unhealthy eating habits.

There is a significant influence on eating behaviour with children in the presence of peers and friends within different social environments, energy intake increases generally apart from in situations where social-evaluation is high and when peers exhibit healthy eating (Salvy et al., 2012).

Television has also been shown to negatively impact healthy eating habits in children, the link between early television viewing and unhealthy eating was mediated by the perceived taste of unhealthy and highly advertised foods (Harris and Bargh, 2009).

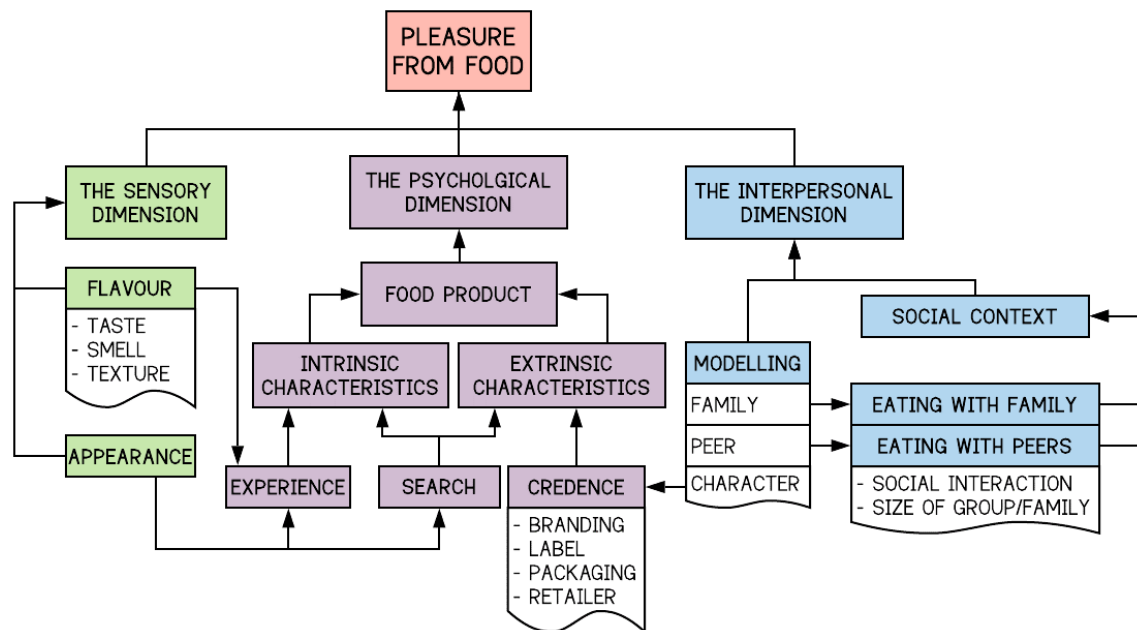
## Food

Food itself influences eating behaviours by different mechanisms, highly palatable foods that are high in fat and sugar have been shown to disrupt hunger and satiety signalling whilst activating reward systems that offsets normal appetite regulation (Erlanson-Albertsson, 2005), thus changing eating behaviours that can result in a higher caloric intake. Inappropriate nutritional signals can also manifest from nutritional deficiencies, excess energy and macronutrient imbalances that are experienced at a young age, which in turn can lead to metabolic dysfunction contributing to future obesity risk (Alles, Eussen and van der Beek, 2014).

As discussed previously, a lack of repeated exposure to a variety of foods at an early age (up to 36 months) has been shown to reduce food acceptance in later years, children that are older than 24 months showed less acceptance following repeated food exposure compared to younger children (Caton et al., 2014). Dovey et al., (2008) showed this to be a contributory factor in increasing picky/fussy eating behaviours and food neophobia.

## Pleasure from Food

Eating is a primary source of pleasure for a child through development and later in life, it is closely linked with the satisfaction of the physiological needs that nourishment provides. Pleasure from food is multidimensional, it is derived from the sensory properties of food: Flavour, taste, smell, texture and appearance (The Sensory Dimension), cognitive representations of food or individual belief surrounding food (The Psychological Dimension) and the context of consumption or interaction with others whilst eating (The Interpersonal Dimension) (**Figure 8**).



**Figure 8.** The three dimensions of pleasure from food and associated factors, diagram based on the work and literature reviewed by Fernqvist and Ekelund (2014) and Marty et al (2018).

## The Sensory Dimension

The sensory dimension of pleasure develops at an early age, and one major component of food pleasure comes from flavour perception. Beauchamp and Mennella (2011) define it as the perceptual combination of smell, taste and oral chemical somatosensory stimulation (texture and temperature).

### Taste

Taste is a sensation produced when a chemical reacts to receptors on the tongue and it is a very important aspect to flavour perception and development. It has been shown that new borns already have an innate preference for consuming foods with a sweet taste over non sweet foods. This may be a consequence of sweetness acting as a marker of caloric sugars in plants and energy density which is essential for survival (Bartoshuk and Beauchamp, 1994). Umami (savory) tastes has also been described to have a possible innate component as well (Beauchamp and Mennella, 2011). Bitter tastes have been shown to elicit a rejection response in infants and it is generally assumed that this is the result of natural selection, where we have evolved to avoid toxic foods that tend to be bitter in taste for humans to favour sweeter foods that have a greater chance to meet energy demands (Glendinning, 1994; Simmen, and Hladik, 1998).

Many vegetables hold a bitter taste, which is why repeated exposure by the mother herself during utero all the way through breast feeding and then directly to the child is very important for the child to get used to bitter tastes so that vegetable consumption is adequate throughout life (Forestell and Mennella, 2007). Children are now vulnerable in a modern environment where early exposure to sugar laden foods and a lack of bitter tasting fruits and vegetables creates a taste profile later in life that is susceptible to overconsumption and obesity (Mennella and Bobowski, 2015).

A preference for salt taste has also been shown to have innate component that can be explained evolutionarily by the biological need for sodium and its scarcity in the diet of our primate ancestors (Beauchamp, 1987). It can also be modulated by the mother's actions in utero. A study by Crystal and Bernstein (1998) demonstrated that mothers who were experiencing morning sickness which results in maternal dehydration lead to an enhanced preference for salt in offspring. Another factor that contributes to a preference in salt is the ability for it to suppress bitterness, which has been shown to enhance the flavour by increasing sweetness the palatability of the food (Breslin and Beauchamp, 1997). Early exposure to salty foods should look to be restricted not because salt/sodium is inherently

bad but that the effect that salty food has on increasing the preference for more palatable foods and decreasing a preference for potentially bitter fruit and vegetables could promote overconsumption of energy dense foods and a diet that lacks essential nutrients (Liem, 2017).

## **Smell, Texture & Appearance**

Food odours appear to present themselves in a similar way to taste, odours that were more sweet smelling (strawberry, bubble-gum, cola and chocolate) were preferred by children compared to adults, whilst odours like spearmint and cloves elicited a more negative response from children compared to adults (Hoffman et al., 2016).

Texture of food has been shown to greatly influence food acceptance and pleasure, the manipulation of food texture caused a significant decrease in intake of the test food in a study by Werthmann et al (2015) irrespective of colour or taste.

Food colour and appearance has been shown to modify our perception and motivation to eat certain types of food, be it through flavour prediction or perceived pleasantness (Piqueras-Fiszman and Spence, 2014). A study by Foroni, Pergola and Rumiati, (2016) showed that a more red brightness presented in food images elicited a greater arousal than the colour green presented in food images. This may support the hypothesis that humans are more motivated by food with a reddish colour, and this could have implications when it comes to vegetable consumption.

## **The Interpersonal Dimension**

### **Peer Modelling**

Social eating situations where children can interact with other people has a significant influence on the pleasure that is experienced during eating and it's also a vital competent to the development of children's eating behaviours (Marty et al., 2018). Children are also more likely to consume new foods if others are eating the same type of food within a social context (Addessi et al., 2005) and learn about which foods are palatable by observing other people eating (Liberman et al., 2016). A study by Greenhalgh et al., (2009) showed the influence that peer modelling has on eating in children, they found that negative peer modelling, where peers showed a dislike in a certain food inhibits novel food consumption. Whilst children exposed to positive peer modelling caused a greater consumption of the target food but did not reverse the effects of negative peer modelling. Peer modelling has been shown to be more influential compared to adult or parent modelling related to food consumption, and when the gender of the peer is the same as the child, it has a greater effect on eating behaviours compared to if the peer was the opposite gender (Frazier et al., 2011). Cruwys, Bevelander and Hermans, (2015) have shown that peer modelling to be uniformly influential all through development.

### **Character Modelling**

Influencing children's eating behaviour has also been demonstrated when the peer model is fictitious and observed on a computer by increasing the consumption of the target food (Bevelander, Anschütz and Engels, 2012). A study looked at the influence of licensed characters on the preference of younger children and found that they significantly preferred the taste of foods that had a popular cartoon on the packaging compared with the same foods without the characters (Roberto et al., 2010). This would be considered a credence quality under the psychological dimension, but it could also be categorised as a "Character" model, similar to where a child can be influenced by a fictitious life-like peer, they could see a fictitious cartoon as a role model. Along with modelling influences within social situations, the social environment such as the number of people within a group has been shown to influence food consumption by increasing it and may do this through increasing pleasure from food (Lumeng and Hillman, 2007).

## The Psychological Dimension

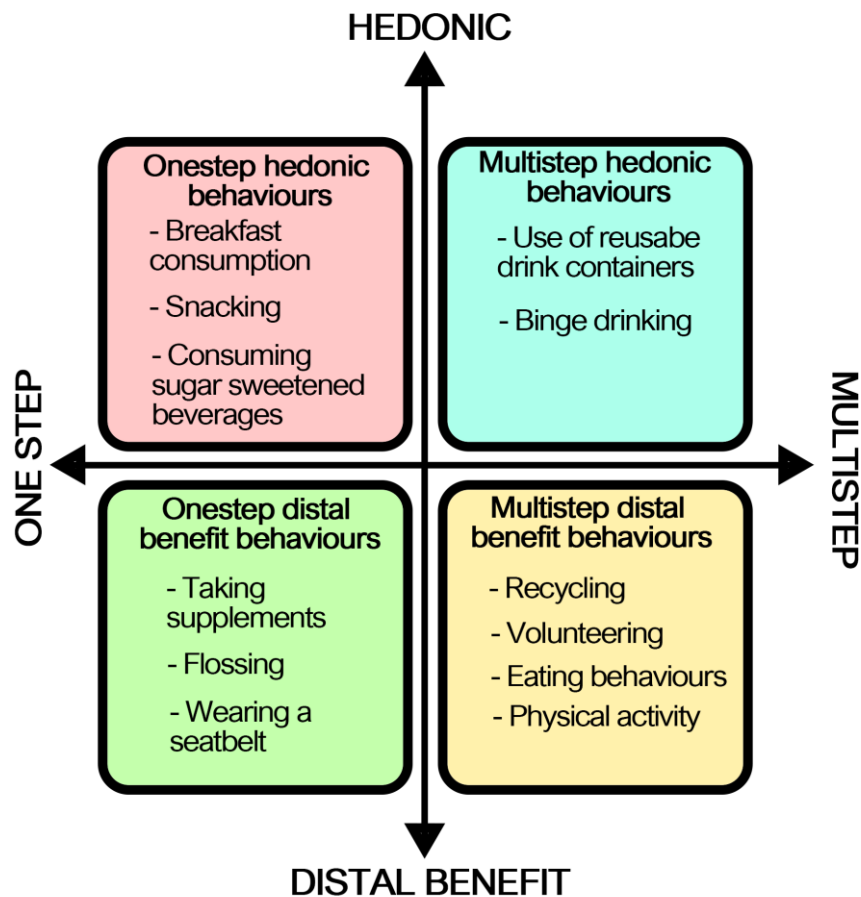
The pleasure a child gets from eating can also be influenced by cognitive factors such as thoughts, beliefs, ideas and imagery. Nelson (1970) describes a concept within consumer behaviour that determines the quality of a product and thus could influence food pleasure - Search qualities, which are determined by the consumer (parent) prior to purchasing. Experience qualities, which are obtained once the food is purchased. Credence qualities has been described to be another property that determines the perception of a product (Darby and Karni, 1973) and in regard to food, characteristics such as the branding, packaging and logos can be categorised as credence qualities which are extrinsic in nature and related to the food product. These external cues have been described by Deliza and Macfie (1996) to generate expectation and influence choice, sensory perception and hedonic liking of food. Intrinsic characteristics are part of the physical product itself and can be assessed before consumption and evaluated during consumption (Fernqvist and Ekelund, 2014).

Advertisements and branding of food packaging that utilise licenced popular characters has been shown to influence young children's taste preferences and snack selection. This type of branding is used frequently on energy dense, nutrient sparse junk foods and could have a big influence for the health of children and overconsumption of food leading to obesity (Roberto et al., 2010). Other studies have shown the power that advertising can have negatively influencing a child's food preference and consumption (Taras et al., 1989; Borzekowski and Robinson, 2001). A reduction in screen time (Shea, Harvey-Berino and Johnson, 2010) or the addition of televised messages related to healthier food options (Gorn and Goldberg, 1982) has been shown to positively influence a children's food preference and consumption.

## Hedonic Behaviour

Hedonism is a concept that favours the pursuit of pleasure and self-indulgence as a primary goal and it can be conceptualised in different ways to illustrate its influence on behaviour. A proposed model for behaviour that is constructed round a four-component model was proposed by Mullan and Novoradovskaya (2018) – see **Figure 9**. Behaviours within the model are categorised as either one step or multistep actions, which is a measure of the complexity, the other criteria defines behaviour as having an immediate pay off/reward (hedonic), or that the benefit is realised in the long term (distal benefit), which is a measure of immediacy (Collins & Mullan, 2011). This model is important within forming healthy habits or trying to replace unhealthy ones, the complexity of the behaviour can be seen as a measure of how challenging it can be to form or dismantle a behaviour in place of a new one and the immediacy can be seen as a measure of when the reward is realised or if gratification is delayed or not.

Behaviours such as consuming an unhealthy snack could be seen as a one-step hedonic behaviour as it could require minimal preparation before consuming and the pleasure derived from it comes immediately. Conversely, maintaining a healthy diet could be seen as a multistep distal benefit behaviour as there are many components and sub actions within the primary behaviour and that the benefits or pleasure that can be seen from following a healthy diet would come in the long term (better body composition, health and wellbeing).



**Figure 9.** Behaviour classification based on number of steps and outcome of behaviour with examples (X axis ranges from one-step to multistep behaviour; Y axis ranges from hedonic to distal benefit behavioural outcomes) (Mullan and Novoradovskaya, 2018).

## Habit

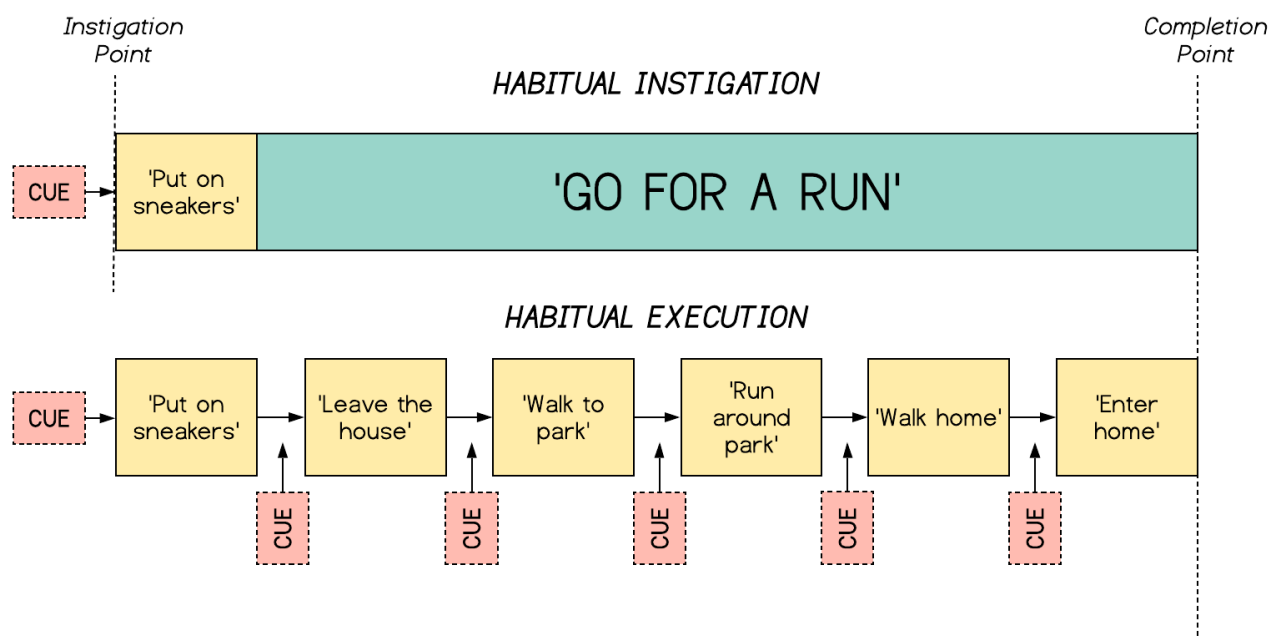
Habit can be defined as a process by which a stimulus generates an impulse to act as a result of a learned stimulus response association, or that a behavioural tendency occurs with minimal conscious awareness or reflection, in response to a specific number of contextual cues and conditions (Gardner, 2014). Orbell and Verplanken (2010) identifies three aspects that are central to a habit: a behaviour that is frequently repeated, has acquired a high degree of automaticity and is cued in stable contexts. Also, that decisions to perform an action that is initially dictated by a goal/reward (e.g. feeling hungry), becomes less goal orientated the more the action is repeated, which results in the integration of the behaviour as habitual that can be triggered by the cue alone (Orbell and Verplanken, 2010).

## Habitual Instigation

Habitual instigation describes habitual selection and initiation of behaviour whereby an action that may have sub-actions associated with it, is completed without the need for individual cues for each sub-action (Gardner, Phillips and Judah, 2016). In the example in **Figure 10**; 'Going for a run' is cued by the initial sub-action of 'put on sneakers' but then the total action of 'Going for a run' becomes an automatic behaviour, with each sub-action within it being completed habitually.

## Habitual Execution

Habitual execution refers to the completion of individual sub-actions, with the cessation of a sub-action that leads onto the automatic trigger of the next via cues (**Figure 10**).



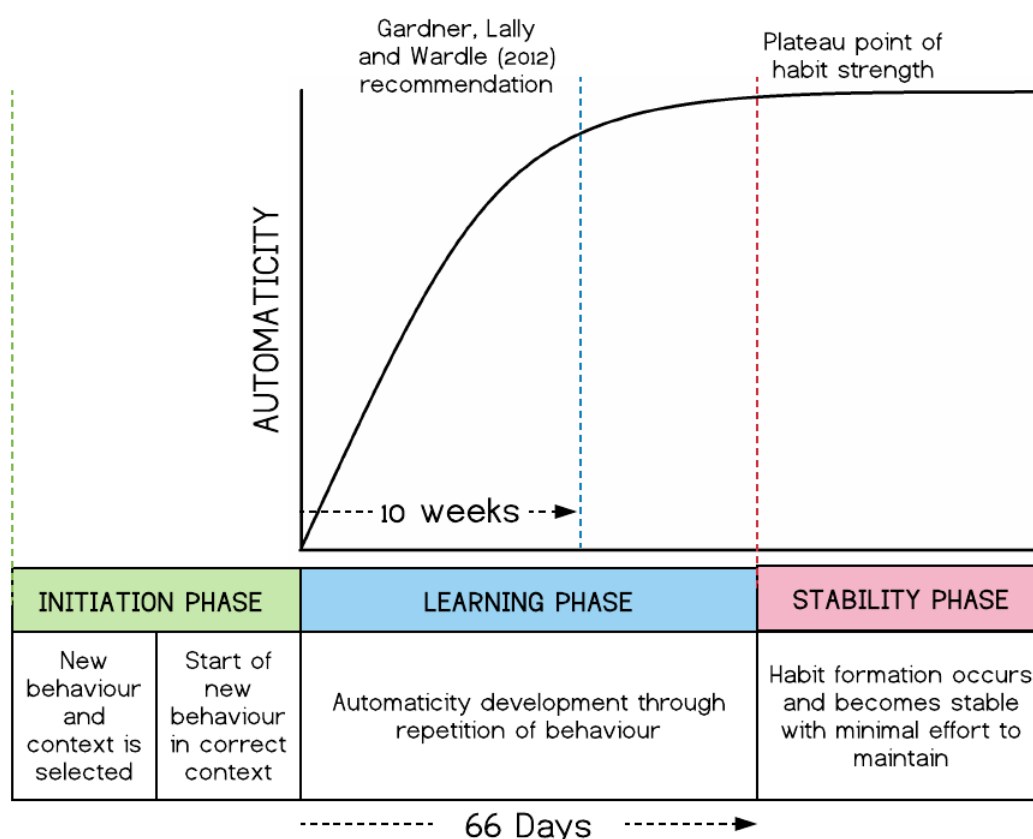
**Figure 10.** Figure adapted and simplified from a diagram by Gardner, Phillips and Judah (2016), It shows the difference between the concepts of habitual instigation and execution.

## Habitual Formation

The formation of a habit occurs in phases and relies primarily on the repetition of a behaviour within a consistent context through associative learning. During the 'Initiation phase' a new behaviour and context will be selected, and the behaviour will start. Automaticity will then start to develop during the 'Learning phase' as the target action is repeated sufficiently, strengthening the habit (Gardner, Lally and Wardle, 2012). External cues are formed and the dependence on conscious attention and motivational processes is reduced (Lally, Wardle and Gardner, 2011), whilst habits are likely to remain even if after motivation or interest is reduced (Gardner, de Bruijn and Lally, 2011).

Lally and Gardner, (2013) suggested that habit formation typically followed an asymptotic curve during its development, with initial repetitions of behaviour causing a large increase in automaticity until reaching a plateau point at which the strength of the habit levels off and the "Stability phase" begins (see **Figure 11**). Automaticity was found to plateau on average at around 66 days after the inception of the behaviour (Lally et al., 2010), but there was substantial variance across participants and behaviour type. Gardner, Lally and Wardle (2012) suggested that it may be helpful to tell patients to expect habit formation (based on daily repetition) to take around 10 weeks, as people are reassured with the knowledge that behaviour becomes progressively easier as a habit forms.





**Figure 11.** The three phases of habit formation and maintenance with the development of automaticity following an asymptotic curve.

Blue dotted line represents the 10 week point into habit formation and Gardner, Lally and Wardle (2012) recommendation of time point to inform patients.

Red dotted line represents the point at which the strength of a habit reaches a plateau and the stability phase begins.

## Initiation Phase

The ability to start a new behaviour is the most challenging aspect of habit formation, this can be seen when looking at intention-behaviour relationships. A review by Sheeran (2002) showed that across a number of health-related behaviours, the average rate of people who intended to perform a behaviour, only 47% were successful in doing so. A more recent meta-analysis demonstrated similar findings, it found that a medium to large change in intention produced only a small to medium change in behaviour (Webb and Sheeran, 2006). A better understanding of the factors that improve the intention-behaviour relationship will ensure new behaviours are successfully implemented.

Planning has been shown to increase the chances that an intended behaviour will be performed and is a powerful self-regulatory tool that can help to translate goals into behaviour (Sniehotta et al., 2005). A distinction can be made between types of planning that find utility in different stages of behaviour change – Action planning, which Sniehotta et al., (2005) describes as “the process of linking goal-directed behaviours to certain environmental cues by specifying when, where and how to act”. Action Planning has been shown to have strong effects on putting goals into action (Gollwitzer, 1999) and an important component of self-management of behavioural change for health outcomes (Lorig et al., 2013; Reinwand et al., 2016). Coping planning, the other type, is reactive and self-regulatory, which tends to increase during the weeks after a new behaviour has been instigated and would be



associated more with the learning phase of habit formation. It is used to combat unwanted influences on behaviour and to protect good intentions from distractions that may result in relapse (Sniehotta et al., 2005).

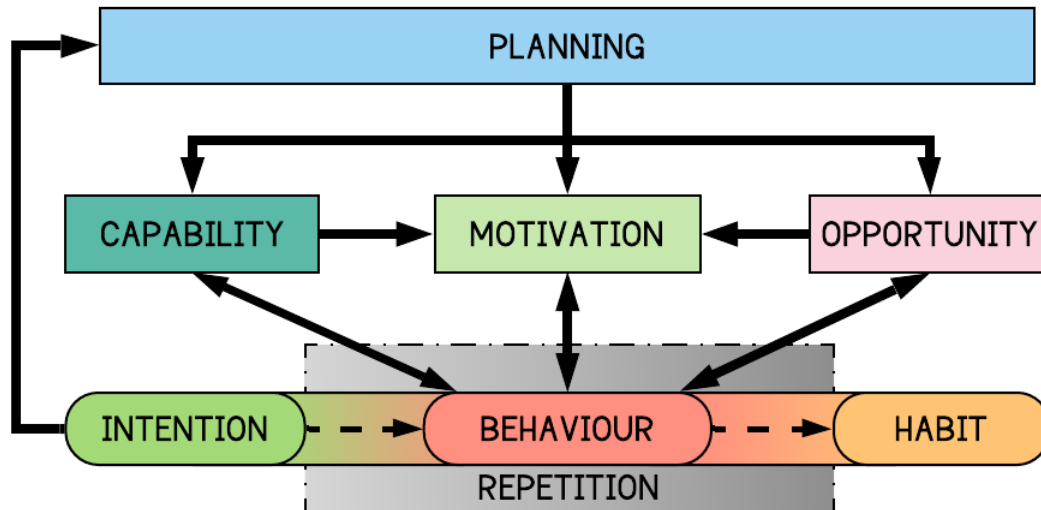
Instigating a behaviour that results in habit formation is more likely to be achieved when people anticipate courses of action (or its consequences) to result in positive outcomes (Bandura, 2001). Motivation is a key factor to ensure the initiation phase of habit formation is successful, also choosing an appropriate context in which to perform the action, such as an event (e.g. when they arrive at school), or a time of day (e.g. before breakfast), that is ingrained within a daily routine, provides an opportunity and stable starting point to initiate the behaviour for habit formation (Lally, Wardle and Gardner, 2011). When the control of a behaviour is perceived as realistic and the person has the capability to achieve it, there is a greater chance for that behaviour to be initiated into a daily routine (Ajzen, 1991).

## Learning Phase

For a habit to form effectively, a behaviour must be repeated within the presence of the same contextual cues (Lally and Gardner, 2013), whilst remaining consistent (daily) over an adequate time scale (see **Figure 11**). Consideration must be given to the many factors that promote or discourage the maintenance of a new behaviour. People will maintain a new behaviour when they have a motive to do so, motivation to avoid negative health outcomes has been shown to be insufficient to maintain preventative behaviour that requires effort, compared to positive maintenance motives (Kwasnicka et al., 2016). Higgins' (2005) regulatory fit theory describes how people will engage with a behaviour if they feel more strongly associated with it, or if it fits within their decisions and prior engagement compared to if they view it as a responsibility or something they ought to carry out. It's important to set realistic goals that prompt positive emotions and adopt a small-changes approach (Hill, 2008), as this can increase effort and commitment to change through success expectancy, rather than ones that prompt a negative effect, which can lead to decreased effort or goal abandonment (Louro, Pieters and Zeelenberg, 2007). Self-efficacy (capability) and satisfaction for the new behaviour was strong a predictor of long-term success in smokers who attempted to quit (Baldwin et al., 2006).

Extrinsic motivation is a mediator of behaviour initiation, although intrinsic motivation has been shown to have a stronger influence on the maintenance of behaviour compared to extrinsic motivation. Hypothesised by Ryan and Deci (2000) in self-determination theory. Self-regulation, which is one's ability to actively control behaviour by inhibiting thoughts, desires, emotions and urges that lie in contrast to the set goal (Kwasnicka et al., 2016), has been shown to be important in controlling impulsive influences that could affect behavioural maintenance (Hofmann, Friese and Wiers, 2008). Coping planning, as mentioned previously, represents a critical self-regulatory strategy for behavioural maintenance (Scholz et al., 2008). Although one study found that coping planning by itself showed greater decreases in behavioural intentions compared to just repetition of a previously delivered intervention (Inauen, Stocker and Scholz, 2018). They concluded that coping planning decreases motivation for health behaviour maintenance for people who experienced minimal barriers prior to the planning intervention. Other studies found more promising results for coping planning used independently for reducing unwanted behaviour (Osch et al., 2008), and when used in conjunction with action planning (Carraro and Gaudreau, 2013; Koh et al., 2017). Monitoring the progress of a new behaviour makes it easier to recognise if the behaviour is meeting set goals, thus improving compliance. It also highlights how a behaviour is obtaining progression towards the goal, which ensures that the behaviour is performed correctly and consistently to maximise progression for future habit formation (Burke et al., 2009).

Some of these concepts have been discussed together in a model termed COM-B by Michie, van Stralen and West (2011), which represents behaviour and how it relates to capability, motivation and opportunity. This model can be seen in **Figure 12**, although it has been adapted to incorporate other influential factors (planning and repetition) that have been previously discussed, along with the representation of how an intention transforms into a behaviour, which then becomes habitual.



**Figure 12.** A framework that has been adapted from the COM-B system by Michie, van Stralen and West (2011). It shows the progression of how an intention becomes a habit through behavioural change and highlights some of the factors that influence that progression.

## Stability Phase

With successful self-regulation of a new behaviour, habit development will form with consciously controlled behaviours becoming automatic over time with repetition (Kwasnicka et al., 2016). Although Verplanken (2006) makes the point that while repetition is necessary for habits to develop, it should be not equated with frequency of occurrence, rather a mental construct holding features automaticity, such as mental efficiency, difficult to control and lack of awareness. This shows that maintaining a habit can be done with minimal effort, which is great if the habit is positive, but if there are habits that have negative outcomes that conflict with the new behaviour trying to be instigated it may be difficult to form a habit from a new behaviour. Also, that strong habits from the past, have the ability to cause an individual to lapse back to that prior habit replacing the new behaviour (Kwasnicka et al., 2016).

## The Dual Process Theory of Thought

There is the idea that there are two systems of thought, one being a quick, impulsive, associative, automatic and affective based form of reasoning and the other being a slow, thoughtful, calculated and deliberative processes (Gronchi and Giovannelli, 2018). Within cognitive and social psychology this idea has been given the name of “the dual process theory of thought” (Osman, 2004; Evans and Stanovich, 2013), and there are multiple different theories within it, but they all share the theme of dualism. Strack and Deutsch (2004) describe this two-system model by how it explains social behaviour. The impulsive system (System 1), which elicits behaviour through associative links and motivational orientations and the reflection system (System 2), which generates behavioural decisions based on knowledge about facts and values.

This theory was taken further to explain how it is integrated into behaviour change and habit formation, Rothman, Sheeran and Wood (2009) outlines a conceptual matrix for explaining how reflective and automatic processes are associated with the initiation and maintenance of food choices with possible interventional strategies to aid in behaviour change (Figure 13). The matrix shows where habit falls within this framework and that it is a key determinant of automatic processing during the maintenance of a behaviour, which we know is the product of repetition within a similar context, whilst using self-regulation to block out conflicting behaviours that would hinder that consistency.

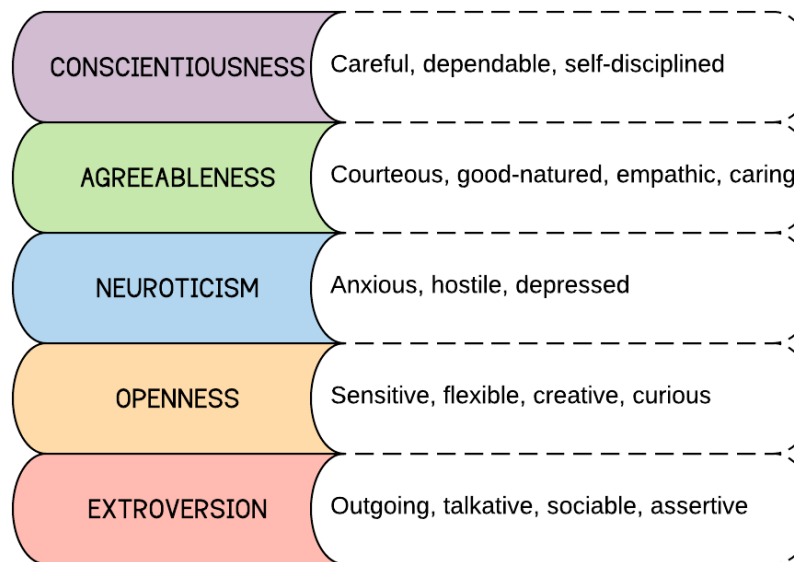
Habits also bypass reflective control and automatically maintain behaviours by establishing associative connections in the memory between the response and cues within a context like the time of day or a physical location (Wood and Neal, 2007; Rothman, Sheeran and Wood, 2009). There are multiple theoretical models that connect reflective processing to action initiation, but they all hold a similar theme within them, which is the deliberation of the advantages and disadvantages of instigating the new behaviour over multiple determinants: The persons attitude towards performing the behaviour, the opinions of others about the new behaviour (social norms), one's ability to carry out the change (self-efficacy) and the decision to act (intention) (Rothman, Sheeran and Wood, 2009). This framework that incorporates dualistic systems of thought, may be a good troubleshooting tool when trying to identify the barriers that are preventing changes in behaviour and highlighting potential interventions that could aid in formation of new habits within health.

BEHAVIOUR CHANGE		
ACTION CONTROL	Initiation	Maintenance
Automatic (System 1)	<b>Key Determinants:</b> <ul style="list-style-type: none"> <li>- Implicit attitudes</li> <li>- Behaviour primes</li> </ul> <b>Possible Interventions:</b> <ul style="list-style-type: none"> <li>- Evaluating conditioning</li> <li>- Association training</li> <li>- Approach/avoidance training</li> <li>- Controlling food cues</li> <li>- Healthful primes</li> <li>- Implementation intentions</li> </ul>	<b>Key Determinants:</b> <ul style="list-style-type: none"> <li>- Habits</li> </ul> <b>Possible Interventions:</b> <ul style="list-style-type: none"> <li>- Repeated and consistent performance of healthful responses</li> <li>- Breaking habits: Self-control over cues to unhealthy eating and changing cues to unhealthful eating</li> </ul>
	<b>Key Determinants:</b> <ul style="list-style-type: none"> <li>- Attitudes, social norms, self-efficacy, intentions</li> </ul> <b>Possible Interventions:</b> <ul style="list-style-type: none"> <li>- Theory-based persuasive, social influence and self-efficacy enhancement strategies</li> <li>- Self-monitoring coupled with additional strategies from control theory</li> <li>- Exploiting context changes that disrupt existing habits</li> <li>- Implementation intentions</li> </ul>	<b>Key Determinants:</b> <ul style="list-style-type: none"> <li>- Satisfaction with behaviour change</li> </ul> <b>Possible Interventions:</b> <ul style="list-style-type: none"> <li>- Temporal comparisons</li> <li>- Rendering outcomes salient</li> <li>- Making people mindful of behaviour change</li> <li>- Shifting expectations</li> </ul>
Reflective (System 2)		

**Figure 13.** A conceptual matrix model illustrating how reflective and automatic processes relate in the initiation and maintenance of food choice with key determinants and possible interventions (Rothman, Sheeran and Wood, 2009).

# Personality

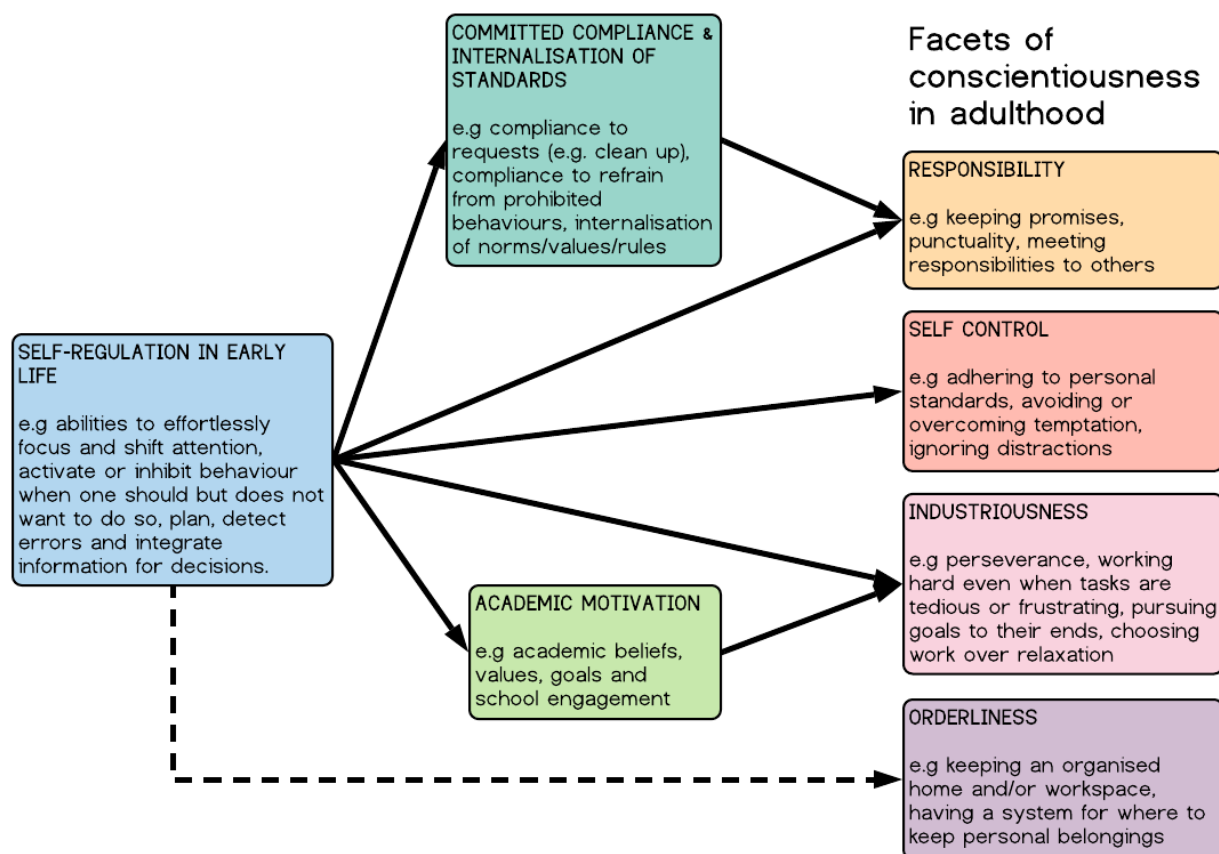
Personality can be defined as a set of thoughts, behaviours and emotional patterns that derive and evolve from environmental and physiological factors (Corr and Matthews, 2009). There are many theories involving personality, one prominent theory within psychology being the Five Factor Model, also known as the big five personality traits (**Figure 14**).



**Figure 14.** *The Five Factor Model of personality with associated characteristics.*

The emergence of how the Five Factor Model came to be and all the different iterations surrounding a five-dimensional model of personality can be seen in a review by Digman (1990). It has been demonstrated that personality traits that can be shaped during childhood, have lasting effects in adulthood on wellbeing and health (Hampson, 2008), especially for the trait conscientiousness (the tendency to be organized, responsible, and hardworking). Conscientiousness can be seen to be present at an early age (Kohnstamm, 1998; Abe and Izard, 1999) and develop through adolescence (John et al., 1994), Lamb et al., (2002) found that children increased in conscientiousness and agreeableness but became less extraverted over the ages of 2 to 15 years old.

The trait conscientiousness and its related facets have been suggested to be linked with temperamentally based self-regulation (Eisenberg et al., 2014), see **Figure 15** for the developmental model of conscientiousness from early life self-regulation. A child's ability to self-regulate behaviour can be dependent on many factors early in life such as low-quality parenting, family/residential stressors, and sociodemographic risk (Li-Grining, 2007), as well as genetic factors (Lemery-Chalfant, Doelger and Goldsmith, 2008).



**Figure 15.** A developmental model of progression of the four facets of conscientiousness within adulthood from self-regulation in early life (Eisenberg et al., 2014).

An ability to maintain self-regulation in early life has been associated strongly with preventing obesity later on (Schlam et al., 2013; Anderson and Keim, 2016; Miller et al., 2018), also with the use of self-regulation strategies that improve executive function, researchers demonstrated that there was an increase in physical activity with children (Bassett-Gunter et al., 2017) and adolescents (Lubans and Morgan, 2009; Matthews, 2011). Emotional dysregulation is predictive of eating disorders in children and adolescence, especially females (Kelly et al., 2016; Gowey et al., 2017), and a failure to instil self-regulatory skills in early childhood predisposes children to excessive weight gain through early adolescence (Francis and Susman, 2009), also individuals who were already obese appeared to be weaker in executive functioning and self-regulation (Dassen et al., 2018).

Trait conscientiousness itself which is known to be strongly dependant on self-regulation in early life (Figure 15), has been shown to positively influence health outcomes in adulthood when measured at an early age by improved eating habits (Wilson et al., 2015; Vollrath, Torgersen and Torgersen, 2018; Intiful et al., 2019), increased physical activity (Rhodes and Smith, 2006; Sutin et al., 2016; Artese et al., 2017) and other health behaviours typical in healthy individuals (Roberts, Walton and Bogg, 2005; Hampson et al., 2007; Joyner, Rhodes and Loprinzi, 2018), it is also strong indicator of later health and longevity (Friedman et al., 1993; Deary et al., 2008; Kern and Friedman, 2008; Hampson et al., 2015).

# Improving Physical Activity Habits

## Knowledge

Educational interventions that provide children with the knowledge of the importance of physical activity and the benefits that can be reaped from incorporating it into their routine, have been shown to improve physical activity levels (Cecchetto, Pena and Pellanda, 2017). Interventions are also more effective when implemented at a younger age (La Torre et al., 2017).

Goal setting is an effective strategy when the goals that are set are appropriate (Haas, Mason and Haines, 2014), realistic (Bovend'Eerd, Botell and Wade, 2009; Nelis et al., 2018), able to be monitored (Harkin et al., 2016) and can be modified dependant on goal related performance (Korinek et al., 2017; Larson et al., 2018b). Goal setting has been demonstrated to be an effective strategy in increasing physical activity and behaviour change (Shilts, Horowitz and Townsend, 2009; Burns, Brusseau & Fu, 2016; Epton, Currie & Armitage, 2017), the use of character modelling in conjunction with goal setting has also been shown to produce significant further increases in physical activity in children specifically (Horne et al., 2011; Larson et al., 2018a, 2018b).

Providing individuals with appropriate feedback on physical activity progress and goal related performance is vital for sustaining physical activity levels and instilling permanent behaviour change. Immediate feedback such as steps, distance, floors climbed and heart rate has been shown to be an effective form of feedback with increasing physical activity (Buchele Harris & Chen, 2018). Although, studies that incorporated supportive coaching in conjunction with immediate measurement feedback resulted in higher physical activity levels compared to just immediate measurement feedback alone (Van Hoya, Boen & Lefevre, 2012, 2015; Van Hoya et al., 2018).

## Helpful Contexts & Barriers

The context and conditions that a child is presented with on a daily basis that can influence physical activity is another important factor to consider when trying to promote physical activity, a better understanding may help direct how schools, policy makers and parents can improve the environment that the child is exposed to increase physical activity levels. In regard to a school environment, studies have shown particular contexts and conditions to be more conducive to promoting physical activity whilst discouraging sedentary behaviour. Such as outdoor environments that provide active opportunities and enough open space with portable play objects such as balls to be interacted with (Bower et al., 2008; Brown et al., 2009).

Within social groupings on the playground, children were found to initiate in physical activity more often when adults were not present or involved with the immediate group and activity context (Brown et al., 2009). A systematic review by Morton et al., (2015) investigated whole school and PE specific environmental factors that influenced physical activity in adolescents, those factors and corresponding studies are included in a summary that can be seen in **Table 1**.



**Table 1.** A summary of the studies reviewed by Morton et al., (2015) that showed physical, social and policy factors within whole school and PE environments that have a significant influence on physical activity. Factors shaded in **GREEN** were significantly associated with higher physical activity/lower sedentary behaviour and factors shaded in **RED** (**barriers**) were significantly associated with lower physical activity/higher sedentary behaviour.

<b>WHOLE SCHOOL ENVIRONMENT</b>	
<b>Physical</b>	
<b>Activity setting (type, location)</b>	(Bocarro et al., 2012) (Fjørtoft, Löfman & Halvorsen Thorén, 2010) (Sallis et al., 2001)
<b>Campus area per student</b>	(Cradock, Melly, Allen, Morris & Gortmaker, 2007)
<b>Social</b>	
<b>Perceived school PA climate/support (Teachers)</b>	(Birnbaum et al., 2005) (Graham, Bauer, Friend, Barr-Anderson & Nuemark-Sztainer, 2014) (McLellan, Rissel, Donnelly & Bauman, 1999)
<b>School social capital (e.g. connectedness)</b>	(Button, Trites & Janssen, 2013) (Yancey, Grant, Kurosky, Kravitz-Wirtz & Mistry, 2011)
<b>Policy</b>	
<b>Number of PA policies</b>	(Galán et al., 2013)
<b>School offers intramural sport</b>	(Hobin et al., 2012) (Kanters, Bocarro, Edwards, Casper & Floyd, 2012) (Fuller, Sabiston, Karp, Barnett & O'Loughlin, 2011)
<b>Quality of sports management</b>	(Mandic, Bengoechea, Stevens, Leon de la Barra & Skidmore, 2012)
<b>Recess exercises</b>	(Trang, Hong, Dibley & Sibbritt, 2009)
<b>PE ENVIRONMENT</b>	
<b>Physical</b>	
<b>Size of instructional area</b>	(Chow, McKenzie & Louie, 2009)
<b>Social</b>	
<b>'Teacher influence'</b>	(Abarca-Sos, Bois, Zaragoza, Generelo & Julian, 2013)
<b>Social support</b>	(Zhang, Solmon, Gao & Kosma, 2012)
<b>Positive feedback</b>	(Pihu, Hein, Koka & Hagger, 2008)
<b>Provision of choice</b>	(Lonsdale et al., 2013) (How, Whipp, Dimmock & Jackson, 2013)
<b>Active supervision</b>	(Schuldheisz & van der Mars, 2001)
<b>Transformational teaching behaviours</b>	(Beauchamp et al., 2013)
<b>Psychological need support (autonomy, competence and relatedness support)</b>	(Zhang, Solmon, Kosma, Carson & Gu, 2011)
<b>Autonomy support</b>	(Chatzisarantis & Hagger, 2009) (Hagger, Chatzisarantis, Barkoukis, Wang & Baranowski, 2005) (Jackson, Whipp, Chua, Dimmock & Hagger, 2013) (Moreno-Murcia & Hernández, 2013) (Barkoukis & Hagger, 2012) (Hagger, Chatzisarantis, Culverhouse & Biddle, 2003) (Perlman, 2013)
<b>Relatedness support</b>	(Jackson, Whipp, Chua, Dimmock & Hagger, 2013)
<b>Perceptions of learning/mastery climate</b>	(Cecchini, Fernandez-Rio & Mendez-Gimenez, 2014) (Gao, Lochbaum & Podlog, 2011) (Jaakkola, Washington & Yli-Piipari, 2012) (Parish & Treasure, 2003) (Barkoukis & Hagger, 2012)
<b>Policy</b>	
<b>PE class size</b>	(McKenzie, Marshall, Sallis & Conway, 2000)



It is also important to setup up the environment at 'home' (inside and out) to be conducive to promoting physical activity for children and there are many factors that have been shown in the literature to influence physical activity in the home (**Table 2**).

**Table 2.** A summary of the factors that have a significant influence on physical activity within the home environment. Factors shaded in **GREEN** were significantly associated with higher physical activity/lower sedentary behaviour and factors shaded in **RED (barriers)** were significantly associated with lower physical activity/higher sedentary behaviour.

<b>HOME ENVIRONMENT</b>	
<b>Sports equipment within the home that is easy to access</b>	(Østbye et al., 2013) (Haddad et al., 2017),
<b>Adequate indoor space for play</b>	(Neshteruk et al., 2018)
<b>Sports or activities outside of school</b>	(Kuo et al., 2009) (Akhtar-Danesh, Dehghan, Morrison & Fonseka, 2011)
<b>Time outdoors</b>	(McIver et al., 2009) (Buro et al., 2015)
<b>Parental engagement in childhood activities</b>	(O'Connor et al., 2013) (Suen, Cerin & Wu, 2015)
<b>Child feeding</b>	(O'Connor et al., 2013)
<b>A positive home environment related to physical activity (parental modelling, parental knowledge of physical activity recommendations, parental encouragement)</b>	(Haddad et al., 2017)
<b>Living close to school</b>	(Hesketh, Hinkley and Campbell, 2012)
<b>Dedicated Play time</b>	(O'Connor et al., 2013)
<b>Independent exploration</b>	(De Craemer et al., 2013) (Hesketh, Hinkley & Campbell, 2012)
<b>Number of cars in the household</b>	(Pouliou et al., 2014) (De Craemer et al., 2013) (O'Connor et al., 2013)
<b>Cost of activities</b>	(Suen, Cerin & Wu, 2015) (Pagnini, Wilkenfeld, King, Booth & Booth, 2007) (De Craemer et al., 2013)
<b>Lack of time</b>	(Suen, Cerin & Wu, 2015)
<b>Use of stroller</b>	(Birken et al., 2015) (Carson, Clark, Berry, Holt & Latimer-Cheung, 2014)
<b>TV/Video game time</b>	(Maitland et al., 2013) (O'Connor et al., 2013) (De Decker et al., 2012) (Carson, Clark, Berry, Holt & Latimer-Cheung, 2014)
<b>Winter Season/Bad Weather</b>	(Irwin, He, Sangster Bouck, Tucker & Pollett, 2005) (Carson, Clark, Berry, Holt & Latimer-Cheung, 2014)
<b>Safety concerns in the community</b>	(Pagnini, Wilkenfeld, King, Booth & Booth, 2007) (Irwin, He, Sangster Bouck, Tucker & Pollett, 2005) (Suen, Cerin & Wu, 2015)
<b>Psychological control</b>	(O'Connor et al., 2013)
<b>Physical or emotional abuse</b>	(O'Connor et al., 2013)

# Improving Healthy Eating Habits

## Knowledge

Educational programmes that allow children to obtain a level of nutritional knowledge is vital to ensuring healthy eating habits are instilled and maintained. It has been demonstrated that multicomponent interventional strategies that included an educational component, are positively associated with children's development of nutrition knowledge, dietary behaviour changes, intake of healthy foods and the prevention of obesity (Burgess-Champoux et al., 2008; Foster et al., 2008; de Silva-Sanigorski et al., 2010; Folta et al., 2013 Cohen et al., 2014 Colley et al., 2019). Researchers that looked at the effect educational programmes had on fruit and vegetable consumption specifically found that intakes increased (Anderson et al., 2005; Gold et al., 2017; Choi, Lee & Hwang, 2018). Other studies have shown that educational interventions showed promise when educating the downsides to consuming unhealthy foods and drinks such as sugar sweetened beverages in reducing intake (James et al., 2004; Lo et al., 2008; Sichieri et al., 2009; Levy, Friend & Wang, 2011).

Nutritional education should not only be focused within a school environment, parents should look to be properly educated themselves in regard to nutrition so that education continues at home. Targeted interventions to improve parents or carers knowledge and techniques in relation to food has been shown to improve children's eating habits within the home (Sanders & Kirby, 2014; Gerards & Kremers, 2015; Goldthorpe, Ali & Calam, 2018), we also know that from research, parental education level in general has an influence on children's eating habits (Van Ansem et al., 2014; Scaglioni et al., 2018).

Teaching children goal setting strategies has also been seen to be beneficial when trying to change healthy eating habits, a 4 step goal-setting process that included 1) Recognising a need for change 2) Establishing a goal 3) Adopting a goal-directed activity and 4) Self-monitoring it was identified to promote dietary and behaviour change in children (Cullen, Baranowski & Smith, 2001). Although in a previously mentioned study, the use of character models in conjunction of goal setting did not increase fruit and vegetable consumption compared to the control (Larson et al., 2018b). Other multicomponent interventions that included goal setting with group participation and tasting found promising results for fruit and vegetable consumption specifically but also nutrition knowledge and asking behaviours (Baranowski et al., 2000).

## Helpful Contexts & Barriers

There are many environmental and social factors that can influence a child's eating habits, these contexts and cues can promote the consumption of healthy foods like fruits and vegetables or act as barrier to healthy eating behaviours and promote unhealthy eating behaviours. Within schools, the importance of adopting and developing policies that are indicative of healthy eating habits is important for nurturing a healthy eating environment (Driessen, Cameron, Thornton, Lai & Barnett, 2014; Orava, Manske & Hanning, 2017). Youths also consume between one-third to one-half of their meals at school making interventions that improve the environment at school crucial for children's eating habits (Micha et al., 2018). The barriers and facilitators within a school environment that are associated with student eating behaviours can be seen in **Table 3**.

**Table 3.** A summary of the factors that have a significant influence on healthy eating within the school environment. Factors shaded in **GREEN** were significantly associated with facilitating healthy eating and factors shaded in **RED** (**barriers**) were significantly associated with lower healthy eating.

<b>SCHOOL ENVIRONMENT</b>	
<b>Eating school lunches</b>	(Au et al., 2018) (Au, Rosen, Fenton, Hecht & Ritchie, 2016) (Dubuisson et al., 2012)
<b>Nutrition standards in schools</b>	(Bevans, Sanchez, Teneralli & Forrest, 2011) (Micha et al., 2018).
<b>School garden programmes</b>	(Robinson-O'Brien, Story & Heim, 2009) (Somerset & Markwell, 2009) (Parmer, Salisbury-Glennon, Shannon & Struempfer, 2009)
<b>Free fruit and vegetable to students</b>	(Davis, Cullen, Watson, Konarik & Radcliffe, 2009) (Coyle et al., 2009)
<b>Multicomponent interventions</b>	(Foster et al., 2008) (Burgess-Champoux et al., 2008) (de Silva-Sanigorski et al., 2010) (Folta et al., 2013) (Cohen et al., 2014) (Colley et al., 2019)
<b>Cold filtered water provision</b>	(Muckelbauer et al., 2009) (Loughridge & Barratt, 2005)
<b>Healthier options in school</b>	(Gosliner, Madsen, Woodward-Lopez & Crawford, 2011) (Mensink, Schwinghammer & Smeets, 2012)
<b>Making healthier food more convenient</b>	(Hanks, Just, Smith & Wansink, 2012)
<b>Unrestricted vending machines providing unhealthy snacks</b>	(Nickelson, Roseman & Forthofer, 2010) (Thompson, Yarocho, Moser, Finney Rutten & Agurs-Collins, 2010) (Park, Sappenfield, Huang, Sherry & Bensyl, 2010)
<b>Peer pressure</b>	(Al-sheyab, Gharaibeh & Kheirallah, 2018)
<b>Skipping breakfast</b>	(Kesztyüs, Traub, Lauer, Kesztyüs & Steinacker, 2017) (Traub et al., 2018) (Fayet-Moore, Kim, Sritharan & Petocz, 2016)
<b>Takeaways near school</b>	(Turbutt, Richardson & Pettinger, 2018)

It is also important to setup up the environment at 'home' (inside and out) to be conducive to promoting healthy for children and there are many factors that have been shown in the literature to influence healthy eating and behaviour in the home (**Table 4**).

**Table 4.** A summary of the factors that have a significant influence on healthy eating within the home environment. Factors shaded in **GREEN** were significantly associated with facilitating healthy eating and factors shaded in **RED (barriers)** were significantly associated with lower healthy eating.

<b>HOME ENVIRONMENT</b>	
<b>Participation in family meals</b>	(Fink, Racine, Mueffelmann, Dean & Herman-Smith, 2014) (Videon & Manning, 2003) (Neumark-Sztainer, Wall, Perry & Story, 2003) (Neumark-Sztainer, Hannan, Story, Croll & Perry, 2003) (Gillman, 2000) (Shier, Nicosia & Datar, 2016) (Jackson et al., 2017)
<b>Parental consumption of healthy foods (modelling)</b>	(Ong, Ullah, Magarey, Miller & Leslie, 2016) (Cooke et al., 2004) (Orlet Fisher, Mitchell, Wright & Birch, 2002) (Hanson, Neumark-Sztainer, Eisenberg, Story & Wall, 2005)
<b>Availability of healthy food within home</b>	(Ong, Ullah, Magarey, Miller & Leslie, 2016) (Couch, Glanz, Zhou, Sallis & Saelens, 2014) (van der Horst et al., 2006) (Cullen et al., 2003) (Neumark-Sztainer, Wall, Perry & Story, 2003) (Hanson, Neumark-Sztainer, Eisenberg, Story & Wall, 2005) (Shier, Nicosia & Datar, 2016)
<b>"Allow/limit" food rules</b>	(Couch, Glanz, Zhou, Sallis & Saelens, 2014) (van der Horst et al., 2006) (Shier, Nicosia & Datar, 2016)
<b>Food security</b>	(Neumark-Sztainer, Wall, Perry & Story, 2003)
<b>Better educated parents</b>	(Videon & Manning, 2003) (van der Horst et al., 2006)
<b>Grocery store close to home</b>	(Barrett et al., 2017) (Edmonds, Baranowski, Baranowski, Cullen & Myres, 2001) (Patrick, Nicklas, Hughes & Morales, 2005)
<b>Authoritative parental feeding style</b>	(Van der Horst & Sleddens, 2017) (Rhee, 2006)
<b>Non-caloric beverage availability in home</b>	(Ebbeling, 2006)
<b>Availability of unhealthy food within home</b>	(Campbell et al., 2007) (Grimm, Harnack & Story, 2004)
<b>Family fast food and restaurant meals</b>	(Shier, Nicosia & Datar, 2016)
<b>Food insecurity</b>	(Matheson, Varady, Varady & Killen, 2002) (Nackers & Appelhans, 2013) (Jackson et al., 2017)
<b>Low household income</b>	(Bhattacharya, Currie & Haider, 2004) (Nackers & Appelhans, 2013) (Shariff et al., 2015) (Casey, Szeto, Lensing, Bogle & Weber, 2001)
<b>Skipping breakfast</b>	(Kesztyüs, Traub, Lauer, Kesztyüs & Steinacker, 2017) (Traub et al., 2018) (Fayet-Moore, Kim, Sritharan & Petocz, 2016) (Videon & Manning, 2003)
<b>Lesser educated parents</b>	(Videon & Manning, 2003)
<b>Screen time (TV/Video games)</b>	(Pearson et al., 2017) (Stiglic & Viner, 2019) (Grimm, Harnack & Story, 2004) (Jackson et al., 2017)
<b>Indulgent or uninvolved parental feeding styles</b>	(Hoerr et al., 2009) (Hughes, Shewchuk, Baskin, Nicklas & Qu, 2008)
<b>Authoritarian parental feeding style</b>	(van der Horst & Sleddens, 2017) (Rhee, 2006)

# Practical Applications for Improving and Maintaining Healthy Eating Habits

## Prenatal Considerations

- Diet of the mother should be of high nutritional quality with a variety of different healthy foods throughout pregnancy. This is important for shaping the child's taste preferences and subsequent eating behaviours. **(p. 5)**
- Nutrition of the mother during pregnancy should fall within the governments recommended guidelines, nutritionally complete and no unhealthy junk food as this can directly influence the taste preferences of the child. **(p. 5)**

## Parental Considerations

- Nutrition of the mother after pregnancy during breastfeeding and throughout weaning should fall within the governments recommended guidelines, nutritionally complete and no unhealthy junk food as this can directly influence the taste preferences of the child. **(p. 5)**
- During the weaning period when solid food would be introduced, exposure to a variety of healthy foods such as fruit and vegetables should be instigated. **(p. 5)**
- Parents should maintain a healthy diet throughout the life of the child to act as a role model to support the maintenance of healthy eating behaviours. **(p. 7, 26)**
- Parents should be aware of nutritional guidelines and a basic knowledge of nutrition, health and cooking. **(p. 9, 24, 26)**
- Adopt an authoritative parental feeding style and try to avoid uninvolved, authoritarian or indulgent styles of parenting – Encourage eating using supportive and nondirective behaviours, demanding but responsive to child's needs, incorporate allow/limit rules. **(p. 8, 26)**
- Do not use unhealthy junk food or treats as a reward for good behaviour or eating healthy food. **(p. 6, 7, 26)**
- Utilise non-food based, tangible rewards to encourage and praise healthy eating. **(p. 6, 7, 26)**
- Do not pressure a child to eat healthier foods **(p. 6, 7, 26)**
- Take caution when setting restrictions on certain foods especially as the child gets older, although adopting restrictive guidance can be a good method for shaping healthy eating habits when used appropriately **(p. 6, 7)**
- Adopt active guidance towards forming healthy eating habits. **(p. 7, 26)**

## Promoting Healthy Eating at Home

- Ensuring the child participates in family meals (p. 26)
- Healthy food needs to be made available within the home (pp. 6, 7, 26)
- Limit unhealthy food availability within the home (pp. 6, 7, 26)
- Healthy food should be made accessible to the child (foods should be prepared, presented, and/or maintained in a form that enables or encourages children to eat them) (pp. 6, 7, 26)
- Make non-caloric beverages available in the home (diet coke etc) (pp. 6, 26)
- Minimise the frequency the family uses fast food outlets and/or restaurants (p. 26)
- Try to limit a child's screen time on TV and video games (pp. 12, 26)
- Ensure the child does not skip breakfast (p. 26)

## Promoting Healthy Eating at School

- Providing the child with the availability to purchase school meals (pp. 24, 25)
- The school should provide healthy food options and have high nutrition standards (pp. 24, 25)
- Vending machines in school should not contain unhealthy snacks and provide healthier alternatives (p. 25)
- Gardening programmes that the child can enrol into at school (p. 25)
- Free fruit and vegetables to be made available in school (p. 25)
- Cold filtered water to be provided within the school (p. 25)
- Healthy food to be made more convenient for students to purchase (p. 25)
- Multicomponent programmes with interventional components such as policy, education, family and community involvement, and/or food provision to improve the child's nutrition knowledge, dietary behaviour changes, and intake of healthy foods. (pp. 24, 25)
- Adopting traditional style games during PE to educate children on nutrition (pp. 30 - 32)

## Practical Applications for Improving and Maintaining Physical Activity Habits

### Prenatal Considerations

- Physical activity level of the mother should be adequate throughout pregnancy. (p. 4)
- Nutrition of the mother during pregnancy should fall within the governments recommended guidelines, nutritionally complete and no unhealthy junk food. (p. 4)
- If the child is female, then more care should be taken in ensuring that they get adequate physical activity as on average female children have lower levels of physical activity. (p. 4)

## Parental Considerations

- Parents should engage or join in with the child during physical activities (p. 23)
- Parents should maintain a personal level of physical activity to act as a role model for promoting physical activity in their children. (pp. 4, 23)
- A positive home environment related to physical activity such as parents having a knowledge of physical activity recommendations and encouragement (pp. 4, 23)
- Provide psychological support and avoid any form of abuse or neglect (p. 23)

## Promoting Physical Activity at Home

- Adequate indoor space for play. (p. 23)
- Dedicated play time. (p. 23)
- Time outdoors and independent exploration at an appropriate age (p. 23)
- Sports and activities should be organised outside of school (p. 23)
- Sporting equipment to be made available and easy to access within the home (p. 23)
- Living close to school so that the child can walk to school when at an appropriate age (p. 23)
- Ensuring the child has adequate nutrition whilst meeting recommended energy needs (p. 23)
- Live close to parks and recreational facilities (p. 23)
- Live in a safe community (pp. 4, 23)
- Try to limit the use of the stroller or carrying the child when walking is possible (p. 23)
- Allow adequate time to ensure the child can perform enough physical activity (p. 23)
- Whenever travelling, if walking is possible then do so as an alternative to taking the car (p. 23)
- Try to limit a child's screen time on TV and video games (pp. 4, 23)

## Promoting Physical Activity at School

- Campus size should be big enough in relation to number of students (p. 22)
- A good student perception of support from teachers and staff to physical activity (p. 22)
- Provide an environment within school that fosters social cohesion between students and teachers (p. 22)
- Have policies that are specific to promoting physical activity (p. 22)
- The school to offer sporting activities within the building (p. 22)
- Providing break/recess physical activities (p. 22)
- Sports management and facilities to be of good standard (p. 22)
- Adequate size of instructional area during physical education (p. 22)
- Active supervision, active feedback and social support during physical education (p. 22)
- Providing children, the choice to choose between different physical educational activities (p. 22)
- Transformational behaviours by PE teacher (encourage, inspire and motivate) (p. 22)
- Non-controlling autonomy and relatedness support (p. 22)
- Avoid overcrowded class size during physical education (p. 22)
- Adopting traditional style games during PE to improve motor skills and increase physical activity (pp. 30 - 32)



# Traditional Games in Physical Education

Traditional games, which are games that are often culture specific and passed down from generation to generation (e.g. Hide & Seek, Chase, Dodgeball, Tug-of war, What's the time Mr Wolf?) have been shown to be an effective educational tool within a school environment such as during physical education (Aypay, 2016; Trajkovic et al., 2018).

Traditional games have also shown the ability to improve motor skill development (Akbari et al., 2013; Charles, Abdullah, Musa, Kosni & Maliki, 2017), which is an important aspect to physical development and lifelong physical activity in children (True et al., 2017) as well as having a positive impact on academic performance (Macdonald et al., 2018).

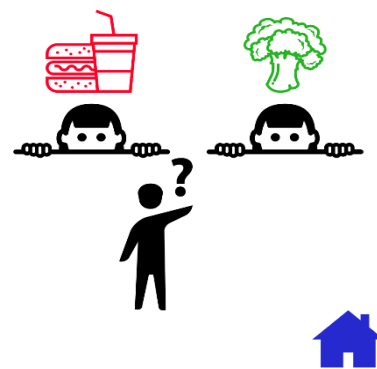
When delivering nutritional education, studies have shown that an integrated “learning through playing” approach to be successful in improving children’s knowledge about healthy foods and lifestyle (Rosi et al., 2016; Nekitsing, Hetherington & Blundell-Birtill, 2018). Other research has shown positive results when video games have been adopted to improve nutrition and health knowledge and changing behaviour (Baranowski et al., 2018).

Therefore, the use of traditional games to educate children on nutrition and health by adapting games to have a nutritional or health related theme within them, may be an efficacious in not only increasing children’s physical activity, but also motor skill development and nutritional knowledge in general. This would help contribute to improving healthy eating and physical activity habits in children.

## Hide & Seek

A game where any number of players will hide or conceal themselves within the environment for another player to close their eyes and count to a predetermined number before going to locate the concealed players. This could be adapted to teach nutrition and health in many ways such as:

- The children hiding could wear coloured bibs/vests that represent either healthy or junk/bad food, when children wearing the colour related to bad food were located, they would then be allowed to chase the child seeking. The child seeking would then become ‘safe’ if they run back to a designated area called ‘base, the child chasing would be out if they were not successful in catching. When children are located who are wearing the colour related to healthy food, they could join in on the seeking making the chase element harder for the chasers.
- The children hiding could hold cards that are related different foods (e.g. broccoli, fried chicken, potato, chocolate). When the child locates someone hiding, they can ask to view their card and would have to then decide based off what that card was if they wanted to leave them hiding or allow them to join in with them seeking. The aim of the game would be for the child to pick people hiding that have cards with healthy food types and to leave children hiding who have cards with unhealthy food types. An assessment of what cards were picked can be discussed at the end of the round.



## Chase/tag/it

A playground game that involves two or more players chasing each other in attempt to “tag” or touch them, usually accompanied by saying “tag” or “it”. At this point the player touched then becomes the person chasing other players.

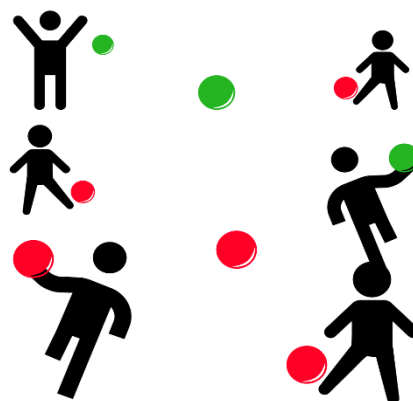
- Whoever the chaser is in the game would only be able to tag people with the addition of verbally naming an unhealthy food (e.g. chips, chocolate, burger, fizzy drink etc), this could be refereed by an adult qualifying successful ‘tags’ only when an unhealthy food was verbally named.



## Dodgeball

Dodgeball is a team sport where two teams try to throw balls and hit each other whilst trying to avoid being hit themselves. The objective of the game is to eliminate all the players on the other team which is done by either hitting them with a ball or catching a ball that they have thrown.

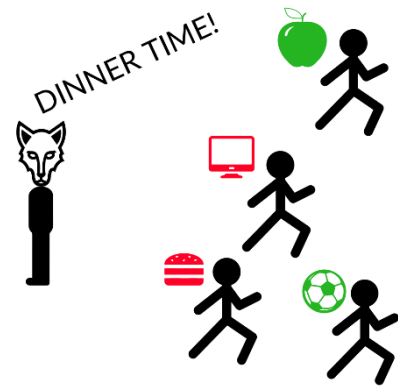
- This game could be adopted by simply having two different colours of balls (red & green), one colour would represent unhealthy foods (e.g. red) and the other would represent healthy foods (e.g. green). The object of the game would be similar to the original, although players would want to avoid being hit by the red balls and would try to catch the green balls. Being hit by red balls would eliminate the player being hit and catching a green ball would allow a player that was already out to re-join the game. The game could be timed and whoever has the most players in play when the time is up wins the game. Clarification of what types of foods represent healthy (green) and unhealthy (red) could be conducted before the game begins with a test at the end of the game.



## What’s the time, Mr Wolf?

This game is a form of tag that involves one person (Mr Wolf) to stand at the end of a playground or field facing away from the other players. A call and response will then take place, all the players besides ‘Mr Wolf’ will chant in unison: “Whats the time Mr Wolf?”, and ‘Mr Wolf’ can either answer by giving a time such as ‘5 O’Clock’ which will allow the other players to take 5 steps whilst counting out loud the steps they take. Mr Wolf can also reply by shouting “Dinner Time” whilst turning around and trying to chase the other players before they get back to the starting point.

- This game can easily be adapted to help children understand specific foods that are good or bad for health or even different behaviours that have an influence on health positively or negatively (e.g. TV watching, sedentary behaviour, sport, outdoor activities). The players that are walking up on Mr Wolf could wear pre-made tshirts that have images of different healthy or unhealthy foods, practices or behaviours on the back. The objective of the game would be to try and chase the healthy foods, practices or behaviours instead of the unhealthy ones, reflection on how the players performed could be conducted after each game that would offer an opportunity to correct mistakes and educate on different foods and practices that are healthy or unhealthy.



## References

- Abarca-Sos, A., Bois, J., Zaragoza, J., Generelo, E., & Julian, J. (2013). Ecological correlates of physical activity in youth: importance of parents, friends, physical education teachers and geographical localization. *International Journal Of Sport Psychology*, 44(3), 215-233.
- Abe, J., & Izard, C. (1999). A longitudinal study of emotion expression and personality relations in early development. *Journal Of Personality And Social Psychology*, 77(3), 566-577. doi:10.1037//0022-3514.77.3.566
- Addressi, E., Galloway, A., Visalberghi, E., & Birch, L. (2005). Specific social influences on the acceptance of novel foods in 2–5-year-old children. *Appetite*, 45(3), 264-271. doi:10.1016/j.appet.2005.07.007
- Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior And Human Decision Processes*, 50(2), 179-211. doi:10.1016/0749-5978(91)90020-t
- Akbari, H., Abdoli, B., Shafizadeh, M., Khalaji, H., Hajihosseini, S., & Ziaee, V. (2013). The Effect of Traditional Games in Fundamental Motor Skill Development in 7--9 Year--Old Boys. *Iran J Pediatr*.
- Akhtar-Danesh, N., Dehghan, M., Morrison, K., & Fonseka, S. (2011). Parents' perceptions and attitudes on childhood obesity: A Q-methodology study. *Journal Of The American Academy Of Nurse Practitioners*, 23(2), 67-75. doi:10.1111/j.1745-7599.2010.00584.x
- Alles, M., Eussen, S., & van der Beek, E. (2014). Nutritional Challenges and Opportunities during the Weaning Period and in Young Childhood. *Annals Of Nutrition And Metabolism*, 64(3-4), 284-293. doi:10.1159/000365036
- Al-sheyab, N., Gharaibeh, T., & Kheirallah, K. (2018). Relationship between Peer Pressure and Risk of Eating Disorders among Adolescents in Jordan. *Journal Of Obesity*, 2018, 1-8. doi:10.1155/2018/7309878
- Anderson, A., Porteous, L., Foster, E., Higgins, C., Stead, M., & Hetherington, M. et al. (2005). The impact of a school-based nutrition education intervention on dietary intake and cognitive and attitudinal variables relating to fruits and vegetables. *Public Health Nutrition*, 8(6), 650-656. doi:10.1079/phn2004721
- Anderson, S., & Keim, S. (2016). Parent–Child Interaction, Self-Regulation, and Obesity Prevention in Early Childhood. *Current Obesity Reports*, 5(2), 192-200. doi:10.1007/s13679-016-0208-9
- Artese, A., Ehley, D., Sutin, A., & Terracciano, A. (2017). Personality and actigraphy-measured physical activity in older adults. *Psychology And Aging*, 32(2), 131-138. doi:10.1037/pag0000158
- Au, L., Gurzo, K., Gosliner, W., Webb, K., Crawford, P., & Ritchie, L. (2018). Eating School Meals Daily Is Associated with Healthier Dietary Intakes: The Healthy Communities Study. *Journal Of The Academy Of Nutrition And Dietetics*, 118(8), 1474-1481.e1. doi:10.1016/j.jand.2018.01.010
- Au, L., Rosen, N., Fenton, K., Hecht, K., & Ritchie, L. (2016). Eating School Lunch Is Associated with Higher Diet Quality among Elementary School Students. *Journal Of The Academy Of Nutrition And Dietetics*, 116(11), 1817-1824. doi:10.1016/j.jand.2016.04.010
- Aypay, A. (2016). Investigating The Role of Traditional Children's Games in Teaching Ten Universal Values in Turkey. *Eurasian Journal Of Educational Research*, 16(62). doi:10.14689/ejer.2016.62.14
- Bagley, S., Salmon, J., & Crawford, D. (2006). Family Structure and Children's Television Viewing and Physical Activity. *Medicine & Science In Sports & Exercise*, 38(5), 910-918. doi:10.1249/01.mss.0000218132.68268.f4
- Bailey, R. (2005). Evaluating the relationship between physical education, sport and social inclusion. *Educational Review*, 57(1), 71-90. doi:10.1080/0013191042000274196
- Baldwin, A., Rothman, A., Hertel, A., Linde, J., Jeffery, R., Finch, E., & Lando, H. (2006). Specifying the determinants of the initiation and maintenance of behavior change: An examination of self-efficacy, satisfaction, and smoking cessation. *Health Psychology*, 25(5), 626-634. doi:10.1037/0278-6133.25.5.626

- Bandura, A. (2001). Social Cognitive Theory: An Agentic Perspective. *Annual Review Of Psychology*, 52(1), 1-26. doi:10.1146/annurev.psych.52.1.1
- Baranowski, T., Davis, M., Resnicow, K., Baranowski, J., Doyle, C., & Lin, L. et al. (2000). Gimme 5 Fruit, Juice, and Vegetables for Fun and Health: Outcome Evaluation. *Health Education & Behavior*, 27(1), 96-111. doi:10.1177/109019810002700109
- Baranowski, T., Ryan, C., Hoyos-Cespedes, A., & Lu, A. (2018). Nutrition Education and Dietary Behavior Change Games: A Scoping Review. *Games For Health Journal*, 8(3), 153-176. doi:10.1089/g4h.2018.0070
- Barkoukis, V., & Hagger, M. (2012). The trans-contextual model: perceived learning and performance motivational climates as analogues of perceived autonomy support. *European Journal Of Psychology Of Education*, 28(2), 353-372. doi:10.1007/s10212-012-0118-5
- Barrett, M., Crozier, S., Lewis, D., Godfrey, K., Robinson, S., & Cooper, C. et al. (2017). Greater access to healthy food outlets in the home and school environment is associated with better dietary quality in young children. *Public Health Nutrition*, 20(18), 3316-3325. doi:10.1017/s1368980017002075
- Bartoshuk, L., & Beauchamp, G. (1994). Chemical Senses. *Annual Review Of Psychology*, 45(1), 419-449. doi:10.1146/annurev.ps.45.020194.002223
- Bassett-Gunter, R., Rhodes, R., Sweet, S., Tristani, L., & Soltani, Y. (2017). Parent Support for Children's Physical Activity: A Qualitative Investigation of Barriers and Strategies. *Research Quarterly For Exercise And Sport*, 88(3), 282-292. doi:10.1080/02701367.2017.1332735
- Beauchamp, G. (1987). The Human Preference for Excess Salt. *American Scientist*, 75(1), 27-33.
- Beauchamp, G., & Mennella, J. (2011). Flavor Perception in Human Infants: Development and Functional Significance. *Digestion*, 83(1), 1-6. doi:10.1159/000323397
- Beauchamp, M., Liu, Y., Morton, K., Martin, L., Wilson, A., & Wilson, A. et al. (2013). Transformational Teaching and Adolescent Physical Activity: Multilevel and Mediation Effects. *International Journal Of Behavioral Medicine*, 21(3), 537-546. doi:10.1007/s12529-013-9321-2
- Bevans, K., Sanchez, B., Teneralli, R., & Forrest, C. (2011). Children's Eating Behavior: The Importance of Nutrition Standards for Foods in Schools. *Journal Of School Health*, 81(7), 424-429. doi:10.1111/j.1746-1561.2011.00611.x
- Bevelander, K., Anschütz, D., & Engels, R. (2012). The effect of a fictitious peer on young children's choice of familiar v. unfamiliar low- and high-energy-dense foods. *British Journal Of Nutrition*, 108(6), 1126-1133. doi:10.1017/s0007114511006374
- Bhattacharya, J., Currie, J., & Haider, S. (2004). Poverty, food insecurity, and nutritional outcomes in children and adults. *Journal Of Health Economics*, 23(4), 839-862. doi:10.1016/j.jhealeco.2003.12.008
- Birch, L., Fisher, J., Grimm-Thomas, K., Markey, C., Sawyer, R., & Johnson, S. (2001). Confirmatory factor analysis of the Child Feeding Questionnaire: a measure of parental attitudes, beliefs and practices about child feeding and obesity proneness. *Appetite*, 36(3), 201-210. doi:10.1006/appe.2001.0398
- Birch, L., Marlin, D., & Rotter, J. (1984). Eating as the "Means" Activity in a Contingency: Effects on Young Children's Food Preference. *Child Development*, 55(2), 431. doi:10.2307/1129954
- Birken, C., Lichtblau, B., Lenton-Brym, T., Tucker, P., Maguire, J., Parkin, P., & Mahant, S. (2015). Parents' perception of stroller use in young children: a qualitative study. *BMC Public Health*, 15(1). doi:10.1186/s12889-015-1989-6
- Birnbaum, A., Evenson, K., Motl, R., Dishman, R., Voorhees, C., & Sallis, J. et al. (2005). Scale Development for Perceived School Climate for Girls' Physical Activity. *American Journal Of Health Behavior*, 29(3), 250-257. doi:10.5993/ajhb.29.3.6
- Black, R., Victora, C., Walker, S., Bhutta, Z., Christian, P., & de Onis, M. et al. (2013). Maternal and child undernutrition and overweight in low-income and middle-income countries. *The Lancet*, 382(9890), 427-451. doi:10.1016/s0140-6736(13)60937-x
- Blüher, M. (2019). Obesity: global epidemiology and pathogenesis. *Nature Reviews Endocrinology*, 15(5), 288-298. doi:10.1038/s41574-019-0176-8

- Bocarro, J., Kanters, M., Cerin, E., Floyd, M., Casper, J., Suau, L., & McKenzie, T. (2012). School sport policy and school-based physical activity environments and their association with observed physical activity in middle school children. *Health & Place*, 18(1), 31-38. doi:10.1016/j.healthplace.2011.08.007
- Borzekowski, D., & Robinson, T. (2001). The 30-Second Effect. *Journal Of The American Dietetic Association*, 101(1), 42-46. doi:10.1016/s0002-8223(01)00012-8
- Bovend'Eerd, T., Botell, R., & Wade, D. (2009). Writing SMART rehabilitation goals and achieving goal attainment scaling: a practical guide. *Clinical Rehabilitation*, 23(4), 352-361. doi:10.1177/0269215508101741
- Bower, J., Hales, D., Tate, D., Rubin, D., Benjamin, S., & Ward, D. (2008). The Childcare Environment and Children's Physical Activity. *American Journal Of Preventive Medicine*, 34(1), 23-29. doi:10.1016/j.amepre.2007.09.022
- Breslin, P., & Beauchamp, G. (1997). Salt enhances flavour by suppressing bitterness. *Nature*, 387(6633), 563-563. doi:10.1038/42388
- Brown, K., Ogden, J., Vögele, C., & Gibson, E. (2008). The role of parental control practices in explaining children's diet and BMI. *Appetite*, 50(2-3), 252-259. doi:10.1016/j.appet.2007.07.010
- Brown, R. (2004). Children's eating attitudes and behaviour: a study of the modelling and control theories of parental influence. *Health Education Research*, 19(3), 261-271. doi:10.1093/her/cyg040
- Brown, W., Pfeiffer, K., McIver, K., Dowda, M., Addy, C., & Pate, R. (2009). Social and Environmental Factors Associated With Preschoolers' Nonsedentary Physical Activity. *Child Development*, 80(1), 45-58. doi:10.1111/j.1467-8624.2008.01245.x
- Buchele Harris, H., & Chen, W. (2018). Technology-Enhanced Classroom Activity Breaks Impacting Children's Physical Activity and Fitness. *Journal Of Clinical Medicine*, 7(7), 165. doi:10.3390/jcm7070165
- Burgess-Champoux, T., Chan, H., Rosen, R., Marquart, L., & Reicks, M. (2008). Healthy whole-grain choices for children and parents: a multi-component school-based pilot intervention. *Public Health Nutrition*, 11(8), 849-859. doi:10.1017/s1368980007001346
- Burke, L., Swigart, V., Warziski Turk, M., Derro, N., & Ewing, L. (2009). Experiences of Self-Monitoring: Successes and Struggles During Treatment for Weight Loss. *Qualitative Health Research*, 19(6), 815-828. doi:10.1177/1049732309335395
- Burns, R., Brusseau, T., & Fu, Y. (2016). Influence of Goal Setting on Physical Activity and Cardiorespiratory Endurance in Low-Income Children Enrolled in CSPAP Schools. *American Journal Of Health Education*, 48(1), 32-40. doi:10.1080/19325037.2016.1250689
- Buro, B., Gold, A., Contreras, D., Keim, A., Mobley, A., & Oscarson, R. et al. (2015). An Ecological Approach to Exploring Rural Food Access and Active Living for Families With Preschoolers\*. *Journal Of Nutrition Education And Behavior*, 47(6), 548-554.e1. doi:10.1016/j.jneb.2015.08.020
- Button, B., Trites, S., & Janssen, I. (2013). Relations between the school physical environment and school social capital with student physical activity levels. *BMC Public Health*, 13(1). doi:10.1186/1471-2458-13-1191
- Campbell, K., Crawford, D., Salmon, J., Carver, A., Garnett, S., & Baur, L. (2007). Associations Between the Home Food Environment and Obesity-promoting Eating Behaviors in Adolescence\*. *Obesity*, 15(3), 719-730. doi:10.1038/oby.2007.553
- Carraro, N., & Gaudreau, P. (2013). Spontaneous and experimentally induced action planning and coping planning for physical activity: A meta-analysis. *Psychology Of Sport And Exercise*, 14(2), 228-248. doi:10.1016/j.psychsport.2012.10.004
- Carson, V., Clark, M., Berry, T., Holt, N., & Latimer-Cheung, A. (2014). A qualitative examination of the perceptions of parents on the Canadian Sedentary Behaviour Guidelines for the early years. *International Journal Of Behavioral Nutrition And Physical Activity*, 11(1), 65. doi:10.1186/1479-5868-11-65

- Carson, V., Stearns, J., & Janssen, I. (2015). The Relationship Between Parental Physical Activity and Screen Time Behaviors and the Behaviors of their Young Children. *Pediatric Exercise Science*, 27(3), 390-395. doi:10.1123/pes.2014-0214
- Casey, P., Szeto, K., Lensing, S., Bogle, M., & Weber, J. (2001). Children in Food-Insufficient, Low-Income Families. *Archives Of Pediatrics & Adolescent Medicine*, 155(4), 508. doi:10.1001/archpedi.155.4.508
- Caton, S., Blundell, P., Ahern, S., Nekitsing, C., Olsen, A., & Møller, P. et al. (2014). Learning to Eat Vegetables in Early Life: The Role of Timing, Age and Individual Eating Traits. *Plos ONE*, 9(5), e97609. doi:10.1371/journal.pone.0097609
- Cecchetto, F., Pena, D., & Pellanda, L. (2017). Playful Interventions Increase Knowledge about Healthy Habits and Cardiovascular Risk Factors in Children: The CARDIOKIDS Randomized Study. *Arquivos Brasileiros De Cardiologia*. doi:10.5935/abc.20170107
- Cecchini, J., Fernandez-Rio, J., & Mendez-Gimenez, A. (2014). Effects of Epstein's TARGET on adolescents' intentions to be physically active and leisure-time physical activity. *Health Education Research*, 29(3), 485-490. doi:10.1093/her/cyu007
- Charles, A., Abdullah, M., Musa, R., Kosni, N., & Maliki, A. (2017). The Effectiveness of Traditional Games intervention program in the Improvement of Form One School-Age Children's Motor Skills Related Performance Components. *Journal Of Physical Education And Sport*, 17(s03). doi:10.7752/jpes.2017.s3141
- Chatzisarantis, N., & Hagger, M. (2009). Effects of an intervention based on self-determination theory on self-reported leisure-time physical activity participation. *Psychology & Health*, 24(1), 29-48. doi:10.1080/08870440701809533
- Choi, E., Lee, J., & Hwang, J. (2018). Fruit and vegetable intakes in relation to behavioral outcomes associated with a nutrition education intervention in preschoolers. *Nutrition Research And Practice*, 12(6), 521. doi:10.4162/nrp.2018.12.6.521
- Chow, B., McKenzie, T., & Louie, L. (2009). Physical Activity and Environmental Influences during Secondary School Physical Education. *Journal Of Teaching In Physical Education*, 28(1), 21-37. doi:10.1123/jtpe.28.1.21
- Cohen, J., Kraak, V., Choumenkovitch, S., Hyatt, R., & Economos, C. (2014). The CHANGE Study: A Healthy-Lifestyles Intervention to Improve Rural Children's Diet Quality. *Journal Of The Academy Of Nutrition And Dietetics*, 114(1), 48-53. doi:10.1016/j.jand.2013.08.014
- Colley, P., Myer, B., Seabrook, J., & Gilliland, J. (2019). The Impact of Canadian School Food Programs on Children's Nutrition and Health: A Systematic Review. *Canadian Journal Of Dietetic Practice And Research*, 80(2), 79-86. doi:10.3148/cjdpr-2018-037
- Collins, A., & Mullan, B. (2011). An extension of the theory of planned behavior to predict immediate hedonic behaviors and distal benefit behaviors. *Food Quality And Preference*, 22(7), 638-646. doi:10.1016/j.foodqual.2011.03.011
- Cooke, L., Wardle, J., Gibson, E., Sapochnik, M., Sheiham, A., & Lawson, M. (2004). Demographic, familial and trait predictors of fruit and vegetable consumption by pre-school children. *Public Health Nutrition*, 7(2), 295-302. doi:10.1079/phn2003527
- Corr, P., & Matthews, G. (2009). *The Cambridge handbook of personality psychology*.
- Corsini, N., Slater, A., Harrison, A., Cooke, L., & Cox, D. (2011). Rewards can be used effectively with repeated exposure to increase liking of vegetables in 4–6-year-old children. *Public Health Nutrition*, 16(5), 942-951. doi:10.1017/s1368980011002035
- Couch, S., Glanz, K., Zhou, C., Sallis, J., & Saelens, B. (2014). Home Food Environment in Relation to Children's Diet Quality and Weight Status. *Journal Of The Academy Of Nutrition And Dietetics*, 114(10), 1569-1579.e1. doi:10.1016/j.jand.2014.05.015
- Coyle, K., Potter, S., Schneider, D., May, G., Robin, L., Seymour, J., & DeBrot, K. (2009). Distributing Free Fresh Fruit and Vegetables at School: Results of a Pilot Outcome Evaluation. *Public Health Reports*, 124(5), 660-669. doi:10.1177/003335490912400508
- Cradock, A., Melly, S., Allen, J., Morris, J., & Gortmaker, S. (2007). Characteristics of School Campuses and Physical Activity Among Youth. *American Journal Of Preventive Medicine*, 33(2), 106-113.e1. doi:10.1016/j.amepre.2007.04.009



- Cruwys, T., Bevelander, K., & Hermans, R. (2015). Social modeling of eating: A review of when and why social influence affects food intake and choice. *Appetite*, 86, 3-18. doi:10.1016/j.appet.2014.08.035
- Crystal, S., & Bernstein, I. (1998). Infant Salt Preference and Mother's Morning Sickness. *Appetite*, 30(3), 297-307. doi:10.1006/appe.1997.0144
- Cullen, K., Baranowski, T., & Smith, S. (2001). Using goal setting as a strategy for dietary behavior change. *Journal Of The American Dietetic Association*, 101(5), 562-566. doi:10.1016/s0002-8223(01)00140-7
- Cullen, K., Baranowski, T., Owens, E., Marsh, T., Rittenberry, L., & de Moor, C. (2003). Availability, Accessibility, and Preferences for Fruit, 100% Fruit Juice, and Vegetables Influence Children's Dietary Behavior. *Health Education & Behavior*, 30(5), 615-626. doi:10.1177/1090198103257254
- Darby, M., & Karni, E. (1973). Free Competition and the Optimal Amount of Fraud. *The Journal Of Law And Economics*, 16(1), 67-88. doi:10.1086/466756
- Dassen, F., Houben, K., Allom, V., & Jansen, A. (2018). Self-regulation and obesity: the role of executive function and delay discounting in the prediction of weight loss. *Journal Of Behavioral Medicine*, 41(6), 806-818. doi:10.1007/s10865-018-9940-9
- Davis, E., Cullen, K., Watson, K., Konarik, M., & Radcliffe, J. (2009). A Fresh Fruit and Vegetable Program Improves High School Students' Consumption of Fresh Produce. *Journal Of The American Dietetic Association*, 109(7), 1227-1231. doi:10.1016/j.jada.2009.04.017
- De Cosmi, V., Scaglioni, S., & Agostoni, C. (2017). Early Taste Experiences and Later Food Choices. *Nutrients*, 9(2), 107. doi:10.3390/nu9020107
- De Craemer, M., De Decker, E., De Bourdeaudhuij, I., Deforche, B., Vereecken, C., & Duvinage, K. et al. (2013). Physical activity and beverage consumption in preschoolers: focus groups with parents and teachers. *BMC Public Health*, 13(1). doi:10.1186/1471-2458-13-278
- De Decker, E., De Craemer, M., De Bourdeaudhuij, I., Wijndaele, K., Duvinage, K., & Koletzko, B. et al. (2012). Influencing factors of screen time in preschool children: an exploration of parents' perceptions through focus groups in six European countries. *Obesity Reviews*, 13, 75-84. doi:10.1111/j.1467-789x.2011.00961.x
- de Onis, M., Blössner, M., & Borghi, E. (2010). Global prevalence and trends of overweight and obesity among preschool children. *The American Journal Of Clinical Nutrition*, 92(5), 1257-1264. doi:10.3945/ajcn.2010.29786
- de Silva-Sanigorski, A., Bell, A., Kremer, P., Nichols, M., Crellin, M., & Smith, M. et al. (2010). Reducing obesity in early childhood: results from Romp & Chomp, an Australian community-wide intervention program. *The American Journal Of Clinical Nutrition*, 91(4), 831-840. doi:10.3945/ajcn.2009.28826
- de Wit, S., Kindt, M., Knot, S., Verhoeven, A., Robbins, T., & Gasull-Camos, J. et al. (2018). Shifting the balance between goals and habits: Five failures in experimental habit induction. *Journal Of Experimental Psychology: General*, 147(7), 1043-1065. doi:10.1037/xge0000402
- Deary, I., Batty, G., Pattie, A., & Gale, C. (2008). More Intelligent, More Dependable Children Live Longer. *Psychological Science*, 19(9), 874-880. doi:10.1111/j.1467-9280.2008.02171.x
- Deliza, R., & Macfie, H. (1996). THE GENERATION OF SENSORY EXPECTATION BY EXTERNAL CUES AND ITS EFFECT ON SENSORY PERCEPTION AND HEDONIC RATINGS: A REVIEW. *Journal Of Sensory Studies*, 11(2), 103-128. doi:10.1111/j.1745-459x.1996.tb00036.x
- Digman, J. (1990). Personality Structure: Emergence of the Five-Factor Model. *Annual Review Of Psychology*, 41(1), 417-440. doi:10.1146/annurev.ps.41.020190.002221
- Dovey, T., Staples, P., Gibson, E., & Halford, J. (2008). Food neophobia and 'picky/fussy' eating in children: A review. *Appetite*, 50(2-3), 181-193. doi:10.1016/j.appet.2007.09.009
- Driessen, C., Cameron, A., Thornton, L., Lai, S., & Barnett, L. (2014). Effect of changes to the school food environment on eating behaviours and/or body weight in children: a systematic review. *Obesity Reviews*, 15(12), 968-982. doi:10.1111/obr.12224
- Dubuisson, C., Lioret, S., Dufour, A., Volatier, J., Lafay, L., & Turck, D. (2012). Associations between usual school lunch attendance and eating habits and sedentary behaviour in French children

- and adolescents. *European Journal Of Clinical Nutrition*, 66(12), 1335-1341. doi:10.1038/ejcn.2012.137
- Dudley, D., Cotton, W., & Peralta, L. (2015). Teaching approaches and strategies that promote healthy eating in primary school children: a systematic review and meta-analysis. *International Journal Of Behavioral Nutrition And Physical Activity*, 12(1). doi:10.1186/s12966-015-0182-8
- Dwyer, G., Higgs, J., Hardy, L., & Baur, L. (2008). What do parents and preschool staff tell us about young children's physical activity: a qualitative study. *International Journal Of Behavioral Nutrition And Physical Activity*, 5(1), 66. doi:10.1186/1479-5868-5-66
- Ebbeling, C. (2006). Effects of Decreasing Sugar-Sweetened Beverage Consumption on Body Weight in Adolescents: A Randomized, Controlled Pilot Study. *PEDIATRICS*, 117(3), 673-680. doi:10.1542/peds.2005-0983
- Edmonds, J., Baranowski, T., Baranowski, J., Cullen, K., & Myres, D. (2001). Ecological and Socioeconomic Correlates of Fruit, Juice, and Vegetable Consumption among African-American Boys. *Preventive Medicine*, 32(6), 476-481. doi:10.1006/pmed.2001.0831
- Eisenberg, N., Duckworth, A., Spinrad, T., & Valiente, C. (2014). Conscientiousness: Origins in childhood?. *Developmental Psychology*, 50(5), 1331-1349. doi:10.1037/a0030977
- El-Behadli, A., Sharp, C., Hughes, S., Obasi, E., & Nicklas, T. (2015). Maternal depression, stress and feeding styles: towards a framework for theory and research in child obesity. *British Journal Of Nutrition*, 113(S1), S55-S71. doi:10.1017/s000711451400333x
- Emck, C., Bosscher, R., Beek, P., & Doreleijers, T. (2009). Gross motor performance and self-perceived motor competence in children with emotional, behavioural, and pervasive developmental disorders: a review. *Developmental Medicine & Child Neurology*, 51(7), 501-517. doi:10.1111/j.1469-8749.2009.03337.x
- Epton, T., Currie, S., & Armitage, C. (2017). Unique effects of setting goals on behavior change: Systematic review and meta-analysis. *Journal Of Consulting And Clinical Psychology*, 85(12), 1182-1198. doi:10.1037/ccp0000260
- Erlanson-Albertsson, C. (2005). How Palatable Food Disrupts Appetite Regulation. *Basic & Clinical Pharmacology & Toxicology*, 97(2), 61-73. doi:10.1111/j.1742-7843.2005.pto\_179.x
- Evans, J., & Stanovich, K. (2013). Dual-Process Theories of Higher Cognition. *Perspectives On Psychological Science*, 8(3), 223-241. doi:10.1177/1745691612460685
- FAO, IFAD, UNICEF, WFP and WHO. (2017). *The state of food security and nutrition in the world*. Rome. Retrieved from <http://www.fao.org/3/a-I7695e.pdf>
- Fayet-Moore, F., Kim, J., Sritharan, N., & Petocz, P. (2016). Impact of Breakfast Skipping and Breakfast Choice on the Nutrient Intake and Body Mass Index of Australian Children. *Nutrients*, 8(8), 487. doi:10.3390/nu8080487
- Fernández-Alvira, J., Bammann, K., Pala, V., Krogh, V., Barba, G., & Eiben, G. et al. (2014). Country-specific dietary patterns and associations with socioeconomic status in European children: the IDEFICS study. *European Journal Of Clinical Nutrition*, 68(7), 811-821. doi:10.1038/ejcn.2014.78
- Fernqvist, F., & Ekelund, L. (2014). Credence and the effect on consumer liking of food – A review. *Food Quality And Preference*, 32, 340-353. doi:10.1016/j.foodqual.2013.10.005
- Fink, S., Racine, E., Mueffelman, R., Dean, M., & Herman-Smith, R. (2014). Family Meals and Diet Quality Among Children and Adolescents in North Carolina. *Journal Of Nutrition Education And Behavior*, 46(5), 418-422. doi:10.1016/j.jneb.2014.05.004
- Finn, K., Johannsen, N., & Specker, B. (2002). Factors associated with physical activity in preschool children. *The Journal Of Pediatrics*, 140(1), 81-85. doi:10.1067/mpd.2002.120693
- Fjørtoft, I., Löfman, O., & Halvorsen Thorén, K. (2010). Schoolyard physical activity in 14-year-old adolescents assessed by mobile GPS and heart rate monitoring analysed by GIS. *Scandinavian Journal Of Public Health*, 38(5\_suppl), 28-37. doi:10.1177/1403494810384909
- Folta, S., Kuder, J., Goldberg, J., Hyatt, R., Must, A., & Naumova, E. et al. (2013). Changes in diet and physical activity resulting from the Shape Up Somerville community intervention. *BMC Pediatrics*, 13(1). doi:10.1186/1471-2431-13-157

- Forestell, C., & Mennella, J. (2007). Early Determinants of Fruit and Vegetable Acceptance. *PEDIATRICS*, 120(6), 1247-1254. doi:10.1542/peds.2007-0858
- Foroni, F., Pergola, G., & Rumiati, R. (2016). Food color is in the eye of the beholder: the role of human trichromatic vision in food evaluation. *Scientific Reports*, 6(1). doi:10.1038/srep37034
- Foster, G., Sherman, S., Borradaile, K., Grundy, K., Vander Veur, S., & Nachmani, J. et al. (2008). A Policy-Based School Intervention to Prevent Overweight and Obesity. *PEDIATRICS*, 121(4), e794-e802. doi:10.1542/peds.2007-1365
- Franchini, B., Póinhos, R., Klepp, K., & de Almeida, M. (2011). Association between parenting styles and own fruit and vegetable consumption among Portuguese mothers of school children. *British Journal Of Nutrition*, 106(6), 931-935. doi:10.1017/s0007114511001048
- Francis, L., & Susman, E. (2009). Self-regulation and Rapid Weight Gain in Children From Age 3 to 12 Years. *Archives Of Pediatrics & Adolescent Medicine*, 163(4), 297. doi:10.1001/archpediatrics.2008.579
- Frazier, B., Gelman, S., Kaciroti, N., Russell, J., & Lumeng, J. (2011). I'll have what she's having: the impact of model characteristics on children's food choices. *Developmental Science*, 15(1), 87-98. doi:10.1111/j.1467-7687.2011.01106.x
- Friedman, H., Tucker, J., Tomlinson-Keasey, C., Schwartz, J., & et al. (1993). Does childhood personality predict longevity?. *Journal Of Personality And Social Psychology*, 65(1), 176-185. doi:10.1037//0022-3514.65.1.176
- Fuller, D., Sabiston, C., Karp, I., Barnett, T., & O'Loughlin, J. (2011). School Sports Opportunities Influence Physical Activity in Secondary School and Beyond. *Journal Of School Health*, 81(8), 449-454. doi:10.1111/j.1746-1561.2011.00613.x
- Galán, I., Boix, R., Medrano, M., Ramos, P., Rivera, F., & Moreno, C. (2013). Individual Factors and School-Based Policies Related to Adherence to Physical Activity Recommendations in Spanish Adolescents. *Prevention Science*, 15(4), 588-599. doi:10.1007/s11121-013-0407-5
- Galloway, A., Fiorito, L., Lee, Y., & Birch, L. (2005). Parental pressure, dietary patterns, and weight status among girls who are "picky eaters". *Journal Of The American Dietetic Association*, 105(4), 541-548. doi:10.1016/j.jada.2005.01.029
- Gao, Z., Lochbaum, M., & Podlog, L. (2011). Self-Efficacy as a Mediator of Children's Achievement Motivation and in-Class Physical Activity. *Perceptual And Motor Skills*, 113(3), 969-981. doi:10.2466/06.11.25.pms.113.6.969-981
- Gardner, B. (2014). A review and analysis of the use of 'habit' in understanding, predicting and influencing health-related behaviour. *Health Psychology Review*, 9(3), 277-295. doi:10.1080/17437199.2013.876238
- Gardner, B., de Bruijn, G., & Lally, P. (2011). A Systematic Review and Meta-analysis of Applications of the Self-Report Habit Index to Nutrition and Physical Activity Behaviours. *Annals Of Behavioral Medicine*, 42(2), 174-187. doi:10.1007/s12160-011-9282-0
- Gardner, B., Lally, P., & Wardle, J. (2012). Making health habitual: the psychology of 'habit-formation' and general practice. *British Journal Of General Practice*, 62(605), 664-666. doi:10.3399/bjgp12x659466
- Gardner, B., Phillips, L., & Judah, G. (2016). Habitual instigation and habitual execution: Definition, measurement, and effects on behaviour frequency. *British Journal Of Health Psychology*, 21(3), 613-630. doi:10.1111/bjhp.12189
- Gerards, S., & Kremers, S. (2015). The Role of Food Parenting Skills and the Home Food Environment in Children's Weight Gain and Obesity. *Current Obesity Reports*, 4(1), 30-36. doi:10.1007/s13679-015-0139-x
- Gillman, M. (2000). Family Dinner and Diet Quality Among Older Children and Adolescents. *Archives Of Family Medicine*, 9(3), 235-240. doi:10.1001/archfami.9.3.235
- Glendinning, J. (1994). Is the bitter rejection response always adaptive?. *Physiology & Behavior*, 56(6), 1217-1227. doi:10.1016/0031-9384(94)90369-7
- Gold, A., Larson, M., Tucker, J., & Strang, M. (2017). Classroom Nutrition Education Combined With Fruit and Vegetable Taste Testing Improves Children's Dietary Intake. *Journal Of School Health*, 87(2), 106-113. doi:10.1111/josh.12478

- Goldthorpe, J., Ali, N., & Calam, R. (2018). Providing healthy diets for young children: the experience of parents in a UK inner city. *International Journal Of Qualitative Studies On Health And Well-Being*, 13(1), 1490623. doi:10.1080/17482631.2018.1490623
- Gollwitzer, P. (1999). Implementation intentions: Strong effects of simple plans. *American Psychologist*, 54(7), 493-503. doi:10.1037/0003-066x.54.7.493
- Gorn, G., & Goldberg, M. (1982). Behavioral Evidence of the Effects of Televised Food Messages on Children. *Journal Of Consumer Research*, 9(2), 200. doi:10.1086/208913
- Gosliner, W., Madsen, K., Woodward-Lopez, G., & Crawford, P. (2011). Would Students Prefer to Eat Healthier Foods at School?. *Journal Of School Health*, 81(3), 146-151. doi:10.1111/j.1746-1561.2010.00573.x
- Gowey, M., Lim, C., Dutton, G., Silverstein, J., Dumont-Driscoll, M., & Janicke, D. (2017). Executive Function and Dysregulated Eating Behaviors in Pediatric Obesity. *Journal Of Pediatric Psychology*, 43(8), 834-845. doi:10.1093/jpepsy/jsx091
- Graham, D., Bauer, K., Friend, S., Barr-Anderson, D., & Nuemark-Sztainer, D. (2014). Personal, Behavioral, and Socioenvironmental Correlates of Physical Activity Among Adolescent Girls: Cross-Sectional and Longitudinal Associations. *Journal Of Physical Activity And Health*, 11(1), 51-61. doi:10.1123/jpah.2011-0239
- Greenhalgh, J., Dowey, A., Horne, P., Fergus Lowe, C., Griffiths, J., & Whitaker, C. (2009). Positive- and negative peer modelling effects on young children's consumption of novel blue foods. *Appetite*, 52(3), 646-653. doi:10.1016/j.appet.2009.02.016
- Grimm, G., Harnack, L., & Story, M. (2004). Factors associated with soft drink consumption in school-aged children. *Journal Of The American Dietetic Association*, 104(8), 1244-1249. doi:10.1016/j.jada.2004.05.206
- Gronchi, G., & Giovannelli, F. (2018). Dual Process Theory of Thought and Default Mode Network: A Possible Neural Foundation of Fast Thinking. *Frontiers In Psychology*, 9. doi:10.3389/fpsyg.2018.01237
- Haas, R., Mason, W., & Haines, T. (2014). Difficulties Experienced in Setting and Achieving Goals by Participants of a Falls Prevention Programme: A Mixed-Methods Evaluation. *Physiotherapy Canada*, 66(4), 413-422. doi:10.3138/ptc.2013-30bc
- Haddad, J., Ullah, S., Bell, L., Leslie, E., & Magarey, A. (2017). The Influence of Home and School Environments on Children's Diet and Physical Activity, and Body Mass Index: A Structural Equation Modelling Approach. *Maternal And Child Health Journal*, 22(3), 364-375. doi:10.1007/s10995-017-2386-9
- Hagger, M., Chatzisarantis, N., Barkoukis, V., Wang, C., & Baranowski, J. (2005). Perceived Autonomy Support in Physical Education and Leisure-Time Physical Activity: A Cross-Cultural Evaluation of the Trans-Contextual Model. *Journal Of Educational Psychology*, 97(3), 376-390. doi:10.1037/0022-0663.97.3.376
- Hagger, M., Chatzisarantis, N., Culverhouse, T., & Biddle, S. (2003). The Processes by Which Perceived Autonomy Support in Physical Education Promotes Leisure-Time Physical Activity Intentions and Behavior: A Trans-Contextual Model. *Journal Of Educational Psychology*, 95(4), 784-795. doi:10.1037/0022-0663.95.4.784
- Hampson, S. (2008). Mechanisms by Which Childhood Personality Traits Influence Adult Well-Being. *Current Directions In Psychological Science*, 17(4), 264-268. doi:10.1111/j.1467-8721.2008.00587.x
- Hampson, S., Edmonds, G., Barckley, M., Goldberg, L., Dubanoski, J., & Hillier, T. (2015). A Big Five approach to self-regulation: personality traits and health trajectories in the Hawaii longitudinal study of personality and health. *Psychology, Health & Medicine*, 21(2), 152-162. doi:10.1080/13548506.2015.1061676
- Hampson, S., Goldberg, L., Vogt, T., & Dubanoski, J. (2007). Mechanisms by which childhood personality traits influence adult health status: Educational attainment and healthy behaviors. *Health Psychology*, 26(1), 121-125. doi:10.1037/0278-6133.26.1.121

- Hanks, A., Just, D., Smith, L., & Wansink, B. (2012). Healthy convenience: nudging students toward healthier choices in the lunchroom. *Journal Of Public Health*, 34(3), 370-376. doi:10.1093/pubmed/fds003
- Hansen, D., Larson, R., & Dworkin, J. (2003). What Adolescents Learn in Organized Youth Activities: A Survey of Self-Reported Developmental Experiences. *Journal Of Research On Adolescence*, 13(1), 25-55. doi:10.1111/1532-7795.1301006
- Hanson, N., Neumark-Sztainer, D., Eisenberg, M., Story, M., & Wall, M. (2005). Associations between parental report of the home food environment and adolescent intakes of fruits, vegetables and dairy foods. *Public Health Nutrition*, 8(1), 77-85. doi:10.1079/phn2005661
- Harkin, B., Webb, T., Chang, B., Prestwich, A., Conner, M., & Kellar, I. et al. (2016). Does monitoring goal progress promote goal attainment? A meta-analysis of the experimental evidence. *Psychological Bulletin*, 142(2), 198-229. doi:10.1037/bul0000025
- Harris, G. (2008). Development of taste and food preferences in children. *Current Opinion In Clinical Nutrition And Metabolic Care*, 11(3), 315-319. doi:10.1097/mco.0b013e3282f9e228
- Harris, J., & Bargh, J. (2009). Television Viewing and Unhealthy Diet: Implications for Children and Media Interventions. *Health Communication*, 24(7), 660-673. doi:10.1080/10410230903242267
- Hearn, M., Baranowski, T., Baranowski, J., Doyle, C., Smith, M., Lin, L., & Resnicow, K. (1998). Environmental Influences on Dietary Behavior among Children: Availability and Accessibility of Fruits and Vegetables Enable Consumption. *Journal Of Health Education*, 29(1), 26-32. doi:10.1080/10556699.1998.10603294
- Hennessey, E., Hughes, S., Goldberg, J., Hyatt, R., & Economos, C. (2012). Permissive Parental Feeding Behavior Is Associated with an Increase in Intake of Low-Nutrient-Dense Foods among American Children Living in Rural Communities. *Journal Of The Academy Of Nutrition And Dietetics*, 112(1), 142-148. doi:10.1016/j.jada.2011.08.030
- Hesketh, K., Hinkley, T., & Campbell, K. (2012). Children's physical activity and screen time: qualitative comparison of views of parents of infants and preschool children. *International Journal Of Behavioral Nutrition And Physical Activity*, 9(1), 152. doi:10.1186/1479-5868-9-152
- Higgins, E. (2005). Value From Regulatory Fit. *Current Directions In Psychological Science*, 14(4), 209-213. doi:10.1111/j.0963-7214.2005.00366.x
- Hill, J. (2008). Can a small-changes approach help address the obesity epidemic? A report of the Joint Task Force of the American Society for Nutrition, Institute of Food Technologists, and International Food Information Council. *The American Journal Of Clinical Nutrition*, 89(2), 477-484. doi:10.3945/ajcn.2008.26566
- Hobin, E., Leatherdale, S., Manske, S., Dubin, J., Elliott, S., & Veugelers, P. (2012). A multilevel examination of gender differences in the association between features of the school environment and physical activity among a sample of grades 9 to 12 students in Ontario, Canada. *BMC Public Health*, 12(1). doi:10.1186/1471-2458-12-74
- Hobin, E., Leatherdale, S., Manske, S., Dubin, J., Elliott, S., & Veugelers, P. (2012). A multilevel examination of factors of the school environment and time spent in moderate to vigorous physical activity among a sample of secondary school students in grades 9–12 in Ontario, Canada. *International Journal Of Public Health*, 57(4), 699-709. doi:10.1007/s00038-012-0336-2
- Hoerr, S., Hughes, S., Fisher, J., Nicklas, T., Liu, Y., & Shewchuk, R. (2009). Associations among parental feeding styles and children's food intake in families with limited incomes. *International Journal Of Behavioral Nutrition And Physical Activity*, 6(1), 55. doi:10.1186/1479-5868-6-55
- Hoffman, A., Salgado, R., Dresler, C., Faller, R., & Bartlett, C. (2016). Flavour preferences in youth versus adults: a review. *Tobacco Control*, 25(Suppl 2), ii32-ii39. doi:10.1136/tobaccocontrol-2016-053192
- Hofmann, W., Friese, M., & Wiers, R. (2008). Impulsive versus reflective influences on health behavior: a theoretical framework and empirical review. *Health Psychology Review*, 2(2), 111-137. doi:10.1080/17437190802617668

- Horne, P., Greenhalgh, J., Erjavec, M., Lowe, C., Viktor, S., & Whitaker, C. (2011). Increasing pre-school children's consumption of fruit and vegetables. A modelling and rewards intervention. *Appetite*, 56(2), 375-385. doi:10.1016/j.appet.2010.11.146
- Horne, P., Hardman, C., Lowe, C., & Rowlands, A. (2007). Increasing children's physical activity: a peer modelling, rewards and pedometer-based intervention. *European Journal Of Clinical Nutrition*, 63(2), 191-198. doi:10.1038/sj.ejcn.1602915
- How, Y., Whipp, P., Dimmock, J., & Jackson, B. (2013). The Effects of Choice on Autonomous Motivation, Perceived Autonomy Support, and Physical Activity Levels in High School Physical Education. *Journal Of Teaching In Physical Education*, 32(2), 131-148. doi:10.1123/jtpe.32.2.131
- Hughes, S., Shewchuk, R., Baskin, M., Nicklas, T., & Qu, H. (2008). Indulgent Feeding Style and Children's Weight Status in Preschool. *Journal Of Developmental & Behavioral Pediatrics*, 29(5), 403-410. doi:10.1097/dbp.0b013e318182a976
- Inauen, J., Stocker, A., & Scholz, U. (2018). Why and for Whom May Coping Planning Have Adverse Effects? A Moderated Mediation Analysis. *Applied Psychology: Health And Well-Being*, 10(2), 272-289. doi:10.1111/aphw.12130
- Intiful, F., Oddam, E., Kretchy, I., & Quampah, J. (2019). Exploring the relationship between the big five personality characteristics and dietary habits among students in a Ghanaian University. *BMC Psychology*, 7(1). doi:10.1186/s40359-019-0286-z
- Irwin, J., He, M., Sangster Bouck, M., Tucker, P., & Pollett, G. (2005). Preschoolers' Physical Activity Behaviours. *Can J Public Health*.
- Jaakkola, T., Washington, T., & Yli-Piipari, S. (2012). The association between motivation in school physical education and self-reported physical activity during Finnish junior high school. *European Physical Education Review*, 19(1), 127-141. doi:10.1177/1356336x12465514
- Jackson, B., Whipp, P., Chua, K., Dimmock, J., & Hagger, M. (2013). Students' Tripartite Efficacy Beliefs in High School Physical Education: Within- and Cross-Domain Relations With Motivational Processes and Leisure-Time Physical Activity. *Journal Of Sport And Exercise Psychology*, 35(1), 72-84. doi:10.1123/jsep.35.1.72
- Jackson, J., Smit, E., Branscum, A., Gunter, K., Harvey, M., Manore, M., & John, D. (2017). The Family Home Environment, Food Insecurity, and Body Mass Index in Rural Children. *Health Education & Behavior*, 44(4), 648-657. doi:10.1177/1090198116684757
- James, J., Thomas, P., Cavan, D., & Kerr, D. (2004). Preventing childhood obesity by reducing consumption of carbonated drinks: cluster randomised controlled trial. *BMJ*, 328(7450), 1237. doi:10.1136/bmj.38077.458438.ee
- John, O., Caspi, A., Robins, R., Moffitt, T., & Stouthamer-Loeber, M. (1994). The "Little Five": Exploring the Nomological Network of the Five-Factor Model of Personality in Adolescent Boys. *Child Development*, 65(1), 160-178. doi:10.1111/j.1467-8624.1994.tb00742.x
- Joyner, C., Rhodes, R., & Loprinzi, P. (2018). The prospective association between the Five Factor personality model with health behaviors and health behavior clusters. *Europe'S Journal Of Psychology*, 14(4), 880-896. doi:10.5964/ejop.v14i4.1450
- Kanters, M., Bocarro, J., Edwards, M., Casper, J., & Floyd, M. (2012). School Sport Participation Under Two School Sport Policies: Comparisons by Race/Ethnicity, Gender, and Socioeconomic Status. *Annals Of Behavioral Medicine*, 45(S1), 113-121. doi:10.1007/s12160-012-9413-2
- Kelly, N., Tanofsky-Kraff, M., Vannucci, A., Ranzenhofer, L., Altschul, A., & Schvey, N. et al. (2016). Emotion dysregulation and loss-of-control eating in children and adolescents. *Health Psychology*, 35(10), 1110-1119. doi:10.1037/hea0000389
- Kern, M., & Friedman, H. (2008). Do conscientious individuals live longer? A quantitative review. *Health Psychology*, 27(5), 505-512. doi:10.1037/0278-6133.27.5.505
- Keszytüs, D., Traub, M., Lauer, R., Keszytüs, T., & Steinacker, J. (2017). Skipping breakfast is detrimental for primary school children: cross-sectional analysis of determinants for targeted prevention. *BMC Public Health*, 17(1). doi:10.1186/s12889-017-4169-z
- Koh, L., Hagger, M., Goh, V., Hart, W., & Gucciardi, D. (2017). Effects of a brief action and coping planning intervention on completion of preventive exercises prescribed by a physiotherapist

- among people with knee pain. *Journal Of Science And Medicine In Sport*, 20(8), 723-728. doi:10.1016/j.jsams.2017.02.008
- Kohnstamm, G. (1998). *Parental descriptions of child personality*. Mahwah, N.J.: Erlbaum.
- Korinek, E., Phatak, S., Martin, C., Freigoun, M., Rivera, D., & Adams, M. et al. (2017). Adaptive step goals and rewards: a longitudinal growth model of daily steps for a smartphone-based walking intervention. *Journal Of Behavioral Medicine*, 41(1), 74-86. doi:10.1007/s10865-017-9878-3
- Kuo, J., Schmitz, K., Evenson, K., McKenzie, T., Jobe, J., & Rung, A. et al. (2009). Physical and Social Contexts of Physical Activities Among Adolescent Girls. *Journal Of Physical Activity And Health*, 6(2), 144-152. doi:10.1123/jpah.6.2.144
- Kwasnicka, D., Dombrowski, S., White, M., & Sniehotta, F. (2016). Theoretical explanations for maintenance of behaviour change: a systematic review of behaviour theories. *Health Psychology Review*, 10(3), 277-296. doi:10.1080/17437199.2016.1151372
- La Torre, G., Mannocci, A., Saulle, R., Sinopoli, A., D'Egidio, V., & Sestili, C. et al. (2017). Improving knowledge and behaviors on diet and physical activity in children: results of a pilot randomized field trial. *Annali Di Igiene*. doi:10.7416/ai.2017.2187.
- Lally, P., & Gardner, B. (2013). Promoting habit formation. *Health Psychology Review*, 7(sup1), S137-S158. doi:10.1080/17437199.2011.603640
- Lally, P., van Jaarsveld, C., Potts, H., & Wardle, J. (2010). How are habits formed: Modelling habit formation in the real world. *European Journal Of Social Psychology*, 40(6), 998-1009. doi:10.1002/ejsp.674
- Lally, P., Wardle, J., & Gardner, B. (2011). Experiences of habit formation: A qualitative study. *Psychology, Health & Medicine*, 16(4), 484-489. doi:10.1080/13548506.2011.555774
- Lamb, M., Chuang, S., Wessels, H., Broberg, A., & Hwang, C. (2002). Emergence and Construct Validation of the Big Five Factors in Early Childhood: A Longitudinal Analysis of Their Ontogeny in Sweden. *Child Development*, 73(5), 1517-1524. doi:10.1111/1467-8624.00487
- Larson, J., Brusseau, T., Newton, M., Fairclough, S., Wengreen, H., & Hannon, J. (2018). Fit “n” Cool Kids: Effects of Peer-Modeling and Goal Setting on Physical Activity. *Open Journal Of Preventive Medicine*, 08(04), 85-94. doi:10.4236/ojpm.2018.84008
- Larson, J., Brusseau, T., Wengreen, H., Fairclough, S., Newton, M., & Hannon, J. (2018). Fit “N” Cool Kids: The Effects of Character Modeling and Goal Setting on Children’s Physical Activity and Fruit and Vegetable Consumption. *Clinical Medicine Insights: Pediatrics*, 12, 117955651878429. doi:10.1177/1179556518784296
- Lemery-Chalfant, K., Doelger, L., & Goldsmith, H. (2008). Genetic relations between effortful and attentional control and symptoms of psychopathology in middle childhood. *Infant And Child Development*, 17(4), 365-385. doi:10.1002/icd.581
- Levy, D., Friend, K., & Wang, Y. (2011). A Review of the Literature on Policies Directed at the Youth Consumption of Sugar Sweetened Beverages. *Advances In Nutrition*, 2(2), 182S-200S. doi:10.3945/an.111.000356
- Liberman, Z., Woodward, A., Sullivan, K., & Kinzler, K. (2016). Early emerging system for reasoning about the social nature of food. *Proceedings Of The National Academy Of Sciences*, 113(34), 9480-9485. doi:10.1073/pnas.1605456113
- Liem, D. (2017). Infants’ and Children’s Salt Taste Perception and Liking: A Review. *Nutrients*, 9(9), 1011. doi:10.3390/nu9091011
- Li-Grining, C. (2007). Effortful control among low-income preschoolers in three cities: Stability, change, and individual differences. *Developmental Psychology*, 43(1), 208-221. doi:10.1037/0012-1649.43.1.208
- Lindsay, A., Greaney, M., Wallington, S., Mesa, T., & Salas, C. (2017). A review of early influences on physical activity and sedentary behaviors of preschool-age children in high-income countries. *Journal For Specialists In Pediatric Nursing*, 22(3), e12182. doi:10.1111/jspn.12182
- Lo, E., Coles, R., Humbert, M., Polowski, J., Henry, C., & Whiting, S. (2008). Beverage intake improvement by high school students in Saskatchewan, Canada. *Nutrition Research*, 28(3), 144-150. doi:10.1016/j.nutres.2008.01.005



- Lonsdale, C., Rosenkranz, R., Sanders, T., Peralta, L., Bennie, A., & Jackson, B. et al. (2013). A cluster randomized controlled trial of strategies to increase adolescents' physical activity and motivation in physical education: Results of the Motivating Active Learning in Physical Education (MALP) trial. *Preventive Medicine*, 57(5), 696-702. doi:10.1016/j.ypmed.2013.09.003
- Lorig, K., Laurent, D., Plant, K., Krishnan, E., & Ritter, P. (2013). The components of action planning and their associations with behavior and health outcomes. *Chronic Illness*, 10(1), 50-59. doi:10.1177/1742395313495572
- Loughridge, J., & Barratt, J. (2005). Does the provision of cooled filtered water in secondary school cafeterias increase water drinking and decrease the purchase of soft drinks?. *Journal Of Human Nutrition And Dietetics*, 18(4), 281-286. doi:10.1111/j.1365-277x.2005.00622.x
- Louro, M., Pieters, R., & Zeelenberg, M. (2007). Dynamics of multiple-goal pursuit. *Journal Of Personality And Social Psychology*, 93(2), 174-193. doi:10.1037/0022-3514.93.2.174
- Lu, J., Xiong, S., Arora, N., & Dubé, L. (2015). Using food as reinforcer to shape children's non-food behavior: The adverse nutritional effect doubly moderated by reward sensitivity and gender. *Eating Behaviors*, 19, 94-97. doi:10.1016/j.eatbeh.2015.07.003
- Lubans, D., & Morgan, P. (2009). Social, psychological and behavioural correlates of pedometer step counts in a sample of Australian adolescents. *Journal Of Science And Medicine In Sport*, 12(1), 141-147. doi:10.1016/j.jsams.2007.06.010
- Lumeng, J., & Hillman, K. (2007). Eating in larger groups increases food consumption. *Archives Of Disease In Childhood*, 92(5), 384-387. doi:10.1136/adc.2006.103259
- Lussana, F., Painter, R., Ocke, M., Buller, H., Bossuyt, P., & Roseboom, T. (2008). Prenatal exposure to the Dutch famine is associated with a preference for fatty foods and a more atherogenic lipid profile. *The American Journal Of Clinical Nutrition*, 88(6), 1648-1652. doi:10.3945/ajcn.2008.26140
- Macdonald, K., Milne, N., Orr, R., & Pope, R. (2018). Relationships Between Motor Proficiency and Academic Performance in Mathematics and Reading in School-Aged Children and Adolescents: A Systematic Review. *International Journal Of Environmental Research And Public Health*, 15(8), 1603. doi:10.3390/ijerph15081603
- Maitland, C., Stratton, G., Foster, S., Braham, R., & Rosenberg, M. (2013). A place for play? The influence of the home physical environment on children's physical activity and sedentary behaviour. *International Journal Of Behavioral Nutrition And Physical Activity*, 10(1), 99. doi:10.1186/1479-5868-10-99
- Mandic, S., Bengoechea, E., Stevens, E., Leon de la Barra, S., & Skidmore, P. (2012). Getting kids active by participating in sport and doing it more often: focusing on what matters. *International Journal Of Behavioral Nutrition And Physical Activity*, 9(1), 86. doi:10.1186/1479-5868-9-86
- Manyanga, T., Tremblay, M., Chaput, J., Katzmarzyk, P., Fogelholm, M., & Hu, G. et al. (2017). Socioeconomic status and dietary patterns in children from around the world: different associations by levels of country human development?. *BMC Public Health*, 17(1). doi:10.1186/s12889-017-4383-8
- Marty, L., Chambaron, S., Nicklaus, S., & Monnery-Patris, S. (2018). Learned pleasure from eating: An opportunity to promote healthy eating in children?. *Appetite*, 120, 265-274. doi:10.1016/j.appet.2017.09.006
- Matheson, D., Varady, J., Varady, A., & Killen, J. (2002). Household food security and nutritional status of Hispanic children in the fifth grade. *The American Journal Of Clinical Nutrition*, 76(1), 210-217. doi:10.1093/ajcn/76.1.210
- Matthews, J. (2011). Physical Activity and Self-regulation Strategy Use in Adolescents. *American Journal Of Health Behavior*, 35(6). doi:10.5993/ajhb.35.6.16
- Mattocks, C., Ness, A., Deere, K., Tilling, K., Leary, S., Blair, S., & Riddoch, C. (2007). Early life determinants of physical activity in 11 to 12 year olds: cohort study. *BMJ*, 336(7634), 26-29. doi:10.1136/bmj.39385.443565.be

- Mayén, A., Marques-Vidal, P., Paccaud, F., Bovet, P., & Stringhini, S. (2014). Socioeconomic determinants of dietary patterns in low- and middle-income countries: a systematic review. *The American Journal Of Clinical Nutrition*, 100(6), 1520-1531. doi:10.3945/ajcn.114.089029
- McIver, K., Brown, W., Pfeiffer, K., Dowda, M., & Pate, R. (2009). Assessing Children's Physical Activity in Their Homes: The Observational System for Recording Physical Activity in Children–Home. *Journal Of Applied Behavior Analysis*, 42(1), 1-16. doi:10.1901/jaba.2009.42-1
- McKenzie, T., Marshall, S., Sallis, J., & Conway, T. (2000). Student Activity Levels, Lesson Context, and Teacher Behavior during Middle School Physical Education. *Research Quarterly For Exercise And Sport*, 71(3), 249-259. doi:10.1080/02701367.2000.10608905
- McLellan, L., Rissel, C., Donnelly, N., & Bauman, A. (1999). Health behaviour and the school environment in New South Wales, Australia. *Social Science & Medicine*, 49(5), 611-619. doi:10.1016/s0277-9536(99)00136-7
- Measelle, J., John, O., Ablow, J., Cowan, P., & Cowan, C. (2005). Can Children Provide Coherent, Stable, and Valid Self-Reports on the Big Five Dimensions? A Longitudinal Study From Ages 5 to 7. *Journal Of Personality And Social Psychology*, 89(1), 90-106. doi:10.1037/0022-3514.89.1.90
- Mennella, J., & Bobowski, N. (2015). The sweetness and bitterness of childhood: Insights from basic research on taste preferences. *Physiology & Behavior*, 152, 502-507. doi:10.1016/j.physbeh.2015.05.015
- Mensink, F., Schwinghammer, S., & Smeets, A. (2012). The Healthy School Canteen Programme: A Promising Intervention to Make the School Food Environment Healthier. *Journal Of Environmental And Public Health*, 2012, 1-8. doi:10.1155/2012/415746
- Micha, R., Karageorgou, D., Bakogianni, I., Trichia, E., Whitsel, L., & Story, M. et al. (2018). Effectiveness of school food environment policies on children's dietary behaviors: A systematic review and meta-analysis. *PLOS ONE*, 13(3), e0194555. doi:10.1371/journal.pone.0194555
- Michie, S., van Stralen, M., & West, R. (2011). The behaviour change wheel: A new method for characterising and designing behaviour change interventions. *Implementation Science*, 6(1). doi:10.1186/1748-5908-6-42
- Miller, A., Gearhardt, A., Fredericks, E., Katz, B., Shapiro, L., & Holden, K. et al. (2018). Targeting self-regulation to promote health behaviors in children. *Behaviour Research And Therapy*, 101, 71-81. doi:10.1016/j.brat.2017.09.008
- Moding, K., & Stifter, C. (2016). Stability of food neophobia from infancy through early childhood. *Appetite*, 97, 72-78. doi:10.1016/j.appet.2015.11.016
- Moreno-Murcia, J., & Hernández, E. (2013). The Importance of Supporting Adolescents' Autonomy in Promoting Physical-Sport Exercise. *The Spanish Journal Of Psychology*, 16. doi:10.1017/sjp.2013.81
- Morton, K., Atkin, A., Corder, K., Suhrcke, M., & van Sluijs, E. (2015). The school environment and adolescent physical activity and sedentary behaviour: a mixed-studies systematic review. *Obesity Reviews*, 17(2), 142-158. doi:10.1111/obr.12352
- Muckelbauer, R., Libuda, L., Clausen, K., Toschke, A., Reinehr, T., & Kersting, M. (2009). Promotion and Provision of Drinking Water in Schools for Overweight Prevention: Randomized, Controlled Cluster Trial. *PEDIATRICS*, 123(4), e661-e667. doi:10.1542/peds.2008-2186
- Mullan, B., & Novorodovskaya, E. (2018). *The Psychology of Habit - Theory, Mechanisms, Change, and Contexts* (1st ed., pp. 71-90).
- Nackers, L., & Appelhans, B. (2013). Food Insecurity Is Linked to a Food Environment Promoting Obesity in Households With Children. *Journal Of Nutrition Education And Behavior*, 45(6), 780-784. doi:10.1016/j.jneb.2013.08.001
- Nekitsing, C., Hetherington, M., & Blundell-Birtill, P. (2018). Developing Healthy Food Preferences in Preschool Children Through Taste Exposure, Sensory Learning, and Nutrition Education. *Current Obesity Reports*, 7(1), 60-67. doi:10.1007/s13679-018-0297-8
- Nelis, S., Thom, J., Jones, I., Hindle, J., & Clare, L. (2018). Goal-setting to Promote a Healthier Lifestyle in Later Life: Qualitative Evaluation of the AgeWell Trial. *Clinical Gerontologist*, 41(4), 335-345. doi:10.1080/07317115.2017.1416509

- Nelson, P. (1970). Information and Consumer Behavior. *Journal Of Political Economy*, 78(2), 311-329. doi:10.1086/259630
- Neshteruk, C., Mazzucca, S., Østbye, T., & Ward, D. (2018). The physical environment in family childcare homes and children's physical activity. *Child: Care, Health And Development*. doi:10.1111/cch.12578
- Neumark-Sztainer, D., Hannan, P., Story, M., Croll, J., & Perry, C. (2003). Family meal patterns: Associations with sociodemographic characteristics and improved dietary intake among adolescents. *Journal Of The American Dietetic Association*, 103(3), 317-322. doi:10.1053/jada.2003.50048
- Neumark-Sztainer, D., Wall, M., Perry, C., & Story, M. (2003). Correlates of fruit and vegetable intake among adolescents. *Preventive Medicine*, 37(3), 198-208. doi:10.1016/s0091-7435(03)00114-2
- Newman, J., & Taylor, A. (1992). Effect of a means-end contingency on young children's food preferences. *Journal Of Experimental Child Psychology*, 53(2), 200-216. doi:10.1016/0022-0965(92)90049-c
- NHS. (2018). *National Child Measurement Programme*. London: NHS Digital. Retrieved from <https://files.digital.nhs.uk/9F/22AF4D/nati-chil-meas-prog-eng-2017-2018-rep.pdf>
- Nickelson, J., Roseman, M., & Forthofer, M. (2010). Associations between Parental Limits, School Vending Machine Purchases, and Soft Drink Consumption among Kentucky Middle School Students. *Journal Of Nutrition Education And Behavior*, 42(2), 115-122. doi:10.1016/j.jneb.2009.02.005
- Nyaradi, A., Li, J., Hickling, S., Foster, J., & Oddy, W. (2013). The role of nutrition in children's neurocognitive development, from pregnancy through childhood. *Frontiers In Human Neuroscience*, 7. doi:10.3389/fnhum.2013.00097
- O'Connor, T., Cerin, E., Hughes, S., Robles, J., Thompson, D., & Baranowski, T. et al. (2013). What Hispanic parents do to encourage and discourage 3-5 year old children to be active: a qualitative study using nominal group technique. *International Journal Of Behavioral Nutrition And Physical Activity*, 10(1), 93. doi:10.1186/1479-5868-10-93
- Ong, J., Ullah, S., Magarey, A., Miller, J., & Leslie, E. (2016). Relationship between the home environment and fruit and vegetable consumption in children aged 6–12 years: a systematic review. *Public Health Nutrition*, 20(3), 464-480. doi:10.1017/s1368980016002883
- Orava, T., Manske, S., & Hanning, R. (2017). Support for healthy eating at schools according to the comprehensive school health framework: evaluation during the early years of the Ontario School Food and Beverage Policy implementation. *Health Promotion And Chronic Disease Prevention In Canada*, 37(9), 303-312. doi:10.24095/hpcdp.37.9.05
- Orbell, S., & Verplanken, B. (2010). The automatic component of habit in health behavior: Habit as cue-contingent automaticity. *Health Psychology*, 29(4), 374-383. doi:10.1037/a0019596
- Orlet Fisher, J., Mitchell, D., Wright, H., & Birch, L. (2002). Parental influences on young girls' fruit and vegetable, micronutrient, and fat intakes. *Journal Of The American Dietetic Association*, 102(1), 58-64. doi:10.1016/s0002-8223(02)90017-9
- Osch, L., Lechner, L., Reubsæet, A., Wigger, S., & Vries, H. (2008). Relapse prevention in a national smoking cessation contest: Effects of coping planning. *British Journal Of Health Psychology*, 13(3), 525-535. doi:10.1348/135910707x224504
- Osman, M. (2004). An evaluation of dual-process theories of reasoning. *Psychonomic Bulletin & Review*, 11(6), 988-1010. doi:10.3758/bf03196730
- Østbye, T., Malhotra, R., Stroo, M., Lovelady, C., Brouwer, R., Zucker, N., & Fuemmeler, B. (2013). The effect of the home environment on physical activity and dietary intake in preschool children. *International Journal Of Obesity*, 37(10), 1314-1321. doi:10.1038/ijo.2013.76
- Pagnini, D., Wilkenfeld, R., King, L., Booth, M., & Booth, S. (2007). Mothers of pre-school children talk about childhood overweight and obesity: The Weight of Opinion study. *Journal Of Paediatrics And Child Health*, 43(12), 806-810. doi:10.1111/j.1440-1754.2007.01199.x

- Palfreyman, Z., Haycraft, E., & Meyer, C. (2015). Parental modelling of eating behaviours: Observational validation of the Parental Modelling of Eating Behaviours scale (PARM). *Appetite*, 86, 31-37. doi:10.1016/j.appet.2014.08.008
- Parish, L., & Treasure, D. (2003). Physical Activity and Situational Motivation in Physical Education: Influence of the Motivational Climate and Perceived Ability. *Research Quarterly For Exercise And Sport*, 74(2), 173-182. doi:10.1080/02701367.2003.10609079
- Park, S., Sappenfield, W., Huang, Y., Sherry, B., & Bensyl, D. (2010). The Impact of the Availability of School Vending Machines on Eating Behavior during Lunch: The Youth Physical Activity and Nutrition Survey. *Journal Of The American Dietetic Association*, 110(10), 1532-1536. doi:10.1016/j.jada.2010.07.003
- Parmer, S., Salisbury-Glennon, J., Shannon, D., & Struempfer, B. (2009). School Gardens: An Experiential Learning Approach for a Nutrition Education Program to Increase Fruit and Vegetable Knowledge, Preference, and Consumption among Second-grade Students. *Journal Of Nutrition Education And Behavior*, 41(3), 212-217. doi:10.1016/j.jneb.2008.06.002
- Pate, R. (2004). Physical Activity Among Children Attending Preschools. *PEDIATRICS*, 114(5), 1258-1263. doi:10.1542/peds.2003-1088-I
- Patrick, H., Nicklas, T., Hughes, S., & Morales, M. (2005). The benefits of authoritative feeding style: caregiver feeding styles and children's food consumption patterns. *Appetite*, 44(2), 243-249. doi:10.1016/j.appet.2002.07.001
- Pearson, N., Griffiths, P., Biddle, S., Johnston, J., McGeorge, S., & Haycraft, E. (2017). Clustering and correlates of screen-time and eating behaviours among young adolescents. *BMC Public Health*, 17(1). doi:10.1186/s12889-017-4441-2
- Perlman, D. (2013). The Influence of the Social Context on Students In-Class Physical Activity. *Journal Of Teaching In Physical Education*, 32(1), 46-60. doi:10.1123/jtpe.32.1.46
- Petrauskienė, A., Žaltauskė, V., & Albavičiūtė, E. (2015). Family socioeconomic status and nutrition habits of 7–8 year old children: cross-sectional Lithuanian COSI study. *Italian Journal Of Pediatrics*, 41(1). doi:10.1186/s13052-015-0139-1
- Pihu, M., Hein, V., Koka, A., & Hagger, M. (2008). How students' perceptions of teachers' autonomy-supportive behaviours affect physical activity behaviour: an application of the trans-contextual model. *European Journal Of Sport Science*, 8(4), 193-204. doi:10.1080/17461390802067679
- Piqueras-Fiszman, B., & Spence, C. (2014). Colour, pleasantness, and consumption behaviour within a meal. *Appetite*, 75, 165-172. doi:10.1016/j.appet.2014.01.004
- Pouliou, T., Sera, F., Griffiths, L., Joshi, H., Geraci, M., Cortina-Borja, M., & Law, C. (2014). Environmental influences on children's physical activity. *Journal Of Epidemiology And Community Health*, 69(1), 77-85. doi:10.1136/jech-2014-204287
- Reinwand, D., Crutzen, R., Storm, V., Wienert, J., Kuhlmann, T., de Vries, H., & Lippke, S. (2016). Generating and predicting high quality action plans to facilitate physical activity and fruit and vegetable consumption: results from an experimental arm of a randomised controlled trial. *BMC Public Health*, 16(1). doi:10.1186/s12889-016-2975-3
- Remington, A., Anñez, E., Croker, H., Wardle, J., & Cooke, L. (2011). Increasing food acceptance in the home setting: a randomized controlled trial of parent-administered taste exposure with incentives. *The American Journal Of Clinical Nutrition*, 95(1), 72-77. doi:10.3945/ajcn.111.024596
- Rhee, K. (2006). Parenting Styles and Overweight Status in First Grade. *PEDIATRICS*, 117(6), 2047-2054. doi:10.1542/peds.2005-2259
- Rhodes, R., & Smith, N. (2006). Personality correlates of physical activity: a review and meta-analysis. *British Journal Of Sports Medicine*, 40(12), 958-965. doi:10.1136/bjsm.2006.028860
- Roberto, C., Baik, J., Harris, J., & Brownell, K. (2010). Influence of Licensed Characters on Children's Taste and Snack Preferences. *PEDIATRICS*, 126(1), 88-93. doi:10.1542/peds.2009-3433
- Roberts, B., Walton, K., & Bogg, T. (2005). Conscientiousness and Health across the Life Course. *Review Of General Psychology*, 9(2), 156-168. doi:10.1037/1089-2680.9.2.156
- Roberts, L., Marx, J., & Musher-Eizenman, D. (2018). Using food as a reward: An examination of parental reward practices. *Appetite*, 120, 318-326. doi:10.1016/j.appet.2017.09.024

- Robinson-O'Brien, R., Story, M., & Heim, S. (2009). Impact of Garden-Based Youth Nutrition Intervention Programs: A Review. *Journal Of The American Dietetic Association*, 109(2), 273-280. doi:10.1016/j.jada.2008.10.051
- Rodenburg, G., Oenema, A., Kremers, S., & van de Mheen, D. (2012). Parental and child fruit consumption in the context of general parenting, parental education and ethnic background. *Appetite*, 58(1), 364-372. doi:10.1016/j.appet.2011.11.001
- Rollins, B., Loken, E., Savage, J., & Birch, L. (2014). Measurement of food reinforcement in preschool children. Associations with food intake, BMI, and reward sensitivity. *Appetite*, 72, 21-27. doi:10.1016/j.appet.2013.09.018
- Rome, E. (2011). Obesity Prevention and Treatment. *Pediatrics In Review*, 32(9), 363-373. doi:10.1542/pir.32-9-363
- Romieu, I., Dossus, L., Barquera, S., Blotière, H., Franks, P., & Gunter, M. et al. (2017). Energy balance and obesity: what are the main drivers?. *Cancer Causes & Control*, 28(3), 247-258. doi:10.1007/s10552-017-0869-z
- Rosi, A., Brighenti, F., Finistrella, V., Ingrosso, L., Monti, G., & Vanelli, M. et al. (2016). Giocampus school: a "learning through playing" approach to deliver nutritional education to children. *International Journal Of Food Sciences And Nutrition*, 67(2), 207-215. doi:10.3109/09637486.2016.1144720
- Rothman, A., Sheeran, P., & Wood, W. (2009). Reflective and Automatic Processes in the Initiation and Maintenance of Dietary Change. *Annals Of Behavioral Medicine*, 38(S1), 4-17. doi:10.1007/s12160-009-9118-3
- Ruiz, R., Gesell, S., Buchowski, M., Lambert, W., & Barkin, S. (2011). The Relationship Between Hispanic Parents and Their Preschool-Aged Children's Physical Activity. *PEDIATRICS*, 127(5), 888-895. doi:10.1542/peds.2010-1712
- Ryan, R., & Deci, E. (2000). Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being. *American Psychologist*, 55(1), 68-78. doi:10.1037//0003-066x.55.1.68
- Sallis, J., Conway, T., Prochaska, J., McKenzie, T., Marshall, S., & Brown, M. (2001). The association of school environments with youth physical activity. *American Journal Of Public Health*, 91(4), 618-620. doi:10.2105/ajph.91.4.618
- Salvy, S., de la Haye, K., Bowker, J., & Hermans, R. (2012). Influence of peers and friends on children's and adolescents' eating and activity behaviors. *Physiology & Behavior*, 106(3), 369-378. doi:10.1016/j.physbeh.2012.03.022
- Sanders, M., & Kirby, J. (2014). A Public-Health Approach to Improving Parenting and Promoting Children's Well-Being. *Child Development Perspectives*, 8(4), 250-257. doi:10.1111/cdep.12086
- Sawyer, A., Smith, L., Schrempft, S., van Jaarsveld, C., Wardle, J., & Fisher, A. (2014). Primary caregiver knowledge of paediatric physical activity recommendations in the United Kingdom and its association with caregiver behaviour: an observational study. *BMC Public Health*, 14(1). doi:10.1186/1471-2458-14-795
- Scaglioni, S., De Cosmi, V., Ciappolino, V., Parazzini, F., Brambilla, P., & Agostoni, C. (2018). Factors Influencing Children's Eating Behaviours. *Nutrients*, 10(6), 706. doi:10.3390/nu10060706
- Scaglioni, S., Salvioni, M., & Galimberti, C. (2008). Influence of parental attitudes in the development of children eating behaviour. *British Journal Of Nutrition*, 99(S1), S22-S25. doi:10.1017/s0007114508892471
- Schlam, T., Wilson, N., Shoda, Y., Mischel, W., & Ayduk, O. (2013). Preschoolers' Delay of Gratification Predicts their Body Mass 30 Years Later. *The Journal Of Pediatrics*, 162(1), 90-93. doi:10.1016/j.jpeds.2012.06.049
- Scholz, U., Schüz, B., Ziegelmann, J., Lippke, S., & Schwarzer, R. (2008). Beyond behavioural intentions: Planning mediates between intentions and physical activity. *British Journal Of Health Psychology*, 13(3), 479-494. doi:10.1348/135910707x216062

- Schuldheisz, J., & van der Mars, H. (2001). Active Supervision and Students' Physical Activity in Middle School Physical Education. *Journal Of Teaching In Physical Education*, 21(1), 75-90. doi:10.1123/jtpe.21.1.75
- Shariff, Z., Lin, K., Sariman, S., Lee, H., Siew, C., & Yusof, B. et al. (2015). The relationship between household income and dietary intakes of 1-10 year old urban Malaysian. *Nutrition Research And Practice*, 9(3), 278. doi:10.4162/nrp.2015.9.3.278
- Shea, B., Harvey-Berino, J., & Johnson, R. (2010). Watching television: how does it influence the dietary quality of children?. *Nutrition Bulletin*, 35(2), 165-171. doi:10.1111/j.1467-3010.2010.01819.x
- Sheeran, P. (2002). Intention—Behavior Relations: A Conceptual and Empirical Review. *European Review Of Social Psychology*, 12(1), 1-36. doi:10.1080/147927721430000003
- Shier, V., Nicosia, N., & Datar, A. (2016). Neighborhood and home food environment and children's diet and obesity: Evidence from military personnel's installation assignment. *Social Science & Medicine*, 158, 122-131. doi:10.1016/j.socscimed.2016.03.043
- Shilts, M., Horowitz, M., & Townsend, M. (2009). Guided goal setting: Effectiveness in a dietary and physical activity intervention with low-income adolescents. *International Journal Of Adolescent Medicine And Health*, 21(1). doi:10.1515/ijamh.2009.21.1.111
- Shloim, N., Edelson, L., Martin, N., & Hetherington, M. (2015). Parenting Styles, Feeding Styles, Feeding Practices, and Weight Status in 4–12 Year-Old Children: A Systematic Review of the Literature. *Frontiers In Psychology*, 6. doi:10.3389/fpsyg.2015.01849
- Siadat, Z., Jiryae, N., Zamani, A., & Taleban, R. (2015). Comparing of goal setting strategy with group education method to increase physical activity level: A randomized trial. *Journal Of Research In Medical Sciences*, 20(10), 987. doi:10.4103/1735-1995.172792
- Sichieri, R., Paula Trotte, A., de Souza, R., & Veiga, G. (2009). School randomised trial on prevention of excessive weight gain by discouraging students from drinking sodas. *Public Health Nutrition*, 12(2), 197-202. doi:10.1017/s1368980008002644
- Simmen, B., & Hladik, C. (1998). Sweet and Bitter Taste Discrimination in Primates: Scaling Effects across Species. *Folia Primatologica*, 69(3), 129-138. doi:10.1159/000021575
- Simmonds, M., Llewellyn, A., Owen, C., & Woolacott, N. (2015). Predicting adult obesity from childhood obesity: a systematic review and meta-analysis. *Obesity Reviews*, 17(2), 95-107. doi:10.1111/obr.12334
- Sniehotta, F., Schwarzer, R., Scholz, U., & Schüz, B. (2005). Action planning and coping planning for long-term lifestyle change: theory and assessment. *European Journal Of Social Psychology*, 35(4), 565-576. doi:10.1002/ejsp.258
- Somerset, S., & Markwell, K. (2009). Impact of a school-based food garden on attitudes and identification skills regarding vegetables and fruit: a 12-month intervention trial. *Public Health Nutrition*, 12(2), 214-221. doi:10.1017/s1368980008003327
- Stein, A., Rundle, A., Wada, N., Goldbohm, R., & Lumey, L. (2009). Associations of Gestational Exposure to Famine with Energy Balance and Macronutrient Density of the Diet at Age 58 Years Differ According to the Reference Population Used. *The Journal Of Nutrition*, 139(8), 1555-1561. doi:10.3945/jn.109.105536
- Stiglic, N., & Viner, R. (2019). Effects of screentime on the health and well-being of children and adolescents: a systematic review of reviews. *BMJ Open*, 9(1), e023191. doi:10.1136/bmjopen-2018-023191
- Strack, F., & Deutsch, R. (2004). Reflective and Impulsive Determinants of Social Behavior. *Personality And Social Psychology Review*, 8(3), 220-247. doi:10.1207/s15327957pspr0803\_1
- Styne, D., Arslanian, S., Connor, E., Farooqi, I., Murad, M., Silverstein, J., & Yanovski, J. (2017). Pediatric Obesity—Assessment, Treatment, and Prevention: An Endocrine Society Clinical Practice Guideline. *The Journal Of Clinical Endocrinology & Metabolism*. doi:10.1210/jc.2016-2573
- Suen, Y., Cerin, E., & Wu, S. (2015). Parental Practices Encouraging and Discouraging Physical Activity in Hong Kong Chinese Preschoolers. *Journal Of Physical Activity And Health*, 12(3), 361-369. doi:10.1123/jpah.2013-0123

- Sutin, A., Stephan, Y., Luchetti, M., Artese, A., Oshio, A., & Terracciano, A. (2016). The five-factor model of personality and physical inactivity: A meta-analysis of 16 samples. *Journal Of Research In Personality*, 63, 22-28. doi:10.1016/j.jrp.2016.05.001
- Taras, H., SALLIS, J., PATTERSON, T., NADER, P., & NELSON, J. (1989). Televisions Influence on Childrens Diet and Physical Activity. *Journal Of Developmental & Behavioral Pediatrics*, 10(4), 176-180. doi:10.1097/00004703-198908000-00003
- Thompson, O., Yaroch, A., Moser, R., Finney Rutten, L., & Agurs-Collins, T. (2010). School Vending Machine Purchasing Behavior: Results From the 2005 YouthStyles Survey. *Journal Of School Health*, 80(5), 225-232. doi:10.1111/j.1746-1561.2010.00494.x
- Trajkovik, V., Malinovski, T., Vasileva-Stojanovska, T., & Vasileva, M. (2018). Traditional games in elementary school: Relationships of student's personality traits, motivation and experience with learning outcomes. *PLOS ONE*, 13(8), e0202172. doi:10.1371/journal.pone.0202172
- Trang, N., Hong, T., Dibley, M., & Sibbritt, D. (2009). Factors Associated with Physical Inactivity in Adolescents in Ho Chi Minh City, Vietnam. *Medicine & Science In Sports & Exercise*, 41(7), 1374-1383. doi:10.1249/mss.0b013e31819c0dd3
- Traub, M., Lauer, R., Kesztyüs, T., Wartha, O., Steinacker, J., & Kesztyüs, D. (2018). Skipping breakfast, overconsumption of soft drinks and screen media: longitudinal analysis of the combined influence on weight development in primary schoolchildren. *BMC Public Health*, 18(1). doi:10.1186/s12889-018-5262-7
- True, L., Pfeiffer, K., Dowda, M., Williams, H., Brown, W., O'Neill, J., & Pate, R. (2017). Motor competence and characteristics within the preschool environment. *Journal Of Science And Medicine In Sport*, 20(8), 751-755. doi:10.1016/j.jsams.2016.11.019
- Turbutt, C., Richardson, J., & Pettinger, C. (2018). The impact of hot food takeaways near schools in the UK on childhood obesity: a systematic review of the evidence. *Journal Of Public Health*, 41(2), 231-239. doi:10.1093/pubmed/fdy048
- van Ansem, W., Schrijvers, C., Rodenburg, G., & van de Mheen, D. (2014). Maternal educational level and children's healthy eating behaviour: role of the home food environment (cross-sectional results from the INPACT study). *International Journal Of Behavioral Nutrition And Physical Activity*, 11(1). doi:10.1186/s12966-014-0113-0
- van der Horst, K., & Sleddens, E. (2017). Parenting styles, feeding styles and food-related parenting practices in relation to toddlers' eating styles: A cluster-analytic approach. *PLOS ONE*, 12(5), e0178149. doi:10.1371/journal.pone.0178149
- van der Horst, K., Oenema, A., Ferreira, I., Wendel-Vos, W., Giskes, K., van Lenthe, F., & Brug, J. (2006). A systematic review of environmental correlates of obesity-related dietary behaviors in youth. *Health Education Research*, 22(2), 203-226. doi:10.1093/her/cyl069
- Van Hoya, K., Boen, F., & Lefevre, J. (2012). The Effects of Physical Activity Feedback on Behavior and Awareness in Employees: Study Protocol for a Randomized Controlled Trial. *Int J Telemed Appl*. doi:10.1155/2012/460712
- Van Hoya, K., Boen, F., & Lefevre, J. (2015). The Impact of Different Degrees of Feedback on Physical Activity Levels: A 4-Week Intervention Study. *International Journal Of Environmental Research And Public Health*, 12(6), 6561-6581. doi:10.3390/ijerph120606561
- Van Hoya, K., Wijtzes, A., Lefevre, J., De Baere, S., & Boen, F. (2018). Year-round effects of a four-week randomized controlled trial using different types of feedback on employees' physical activity. *BMC Public Health*, 18(1). doi:10.1186/s12889-018-5402-0
- Ventura, A., & Worobey, J. (2013). Early Influences on the Development of Food Preferences. *Current Biology*, 23(9), R401-R408. doi:10.1016/j.cub.2013.02.037
- Verplanken, B. (2006). Beyond frequency: Habit as mental construct. *British Journal Of Social Psychology*, 45(3), 639-656. doi:10.1348/014466605x49122
- Videon, T., & Manning, C. (2003). Influences on adolescent eating patterns: the importance of family meals. *Journal Of Adolescent Health*, 32(5), 365-373. doi:10.1016/s1054-139x(02)00711-5
- Vollmer, R. (2019). Parental feeding style changes the relationships between children's food preferences and food parenting practices: The case for comprehensive food parenting



- interventions by pediatric healthcare professionals. *Journal For Specialists In Pediatric Nursing*, 24(1), e12230. doi:10.1111/jspn.12230
- Vollmer, R., & Mobley, A. (2013). Parenting styles, feeding styles, and their influence on child obesogenic behaviors and body weight. A review. *Appetite*, 71, 232-241. doi:10.1016/j.appet.2013.08.015
- Vollrath, M., Torgersen, S., & Torgersen, L. (2018). Associations of children's Big Five personality with eating behaviors. *BMC Research Notes*, 11(1). doi:10.1186/s13104-018-3768-9
- Webb, T., & Sheeran, P. (2006). Does changing behavioral intentions engender behavior change? A meta-analysis of the experimental evidence. *Psychological Bulletin*, 132(2), 249-268. doi:10.1037/0033-2909.132.2.249
- Weihrauch-Blüher, S., Schwarz, P., & Klusmann, J. (2019). Childhood obesity: increased risk for cardiometabolic disease and cancer in adulthood. *Metabolism*, 92, 147-152. doi:10.1016/j.metabol.2018.12.001
- Werthmann, J., Jansen, A., Havermans, R., Nederkoorn, C., Kremers, S., & Roefs, A. (2015). Bits and pieces. Food texture influences food acceptance in young children. *Appetite*, 84, 181-187. doi:10.1016/j.appet.2014.09.025
- Wilson, A., O'Connor, D., Lawton, R., Hill, P., & Roberts, B. (2015). Conscientiousness and fruit and vegetable consumption: exploring behavioural intention as a mediator. *Psychology, Health & Medicine*, 21(4), 469-475. doi:10.1080/13548506.2015.1093644
- Wood, W., & Neal, D. (2007). A new look at habits and the habit-goal interface. *Psychological Review*, 114(4), 843-863. doi:10.1037/0033-295x.114.4.843
- World Health Organisation. (2016). *Global Health Observatory data repository*. Retrieved from <http://apps.who.int/gho/data/view.main.BMIPLUS1C05-09v?lang=en>
- World Health Organisation/COSI. (2018). *Childhood Obesity Surveillance Initiative HIGHLIGHTS 2015-17*. Vienna. Retrieved from [http://www.euro.who.int/\\_\\_data/assets/pdf\\_file/0006/372426/WH14\\_COSI\\_factsheets\\_v2.pdf?ua=1](http://www.euro.who.int/__data/assets/pdf_file/0006/372426/WH14_COSI_factsheets_v2.pdf?ua=1)
- Xu, S., & Xue, Y. (2015). Pediatric obesity: Causes, symptoms, prevention and treatment. *Experimental And Therapeutic Medicine*, 11(1), 15-20. doi:10.3892/etm.2015.2853
- Yancey, A., Grant, D., Kurosky, S., Kravitz-Wirtz, N., & Mistry, R. (2011). Role Modeling, Risk, and Resilience in California Adolescents. *Journal Of Adolescent Health*, 48(1), 36-43. doi:10.1016/j.jadohealth.2010.05.001
- Yee, A., Lwin, M., & Ho, S. (2017). The influence of parental practices on child promotive and preventive food consumption behaviors: a systematic review and meta-analysis. *International Journal Of Behavioral Nutrition And Physical Activity*, 14(1). doi:10.1186/s12966-017-0501-3
- Zecevic, C., Tremblay, L., Lovsin, T., & Michel, L. (2010). Parental Influence on Young Children's Physical Activity. *International Journal Of Pediatrics*, 2010, 1-9. doi:10.1155/2010/468526
- Zhang, T., Solmon, M., Gao, Z., & Kosma, M. (2012). Promoting School Students' Physical Activity: A Social Ecological Perspective. *Journal Of Applied Sport Psychology*, 24(1), 92-105. doi:10.1080/10413200.2011.627083
- Zhang, T., Solmon, M., Kosma, M., Carson, R., & Gu, X. (2011). Need Support, Need Satisfaction, Intrinsic Motivation, and Physical Activity Participation among Middle School Students. *Journal Of Teaching In Physical Education*, 30(1), 51-68. doi:10.1123/jtpe.30.1.51