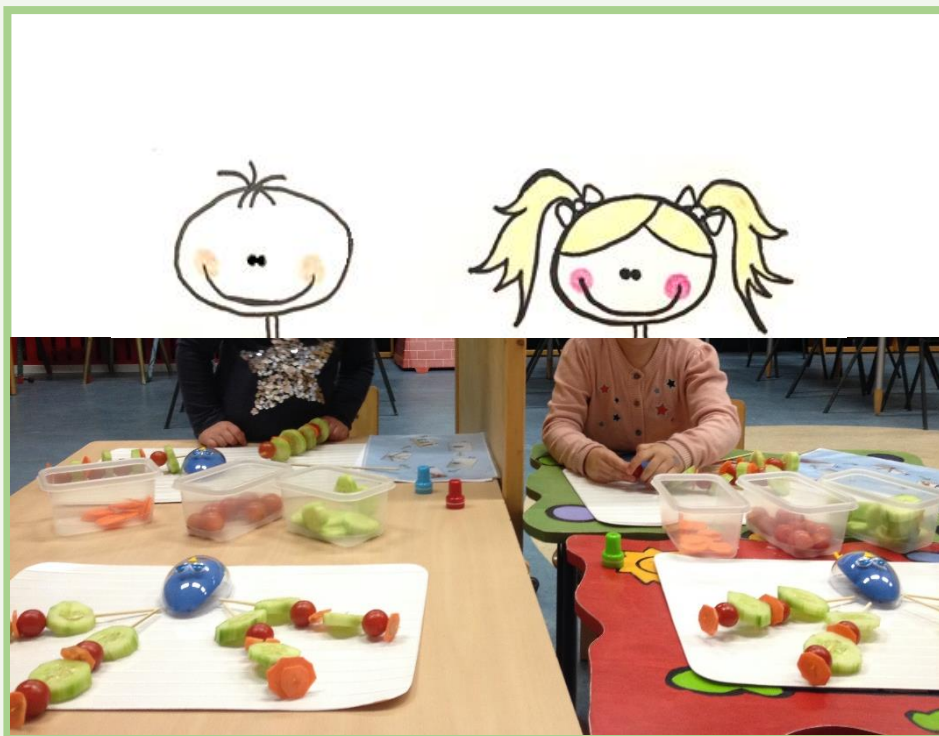


The impact of self-creating vegetable snacks on children's vegetable consumption

MSc Thesis Marketing and Consumer Behaviour



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Abstract

Objective: To examine (1) whether children aged four to six have an increased consumption of and liking for self-created vegetable snacks, rather than for vegetable snacks created by others; (2) whether the increase in consumption and liking of self-created vegetable snacks is mediated by perceived effort and pride.

Method: A between-subjects field experiment was conducted at an after school day care. Children in the experimental condition (N=40) created, consumed and evaluated their own vegetable snack and children in the control condition (N=40) created the same snack with non-food objects and consumed and evaluated a vegetable snack created by others. After the creation task, children's vegetable liking, perceived effort and perceived pride were measured. Children's consumption amount was determined ex post of the experiment.

Results: No main effect of the vegetable snack manipulation on consumption and liking of vegetables was observed. However, a marginally significant effect ($P=0.06$) of self-creating vegetable snacks on vegetable liking in girls was found. Perceived pride ($P=0.04$) and vegetable liking ($P=0.00$) significantly predicted vegetable consumption in children who created the vegetable snack oneself. Perceived pride ($P=0.054$) also marginally predicted vegetable liking in children who created the vegetable snack oneself. No significant effect was found for perceived effort.

Conclusion: Findings suggest that children do not have an increased consumption of self-created vegetable snacks. However, self-creating vegetable snacks seems to be a potentially effective strategy to increase vegetable liking in girls. Furthermore, vegetable consumption tends to increase when vegetable liking and personal feelings of pride associated with self-created vegetable snacks increases.

Preface

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1. Introduction

The intake of vegetables is of significant importance for the right growth and development of children (Centers for Disease Control and Prevention, 2014; Whitney & Rolfes, 2007). Vegetables contain vitamins, minerals and dietary fibres, which are important for the prevention of future chronic diseases, the strengthening of the immune system and the improvement of mental activities in children (Whitney & Rolfes, 2007). Despite these positive health effects of vegetable consumption, on average virtually none of the Dutch boys and girls in the age period four to six years meet the recommendations (Ocké et al., 2008). The Netherlands Nutrition Centre has recommended 100 to 150 grams vegetables per day for children in this age period (Voedingscentrum, 2011). However, the mean habitual consumption of Dutch girls is 41 grams per day and the mean habitual consumption of Dutch boys is 44 grams per day (Ocké et al., 2008). Instead, the consumption of saturated fatty acids is higher than recommended (Ocké et al., 2008). This may be caused by children's preference for fat and sweet (Liem & De Graaf, 2004), and their dislike of bitter tastes, like vegetables (Capaldi & Privitera, 2008; Drewnowski & Gomez-Carneros, 2000).

In response to children's aversion to bitter tastes several studies are aimed at promoting vegetable consumption in children by associating vegetables with a liked (sweet) flavour (Capaldi & Privitera, 2008; Havermans & Jansen, 2007). However, it is questioned whether sweetening vegetables actually leads to health benefits (Havermans & Jansen, 2007). Therefore, several studies are focused on increasing vegetable consumption in children without manipulating the taste. For instance, studies of Lakkakula, Geaghan, Zanovec, Pierce, and Tuuri (2010) and Wardle, Herrera, Cooke, and Gibson (2003) indicated repeated tasting of previously less-liked and unfamiliar vegetables as an effective strategy to improve children's liking of vegetables. Lately, a lot of research concerning vegetable consumption is focused on the involvement of children in meal preparation. Van der Horst, Ferrage, and Rytz (2014) have shown that involving children aged six to ten in cooking activities significantly increases their subsequent vegetable consumption. This result is in line with the outcome of a cross-sectional survey among 3398 children aged ten to eleven, which suggest that a higher frequency of participating in meal preparation is associated with a higher vegetable preference (Chu, Farmer, Fung, Kuhle, Storey, et al., 2013).

The positive effect of involving children in cooking activities on vegetable consumption may be explained by a broader trend in research investigating the psychology underlying consumer involvement. Nowadays consumers are viewed as co-creators of value, instead of recipients of value (Norton, Mochon, & Ariely, 2012; Vargo & Lusch, 2004). Experiments of Norton et al. (2012) showed that consumers have an increased valuation for self-created products compared to objectively similar not self-created products; they labelled this phenomenon the *IKEA-effect*. In other words, labour leads to love, but only when the task has been completed successfully (Norton et al., 2012). Several psychological mechanisms may be the drivers of the increase in valuation of self-created products, however the specific factors underlying the phenomenon are not yet known. Norton et al. (2012) suggested that the drivers vary by the type of product being created.

Research focused on the enhancement of vegetable consumption in children did not yet examined the effectivity of self-creating vegetable snacks aimed at children aged four to six. The application of this phenomenon seems to be a promising strategy to increase the vegetable consumption of children in this age period. Therefore, it is important to investigate the effectivity of self-creating vegetable snacks on vegetable consumption and to reveal the underlying psychological mechanisms. Assuming that this

will be known, policy makers could think of new strategies to enhance vegetable consumption in children in this age group. Furthermore, the present study will deliver a scientific contribution to the literature of the IKEA effect, as in this study the effect will be tested in a food context with children instead of adults.

The aim of the present study is to investigate whether children aged four to six have an increased valuation for self-created vegetable snacks compared to ready-made vegetable snacks and whether this impacts consumption. This will be done by means of a between-subjects field experiment in after school day cares. Furthermore, different mechanisms that may underlie the increase in valuation for self-created vegetable snacks will be elaborated upon. Particularly, *perceived effort* and *perceived pride* associated with self-created products are investigated as underlying psychological mechanisms. Because, focusing on perceived effort, Festinger (1962) demonstrated that the more effort consumers exert in a task, the more they will value it. Norton et al. (2012) also found evidence for this explanation. Focusing on perceived pride, Mochon, Norton, and Ariely (2012) showed that a higher valuation of self-created utilitarian products occurs, because of feelings of competence (pride) associated with these products.

Based on what has been discussed, the following research question is proposed:

“What is the impact of self-creating vegetable snacks on vegetable consumption and liking in children aged four to six and what psychological mechanisms underlie the effect of self-creating vegetable snacks on vegetable consumption?”

2. Theoretical framework

In this chapter the theoretical framework behind the effect of self-creating vegetable snacks on children's valuation of these vegetable snacks is discussed. It is demonstrated that developmental characteristics could significantly influence interventions designed to change food preferences and consumption (Zeinstra, Koelen, Kok, & De Graaf, 2007). Therefore, first the developmental characteristics of children aged four to six are described. In section 2.1 the development of food preferences is explained and section 2.2 focuses on the cognitive and social development. Next, in section 2.3, several strategies to improve vegetable consumption in children are highlighted. In more detail, key examples of studies that implicitly or explicitly investigated the effect of self-creating food products on consumers' valuation of these products are discussed. The co-creation of value is central in section 2.4, this section also described the general effect of self-creating products on consumers' valuation of these products. Norton et al. (2012) have labelled this phenomenon the *IKEA effect*, and has defined it as "consumers' willingness to pay more for self-created products than for identical products made by others" (Mochon et al., 2012). Several researchers have suggested and/or investigated psychological mechanisms that may underlie this phenomenon, these are discussed in section 2.5. Perceived effort and perceived pride are supposed to be the main underlying psychological mechanisms in the present study, therefore these mechanisms are explained in more detail. Finally, in section 2.6 the proposed conceptual model and corresponding hypotheses are presented.

2.1 Development of food preferences

As Table 1 depicts, the average habitual vegetable consumption in Dutch girls aged four to six is less than in Dutch boys in this age group (Ocké et al., 2008; Voedingscentrum, 2011), although several studies demonstrated that girls liked vegetables more than boys (Cooke & Wardle, 2005). For instance, a study among four to five year old British children and a study among nine to eleven year old French children showed that girls liked (raw) vegetables more than boys (Cooke & Wardle, 2005; Le Bigot Macaux, 2001; Wardle, Sanderson, Leigh Gibson, & Rapoport, 2001). However, across age groups and genders, all children indicated vegetables as their least liked food category and fatty and sugary foods as their most liked food category (Cooke & Wardle, 2005; Zeinstra et al., 2007). Not surprisingly, a negative association between vegetable consumption and dietary fat consumption is found (Birch & Fisher, 1998; Subar, Ziegler, Patterson, Ursin, & Graubard, 1994).

Table 1 - Recommended and habitual vegetable consumption of Dutch children aged four to six (Ocké et al., 2008; Voedingscentrum, 2011)

	4-6 year old boys	4-6 year old girls
Recommended vegetable consumption	100-150 grams a day	100-150 grams a day
Habitual vegetable consumption	44 grams a day	41 grams a day

Accordingly, several scientists have focused on the development of food preferences in children and confirmed that preference is an important determinant of food selection and consumption in children (Bere & Klepp, 2005; Birch, 1999; Zeinstra et al., 2007). Studies of Domel et al. (1996) and Resnicow et al. (1997) strengthened these findings, they investigated the influence of several psychological, social and demographic factors on vegetable consumption and found preference as the only significant predictor of vegetable consumption in primary school children. In accordance, results of a cross-sectional survey among children aged ten to eleven showed that children who indicated a higher liking for vegetables also indicated a significantly higher consumption of vegetables (Chu, Farmer, Fung, Kuhle, & Veugelers, 2013). In light of the present study, it is relevant to focus on the aspects that

influence the formation of food preferences in children (Birch & Fisher, 1998), as understanding the formation enhances the effectiveness of strategies aimed at promoting vegetable consumption. Therefore, the most relevant predispositions influencing the development of food preferences are discussed in the following sections. It is important to keep in mind that both genetic and environmental factors influence the formation of food preferences; genetic predispositions work conjointly with environmental factors (Birch, 1999).

2.1.1 Rejection of bitter and neophobia

Children have a genetic predisposition to prefer sweet and salty foods (Liem & De Graaf, 2004) and to reject bitter and sour foods, like vegetables (Capaldi & Privitera, 2008; Drewnowski & Gomez-Carneros, 2000). This genetic predisposition is a reflexive response to basic tastes, present at birth (Birch, 1999). Furthermore, children have a predisposition to reject novel foods, this relates to *neophobia*; neophobia is defined as “fear of the new” (Birch, 1999). When children are unfamiliar with a specific vegetable, they tend to reject this vegetable. However, neophobic reactions function in cooperation with learning mechanisms, which decline initial neophobic responses. This implies that children have a predisposition to learn preferences and aversions, they can learn to prefer new foods. When children have some experience with a specific vegetable, learning may turn the initial neophobic rejection of the vegetable into a preference (Birch, 1999).

2.1.2 Social context

Children also have a predisposition to learn preferences by associating foods with the (social) context. In a feeding context, the interaction between parent and child is significant in forming food preferences and consumption patterns of children. Especially parents’ child-feeding strategies may affect the formation of food preferences in children. For instance, restricting access to specific foods, or forbidding consumption of specific foods may affect children’s food preferences. Furthermore, offering foods as rewards for specific behaviour or offering rewards for consumption of specific foods may also affect food preferences in children (Birch, 1999). In a family environment, in which genetics plays a minor role (Rozin & Millman, 1987), similarities are found in the food preferences of child-mother, child-father and child-sibling. Similarities in food preferences between siblings were particularly pronounced. Parent-child resemblances are increased when children have reached adulthood (Birch, 1999; Pliner & Pelchat, 1986).

2.1.3 Post-ingestive consequences

Finally, children have a predisposition to learn preferences by associating the flavour of food with the post-ingestive consequences of eating them. This can be positive, a learned food preference, or negative, a learned food aversion. Learned food aversions are formed more quickly in comparison with learned food preferences and are less easily extinguished, since learned food aversions are formed as a consequence of pairing a specific food with illness and learned food preferences are formed as a consequence of pairing a specific food with the effect of normal eating, for instance the pleasant post-ingestive signals of normal satiety (Birch, 1999). Focusing on learned food preferences, a specific food can be paired with an already preferred flavour (positive flavour-flavour learning), like sweetened vegetables (Birch, 1999; Havermans & Jansen, 2007), or a specific food can be associated with the post-ingestive consequences of ingested nutrients (flavour-nutrient learning), like yoghurt high in energy and fat density (Birch, 1999; Johnson, McPhee, & Birch, 1991; Kern, McPhee, Fisher, Johnson, & Birch, 1993).

2.2 Development of children

Next to children's development of food preferences, it is also important to take children's cognitive, and social development into account, as children in different developmental stages think, decide and perceive food topics differently (Zeinstra et al., 2007). Children's perception about a specific food may have an impact on their preference, willingness to taste and whole eating experience (Oram, 1994; Zeinstra et al., 2007). Furthermore, children aged four to six have already learned how to be a consumer, for instance they already developed some decision making skills (John, 1999). This developmental process is called 'consumer socialization' and will also be discussed in more detail. In the following sections the most relevant developmental characteristics of children aged four to six are described.

2.2.1 Cognitive development

Piaget's cognitive development model is a widely acknowledged framework to describe the different successive stages of children's cognitive abilities. According to his theory, four main stages of cognitive development can be distinguished, children aged four to six belong to the preoperational stage (two to seven years) (Ginsburg & Oppen, 1988; John, 2008). Preoperational children tend to accept perception as reality and have the tendency to focus on a single dimension of a stimulus, this concept is called *centration* (John, 2008). Focusing on vegetables, children aged four to six are focused on the sensory attributes *appearance* and *texture* in making their judgments. These attributes are the most important determinants for liking and disliking in children aged four to six, while older children are focused on taste attributes (Zeinstra et al., 2007). However, taste attributes are still more important determinants than health attributes in the food selection of four to six year old children (Nguyen, Girgis, & Robinson, 2015).

Information processing theories provide further descriptions of children's cognitive abilities. From a consumer behavioural perspective, children can be grouped into one of three segments based on their information processing skills (Roedder, 1981). Children aged four to six belong to the segment limited information processors (birth to seven years). Their processing skills are under development and are not yet successfully applied in learning situations (John, 2008). Furthermore, preoperational children are limited in their logical thinking and verbal skills (Guinard, 2000; Resurreccion, 1998). Children aged four are preliterate and children aged five and six are either preliterate or may have primitive reading skills (Guinard, 2000; Kroll, 1990). Additionally, preoperational children have a short attention span and experience difficulties in task comprehension (Guinard, 2000; Resurreccion, 1998).

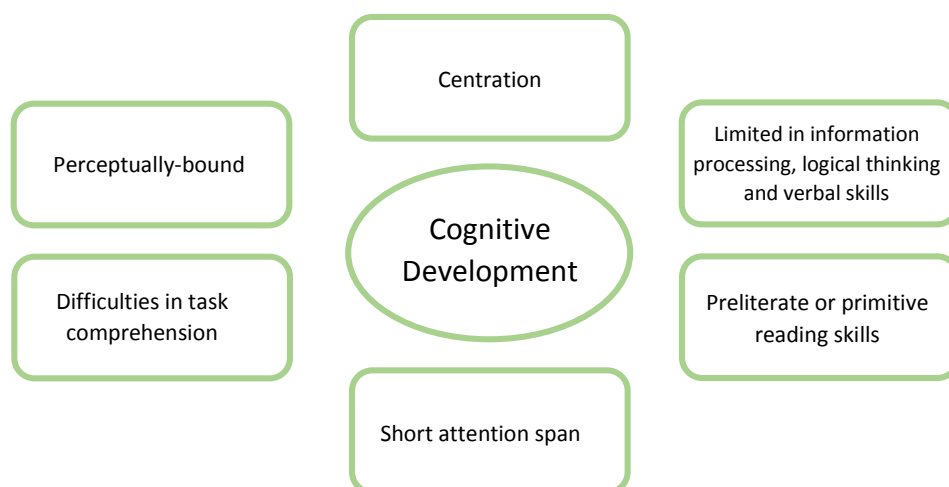


Figure 1 – Characteristics of cognitive development regarding children aged four to six

2.2.2 Social development

Social development include a broad area of topics. The present study is focused on social development from a consumer socialization perspective, therefore the topics *social perspective taking* and *impression formation* are discussed in more detail. According to John (2008), social perspective taking is defined as “the ability to see perspectives beyond one’s own” and impression formation is defined as “the ability to make social comparisons” (John, 2008). Selman (1980) have distinguished five developmental stages in social perspective taking. According to his framework, children aged four to six belong to the egocentric stage (three to six years), they are only aware of their own perspective (John, 2008; Selman, 1980). Focusing on impression formation abilities, Barenboim (1981) found that children before the age of six describe other people in concrete terms, without comparisons with other people, in which they mention physical appearances or overt behaviours. Six year old children belong to the behavioural comparison phase (six to eight years). In this phase children do incorporate comparisons with other people, based on concrete attributes or behaviours (Barenboim, 1981; John, 2008).

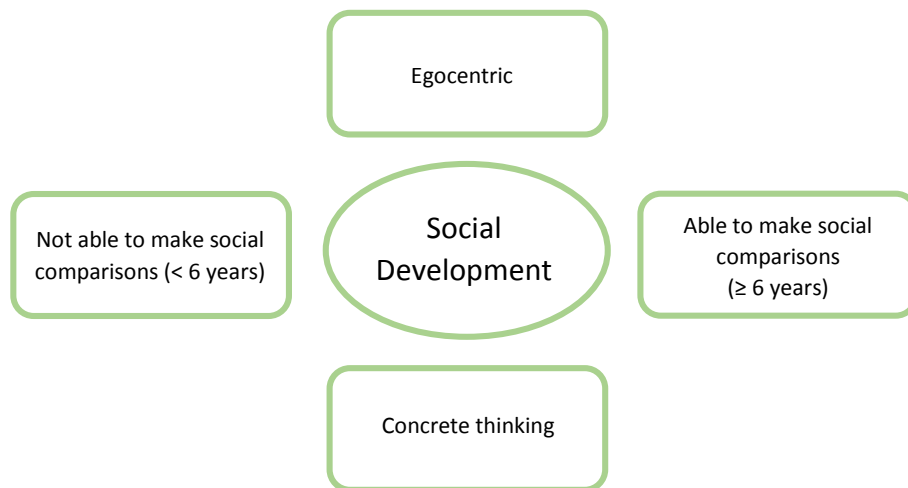


Figure 2 – Characteristics of social development regarding children aged four to six

2.2.3 Consumer socialization

Ward (1974) has defined the concept *consumer socialization* as “processes by which young people acquire skills, knowledge, and attitudes relevant to their functioning as consumers in the marketplace”. According to John (2008), consumer socialization can be considered as a developmental process including three successive stages. Children aged four to six belong to the perceptual stage (three to seven years). As consumer socialization take place in the context of cognitive and social developments, many of the cognitive and social characteristics described in section 2.2.1 and 2.2.2 hold true for the knowledge structures and decision-making skills of children in the perceptual stage. Focusing on knowledge structures, consumer knowledge of children aged four to six is based on perceptually salient single attributes and is represented in terms of concrete details based on their own observations. Focusing on decision-making skills, children aged four to six base their decisions on very limited information, generally based on a perceptually salient single attribute. Decision making skills are hardly modified to fit different situations (John, 2008).

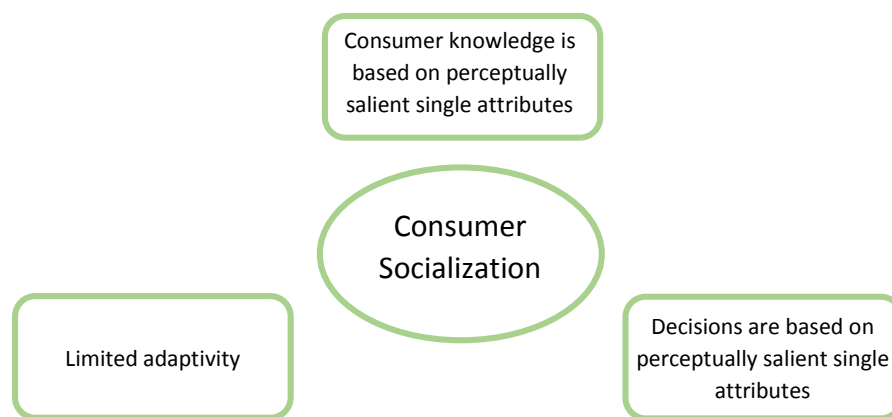


Figure 3 – Characteristics of consumer socialization regarding children aged four to six

2.3 Strategies to improve vegetable consumption

Many studies are aimed at promoting vegetable consumption in children by manipulating the aspects that influence the formation of food preferences, while keeping the cognitive and social development of children in mind. For instance, different research studies have focused on manipulating the often disliked bitter taste of vegetables by associating vegetables with a liked (sweet) flavour (Capaldi & Privitera, 2008; Havermans & Jansen, 2007). This line of research responds to children's genetic predispositions to prefer sweet and to reject bitter tastes in combination with children's ability to learn food preferences. Another line of research is directed at children's predisposition to reject novel foods (Birch, 1999). Several scholars showed that repeated tasting of previously less-liked and unfamiliar vegetables decreased neophobia in children (Lakkakula et al., 2010; Wardle et al., 2003). Lately, a new trend in research concerning the promotion of vegetable consumption has been identified. Several studies are focused on the involvement of consumers in meal preparation. It is shown that consumers are willing to consume more from food products they were involved in than from identical food products made by others (Chu, Farmer, Fung, Kuhle, Storey, et al., 2013; Chu, Storey, & Veugelers, 2013; Dohle, Rall, & Siegrist, 2014; Van der Horst et al., 2014). This field of research is in line with the research aim of the present study, investigating the impact of self-creating vegetable snacks on children's vegetable consumption. Therefore, in the following sections, three studies about the effect of involving consumers in meal preparation are described. An overview of the studies is presented in Table 2.

2.3.1 Involvement in meal preparation study 1

In adults, Dohle et al. (2014) found that the mere act of preparing food resulted in a higher liking and consumption quantity of the food, they labelled this phenomenon as the *I cooked it myself* effect. Participants liked self-prepared food more than food prepared by others which led to a higher consumption quantity. In other words, the effect is mediated by liking. The study, a between-subjects experiment, only included adults and tested the manipulation with high-calorie milkshakes. Participants in the experimental condition (n=30) consumed self-prepared milkshakes, prepared according to a given recipe, and participants in the control condition (n=30) consumed ready-to-drink milkshakes, prepared according to the same recipe (Dohle et al., 2014). Results indicated that, next to a higher liking and consumption quantity, self-created milkshakes were also considered to be more natural than ready-to-drink milkshakes (Dohle et al., 2014). In conclusion, Dohle et al. (2014) showed that self-preparing food positively changed the sensory experience of food.

Focusing on the high-calorie food stimuli offered in the study of Dohle et al. (2014), preparing food may stimulate overconsumption, which could have negative health consequences. The energy intake

of participants in the experimental condition was approximately 82 calories more than the energy intake of participants in the control condition (Dohle et al., 2014). However, the same effect may generate positive health effects when offering vegetables as food stimuli. A study of Hartmann, Dohle, and Siegrist (2013) showed a positive correlation between cooking skills and weekly vegetable consumption in adults. They suggested that cooking skills may help consumers to meet their daily recommendations. Therefore, Hartmann et al. (2013) stressed the importance of learning children how to cook, in order to improve their vegetable consumption. Several multi-component interventions, in which cooking lessons were part of the intervention indeed indicated an increased vegetable consumption (Cullen, Watson, Zakeri, Baranowski, & Baranowski, 2007; Perez-Rodrigo & Aranceta, 1997). However, due to the combination of activities (multi components), separated effects of the components could not be evaluated. Therefore, Van der Horst et al. (2014) experimentally investigated whether involving children in cooking activities increased their food and vegetable consumption, results are presented in the next section.

2.3.2 Involvement in meal preparation study 2

The study of Van der Horst et al. (2014) showed that involving children in cooking activities significantly increased their subsequent vegetable consumption. The design was a between-subject experiment, and included children aged six to ten, they were assisted by their parent. In the experimental condition (n=25) children prepared a lunch meal with help from their parent and in the control condition (n=22) children were present in the kitchen doing something else while their parent prepared the meal. According to a given recipe booklet, participants prepared pasta with breaded chicken strips and cooked cauliflower conforming to a fixed amount and method. In addition, participants prepared a mixed salad as a side dish, the amount was not fixed and participants could choose themselves one or two vegetable sorts out of three options (lettuce, bell pepper and cucumber) (Van der Horst et al., 2014). After cooking, parent and child consumed standardised plates of their prepared meal together. Results particularly demonstrated large effects on salad consumption; participants in the experimental condition consumed 76.1% more salad than participants in the control condition. Therefore, Van der Horst et al. (2014) argued that involving children aged six to ten in a single session of meal preparation significantly increases vegetable consumption. However, also in this experiment, involving children in unhealthy meal preparation might have negative health consequences. Next to an increased vegetable consumption, a significant effect on chicken consumption was found (Van der Horst et al., 2014).

Furthermore, Van der Horst et al. (2014) investigated whether emotions and time involved in meal preparation could explain the effect on consumption. Focusing on the role of emotions, involvement significantly increased feelings of dominance (feeling in control) and valence (feeling positive) between before and directly after cooking. Moreover, children involved in cooking activities indicated significantly higher levels of valence after cooking than children in the control condition. This suggests the importance of emotions in explaining the effect of children's involvement in meal preparation on vegetable consumption. Focusing on the role of time involved in cooking activities, Van der Horst et al. (2014) demonstrated positive correlations between the overall measure of time involved in cooking and (i) eating duration and (ii) overall meal liking. However, no significant correlation was found between time spent cooking the various meal components and the consumption quantity of these components. Therefore, no exposure-response effect can be indicated (Van der Horst et al., 2014). From a critical stance, it is relevant to notice that children's hunger state before consumption is not taken into account in this experiment, which could have influenced the results. Furthermore, the data for examining the mere effect of involving children in cooking activities on their vegetable liking is collected, but the results are not included in the report.

2.3.3 Involvement in meal preparation study 3

Results of Van der Horst et al. (2014) are in line with the outcome of a cross-sectional survey, part of The Raising healthy Eating Active Living kids in Alberta project, tested among children aged ten to eleven. As part of this project, Chu, Farmer, Fung, Kuhle, Storey, et al. (2013) investigated the association between frequency of helping in cooking activities and (i) vegetable and fruit preference and (ii) self-efficacy for selecting and eating healthy foods. The concept *preference* is assessed by measuring participant's liking of vegetables and fruits, comparable to liking measurements of Van der Horst et al. (2014). The concept *self-efficacy* is assessed by measuring participant's level of confidence for making healthier food choices. Results showed that frequency of involvement in cooking activities is associated with a higher vegetable and fruit preference. This association seemed to be stronger in vegetable preference; assisting in home cooking activities several times a day induced approximately a 10% higher vegetable preference. Also, frequency of assisting in home cooking activities is associated with a higher self-efficacy for making healthier food choices. In other words, children who are more frequently involved in home cooking activities showed increased confidence in their ability to make healthier food choices. Because of these associations, it is possible that vegetable and fruit preference and self-efficacy are mediators in the relationship between involvement in cooking activities and consumption of healthier diets, however this cannot be inferred from cross-sectional surveys. In conclusion, encouraging children to be more involved in cooking activities could lead to improved dietary habits (Chu, Farmer, Fung, Kuhle, Storey, et al., 2013).

As part of the same project, Chu, Storey, et al. (2013) analysed the outcome of the cross-sectional survey among children aged ten to eleven from a different perspective. They demonstrated that a higher frequency of involvement in home meal preparation is positively associated with a higher diet quality among children aged ten to eleven. Children involved in home cooking activities at least once per week had a higher diet quality compared with children who were never involved in home cooking activities (Chu, Storey, et al., 2013). The concept *overall diet quality* is assessed based on four aspects: variety, adequacy, moderation and overall balance (Liang, Kuhle, & Veugelers, 2009). Furthermore, children who at least once daily were involved in cooking activities consumed one serving of vegetables and fruit more per day compared with children who were never involved in cooking activities. Same patterns are found for energy intake, children involved in cooking activities at least once a day consumed 245 kcal more in comparison with children who were never involved in cooking activities. However, it is not clearly stated which type of foods induced the increase in energy intake (Chu, Storey, et al., 2013). From a critical stance, analyses of Chu, Farmer, Fung, Kuhle, Storey, et al. (2013) and Chu, Storey, et al. (2013) are limited in the use of self-reported information, collected from children (at school) and their parents (at home). Furthermore, the survey question about frequency of involvement in home meal preparation is not validated and there is no specified information gathered about the type of foods used and the type of cooking activities (Chu, Storey, et al., 2013).

Table 2 - Overview of studies examining consumer involvement in meal preparation

Study	Manipulation	Measurement	Sample	Key findings
(Dohle et al., 2014)	The independent variable 'high caloric milkshake' is manipulated with two levels: self-prepared versus other-prepared	Consumption quantity; Energy intake; Liking; Naturalness; Energy content; Appetite ^a ; Age ^a ; Gender ^a	N=60; 28 male, Mage=24	Self-preparation positively influences consumption quantity, energy intake, liking and naturalness ratings. No difference in calorie estimation was found between both conditions
(Van der Horst et al., 2014)	The independent variable 'lunch meal' is manipulated with two levels: self-prepared (child) versus other-prepared (parent)	Consumption quantity; Energy intake; Liking; Pleasure, arousal and dominance; Behavioural observations; Other measurements for recruitment; Age ^a ; Gender ^a	Children: N=47; 23 male, Mage=8.34 Parents: N=47; 7 male, Mage=40	Self-preparation positively influences consumption quantity, energy intake, pleasure and dominance. No difference in arousal was found between both conditions. Time spent cooking positively influences eating duration and overall meal liking
The Raising healthy Eating Active Living kids in Alberta project:				
(Chu, Farmer, Fung, Kuhle, Storey, et al., 2013)		Frequency of involvement in home meal preparation ^b ; Liking; Self-efficacy; Annual household income ^{ab} ; Parental education attainment ^{ab} ; Geographic residency ^{ab} ; Gender ^{ab}	Schools: N=151 Children: N=3.398; 1.665 male	Higher frequency of involvement in home meal preparation positively influences (i) vegetable and fruit preference and (ii) self-efficacy for making healthier food choices
(Chu, Storey, et al., 2013)		Energy intake ^a ; Food group intake; Overall diet quality		Higher frequency of involvement in home meal preparation positively influences diet quality

^a Control variables.

^b Same measurements are used in analyses of Chu, Storey, et al. (2013).

2.4 Co-creation of value

As discussed in section 2.3, many studies are aimed at promoting vegetable consumption in children by manipulating the aspects that influence the formation of food preferences in children. From this perspective, the effect of meal preparation on consumption may be explained by the social aspect of meal preparation. For instance, in experiments of Van der Horst et al. (2014) children cooked together with their parent, which could have had an influence on liking and consumption. However, Dohle et al. (2014) excluded social aspects in their study design and also showed a significant increase in liking and consumption. Another explanation could be the familiarity effect, although the youngest participants (aged six to ten) in the presented studies were already familiar with a lot of foods, either raw or cooked. Therefore, familiarity effects were probably small (Van der Horst et al., 2014).

It is suggested that a broader trend in marketing could explain the effect of meal preparation on consumption. Namely, in the past few decades the goods-dominant logic for marketing has evolved into a service-dominant logic for marketing in which the co-creation of value is central. Nowadays, value is co-created with and determined by consumers (value-in-use), instead of embedded in the manufacturing process (Lusch, Vargo, & O'Brien, 2007; Vargo & Lusch, 2004). This mechanism, creating value in use, is implemented in several marketing strategies. For instance, the co-creation of value is

pivotal in the marketing concept of the Swedish manufacturer IKEA, in which assembly of the consumer is required for products to arrive (Norton et al., 2012). Focusing on a food context, several product successes, for example the success of instant cake mixes, may be ascribed to the labour consumers have to put into the preparation of the food (Dohle et al., 2014; Norton et al., 2012). From this perspective, the effect of involving children in meal preparation on consumption could be explained by the trend *co-creation of value*. In line with this trend, several scholars have investigated the mere effect of self-creating products on consumers' valuation of these products, this is discussed in the next section.

2.4.1 Effect of self-creating products on product valuation

Recently, Norton et al. (2012) investigated the effect of self-creating products on consumers' valuation of these products. In four experiments they demonstrated the existence and magnitude of a phenomenon which support the idea of value creation in use. This phenomenon, labelled the *IKEA effect*, is defined as "consumers' willingness to pay more for self-created products than for identical products made by others" (Mochon et al., 2012; Norton et al., 2012). The *I cooked it myself effect* introduced by Dohle et al. (2014) and presented in section 2.3.1 is analogous to the IKEA effect, but applied in a food context. Their findings extend the literature of the IKEA effect, as their experiments have shown that labour resulted in a higher consumption amount, next to a higher willingness to pay. In the study of Van der Horst et al. (2014), presented in section 2.3.2, the IKEA effect is also mentioned as an explanation for the increase in vegetable consumption in children who were involved in cooking activities.

These results are more or less in concordance with findings of Franke and Piller (2004) and Franke and Schreier (2010). They showed that allowing consumers the opportunity to customize respectively watches and scarves to their individual preferences generates additional value. In other words, they are willing to pay more for their self-designed products compared to their standard counterparts, even when simple customisation toolkits were used. Schreier (2006) further examined this effect and found that the increased valuation of self-designed products can be seen as a general phenomenon. Franke, Schreier, and Kaiser (2010) have labelled this phenomenon as the *I designed it myself effect*. Customisation plays a significant role in this effect. Therefore, Franke and Piller (2004), Schreier (2006), Franke and Schreier (2010) and Franke et al. (2010) have tested the effect with more hedonic products using a mass customisation approach.

The *I designed it myself effect* differs from the *IKEA effect* in that the opportunity for customisation is excluded in the IKEA effect. The present study is concentrated on more utilitarian products (vegetables) and the opportunity for customisation is also excluded. In contrast with the involvement studies presented in section 2.3, the focus is on the mere effect of self-creating vegetable snacks instead of involving children in the creation process. Thus, social aspects are excluded in the present study, only the mere effect of self-creating vegetable snacks on vegetable consumption is pivotal. This is largely in line with experiments performed by Norton et al. (2012), they have tested the mere effect of self-creating hedonic as well as utilitarian products on consumers' valuation of these products. Thereby they excluded the opportunity for customisation by providing instruction sheets. These experiments are considered in more detail in the next section, in order to offer a greater understanding of the phenomenon in which consumers attribute an increased value to self-created products.

2.4.2 IKEA effect

An overview of the four experiments conducted by Norton et al. (2012) is presented in Table 3. In all experiments, value increment is measured with the concepts liking and/or willingness-to-pay. *Willingness-to-pay* refers to "the maximum price consumers are willing to pay for a product" (Franke & Schreier, 2010; Wertenbroch & Skiera, 2002). Several techniques are used to measure willingness-

to-pay, nonetheless in all experiments actual buying behaviour is measured (Franke & Schreier, 2010; Norton et al., 2012). Experiment 1A showed that the valuation of self-created utilitarian products is higher than the valuation of similar not self-created products; participants were willing to pay more for and had a greater liking of their self-created utilitarian products. In this experiment, the opportunity for customisation was excluded, which implies that the increase in valuation due to labour is not attributable to customisation. In experiment 1B the effect of experiment 1A is replicated with more hedonic products and showed that the IKEA effect is large enough; consumers believe that their self-created products compete those of experts. Thus, consumers place a higher value on both utilitarian and hedonic self-created products. Furthermore, they view their own creations as more valuable than others do when they evaluate their creations. It is even possible that labour leads to a lower valuation by others. Experiment 2 showed the importance of task completion for the link between labour and liking to emerge. The IKEA effect is dissipated when consumers build and then ‘unbuild’ their creations. Experiment 3 have confirmed this result; effort without a successful completion, in this case an incomplete product, does not increase valuation of self-created products. Thus, labour alone is not enough, a successful completion of self-created products is required for the link between labour and love to emerge. In all experiments participants created the products according to an instruction sheet (Norton et al., 2012).

Table 3 - Four experiments conducted by Norton et al. (2012)

Experiment	Manipulation	Measurement	Sample	Key findings
1A	Participants in the builders condition assembled an IKEA box and participants in the non-builders condition received a pre-assembled IKEA box and inspected it	Willingness-to-pay (WTP) and liking	N=52; 20 male, Mage= 19.9	Builders were willing to pay a 63% premium and had a greater liking of the IKEA box than non-builders
1B	Participants in the builders condition assembled with origami and indicated their WTP for their own creation. A set of participants in the non-builders condition indicated their WTP for builders’ origami and another set of participants in the non-builders condition indicated their WTP for experts’ origami	WTP	N=106; 71 male, Mage= 23.4	WTP of builders for their own origami creation was nearly five times higher than WTP of non-builders for the builders’ origami creation. WTP of builders for their own creation was nearly as much as non-builders’ WTP for experts origami
2	In pairs participants were randomly assigned to a prebuilt condition (prebuilt set of Lego), build condition (self-building a set of Lego), or unbuilt condition (self-building and unbuilding a set of Lego). Participants had to indicate their WTP for their own and partners set of Lego	WTP	N=118; 49 male, Mage= 19.7	WTP was highest in the build condition compared to the unbuilt and prebuilt condition. Participants’ WTP was twice as high for their own set of Lego than for their participants’ set of Lego. This difference become non-significant in the unbuilt condition
3	Participants in the builders condition had to create an IKEA storage box and participants in the incomplete builders condition received the same unassembled box, but were instructed to stop before completing the last two steps	WTP and the extent to which they were a do-it-yourself person (DIYer)	N=39; 16 male, Mage= 21.5	Both groups could buy the identical product, however builders’ WTP was higher than the WTP of incomplete builders. This effect was found for both DIYers and non-DIYers

2.5 Underlying psychological mechanisms

From the experiments described in section 2.4 it is evident that consumers place a higher value on self-created products compared to other-created products. However, the psychological mechanisms that underlie the increase in valuation are yet unclear. In light of the present study, assuming that children will consume more from their self-created vegetable snacks, it is relevant to reveal the psychological mechanisms that underlie the increase in consumption and liking. Recently several researchers have focused on the more general matter of self-creating products (Franke & Schreier, 2010; Franke et al., 2010; Mochon et al., 2012; Norton et al., 2012), still it seems to be an ongoing research question. Norton et al. (2012) suggested that the role of the underlying psychological mechanisms may vary by the type of product being created. Focusing on food products, several scholars have investigated presumed psychological mechanisms that may underlie the effect of involving consumers in meal preparation on their subsequent consumption. They found liking, positive emotions, self-efficacy, time involved in meal preparation and effort made in meal preparation as potential underlying psychological mechanisms (Chu, Farmer, Fung, Kuhle, Storey, et al., 2013; Dohle et al., 2014; Van der Horst et al., 2014). Some of these underlying psychological mechanisms are also suggested and/or investigated in relation to the effect of self-creating products on consumers' valuation of these products. In the following sections the underlying psychological mechanisms related to self-creating products are discussed.

2.5.1 Perceived preference fit

Several scholars have pointed *perceived preference fit* as the main factor that generate value (Dellaert & Stremersch, 2005; Franke, Keinz, & Steger, 2009; Franke & Schreier, 2010; Randall, Terwiesch, & Ulrich, 2007). Perceived preference fit refers to “consumers' subjective evaluation of the extent to which the product's features correspond to their preference system” (Franke & Schreier, 2010). In other words, when manipulable product features are of any importance to consumers, their self-designed products would show a greater preference fit than their standard counterparts, which lead to a higher value for the consumer (Franke & Hippel, 2003; Franke & Schreier, 2010). Focusing on a food context, the study of Van der Horst et al. (2014) presented in section 2.3.2 found supportive evidence for this underlying mechanism. They found that providing participants more freedom and choice in the preparation of meal components had a positive effect on consumption (Van der Horst et al., 2014). Participants were given the opportunity to customise meal components to their preferences, which could have increased feelings of autonomy and subsequently could have strengthened the effect on consumption (Domínguez et al., 2013; Van der Horst et al., 2014; Zeinstra, Renes, Koelen, Kok, & de Graaf, 2010). However, as presented in section 2.4.2, consumers still attribute an increased value to self-created products when the opportunity for customisation is excluded, which implies that perceived preference fit did not had a significant impact on the outcome (Norton et al., 2012). In the present study the opportunity for customisation is also excluded. Perceived preference fit and other product-related factors emanating from customisation, like perceived product uniqueness, are therefore not taken into consideration as underlying psychological mechanisms (Franke & Schreier, 2008; Schreier, 2006).

2.5.2 Perceived process enjoyment

Perceived enjoyment of self-designing a product, labelled process enjoyment, is also indicated as a value-generating effect (Franke & Schreier, 2010). *Process enjoyment* refers to “a positive affective reaction elicited by the process of self-designing the product” (Franke & Schreier, 2010). Self-designing in this case means that consumers can customize product features to their unique preferences (Franke & Hippel, 2003; Franke & Schreier, 2010). Thus, process enjoyment is a process-related factor emanating from customisation. Franke and Schreier (2010) demonstrated that a high perceived process enjoyment of self-designing a product positively influences the value consumers attribute to

their self-designed product (Franke & Schreier, 2010; Pham, 1998). In addition, Franke and Schreier (2010) found a significant interaction effect between perceived preference fit and perceived process enjoyment. When consumers successfully manage to self-design a product to their preferences (high perceived preference fit), perceived process enjoyment generates a higher valuation of the product. This effect is weaker in case of lower perceived preference fit (Franke & Schreier, 2010). Focusing on a food context, Van der Horst (2012) found a positive significant correlation between children's cooking enjoyment and eating enjoyment. Again, the present study do not offer the opportunity for customisation. Although the process of self-creating products without the opportunity for customisation could also elicit a positive affective reaction, perceived process enjoyment is not a potential underlying psychological mechanism in the present study. Because, this mechanism is focused on the enjoyment consumers experience during the self-designing process (Franke & Schreier, 2010).

2.5.3 Perceived effort

Van der Horst et al. (2014) and Norton et al. (2012) suggested *effort justification* as an underlying psychological process by which consumers attribute higher valuations to self-created products. This mechanism, focused on the creation process, predicts that the more effort consumers exert in a task, the more they will value it (Festinger, 1962). In other words, effort may increase consumers' valuation in lockstep (Norton et al., 2012). This can be explained by the fact that individuals strive toward internal consistency. When individuals hold contradictory cognitions at the same time, they feel psychologically uncomfortable and become motivated to reduce the inconsistency (dissonance). In this case, it is suggested that consumers justify their effort by increasing their valuation of self-created products, in this way they achieve internal consistency. This often unconscious process is labelled as *cognitive dissonance*, and may occur by new events or when decisions need to be made (Festinger, 1962).

Norton et al. (2012) suggested that *successful task completion* is essential for the effect to emerge and hypothesised that effort without completion does not lead to overvaluation. As already shown in section 2.4.2, the effect indeed dissipated when consumers did not completed their task. Thus, it is proposed that the psychological mechanism effort justification underlies the relationship between self-created products and an increased liking/willingness-to-pay, only when the task is completed successfully (Norton et al., 2012). The importance of successful task completion emanate from a human need for effectance, which refers to "an ability to successfully produce desired outcomes in one's environment" (Mochon et al., 2012; Norton et al., 2012). Controlling and affecting objects is a way to fulfil this need, again only when the task is completed successfully (Belk, 1988; Norton et al., 2012).

In the present study, conform the theory of cognitive dissonance, it is expected that children want to justify their effort made in creating the vegetable snack by showing an increased consumption of and liking for their self-created vegetable snack, even though they actually do not want to consume that amount of the vegetable snack and had a lower liking of the vegetable snack. In this way, they have reduced the inconsistency (dissonance) by changing their cognition about the vegetable snack and thus by showing an increased consumption of and liking for their self-created vegetable snack. In this study, effort justification is referred to as *perceived effort*, as it is assessed ex post of the creation task. Thus, it is proposed that the psychological mechanism perceived effort underlie the effect of self-creating vegetable snacks on children's valuation of these snacks. It is required that children complete their task successfully, otherwise the effect will disappear.

2.5.4 Perceived pride

Recently, several studies have considered *perceived pride* as an underlying psychological mechanism. Because, self-created products may evoke feelings of pride in consumers (Franke & Schreier, 2010; Franke et al., 2010; Mochon et al., 2012; Norton et al., 2012). Mochon et al. (2012) have focused on this psychological mechanism and demonstrated that feelings of competence associated with successful self-created mundane products significantly mediated the effect of creation on valuation. Consumers (adults) who created products themselves perceived higher feelings of competence and were willing to pay more for their products than consumers who received the same product created by others (Mochon et al., 2012). They operationalized feelings of competence as “consumers’ feelings of pride about their own creations” and measured feelings of competence in terms of pride (Mochon et al., 2012). This measure incorporate two correlated constructs, namely *personal feelings of pride* and *consumers’ desire to show off their creations to others*, the relative contribution of these two types of competence varies by context (Mochon et al., 2012). Mochon et al. (2012) further demonstrated the critical role of pride in the creation process by manipulating consumers’ need to signal competence. They showed that the effect of competence also functions as a moderator, because affirming consumers’ sense of self reduces the value they derive from their self-created mundane products and threatening consumers’ sense of self increases their willingness to create mundane products themselves (Mochon et al., 2012). Again, successful task completion is crucial, as successful completion evoke positive affect and failing to complete a task evoke negative affect (McFarland & Ross, 1982; Norton et al., 2012).

Focusing on studies applied in a food context, results of Van der Horst et al. (2014) indicated that children aged six to ten enjoyed cooking because cooking stimulates positive feelings, like pride (Heim, Stang, & Ireland, 2009). Furthermore, they hypothesized that when children are able to create products independently feelings of pride will increase (Schreier, 2006; Van der Horst et al., 2014). This is reasonable, as children often experience pride after succeeding a new task (Tracy & Robins, 2007). For instance, a garden pilot project designed to promote fruit and vegetable consumption in children aged nine to twelve showed that the intervention activities generated feelings of ownership and pride, which subsequently increased the fruits and vegetables consumption and preference in children (Heim et al., 2009). As all children in the above mentioned studies were above the age of two, all children were able to experience feelings of pride. The children were also above the age of four, from this age children are able to recognize pride at above-chance levels and could distinguish it from expressions of happiness and surprise (Tracy, Robins, & Lagattuta, 2005).

Based on these literature and the fact that people have an innate psychological need to feel competent and that creation tasks may fulfil this need (Franke & Schreier, 2010; Gagné & Deci, 2005; Ryan & Deci, 2000), perceived pride is proposed to be a psychological mechanism that underlie the effect of self-creating vegetable snacks on children’s valuation of these snacks. Again, it is required that children complete their tasks successfully for the effect to emerge.

2.6 Hypotheses and conceptual model

In the present study the following research question is central: *“What is the impact of self-creating vegetable snacks on vegetable liking and consumption in children aged four to six and what psychological mechanisms underlie the effect of self-creating vegetable snacks on vegetable consumption?”* Based on the discussed literature four hypotheses are formulated and will be tested in order to answer the formulated research question. These hypotheses are formulated under the requirement that children will successfully complete their tasks. Because, Norton et al. (2012) have shown that the effect of self-creating products on consumers’ valuation of these products disappeared when consumers did not successfully completed their task. The formulated hypotheses are discussed and presented below.

Previous research has demonstrated a positive effect of involving children in meal preparation on their subsequent consumption and liking of vegetables (Chu, Farmer, Fung, Kuhle, Storey, et al., 2013; Chu, Storey, et al., 2013; Van der Horst et al., 2014). Furthermore, experiments conducted by Norton et al. (2012) showed that adults had a higher valuation for self-created utilitarian products than for similar products created by others (Norton et al., 2012). Based on these findings, it is expected that children aged four to six attach an increased valuation to vegetable snacks created by oneself, rather than created by others. The following two hypotheses are built on this assumption:

H1: Children aged four to six have an increased vegetable consumption of self-created vegetable snacks compared to vegetable snacks created by others.

H2: Children aged four to six have an increased liking for self-created vegetable snacks compared to vegetable snacks created by others.

Recent research has shown that consumers attach more value to their own creations, even if they are utilitarian products that are not unique, customised, or fun to build (Norton et al., 2012). Therefore, the present study proposes that the psychological mechanisms perceived effort and perceived pride associated with self-created products underlie the increase in consumption and liking.

Focusing on perceived effort, previous research demonstrated that the more effort consumers exert in a task, the more they will value it (Festinger, 1962). Accordingly, Norton et al. (2012) suggested that the psychological mechanism effort justification underlies the relationship between self-created products and their increase in valuation (Norton et al., 2012). Based on these findings, it is expected that the more effort children aged four to six exert in creating the vegetable snack the more they will value it. Because, according to the theory of cognitive dissonance, children want to justify their effort made in creating the vegetable snack by showing an increased consumption of and liking for their self-created vegetable snack. Built on this assumption, the following hypothesis is formulated:

H3: The increase in vegetable consumption and liking of self-created vegetable snacks is mediated by perceived effort.

Focusing on perceived pride, previous research showed that consumers have an innate psychological need to feel competent and that creation tasks may fulfil this need (Franke & Schreier, 2010; Gagné & Deci, 2005; Ryan & Deci, 2000). In concordance, Mochon et al. (2012) demonstrated in adults that feelings of pride associated with self-created mundane products significantly mediated the effect of creation on valuation. Several studies applied in a food context more or less indicated same results (Heim et al., 2009; Van der Horst, 2012). As explained, there are two types of competence that varies by context, namely personal feelings of pride and consumers’ desire to show off their creations to

others. The present study focuses on personal feelings of pride, as participants have no opportunity to show off their creation to others (Puntoni & Tavassoli, 2007) and the intended recipient of the created product is themselves (Mochon et al., 2012; Moreau, Bonney, & Herd, 2011). Based on these findings, it is expected that creating vegetable snacks oneself evoke personal feelings of pride which lead to an increased valuation of self-created products. Built on this assumption, the following hypothesis is formulated:

H4: The increase in vegetable consumption and liking of self-created vegetable snacks is mediated by personal feelings of pride.

Based on the formulated hypotheses the conceptual model depicted in Figure 4 is created and will be tested by means of field experiments. In this model, four key concepts are presented. The concept *vegetable snack* functions as the independent variable in this model and will be manipulated with two levels: self-created vegetable snacks versus other-created vegetable snacks. *Self-created* vegetable snacks refers to the creation of vegetable snacks by oneself. *Other-created* vegetable snacks refers to the creation of vegetable snacks by others. The second concept *perceived effort* functions as a mediator in this model and refers to the effort involved in creating the vegetable snack and is interpreted ex post based on the outcome (Franke & Schreier, 2010). The third concept *perceived pride* also functions as a mediator in this model and refers to personal feelings of pride of having created the vegetable snack oneself and is also interpreted ex post based on the outcome (Franke & Schreier, 2010; Mochon et al., 2012). The fourth concept *consumption and liking* functions as the dependent variable in this model and refers to the amount of vegetables eaten and liking of the vegetable snack.

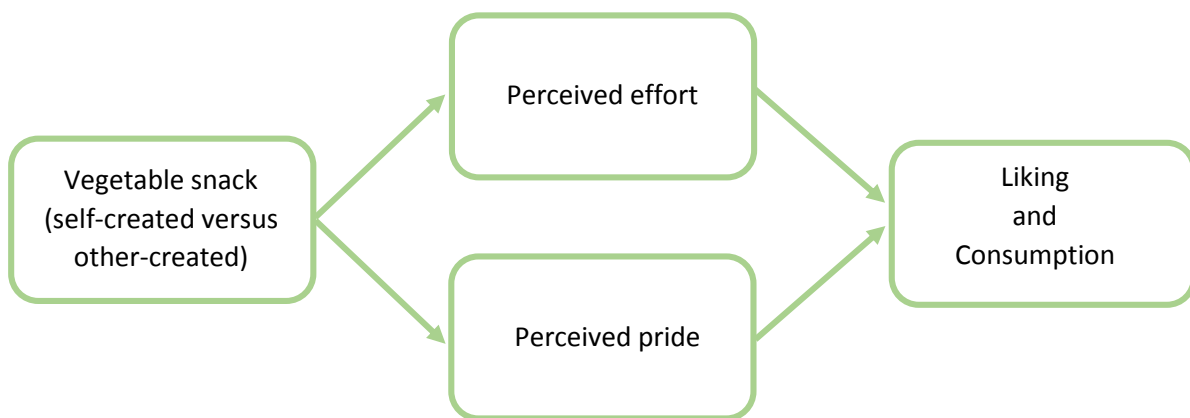


Figure 4 - Conceptual model

3. Methodology

In this chapter the research design, participants, procedure of the experiment, materials used, measurement methods and analysis methods are discussed.

3.1 Design

The mere impact of self-creating vegetable snacks on children's vegetable consumption was examined with a between-subjects field experiment, with one experimental condition and a control condition. Participants in the experimental condition created, consumed and evaluated their own vegetable snack and participants in the control condition created the same snack with non-food objects and consumed and evaluated a vegetable snack created by others. In both conditions a fixed creation task was implemented in order to exclude exposure differences, process enjoyment and customisation as an explanation. For instance, by excluding a creation task in the control condition, only participants in the experimental condition experience process enjoyment which could have an influence on the outcome. Therefore, by implementing a fixed creation task, only the mere effect of self-creating vegetable snacks on vegetable consumption and liking is tested.

3.2 Participants

In total 92 children aged four to six participated in the study, from six groups of four locations in one after school day care. However, data of 82 children were used for analyses (89.1%). Five children were excluded as they have not finished the experiment. Several reasons for not finishing the experiment can be defined, for instance children were picked up earlier than expected by their parents. Furthermore, one child was excluded as she exceeded the age group. Lastly, four children were excluded as they did not consume any vegetables. In this research convenience sampling was applied to select the after school day care. Groups within the after school day care were selected on the basis of voluntary application. All children in one group were allocated to either the experimental condition (N=43) or the control condition (N=43), to avoid awareness of the different conditions. An additional six participants participated in a pilot study. Experiments were conducted in December 2014 and January 2015, in total nine test afternoons were organised. In November and December 2014, managers of the four locations of the after school day care provided their informed consent. Also, informed parental consent was obtained in this period, which meant that only children with no known food allergies or intolerances and eating or behavioural disorders, related to the targeted food products, have participated in the present study (Grubliauskiene & Dewitte, 2014). See Appendix 1 for the letters to the parents and managers. In total two parents did not provide parental consent for their child to participate in the experiment, reasons were not indicated. All procedures have been approved by the Social Sciences Ethics Committee of the Wageningen University. Two female instructors closely involved in the design and procedure of the experiment have collected data for both conditions in the present study.

3.3 Procedure

The tests were completed individually at created test rooms in the four locations of the after school day care. Two participants at a time were retrieved from classroom to participate in the study. The tests were conducted verbally since most participants were not competent to read. The study was divided into six phases after the preparation phase: an introduction phase, a control phase, a creation manipulation phase, a consumption phase, an evaluation phase and a closing phase. Before actual testing both conditions



Figure 5 - Pilot study

were tested in a pilot study (Figure 5). Four participants were tested in the experimental condition and two participants were tested in the control condition. Adjustments were made when necessary, for instance gender was added on the registration form. Another example, perceived effort and perceived pride were measured on a unipolar five-point scale during the pilot study, however this was too difficult for the participants. Therefore, the scales were changed into unipolar three-point scales before actual testing. In the following sections the different experimental phases are described, see Figure 6 for a flowchart of the phases. The procedure for both conditions are also translated into Dutch in the form of a script, these so-called experimental manuals can be found in Appendix 2 and are used during actual testing.

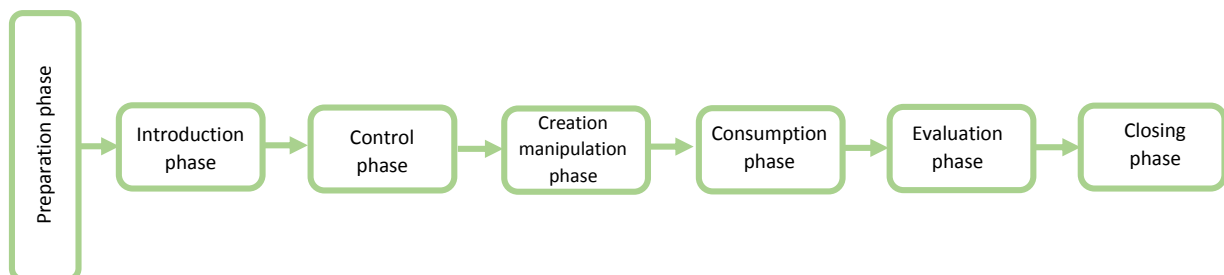


Figure 6 - Flowchart of the experimental procedure

3.3.1 Preparation phase

According to Guinard (2000), it is required to adapt testing rooms into child-friendly environments, beside the standard requirements for sensory adult testing facilities. Therefore, the same furniture as in children's after school day care environments was placed into the testing room. Furthermore, the room was created in such a way that two participants at the same time could individually conduct the experiments. Participants were not able to communicate with each other since a partition was placed between the tables. Before the experiments were conducted, all necessary materials were put on the tables of both participants. See Figure 7 for an impression of the testing room.



Figure 7 – Testing room

3.3.2 Introduction phase

During the introduction phase the instructor introduced themselves and the research to both participants. A time indication of thirty minutes was given and the control variables age was asked and gender was determined. The voluntary basis was stressed and participants were explained why they could not see each other.

3.3.3 Control phase

During the control phase the control variable appetite was measured. Three drawings of teddy bear's with stomachs showing different degrees of fullness were presented, ranging from 'full' to 'empty' (Bennett & Blissett, 2014; Grubliauskiene & Dewitte, 2014; Rolls, Engell, & Birch, 2000). The instructor verbally explained the scale to both participants and tested their understanding of the scale by asking the participant to describe their feeling of fullness right after dinner. The instructor showed the participant the 'full' teddy bear descriptor and explained that their feeling of fullness would be valued as that teddy bear. This procedure was also used for the participants' feeling of fullness right before dinner (Bell & Tepper, 2006). Subsequently, the instructor asked the participant to indicate their feeling of fullness at the moment using the three-point scale.

3.3.4 Creation manipulation phase

After the control phase the instructor showed a peacock made of vegetables to both participants and asked them to create such a peacock themselves with several pieces of vegetables (experimental condition; see Figure 9), or beads (control condition; see Figure 9). Participants in both conditions were shown a peacock made of vegetables as an example in order to prevent exposure differences. Participants in both conditions received an instruction sheet illustrating the different steps with vegetables (experimental condition) or beads (control condition), see Appendix 3. The instructor verbally explained the different steps to the participants. On the basis of this instruction sheet and the example peacock participants had to create their own peacock. Participants in the experimental condition were instructed to maintain the specific order and amount of vegetables set in the example peacock. Participants in the control condition were also instructed to maintain the specific order and amount of vegetables set in the example peacock, by pinning beads in the same colour as the vegetables onto the cocktail sticks.



Figure 8 – Creation manipulation phase

Each participant had to complete their peacock successfully, therefore no time limit was set. Successful completion was a relative concept in this case and meant that each participant have completed their creation to their satisfaction.



Figure 9 - Peacock made of



Figure 10 - Peacock made of

3.3.5 Consumption phase

After the creation manipulation phase the instructor invited the participants in the experimental condition to consume as many of their creation as they desired, however they were not allowed to take vegetables with them when the test was finished. In case the creation was not enough, participants were allowed to consume vegetables directly from the bowls. In the control condition the instructor invited the participants to consume as many of the example peacock as they desired and also offered bowls with vegetables in case the peacock creation was not enough. Again, participants were not allowed to take vegetables with them when the test was finished. In both conditions, empty bowls were refilled immediately.

3.3.6 Evaluation phase

After the consumption phase, the instructor finished the test with some evaluation questions. First, participants' overall liking of the vegetable snack was measured. Next, participants' liking of cucumbers, tomatoes, and carrots was measured. Finally, two questions about the creation task were asked. First, participants' feeling of pride associated with their created peacock was measured. Subsequently, participants' effort made in creating the peacock was assessed. Before rating, the instructor verbally explained the scales to the participants. (Bell & Tepper, 2006).

3.3.7 Closing phase

The closing phase is the last part of the experiment. The instructor thanked the participants for their participation and asked if they have any further questions. The instructor brought the participants back to their group. After that, the instructor counted and registered the number of remaining pieces of each vegetable sort, in order to assess the consumption quantity later on (Wardle et al., 2003).

3.4 Materials

In order to measure the main effect of self-creating vegetable snacks on vegetable consumption, familiarity effects should be excluded as an explanation. Therefore, vegetables that children have previously been offered at preschool were chosen as food stimuli. The vegetables included raw cucumbers, tomatoes and carrots (Bell & Tepper, 2006). These vegetables differ in colour and shape, which increased the attractiveness for children. Furthermore, these vegetables were easily to assemble onto the cocktail sticks. In the control condition beads were used as stimuli in the colours green, red and orange, which corresponded to the colours of the vegetables.

In the experimental condition, sixteen vegetable pieces per vegetable sort were offered in different bowls. Participants needed eight vegetable pieces per vegetable sort for the creation of the peacock, an additional eight pieces of each vegetable sort were offered for consumption. In the control condition, sixteen beads per bead sort were offered in different bowls. Participants needed eight beads per bead sort for the creation of the peacock. Furthermore, the control group received an example peacock made of vegetables for consumption and eight additional pieces of each vegetable sort were offered in different bowls.

3.5 Measurement

The main concepts measured in this research were appetite, liking, pride, perceived effort and consumption quantity. Furthermore, some behavioural observations were carried out. The questionnaire can be found in Appendix 4.

3.5.1 Appetite

Participants' hunger state was assessed on a visual bipolar three-point scale (Figure 11). This scale consisted of three drawings of teddy bears with stomachs showing different degrees of fullness, designed to represent the following responses 'full', 'half full' and 'empty' (scored 0, 1, 2) (Bennett & Blissett, 2014; Grubliauskiene & Dewitte, 2014; Rolls et al., 2000).

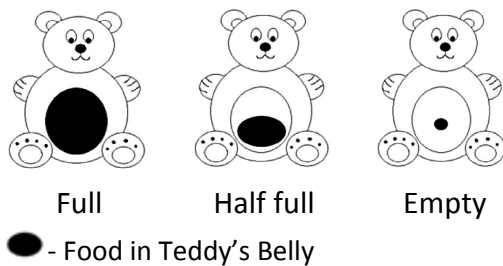


Figure 11 - Bipolar appetite rating scale taken from Bennett and Blissett (2014)

3.5.2 Liking

Participants' overall liking of the vegetable snack and liking of cucumbers, tomatoes and carrots was measured on a bipolar facial hedonic five-point scale (Figure 12). This scale consisted of five drawings of smileys showing different facial expressions, designed to represent the following responses 'very bad', 'bad', 'not bad and not nice', 'nice' and 'very nice' (scored 1, 2, 3, 4, 5). This scale can reliably be used with children in the age period four to six years (Bell & Tepper, 2006; Chen, Resurreccion, & Paguio, 1996; Guinard, 2000).



Figure 12 - Bipolar facial hedonic five-point scale

3.5.3 Pride

Participants' pride was measured on a unipolar three-point scale (Figure 13 and Figure 14). This scale consisted of three pictures of peacocks made of vegetables (experimental condition) or three pictures of peacocks made of beads (control condition). On the pictures peacocks were depicted with a different number of feathers, ranging from no feathers to four feathers, designed to represent the following responses 'not proud at all', 'a little proud' to 'very proud' (scored 0, 1, 2). The more feathers, the more feelings of pride.



Figure 13 - Unipolar three-point scale pride (experimental condition)

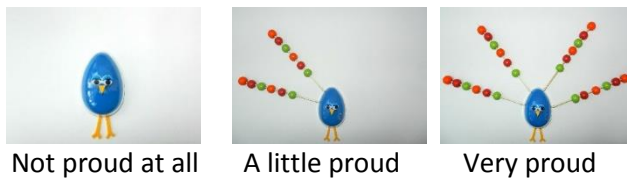


Figure 14 - Unipolar three-point scale pride (control condition)

3.5.4 Perceived effort

Participants' perceived effort was measured on a unipolar three-point scale (Figure 15). This scale consisted of three drawings of smileys showing different facial expressions, designed to represent the following responses 'no effort at all', 'a little effort' and 'very much effort' (scored 0, 1, 2).



Figure 15 - Unipolar three-point scale perceived effort

3.5.5 Consumption amount

Consumption amount was assessed by counting the number of cucumber pieces, tomato pieces and carrot pieces offered before consumption and counting the number of remaining pieces of each vegetable sort after consumption (Wardle et al., 2003). The number of remaining vegetable pieces after consumption was subtracted from the number of vegetable pieces offered before consumption, apart for each vegetable sort. In this way the number of vegetable pieces eaten was determined for each vegetable sort. The consumption quantity is not determined in grams, because of the different shapes and sizes of vegetables.

3.5.6 Behavioural observations

In order to add non-verbal information, the instructors developed and used a coding scheme to code the creation and consumption sessions (Zeinstra et al., 2007), without knowing of the participants. The evaluation form can be found in Appendix 5. The following behaviours were coded: crafting duration (measured per second), consumption duration (measured per second), additional explanation, encouragement, notable emotions, external influences, interaction between participants and others. In addition, instructors registered whether participants maintain the correct order and amount of vegetables (experimental condition) or beads (control condition) in creating their peacock.

3.6 Data analysis

Data were analysed using the SPSS statistical software package, version 21.0 (IBM Corp, Armonk, NY, USA). In all analyses, a significance level of <0.05 was used unless otherwise stated. P-values between 0.05 and 0.1 were considered as 'marginally different'. In the first part of the data analysis, a randomisation check was conducted by assessing variances across the control condition and experimental condition using ANOVAs and Pearson chi-square analysis. Also, correlations between the control variables and dependent variables were checked using Pearson correlation coefficients and Spearman's correlations. Pearson correlation coefficients were run to measure the strength of an association between two continuous variables (Statistics, 2013). Spearman's correlations were run to measure the strength of an association between a categorical and continuous variable or two categorical variables (Laerd Statistics, 2013). The outcome of the ANOVAs, Pearson chi-square analysis

and Pearson correlation coefficients were used to determine for which control variables dependent variables should be corrected. Furthermore, variances across conditions were checked for some categorical and continuous behavioural observations using respectively Pearson chi-square analysis and ANOVAs.

In the second part of the data analysis, the first two hypotheses were tested using analysis of covariance (ANCOVA). First, assumptions fundamental to ANCOVA were tested. Consumption and liking data were checked for normality of distribution by analysing the outcomes of a Q-Q plot, and the level of skewness and kurtosis. Skewness and kurtosis levels (z-scores) were calculated by dividing the outcome of the test statistic by their standard error. When the z-scores are within the range of -1.96 to 1.96 ($P < 0.05$), normality can be assumed. Otherwise, data is normalized by taking the natural logarithm of the observations. Furthermore, homogeneity of variances were checked using Levene's test. All observations were assumed to be independent. Statistical analyses (ANCOVA) of consumption and liking data were performed with the experimental and control condition as fixed factor, consumption or liking data as dependent variable, and control variables that significantly differed between both conditions and correlated with dependent variables as a covariate.

In the third part of the data analysis, the last two hypotheses were tested using Pearson chi-square analysis in order to determine variances across conditions. Subsequently, it is examined to what extent perceived effort and perceived pride predicted consumption and liking in the self-created vegetable snack condition using Spearman's correlations.

In the scheme below an overview of all the variables described in the methodology and included in the data analysis are depicted (see Figure 16).

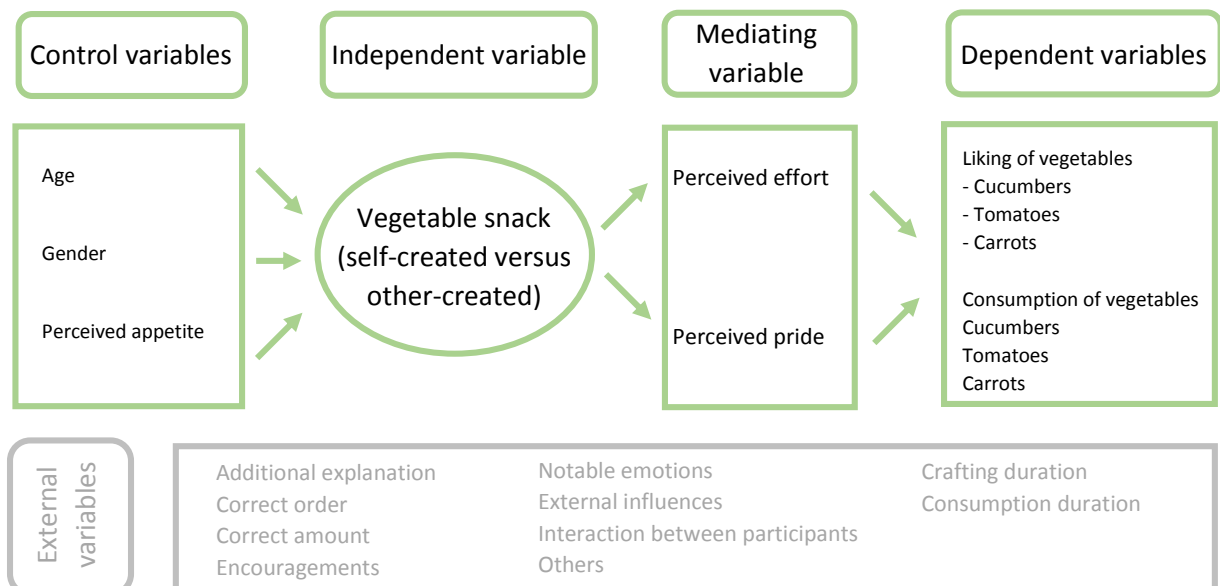


Figure 16 - Overview of variables

4. Results

4.1 Descriptive information

In total, 38 boys (control condition: N=18; experimental condition: N=20) participated in the study and 44 girls (control condition: N=24; experimental condition: N=20). The average age of all participants was 4.83 years (SD=0.86; range 4-6). In the control group the average age was 4.76 years (SD=0.85; range 4-6) and in the experimental group the average age was 4.90 years (SD=0.87; range 4-6). In Table 4 the gender and age distribution between the control condition and experimental condition is shown.

Table 4 - Gender and age distribution

Gender	Age	Control condition		Experimental condition		Total	
		N	%	N	%	N	%
Boys	4 years	11	26.2%	9	22.5%	20	24.4%
	5 years	3	7.1%	4	10.0%	7	8.5%
	6 years	4	9.5%	7	17.5%	11	13.4%
Girls	4 years	10	23.8%	8	20.0%	18	22.0%
	5 years	7	16.7%	6	15.0%	13	15.9%
	6 years	7	16.7%	6	15.0%	13	15.9%
Total		42	100%	40	100%	82	100%

Variances across conditions were checked for two categorical variables (gender and perceived appetite) and one continuous variable (age) using a chi-square test (gender) and ANOVAs (appetite and age). See Table 9 for an overview of the outcomes.

Age and gender did not significantly differ between both conditions (all $P_s > 0.47$). However, analysis of variance with vegetable snack (self-prepared versus other-prepared) as fixed factor and perceived appetite as dependent variable indicated a significant effect ($F(1,80)=5.66$, $P=0.02$, $\eta_p^2=0.07$) in that participants who had to create a peacock with beads ($M=1.31$, $SD=0.72$, on a 3-point scale) had a stronger perceived appetite than participants who had to create a peacock with vegetables ($M=0.90$, $SD=0.84$, on a 3-point scale). Therefore, this variable is held constant by including perceived appetite as a covariate in all analyses.

4.2 Correlations

Correlations between control variables and dependent variables were checked using Pearson correlation coefficients (denoted by r) and Spearman's correlations (denoted by r_s). See Table 5 for the specific correlation coefficients.

A modest/moderate positive correlation was found between the control variable age and the following dependent variables: vegetable consumption ($r = 0.24$, $P = 0.03$), cucumber consumption ($r = 0.32$, $P = 0.00$) and cucumber liking ($r_s = 0.34$, $P = 0.00$). Age is predictive for these dependent variables and is therefore included as a covariate in the ANCOVAs of all dependent variables.

The control variables gender and perceived appetite did not significantly correlate with any of the dependent variables. However, the outcome of the randomisation check showed that perceived appetite was not equally distributed between the control condition and experimental condition. Therefore, perceived appetite is also included as a covariate in the ANCOVAs of the dependent variables.

Table 5 - Correlation coefficients (1)

	Age	Gender	Perceived appetite	Vegetable consumption	Cucumber consumption	Tomato consumption	Carrot consumption	Vegetable liking	Cucumber liking	Tomato liking	Carrot liking
Age		$r_s = -0.08$	$r_s = -0.02$	$r = 0.24^*$	$r = 0.32^{**}$	$r = 0.19$	$r = 0.09$	$r_s = -0.02$	$r_s = 0.34^{**}$	$r_s = 0.15$	$r_s = -0.17$
Gender			$r_s = 0.03$	$r_s = -0.20$	$r_s = -0.11$	$r_s = -0.21$	$r_s = -0.18$	$r_s = 0.04$	$r_s = -0.06$	$r_s = -0.15$	$r_s = -0.06$
Perceived appetite				$r_s = 0.15$	$r_s = 0.18$	$r_s = 0.16$	$r_s = -0.01$	$r_s = 0.02$	$r_s = 0.08$	$r_s = -0.09$	$r_s = 0.00$
Vegetable consumption					$r = 0.78^{**}$	$r = 0.82^{**}$	$r = 0.87^{**}$	$r_s = 0.40^{**}$	$r_s = -0.03$	$r_s = 0.45^{**}$	$r_s = 0.23^*$
Cucumber consumption						$r = 0.42^{**}$	$r = 0.52^{**}$	$r_s = 0.35^{**}$	$r_s = 0.12$	$r_s = 0.13$	$r_s = -0.01$
Tomato consumption							$r = 0.59^{**}$	$r_s = 0.15$	$r_s = 0.01$	$r_s = 0.64^{**}$	$r_s = 0.13$
Carrot consumption								$r_s = 0.41^{**}$	$r_s = -0.09$	$r_s = 0.36^{**}$	$r_s = 0.44^{**}$
Vegetable liking									$r_s = 0.19$	$r_s = 0.28^{**}$	$r_s = 0.31^{**}$
Cucumber liking										$r_s = -0.17$	$r_s = -0.02$
Tomato liking											$r_s = 0.26^*$
Carrot liking											

* Correlation is significant at the 0.05 level (2-tailed).

** Correlation is significant at the 0.01 level (2-tailed).

4.3 External variables

Variances across conditions were also checked for some categorical and continuous behavioural observations, so-called external variables, observed by the instructor during the experiments.

4.3.1 Categorical behavioural observations

Variances across conditions regarding categorical external variables were checked using Pearson chi-square analysis (see Table 6); all assumptions underlying chi square tests were met. The observed external variables were defined before testing. Instructors noted a 'No' when the external variable was not applicable. Observations that could not be placed under one of the predefined external variables were grouped under the variable 'Others'. For instance, pee breaks and spontaneously mentioned likes or dislikes for vegetables were placed under 'Others'.

The external variables were implemented in the design of the manipulation, which means that it is accounted for that they do not have a significant impact on the outcome of the analyses. Therefore, external variables that significantly differ between both conditions were not included as covariates in the analyses. However, the external variables are discussed below to gain a better interpretation of the outcomes of other analyses conducted in this research.

Chi-square analysis indicated a significant difference between both conditions regarding the external variables 'correct order of beads/vegetables' (Pearson chi-square=4.345, $P=0.037$), 'Notable emotions' (Pearson chi-square=4.530, $P=0.033$) and 'Interaction between participants' (Pearson chi-square=10.030, $P=0.002$).

Participants who had to create a peacock with beads showed less difficulty in placing the correct order of beads onto the cocktail sticks (correct order: 81%) than participants who had to create a peacock with vegetables (correct order: 60%). Crafting with vegetables is less common than crafting with beads, this could be an explanation for the significant difference between both conditions. Another explanation could be that children who had to craft with vegetables placed more likeable vegetables onto their cocktail sticks. Placing the correct amount of beads/vegetables onto the cocktail sticks did not significantly differ between both conditions.

Participants who had to create a peacock with beads showed less notable emotions (notable emotions: 16.7%) during the experiment than participants who had to create a peacock with vegetables (notable emotions: 37.5%). An explanation for this could be that participants were less familiar with crafting with vegetables than crafting with beads. In both conditions roughly two kind of (contrary) emotions were observed: shy/quiet and excited/active.

Participants who had to create a peacock with beads interacted less with the other participant (interaction: 19%) than participants who had to create a peacock with vegetables (interaction: 45%). Again, this could be explained by the fact that participants were less common with crafting with vegetables than crafting with beads. The interaction between participants consisted of two-way or one-way verbal and non-verbal communication. For instance, participants tried to verify in which stage of the experiment the other participant was or wanted to show their feathers to each other.

Table 6 – Categorical behavioural observations

	Control condition		Experimental condition		Chi-square (X^2)	P-value
	No	%	No	%		
Additional explanation	34	81.0%	29	72.5%	0.82	0.37
Correct order	8	19.0%	16	40.0%	4.35	0.04
Correct amount	15	35.7%	21	52.5%	2.34	0.13
Encouragements	34	81.0%	29	72.5%	0.82	0.37
Notable emotions	35	83.3%	25	62.5%	4.53	0.03
External influences	34	81.0%	32	80.0%	0.01	0.91
Interaction between participants	34	81.0%	22	55.0%	6.37	0.01
Others	24	57.1%	15	37.5%	3.17	0.08

4.3.2 Continuous behavioural observations

Variances across conditions regarding continuous external variables were measured using analysis of variance (ANOVA), see Table 7. During the experiments the instructor measured the crafting duration and consumption duration with the use of a stopwatch.

Focusing on crafting duration, the Q-Q plot did not seem to deviate from a normal distribution. However, when interpreting skewness and kurtosis levels (skewness= 0.76; kurtosis= 0.26) crafting duration seemed to deviate from a normal distribution. Therefore, data were normalized by taking the natural logarithm of the observations. Transformed consumption scores showed a normal distribution (Normal Q-Q Plot). Skewness and kurtosis levels confirmed this observation (skewness= -0.14 ; kurtosis= -0.68). In this way data is transformed into a format that is suitable for analysis of variance. Variances of crafting duration across the control condition and experimental condition were not significantly different using the transformed data (untransformed data: $P=0.08$; transformed data: $P=0.98$, Levene's test), therefore homogeneity of variances can be assumed.

Analysis of variance with vegetable snack (self-prepared versus other-prepared) as independent variable and crafting duration as dependent variable indicated a significant effect ($F(1,80)=10.90$, $P=0.00$, $\eta_p^2=0.12$) in that participants who had to create a peacock with beads ($M=06:22$, $SD=02:34$) had a shorter crafting time than participants who had to create a peacock with vegetables ($M=08:44$, $SD=03:36$). Again, this could be explained by the fact that participants were less familiar with crafting with vegetables than crafting with beads.

Focusing on consumption duration, the Q-Q plot seemed to deviate from a normal distribution. Skewness and kurtosis levels (skewness= 1.13; kurtosis= 0.77) confirmed this observation. Therefore, data were normalized by taking the natural logarithm of the observations. Transformed consumption scores showed a normal distribution (Normal Q-Q Plot). Skewness and kurtosis levels confirmed this

observation (skewness= -0.23 ; kurtosis= -0.40). In this way data is transformed into a format that is suitable for analysis of variance.

Variances of consumption duration across the control condition and experimental condition were not significantly different (untransformed data: $P=0.406$; transformed data: $P=0.84$, Levene's test), therefore homogeneity of variances can be assumed.

Analysis of variance with vegetable snack (self-prepared versus other-prepared) as independent variable and consumption duration as dependent variable indicated no significant effect ($F(1,80)=0.39$, $P=0.54$, $\eta_p^2=0.01$) between both conditions

Table 7 - Continuous behavioural observations

	Control condition (N=42)		Experimental condition (N=40)		Test statistic	P-value	η_p^2
	Mean (mm:ss)	SD (mm:ss)	Mean (mm:ss)	SD (mm:ss)			
Crafting duration	06:22	02:34	08:44	03:36	$F(1,80)=10.90$	0.00	0.12
Consumption duration	09:14	06:26	10:07	06:44	$F(1,80)=0.39$	0.54	0.01

4.4 Consumption of vegetables

The first hypothesis '*Children aged four to six have an increased consumption of self-created vegetable snacks compared to vegetable snacks created by others*' is tested by analysing vegetable consumption data gathered during the experiments.

On average, participants consumed 18.28 pieces of vegetables ($SD=12.80$). A fourth of the participants (25.6%) finished their peacock made of 24 vegetables and 17 of these participants consumed additional vegetables from the bowls (20.7%). The peacock finishers were equally distributed across the control condition and experimental condition ($P=0.62$, Fisher's Exact Test), just as participants who consumed an additional number of vegetables from the bowls ($P=1.00$, Fisher's Exact Test). Only three of these participants finished the entire portion, which consisted of a peacock made of 24 vegetables and 24 additional vegetables in the bowls. These participants were equally distributed across the control condition and experimental condition ($P=0.61$, Fisher's Exact Test).

Normality of consumption data was estimated by analysing the outcomes of the Q-Q plot, and the level of skewness and kurtosis. According to the Q-Q plot, consumption of vegetables did not seem to deviate from a normal distribution. However, when interpreting skewness and kurtosis levels (skewness= 0.76; kurtosis= -0.28) consumption of vegetables seemed to deviate from a normal distribution. Consumption scores were positively skewed, which means a pile-up of scores on the left of the distribution. Most participants had a low vegetable consumption and only a few participants had a high vegetable consumption. Therefore, data were normalized by taking the natural logarithm of the observations. Transformed consumption scores came closer to a normal distribution than untransformed consumption scores (Normal Q-Q Plot). In this way data is transformed into a format that is suitable for analysis of (co)variance (skewness= -0.23 ; kurtosis= - 1.06).

Variances of number of vegetables consumed across the control condition and experimental condition were not significantly different (untransformed data: $P=0.26$; transformed data: $P=0.94$, Levene's test), therefore homogeneity of variances can be assumed.

On average, participants in the other-created vegetable snack condition consumed 16.71 pieces of vegetables (SD=11.87) and participants in the self-created vegetable snack condition consumed 19.93 pieces of vegetables (SD=13.67). Variances in both conditions were very high. No main effect of vegetable snack (self-created versus other-created) on vegetable consumption was observed after controlling for the effect of perceived appetite and age ($F(1,78)=1.56$, $P=0.22$, $\eta_p^2=0.02$). Same results were found for consumption based on the vegetables separately. No significant effect was detected for the consumption of cucumber ($F(1,78)= 2.72$, $P=0.10$, $\eta_p^2=0.03$) tomato ($F(1,78)= 0.29$, $P=0.59$, $\eta_p^2=0.00$) and carrots ($F(1,78)= 0.51$, $P=0.48$, $\eta_p^2=0.01$). Thus, participants in the self-created vegetable snack condition did not consume significantly more pieces of vegetables than participants in the other-created vegetable snack condition. In conclusion, creation of the vegetable snack (self versus other) had no effect on participants' consumption of vegetables. See Table 9 for an overview of the outcomes.

Prior research focused on (raw) vegetable consumption and liking in children demonstrated gender differences in consumption and liking of (raw) vegetables. Accordingly, the interaction between gender and condition on vegetable consumption was tested with perceived appetite and age as covariates. An effect of gender on vegetable consumption was found ($F(1,76)= 3.12$, $P=0.08$, $\eta_p^2=0.04$), girls consumed significantly more pieces of vegetables ($M=20.82$; $SD=13.65$) than boys ($M=15.34$; $SD=11.21$). However, no interaction effect between gender and condition on vegetable consumption was found ($F(1,76)= 0.08$, $P=0.78$, $\eta_p^2=0.00$).

Results suggest that the first hypothesis '*Children aged four to six have an increased consumption of self-created vegetable snacks compared to vegetable snacks created by others*' cannot not be supported. The vegetable snack manipulation had a no effect on vegetable consumption in children aged four to six.

4.5 Liking of vegetables

The second hypothesis '*Children aged four to six have an increased liking for self-created vegetable snacks compared to vegetable snacks created by others*' is tested by analysing vegetable liking data gathered during the experiments.

Normality of liking data was estimated by analysing the outcomes of the Q-Q plot, and the level of skewness and kurtosis. According to the Q-Q plot, liking of vegetables seemed to deviate from a normal distribution. Skewness and kurtosis levels (skewness= - 1.33; kurtosis= 0.49) confirmed this observation. Liking scores were negatively skewed, which means a pile-up of scores on the right of the distribution. Most children had a high overall-liking of vegetables and only a few children had a low overall-liking of vegetables. However, by taking the natural logarithm of the observations, the distribution still seemed to deviate from a normal distribution (Normal Q-Q Plot). Skewness and kurtosis levels (skewness= -1.90; kurtosis= 2.48) confirmed this observation. Therefore, untransformed consumption scores were used for analysis of (co)variance.

Variances of overall-liking of vegetables across the control condition and experimental condition were not significantly different ($P=0.14$, Levene's test), therefore homogeneity of variances can be assumed.

On average, participants in the other-created vegetable snack condition had an overall-liking of vegetables of 4.12 (SD=1.21, range 1-5) and participants in the self-created vegetable snack condition had an overall-liking of vegetables of 4.10 (SD=1.46, range 1-5). No main effect of vegetable snack (self-created versus other-created) on overall-vegetable liking was observed after controlling for the

effect of appetite and age ($F(1,78)=0.01$, $P=0.92$, $\eta_p^2=0.00$), same was found for liking based on the vegetables separately. No significant effect was detected for the liking of cucumber ($F(1,78)=0.05$, $P=0.82$, $\eta_p^2=0.00$), tomato ($F(1,78)=0.79$, $P=0.38$, $\eta_p^2=0.01$) and carrots ($F(1,78)=1.44$, $P=0.23$, $\eta_p^2=0.02$). Thus, participants in the self-created vegetable snack condition had not a significantly higher liking of vegetables than participants in the other-created vegetable snack condition. In conclusion, creation of the vegetable snack (self versus other) had no effect on participants' liking of vegetables.

Prior research focused on (raw) vegetable consumption and liking in children demonstrated gender differences in consumption and liking of (raw) vegetables. Therefore, the interaction between gender and condition on vegetable liking was tested with perceived appetite and age as covariates. No effect of gender on vegetable liking was found ($F(1,76)=0.03$, $P=0.87$, $\eta_p^2=0.00$). However, a marginally interaction effect between condition and gender on vegetable liking was observed ($F(1,76)=3.68$, $P=0.059$, $\eta_p^2=0.05$). Self-creating vegetable snacks had a marginally significant influence on vegetable liking in girls ($F(1,40)=3.78$, $P=0.059$, $\eta_p^2=0.086$) in that girls who had to create a peacock with vegetables ($M=4.35$, $SD=1.09$, on a 5-point scale) had a higher liking of vegetables than participants who had to create a peacock with beads ($M=3.88$, $SD=1.39$, on a 5-point scale). No significant effect of self-creating vegetable snacks on vegetable liking in boys was observed after controlling for the effect of perceived appetite and age ($F(1,34)=1.85$, $P=0.18$, $\eta_p^2=0.05$). Based on these outcomes, it can be indicated that the vegetable snack manipulation (self-created versus other-created) had only a marginal positive significant effect on liking of girls and no effect on liking of boys. See Table 9 for an overview of the outcomes.

Results suggest that the second hypothesis '*Children aged four to six have an increased liking for self-created vegetable snacks compared to vegetable snacks created by others*' can partly be supported. No main effect of vegetable snack (self-create versus other-created) on vegetable liking was found, however a marginal interaction effect between condition and gender on vegetable liking was observed. The vegetable snack manipulation had a marginal positive influence on vegetable liking in girls aged four to six.

4.6 Perceived effort

The third hypothesis '*The increase in vegetable consumption and liking of self-created vegetable snacks is mediated by perceived effort*' is tested by analysing the outcomes of effort measures gathered during the experiments, ex post of the manipulation.

Participants in the other-created vegetable snack condition had an average amount of effort of 1.90 ($SD=0.30$, range 0-2), 38 participants out of 42 participants (90,5%) indicated that they put a lot of effort in the creation task. Participants in the self-created vegetable snack condition had an average amount of effort of 1.95 ($SD=0.22$, range 0-2), 38 participants out of 40 participants (95%) indicated that they put a lot of effort in the creation task. In both conditions, none of the participants indicated that they have put no effort in the creation task.

Variances across conditions were checked using Pearson chi-square analysis. The assumptions underlying chi-square tests were violated, as 50% of the cells had expected counts less than 5, the minimum expected count was 2.93. Therefore, the Likelihood Ratio was interpreted instead of the Pearson chi-square. No significant difference was observed between the conditions regarding perceived effort (Likelihood Ratio=0.63, $P=0.43$). See Table 9 for an overview of the outcomes.

Results demonstrated that the vegetable snack manipulation did not affect vegetable consumption and liking in participants and that perceived effort did not significantly differ between both conditions, therefore a full mediation analysis is not conducted. Instead, it is examined to what extent perceived effort predicted consumption and liking in children in the experimental condition using Spearman's correlations (denoted by r_s). See Table 8 for the specific correlation coefficients.

Focusing on consumption, no significant correlation was found between perceived effort and vegetable consumption ($r_s = 0.01$, $P=0.98$), same was found for consumption based on the vegetables separately. No significant correlations were found between perceived effort and consumption of cucumber ($r_s = -0.01$, $P=0.95$), tomato ($r_s = 0.01$, $P=0.95$) and carrots ($r_s = 0.05$, $P=0.78$). Thus, perceived effort is not predictive for vegetable consumption.

Focusing on liking, no significant correlation was found between perceived effort and vegetable liking ($r_s = -0.16$, $P=0.34$), same was found for liking based on the vegetables separately. No significant correlations were found between perceived effort and liking of cucumber ($r_s = 0.13$, $P=0.43$), tomato ($r_s = -0.01$, $P=0.95$) and carrots ($r_s = -0.22$, $P=0.18$). Thus, perceived effort is not predictive for vegetable liking.

As no full mediation analysis is conducted, the third hypothesis '*The increase in vegetable consumption and liking of self-created vegetable snacks is mediated by perceived effort*' cannot be supported. Correlation analysis further demonstrated that perceived effort did not significantly predict vegetable consumption of and liking for self-created vegetable snacks in children aged four to six.

4.7 Perceived pride

Finally, the fourth hypothesis '*The increase in vegetable consumption and liking of self-created vegetable snacks is mediated by personal feelings of pride*' is tested by analysing the outcomes of pride measures gathered during the experiments, ex post of the manipulation.

Participants in the other-created vegetable snack condition had an average amount of perceived pride of 1.83 (SD=0.49, range 0-2), 37 participants out of 42 participants (88,1%) indicated that they were very proud of having created the beads peacock oneself. Participants in the self-created vegetable snack condition had an average amount of perceived pride of 1.85 (SD=0.48, range 0-2), 36 participants out of 40 participants (90%) indicated that they were very proud of having created the vegetable peacock oneself.

Variances across conditions were checked using Pearson chi-square analysis. The assumptions underlying chi-square tests were violated, as 66.7% of the cells had expected counts less than 5, the minimum expected count was 1.95. Therefore, the Likelihood Ratio was interpreted instead of the Pearson chi-square. No significant difference was observed between the conditions regarding perceived pride (Likelihood Ratio= 0.17, $P=0.92$). See Table 9 for an overview of the outcomes.

Results demonstrated that the vegetable snack manipulation did not affect vegetable consumption and liking in participants and that perceived pride did not significantly differ between both conditions, therefore a full mediation analysis is not conducted. Instead, it is examined to what extent perceived pride predicted consumption and liking in children in the experimental condition using Spearman's correlations (denoted by r_s). See Table 8 for the specific correlation coefficients.

Focusing on consumption, a positive correlation was found between perceived pride and vegetable consumption ($r_s = 0.33$, $P=0.04$), same was found for tomato consumption ($r_s = 0.33$, $P=0.04$). Perceived

pride did not significantly correlate with consumption of cucumber ($r_s = 0.21$, $P=0.20$) and consumption of carrots ($r_s = 0.22$, $P=0.17$). Thus, perceived pride was only predictive for total vegetable consumption and tomato consumption.

Focusing on liking, a marginal positive correlation was found between perceived pride and vegetable liking ($r_s = 0.306$, $P=0.054$), same was found for tomato liking ($r_s = 0.282$, $P=0.078$). Perceived pride did not significantly correlate with liking of cucumber ($r_s = 0.19$, $P=0.25$) and liking of carrots ($r_s = 0.16$, $P=0.33$). Thus, perceived pride was only marginally predictive for overall vegetable liking and tomato liking.

As no full mediation analysis is conducted, the fourth hypothesis *“The increase in vegetable consumption and liking of self-created vegetable snacks is mediated by personal feelings of pride”* cannot be supported. However, correlation analysis indicated that total vegetable consumption and tomato consumption of self-created vegetable snacks in children aged four to six tend to increase when perceived pride increases. Same was found for liking, perceived pride marginally predicted overall vegetable liking and tomato liking of self-created vegetable snacks in children aged four to six.

Table 8 - Correlation coefficients (2)

	Perceived effort	Perceived pride	Vegetable consumption	Cucumber consumption	Tomato consumption	Carrot consumption	Vegetable liking	Cucumber liking	Tomato liking	Carrot liking
Perceived effort		$r_s = 0.33^*$	$r_s = 0.01$	$r_s = -0.01$	$r_s = 0.01$	$r_s = 0.05$	$r_s = -0.16$	$r_s = 0.13$	$r_s = -0.01$	$r_s = -0.22$
Perceived pride			$r_s = 0.33^*$	$r_s = 0.21$	$r_s = 0.33^*$	$r_s = 0.22$	$r_s = 0.31$	$r_s = 0.19$	$r_s = 0.28$	$r_s = 0.16$
Vegetable consumption				$r = 0.77^{**}$	$r = 0.78^{**}$	$r = 0.91^{**}$	$r_s = 0.61^{**}$	$r_s = 0.13$	$r_s = 0.37^*$	$r_s = 0.32^*$
Cucumber consumption					$r = 0.29$	$r = 0.60^{**}$	$r_s = 0.57^{**}$	$r_s = 0.31$	$r_s = -0.08$	$r_s = 0.09$
Tomato consumption						$r = 0.62^{**}$	$r_s = 0.26$	$r_s = 0.17$	$r_s = 0.60^{**}$	$r_s = 0.27$
Carrot consumption							$r_s = 0.53^{**}$	$r_s = -0.02$	$r_s = 0.37^*$	$r_s = 0.44^{**}$
Vegetable liking								$r_s = 0.23$	$r_s = 0.40^*$	$r_s = 0.37^*$
Cucumber liking									$r_s = -0.17$	$r_s = -0.07$
Tomato liking										$r_s = 0.40^{**}$
Carrot liking										

* Correlation is significant at the 0.05 level (2-tailed).

** Correlation is significant at the 0.01 level (2-tailed).

Table 9 - Overview outcomes

	Control condition (N=42)		Experimental condition (N=40)		Test statistic	P-value	η_p^2
	Mean	SD	Mean	SD			
Randomisation check							
Age (years; range: 4-6)	4.76	0.85	4.90	0.87	F(1,80)=0.53	0.47	0.01
Gender	42.9%*		47.6%*		X ² =0.42	0.52	
Perceived appetite (range: 0-2)	1.31	0.715	0.90	0.84	F(1,80)=5.66	0.02	0.07
Consumption amount (main effect)							
Pieces of vegetables consumed	16.71	11.87	19.93	13.67	F(1,78)=1.56	0.22	0.02
Pieces of cucumbers consumed	7.52	4.52	9.00	5.33	F(1,78)=2.72	0.10	0.03
Pieces of tomatoes consumed	4.00	5.02	4.45	5.41	F(1,78)= 0.29	0.59	0.00
Pieces of carrots consumed	5.19	4.96	6.48	5.91	F(1,78)= 0.51	0.48	0.01
Vegetable liking (main effect)							
Overall liking (range: 1-5)	4.12	1.21	4.10	1.46	F(1,78)=0.01	0.92	0.00
Liking of cucumber (range: 1-5)	4.57	0.94	4.60	0.93	F(1,78)= 0.05	0.82	0.00
Liking of tomatoes (range: 1-5)	2.40	1.78	2.85	1.83	F(1,78)= 0.79	0.38	0.01
Liking of carrots (range: 1-5)	3.12	1.86	3.53	1.74	F(1,78)= 1.44	0.23	0.02
Overall vegetable liking (range: 1-5) (interaction effect)							
Condition x Girls	3.88	1.39	4.35	1.09	F(1,40)=3.78	0.059**	0.086
Indirect effects							
Perceived effort (range: 0-2)			90,5%***		LR=0.63	0.43	
Perceived pride (range: 0-2)			88,1%****		LR=0.17	0.92	

*. Percentage of boys

**. Self-creating vegetable snacks had a marginally significant effect on vegetable liking in girls

***. Percentage of participants that put a lot of effort in the creation task

****. Percentage of participants that were very proud of having created the vegetable snack oneself

5. Discussion

The main aim of the present study was to examine whether self-creating vegetable snacks affects subsequent vegetable consumption and liking in children aged four to six. Children created a peacock with beads or with vegetables and were both exposed to an example peacock made of vegetables. It was proposed that children have an increased consumption of and liking for self-created vegetable snacks, rather than vegetable snacks created by others. A field experiment was conducted to test this hypothesis. Results illustrate that self-creating vegetable snacks did not significantly impact the amount of vegetables consumed. Same results were found for liking of vegetables, however a marginal interaction effect was found between condition and gender on vegetable liking. Self-creating vegetable snacks positively affected vegetable liking in girls. This result could be explained by the fact girls have a higher liking for crafting than boys, as girls in the age period three to five years prefer crafting, while boys prefer physical activities (Lillard, 2015; Pellegrini & Perlmutter, 1989; Pomerleau, Bolduc, Malcuit, & Cossette, 1990). Furthermore, several studies showed that girls liked (raw) vegetables more than boys (Cooke & Wardle, 2005; Le Bigot Macaux, 2001; Wardle et al., 2001). The marginally significant effect found in the present study is in line with other studies that demonstrated the positive effect of self-creating products on consumers' valuation of these products (Mochon et al., 2012; Norton et al., 2012).

The sub aim of the present study was to reveal what psychological mechanisms underlie the effect of self-creating vegetable snacks on vegetable consumption. Recently, scholars demonstrated that consumers attach more value to their own creations, even if they are utilitarian products that are not unique, customised, or fun to build (Norton et al., 2012). Therefore, it is proposed that the increase in vegetable consumption and liking of self-created vegetable snacks is mediated by perceived pride and perceived effort. In both conditions, almost all children indicated that they were very proud of having created the vegetable snack oneself and that they put a lot of effort in the creation task. This seems obvious as in both conditions a creation task was implemented and children often experience pride after succeeding a new task (Tracy & Robins, 2007). Focusing on perceived pride, it is demonstrated that personal feelings of pride associated with self-created vegetable snacks significantly predicted total vegetable consumption and tomato consumption in children aged four to six and marginally predicted overall vegetable liking and tomato liking. Thus, vegetable consumption and liking of self-created vegetable snacks tend to increase when perceived pride increases. These findings extend previous research that demonstrated that feelings of pride underlie the relationship between creation on valuation, indicated in adults (Mochon et al., 2012).

However, perceived effort associated with self-created vegetable snacks did not significantly predict vegetable consumption and liking in children aged four to six. It was suggested that, conform the theory of cognitive dissonance, children wanted to achieve internal consistency and therefore justified their effort by showing an increased valuation for the vegetable snack. However, such an effect could also have influenced consumption and liking in children who created a vegetable snack with beads. Effort made in creating the vegetable snack with beads could have served as a self-licensing cue, which subsequently led to an increased consumption and liking of the ready-made vegetable snack. In other words, children could have 'licensed' their consumption by the effort made in creating the vegetable snack (Khan & Dhar, 2006; Witt Huberts, Evers, & De Ridder, 2012). Self-licensing in this context have led to a positive outcome (vegetable consumption), as self-licensing is often associated with

justifications for indulgent behaviour such as consumption of more hedonic goods (Khan & Dhar, 2006; Kivetz & Simonson, 2002; Kivetz & Zheng, 2006; Witt Huberts et al., 2012).

Another explanation for the absence of perceived effort as a predictor of value increment could be that previous research has only focused on this mechanism in adults (Norton et al., 2012). It could be that the effect disappeared in children aged four to six, as their cognition is still under development. For instance, children aged four to six still have the tendency to focus on a single dimension of a stimulus (John, 2008). Several scientists have found that children in this age group are focused on liking as the single dimension of the food stimulus and demonstrated that liking is the only significant predictor of vegetable consumption in children aged four to six (Chu, Farmer, Fung, Kuhle, & Veugelers, 2013; Domel et al., 1996; Resnicow et al., 1997). In the present study, vegetable liking can also be indicated as a significant predictor of vegetable consumption in children who created the vegetable snack oneself. This study partly extends the findings of previous research as liking also predicted consumption in children. However, liking is not found as the only significant predictor of vegetable consumption in this study, as perceived pride also significantly predicted consumption in children.

5.1 Strengths

The main strength of the present study is the controlled setting of the experiment, in this way only the mere effect of self-creating vegetable snacks on vegetable consumption and liking is measured. Both conditions were treated in exactly the same way, only the independent variable was manipulated. All other aspects that could have had an influence on the outcome were excluded as an explanation to ensure a sophisticated measurement. For instance, social aspects, customisation, process enjoyment and familiarity effects were not implemented in the design of the present study. All other external variables that could have had an influence on the experiment were accurately controlled and measured by the use of a registration form. Another strength of the present study is that the effect of self-creating products on consumers' valuation of these products is replicated in a food context and tested with a young target group, compared to other studies conducted in this research field.

5.2 Limitations

The main strength of this research can also be considered as the main limitation of this research. In both conditions a creation task was implemented, only crafting material was manipulated. This could be the reason that no main effect was found of self-creating vegetable snacks on vegetable liking and consumption in children. Other studies aimed at examining the effect of self-creating products on consumers' valuation of these products excluded a creation task in the control condition. Participants in the control condition received the same product created by others, without first performing a creation task. This led to significant outcomes which indicated that self-creating products increased consumers' valuation of these products (Mochon et al., 2012; Norton et al., 2012). However, in these studies it is difficult to explain the mere effect that underlies consumers' increased valuation of self-created products, as several side effects could have played a significant role, for instance process enjoyment and pre-exposure. This suggests that, in the present study, self-creating vegetable snacks could have led to an increased consumption and liking of vegetables when only a creation task was implemented in the experimental condition.

Another limitation of this research could be the fixed order and amount of vegetables that children had to stick to in creating the vegetable snack, this could have had a negative influence on their feelings of autonomy, and subsequent on their consumption and liking of the vegetables. Accordingly, children who crafted a vegetable snack with vegetables stuck less to the fixed order than children who crafted

a vegetable snack with beads. This could be explained by the fact that crafting with vegetables is less familiar than crafting with beads.

Furthermore, liking was only measured ex post of the manipulation and not beforehand. This was a conscious choice, as children aged four to six have a short attention span and experience difficulties in task comprehension (Guinard, 2000; Resurreccion, 1998). But, this has the restriction that vegetable liking measured before self-creating the vegetable snack cannot be compared with vegetable liking measured after creating the vegetable snack. The creation task could have influenced children's liking of vegetables.

5.3 Further research

Further research is needed to explore under which conditions self creating vegetable snacks may lead to an improved vegetable consumption and liking in children aged four to six. For instance by implementing the opportunity for customisation in the design or by excluding a creation task in the control condition. Furthermore, findings suggest that self-creating vegetable snacks seems to be a potentially effective strategy to increase vegetable liking in girls. Therefore, further research is needed to find significant support for this assumption. Also, the role of pride as a predictor of vegetable consumption and liking in children should be further examined, in order to show stronger evidence for this underlying psychological mechanism. In the present study external variables were accurately measured and interpreted for a better understanding of the outcomes, however they were not included in the analyses. Therefore, further research should incorporate the influence of external variables, such as crafting time, notable emotions and interaction between participants, in the analyses. Lastly, it is interesting to investigate whether self-creating vegetable snacks in such a controlled environment may lead to an increased vegetable consumption and liking in children in an older age group, for instance children aged 6-12.

5.4 Conclusion

Findings suggest that children aged four to six do not have an increased consumption of self-created vegetable snacks, compared to vegetable snacks created by others. Focusing on vegetable liking, self-creating vegetable snacks seems to be a potentially effective strategy to increase vegetable liking in girls. Personal feelings of pride associated with self-created vegetable snacks and vegetable liking significantly predicted vegetable consumption in children who created the vegetable snack oneself. Furthermore, personal feelings of pride associated with self-created vegetable snacks marginally predicted vegetable liking in children who created the vegetable snack oneself. Perceived effort associated with self-created vegetable snacks did not underlie the effect of creation on consumption and liking in children. The present study showed a lot of potentials for further research and can be used as a solid framework.

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Appendices

Appendix 1 – Information letter parents and managers

Letter parents

Toestemming onderzoek onder leerlingen van groep 1 en 2 (leeftijd 4 t/m 6 jaar)

Gezond eten is belangrijk voor de gezondheid van uw kind. Toch blijkt dat kinderen vaak te veel snoepen en te weinig groenten eten. De Wageningen Universiteit onderzoekt strategieën om kinderen gezonder te laten eten.

Doel Veel ouders vinden het lastig om hun kind genoeg groente te laten eten. Mogelijk vergroot het mee klaarmaken van groente de bereidheid om te proeven. In deze studie onderzoeken we dit idee op een speelse manier.



Het onderzoek Het onderzoek vindt eenmalig plaats in de middag op de buitenschoolse opvang van uw kind. Alle kinderen worden gevraagd een pauw te knutselen (zie de afbeelding). De helft van de kinderen knutselt de pauw met de groenten komkommer, wortel en tomaat, en de andere helft van de kinderen knutselt met kralen. Op basis van toeval wordt bepaald waarmee uw kind knutselt. Na het knutselen mogen alle kinderen van een geknutselde groentepauw eten en wordt er gemeten hoeveel er gegeten wordt. De kinderen mogen zelf bepalen hoeveel ze eten. De producten worden niet bewerkt; alleen standaard producten zoals ook in de supermarkt verkrijgbaar worden aangeboden. Na afloop stellen we hen nog een aantal vragen.

Allergie, dieet en overige informatie Is uw kind allergisch of volgt uw kind een speciaal dieet waardoor hij of zij geen komkommer, wortel of tomaat mag eten, meld dit dan bij de pedagogisch medewerker van uw kind. Als uw kind andere voedsel gerelateerde bijzonderheden heeft horen wij dat ook graag.

Vrijwillige medewerking en anonimiteit Medewerking aan het onderzoek is volledig op vrijwillige basis. Uw kind mag ten alle tijden stoppen met de deelname. Mocht u besluiten om niet deel te nemen aan het onderzoek, dan heeft dit geen enkele gevolgen voor u of voor uw kind(eren). De gegevens van dit onderzoek worden volledig anoniem verwerkt en zullen alleen voor dit onderzoek gebruikt worden. De gegevens worden niet aan derden verstrekt. Als u om welke reden dan ook niet wilt dat uw kind(eren) meewerken, laat dit dan vóór **<datum>** weten aan de pedagogisch medewerker van uw kind(eren).

Hoe deelnemen? Mochten wij geen bericht ontvangen dat uw kind niet deel mag nemen, dan gaan we er stilzwijgend vanuit dat u geen bezwaren heeft en dat uw kind mee mag werken. Aan de achterzijde van deze brief is een afmeldformulier gekoppeld waarmee u uw kind kunt afmelden.

Vragen? Heeft u vragen of opmerkingen betreft dit onderzoek, dan kunt u hiervoor terecht bij de onderzoeker Sanne Raghoobar op sanne.raghoobar@wur.nl of 06 20612363.

Met vriendelijke groet namens het onderzoeksteam,

Sabine Jansen en Sanne Raghoobar (onderzoekers)
Dr. Ellen van Kleef (Universitair docent consumentengedrag)
Dr. Emely de Vet (Universitair hoofddocent Gezondheidscommunicatie)

Afmeldformulier

Met het ondertekenen van dit afmeldformulier geef ik aan ervan af te zien dat mijn kind(eren) meedoen aan het onderzoek. U kunt het formulier inleveren bij de pedagogisch medewerker van uw kind(eren).

Naam ouder/verzorger:

Handtekening ouder/verzorger:

Naam kind(eren):

Groep:

Als u wilt kunt u hieronder de reden van afzegging neerschrijven, maar dit is niet noodzakelijk.

Reden:

Letter managers

Geachte heer/mevrouw <naam>,

Vanuit Wageningen Universiteit en Research centrum wordt er een onderzoek naar eetgedrag onder kinderen uitgevoerd. Om dit onderzoek succesvol af te ronden zijn wij op zoek naar organisaties die deel willen nemen aan ons project. Het onderzoek richt zich op kinderen in de leeftijdscategorie van 4 tot en met 6 jaar, wat ongeveer overeen komt met groep 1 en 2.

Doel Het ontwikkelen van een gezonde levensstijl bij kinderen en de daarbij behorende voeding is een onderwerp dat de kinderopvang en ouders bezighoudt. Zo worden initiatieven als gezonde lunches en traktaties vaak al gestimuleerd. Ondanks deze veelbelovende initiatieven blijft het een uitdaging om kinderen genoeg groenten en minder snoep te laten eten. Mogelijk vergroot het mee klaarmaken van groente de bereidheid van kinderen om te proeven. In deze studie onderzoeken we dit idee op een speelse manier, om zo een bijdrage te kunnen leveren aan kennis over het realiseren van een gezonde levensstijl.

Het onderzoek Het onderzoek vindt eenmalig plaats op uw buitenschoolse opvang in de groepen 1 en/of 2. In duo's zullen alle kinderen worden gevraagd een pauw te knutselen (zie de afbeelding). De helft van de kinderen knutselt de pauw met de groenten komkommer, wortel en tomaat, en de andere helft van de kinderen knutselt met kralen. Op basis van toeval wordt bepaald waarmee het kind knutselt. Na het knutselen mogen alle kinderen van een geknutselde groentepauw eten en wordt er gemeten hoeveel er gegeten wordt. De kinderen mogen zelf bepalen hoeveel ze eten. De producten worden niet bewerkt; alleen standaard producten zoals ook in de supermarkt verkrijgbaar worden aangeboden. Na afloop stellen we hen nog een aantal vragen.



Wat betekent dit voor uw kinderopvang? Deelname aan dit onderzoek heeft weinig tot geen impact op de dagelijkse gang van zaken binnen de groepen. Alle materialen en omliggende zaken zullen door de Wageningen Universiteit geleverd worden. Het enige wat wij van uw kinderopvang vragen is een locatie om het onderzoek af te nemen en tijd van de kinderen om te knutselen.

Deelname aan het onderzoek Heeft u interesse om deel te nemen aan ons onderzoek? U kunt een e-mail sturen naar Sanne Raghoobar op sanne.raghoobar@wur.nl of bellen naar 06 20612363, wij zullen dan zo spoedig mogelijk contact met u opnemen. Ook bij eventuele onduidelijkheden of vragen staan wij u graag te woord.

Wij kijken uit naar uw antwoord!

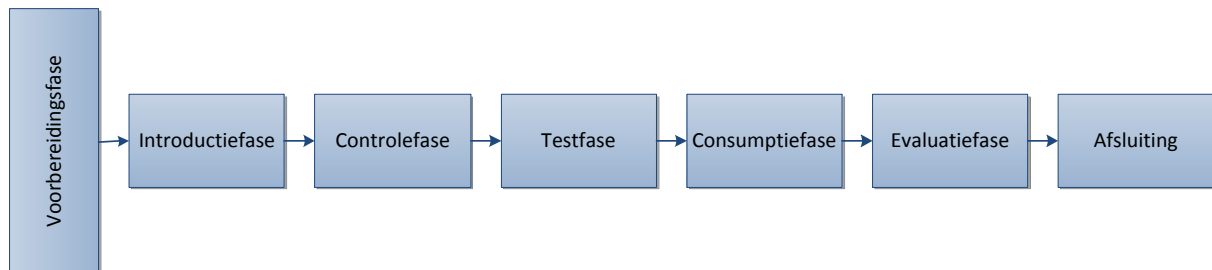
Met gezonde groet namens het onderzoeksteam,

Sabine Jansen en Sanne Raghoobar (onderzoekers)
Dr. Ellen van Kleef (Universitair docent consumentengedrag)
Dr. Emely de Vet (Universitair hoofddocent Gezondheidscommunicatie)

Appendix 2 – Experimental manuals

Experimental condition

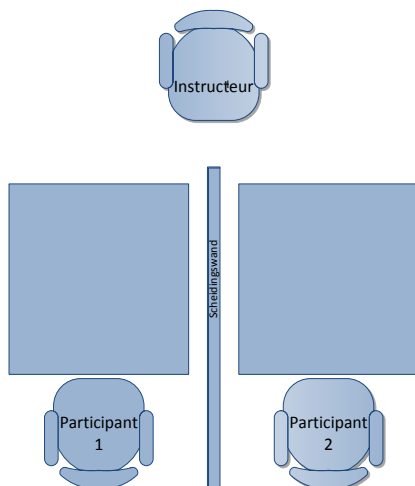
Het experiment kan opgedeeld worden in zes fasen, exclusief de voorbereidingsfase. Ter verduidelijking is er een flowchart toegevoegd die deze fasen weergeeft, zie Figuur 17. In de volgende paragrafen worden de verschillende fasen beschreven, na de voorbereidingsfase wordt dit gedaan in de vorm van een script dat tijdens het experiment gebruikt wordt.



Figuur 17 - Onderzoeksfasen

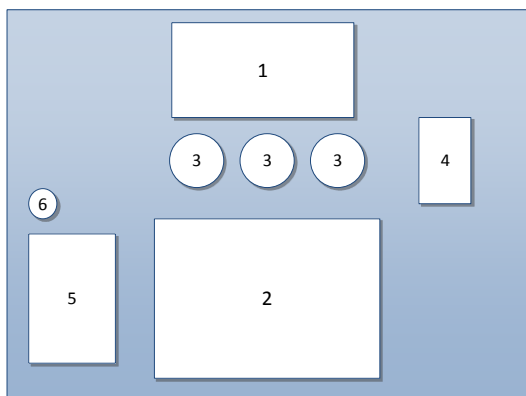
Voorbereidingsfase

Twee participanten nemen tegelijkertijd deel aan het experiment. Door middel van een scheidingswand is sociaal contact geminimaliseerd. De instructeur plaatst zich tijdens de introductiefase, controlefase, evaluatiefase en afsluiting in het zicht van beide participanten. Tijdens de testfase en consumptiefase plaatst de instructeur zich op een afstand van beide participanten. In Figuur 18 is de opstelling van de onderzoeksruijnte geïllustreerd.



Figuur 18 - Opstelling onderzoeksruijnte

Voordat het experiment afgenomen wordt is het belangrijk dat alle benodigde onderdelen klaargezet zijn op de tafels van de participanten. In Figuur 19 **Fout! Verwijzingsbron niet gevonden.** is de opstelling van de tafel weergegeven. De opstelling bestaat uit de volgende onderdelen, de cijfers corresponderen met de cijfers in Figuur 19.



- 1) Voorbeeld groentepauw;
- 2) Placemat met plastic lichaam van de pauw;
- 3) Bakjes met respectievelijk zestien schijfjes komkommer, zestien tomaatjes en zestien schijfjes wortel;
- 4) Vier cocktailprikkers (*instructeur bewaart reserve cocktailprikkers, indien nodig*);
- 5) Vragenlijst appetite bovenop, daarna het instructievel en dan de evaluatievragenlijst;
- 6) Stempels.

Figuur 19 - Opstelling tafel

Om de procedure op een correcte manier te laten verlopen en alle relevante gegevens te registreren maakt de instructeur gebruik van de volgende materialen:

- Evaluatieformulier;
- Vragenlijst;
- Instructievel;
- Tijdschrift;
- Pen;
- Nietmachine;
- Handendoekjes;
- Clipboard.

Introductiefase

Vanaf deze fase wordt de manual als script weergegeven.

Welkom, wat leuk dat jullie mee willen doen aan dit onderzoek! Het duurt ongeveer vijftien minuutjes. Ik zal me even voorstellen, ik ben <naam> en ben bezig met een onderzoek waarbij jullie mij gaan helpen. Wat is jullie naam en hoeveel jaar zijn jullie? Ik zal jullie uitleggen wat we in dit onderzoek gaan doen. Jullie gaan straks een pauw knutselen, daarna mogen jullie van deze pauw eten. Als je wilt stoppen dan kan dat altijd, zeg dit dan even tegen mij. Jullie mogen straks niet met elkaar kletsen, daarom heb ik ervoor gezorgd dat jullie elkaar niet kunnen zien.

Controlefase

Ik ben benieuwd hoeveel trek jullie momenteel hebben. . Naast jullie ligt een papiertje, pak die er maar bij. Op dit papiertje staan drie beertjes afgebeeld. Beertje één heeft geen trek, zijn buikje is helemaal vol. Beertje twee heeft een beetje trek, zijn buikje is half vol. Beertje drie heeft heel veel trek, zijn buikje is bijna leeg (*instructeur wijst aan beide kinderen de beertjes aan*). <Naam kind 1> kan je mij uitleggen hoe je buik voelt wanneer je net avondeten gegeten hebt? <Naam kind 2> kan jij mij ook uitleggen hoe je buik voelt wanneer je net avondeten gegeten hebt? Dankjewel, dit gevoel past het beste bij beertje 1, het beertje met de volle buik (*instructeur wijst het beertje aan beide kinderen aan*). <Naam kind 2> kan je mij nu uitleggen hoe je buik voelt vlak voor dat je avondeten gaat eten. <Naam kind 1> kan jij mij ook uitleggen hoe je buik voelt vlak voordat je avondeten gaat eten? Dankjewel, dit gevoel past het beste bij beertje 3, het beertje met de bijna lege buik (*instructeur wijst het beertje aan beide kinderen aan*). Dan ben ik nu benieuwd hoeveel trek jullie nu hebben, kunnen jullie een stempel zetten bij het beertje dat hier het beste bij past (*instructeur controleert of één stempel achter de vraag is gezet*)?

Testfase

Dan zijn we nu bij het knutselen aangekomen. Voor jullie ligt een pauw gemaakt van groente (*instructeur wijst de voorbeeldpauw aan op de tafel van beide kinderen*). Het is de bedoeling dat jullie deze pauw zo goed mogelijk na gaan maken. De verschillende stapjes staan op dit vel uitgelegd in de vorm van plaatjes (*instructeur wijst naar instructievel*). Dit vel ligt ook op jullie tafel (*instructeur wijst het instructievel aan op de tafel van beide participanten*). Het lichaam van de pauw is al voor jullie in elkaar gezet (*instructeur wijst stap 1 aan*), nu heeft hij nog veren nodig. Eerst leg je de prikkers om de pauw heen (*instructeur wijst stap 2 aan*). In de bakjes voor jullie liggen komkommertjes, tomaatjes en worteltjes. Hiermee ga je de veren knutselen. Deze groenten kun je één voor één op de prikker prikken. Zorg ervoor dat de volgorde van groenten hetzelfde is als op het plaatje, en dat het aantal stukjes dat erop zit ook hetzelfde is (*instructeur wijst stap 3 aan*). Dus begin eerst met een komkommertje, daarna een tomaatje, daarna een worteltje en ga zo door totdat er zes stukjes groente op een prikker zitten. In totaal moeten er vier veren geknutseld worden, deze hoeven niet aan de pauw geklikt te worden, maar kun je er gewoon omheen leggen (*instructeur wijst stap 4 aan*). En dan is de pauw af! Als je klaar bent met je pauw steek je je vinger op (*instructeur wijst stap 5 aan*). Na het knutselen van de pauw mag je van de pauw eten. Het maakt niet uit hoelang je over het knutselen van de pauw doet. Hebben jullie nog vragen? Je kunt altijd naar de plaatjes en de voorbeeldpauw kijken tijdens het knutselen. Veel succes! *De instructeur meet de totale knutseltijd.*

Consumptiefase

De uitleg van deze fase is individueel, behalve als beide participanten even snel klaar zijn met de testfase. Nu mag jij zoveel groenten eten als je zelf wilt, eerst van jouw eigen gemaakte pauw en daarna als je wilt uit de bakjes. De groenten mag je niet mee naar huis nemen. Als je klaar bent met eten steek je je vinger op. *De instructeur meet de totale consumptietijd en meet de tijd dat de ene participant op de andere participant moet wachten. Daarnaast telt de instructeur het resterende aantal stukjes komkommer, tomaat en worteltjes.*

Evaluatiefase

Deze fase wordt gezamenlijk uitgevoerd. Vanaf dit moment mag je niet meer uit de bakjes of van de pauw eten. Naast jullie ligt een vragenlijst, pak die er maar bij. Ik ga jullie nu een aantal vragen stellen over het eten. Vond je de veren lekker of vies? Op dit papiertje staan vijf poppetjes afgebeeld. Het eerste poppetje vindt de veren heel vies, hij heeft twee duimen omlaag. Het tweede poppetje vindt de veren vies, hij heeft één duim omlaag. Het derde poppetje vindt de veren niet vies en niet lekker, hij steekt geen duimen op. Het vierde poppetje vindt de veren lekker, hij lacht en steekt één duim omhoog. Het vijfde poppetje vindt de veren heel lekker, hij lacht en steekt beide duimen omhoog (*instructeur wijst aan beide kinderen de poppetjes aan*). Vonden jullie de veren lekker of vies? Zet een stempel bij één van de vijf poppetjes (*instructeur controleert of één stempel achter de vraag is gezet*).

Vond je de komkommertjes lekker of vies? Het eerste poppetje vindt de komkommertjes heel vies. Het tweede poppetje vindt de komkommertjes vies. Het derde poppetje vindt de komkommertjes niet vies en niet lekker. Het vierde poppetje vindt de komkommertjes lekker. Het vijfde poppetje vindt de komkommertjes heel lekker (*instructeur wijst aan beide kinderen de poppetjes aan*). Vond je de komkommertjes lekker of vies? Zet een stempel bij één van de vijf poppetjes (*instructeur controleert of één stempel achter de vraag is gezet*).

Vond je de tomaatjes lekker of vies? Het eerste poppetje vindt de tomaatjes heel vies. Het tweede poppetje vindt de tomaatjes vies. Het derde poppetje vindt de tomaatjes niet vies en niet lekker. Het vierde poppetje vindt de tomaatjes lekker. Het vijfde poppetje vindt de tomaatjes heel lekker

(instructeur wijst aan beide kinderen de poppetjes aan). Vond je de tomaatjes lekker of vies? Zet een stempel bij één van de vijf poppetjes (instructeur controleert of één stempel achter de vraag is gezet).

Vond je de worteltjes lekker of vies? Het eerste poppetje vindt de worteltjes heel vies. Het tweede poppetje vindt de worteltjes vies. Het derde poppetje vindt de worteltjes niet vies en niet lekker. Het vierde poppetje vindt de worteltjes lekker. Het vijfde poppetje vindt de worteltjes heel lekker *(instructeur wijst aan beide kinderen de poppetjes aan)*. Vond je de worteltjes lekker of vies? Zet een stempel bij één van de vijf poppetjes *(instructeur controleert of één stempel achter de vraag is gezet)*.

Draai de vragenlijst maar om. Ik heb nog twee laatste vragen voor jullie over de geknutselde pauw *(instructeur wijst geknutselde pauw aan)*, hier komt de eerste; Hoe trots ben je op je knutselpauw? De eerste pauw is helemaal niet trots, hij heeft géén veren. De tweede pauw is een beetje trots, hij heeft twee veren. De derde pauw is heel erg trots, hij heeft vier veren *(instructeur wijst aan beide kinderen de pauwen aan)*. Hoe meer veren de pauw heeft, hoe trotser je bent. Hoe trots ben je op je knutselpauw? Zet een stempel bij één van de drie pauwen *(instructeur controleert of één stempel achter de vraag is gezet)*.

Hoe erg heb je je best gedaan op je knutselpauw? Het eerste poppetje heeft helemaal niet zijn best gedaan, hij heeft één duim omlaag. Het tweede poppetje heeft een beetje zijn best gedaan, hij steekt geen duimen op. Het derde poppetje heeft heel erg zijn best gedaan, hij lacht en steekt één duim omhoog *(instructeur wijst aan beide kinderen de poppetjes aan)*. Hoe erg heb je je best gedaan op je knutselpauw? Zet een stempel bij één van de drie poppetjes *(instructeur controleert of één stempel achter de vraag is gezet)*.

Afsluiting

Heel erg bedankt dat jullie mee hebben gedaan aan het onderzoek, ik hoop dat jullie het een beetje leuk hebben gevonden! Heb je nog een vraag aan mij? Jullie mogen alles op de tafel laten liggen, en ik zal jullie terugbrengen naar de groep. *Wanneer de participanten zijn terug gebracht naar hun groep telt de instructeur het aantal overgebleven stukjes groenten.*

Algemene aandachtspunten

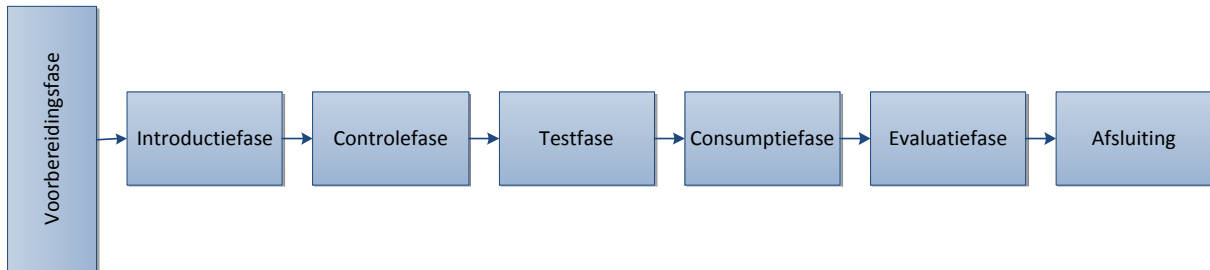
Een aantal algemene aandachtspunten die tijdens het gehele proces gelden zijn:

- Druk de vragenlijsten enkelzijdig af, in verband met het feit dat stempels door het papier heen drukken;
- De instructeur maakt gebruik van zijn of haar eigen vragenlijst en instructievel tijdens de uitleg van het proces;
- Gebruik geen gele stempels, deze zie je niet goed;
- Zorg ervoor dat de participanten op de 'juiste' plek hun stempel zetten, en dat deze duidelijk zichtbaar is;
- Als participanten meerde stempels zetten bij een vraag, zet dan een kruis door de foutieve stempels;
- Let op dat tijdens het onderzoek participanten elkaar niet kunnen zien en niet met elkaar communiceren (zowel verbaal als non-verbaal);
- Tijdens de test- en consumptiefase is het niet de bedoeling dat participanten communiceren met de instructeur;
- De instructeur blijft tijdens het gehele proces neutraal, dat wil zeggen dat er geen complimenten (verbaal en non-verbaal) gegeven worden aan de participanten;

- Tijdens de test- en consumptiefase trekt de instructeur zich terug en richt zich op een tijdschrift. Het evaluatieformulier is onopvallend in het tijdschrift geplaatst.
- Als participanten de groenten rechtstreeks van het stokje af willen eten, aangeven dat ze beter eerst de groenten van het stokje af kunnen halen voordat ze het op gaan eten.
- Neem de tijd om alles uit te leggen, lijkt een participant het in eerste instantie niet te begrijpen, herhaal de stap nogmaals;
- Als zich onvoorziene omstandigheden voordoen, noteer deze dan direct op het evaluatieformulier;
- De participant geeft aan wanneer hij of zij vindt dat het werk af is, indien dit niet geheel overeen komt met wat op het voorbeeld staat is dit geen probleem. Het gaat er om dat de participant vindt dat het knutselwerk 'succesvol' afgerond is;
- Zorg ervoor dat de stoelen hoog genoeg zijn voor de participanten zodat ze bovenop de tafel kunnen kijken. Neem eventueel kussens mee indien de tafels te hoog zijn;
- Het kan zijn dat een participant het lokaal moet verlaten, bijvoorbeeld bij een toiletbezoek of wanneer een participant wilt stoppen. Loop dan rustig mee met de participant en noteer de bijzonderheid op beide evaluatieformulieren, inclusief de tijd dat de bijzonderheid heeft geduurd. Daarnaast is het belangrijk dat de instructeur kort aan de andere participant uitlegt wat er aan de hand is en dat de instructeur aangeeft zo weer terug te zijn.

Control condition

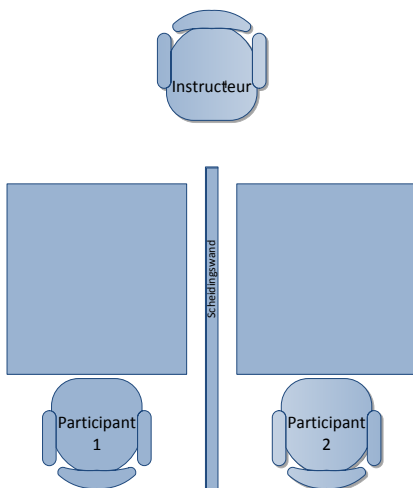
Het experiment kan opgedeeld worden in zes fasen, exclusief de voorbereidingsfase. Ter verduidelijking is er een flowchart toegevoegd die deze fasen weergeeft, zie Figuur 20. In de volgende paragrafen worden de verschillende fasen beschreven, na de voorbereidingsfase wordt dit gedaan in de vorm van een script dat tijdens het experiment gebruikt wordt.



Figuur 20 - Onderzoeksfasen

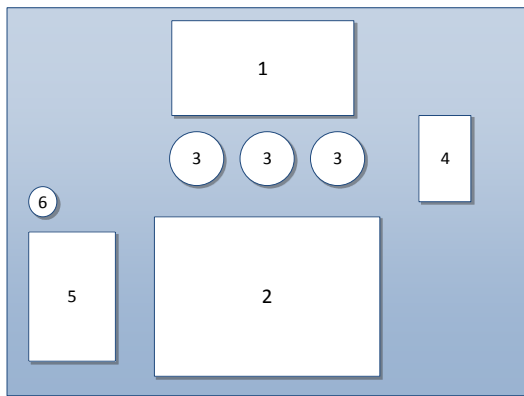
Voorbereidingsfase

Twee participanten nemen tegelijkertijd deel aan het experiment. Door middel van een scheidingswand is sociaal contact geminimaliseerd. De instructeur plaatst zich tijdens de introductiefase, controlefase, evaluatiefase en afsluiting in het zicht van beide participanten. Tijdens de testfase en consumptiefase plaatst de instructeur zich op een afstand van beide participanten. In Figuur 21 is de opstelling van de onderzoeksruijme geïllustreerd.



Figuur 21 - Opstelling onderzoeksruijme

Voordat het experiment afgenomen wordt is het belangrijk dat alle benodigde onderdelen klaargezet zijn op de tafels van de participanten. In Figuur 22 is de opstelling van de tafel weergegeven. De opstelling bestaat uit de volgende onderdelen, de cijfers corresponderen met de cijfers in Figuur 22.



- 1) Voorbeeld groentepauw;
- 2) Placemat met plastic lichaam van de pauw;
- 3) Bakjes met respectievelijk zestien groene kralen, zestien rode kralen en zestien oranje kralen;
- 4) Vier cocktailprikkers (*instructeur bewaart reserve cocktailprikkers, indien nodig*);
- 5) Vragenlijst appetite bovenop, daarna het instructievel en dan de evaluatievragenlijst;
- 6) Stempels.

Figuur 22 - Opstelling tafel

Om de procedure op een correcte manier te laten verlopen en alle relevante gegevens te registreren maakt de instructeur gebruik van de volgende materialen:

- Evaluatieformulier;
- Vragenlijst;
- Instructievel;
- Tijdschrift;
- Pen;
- Nietmachine;
- Handendoekjes;
- Clipboard.

Introductiefase

Vanaf deze fase wordt de manual als script weergegeven.

Welkom, wat leuk dat jullie mee willen doen aan dit onderzoek! Het duurt ongeveer vijftien minuutjes. Ik zal me even voorstellen, ik ben <naam> en ben bezig met een onderzoek waarbij jullie mij gaan helpen. Wat is jullie naam en hoeveel jaar zijn jullie? Ik zal jullie uitleggen wat we in dit onderzoek gaan doen. Jullie gaan straks een pauw knutselen van kralen, daarna mogen jullie van deze pauw eten (*instructeur wijst groentepauw aan*). Als je wilt stoppen dan kan dat altijd, zeg dit dan even tegen mij. Jullie mogen straks niet met elkaar kletsen, daarom heb ik ervoor gezorgd dat jullie elkaar niet kunnen zien.

Controlefase

Ik ben benieuwd hoeveel trek jullie momenteel hebben. Naast jullie ligt een papiertje, pak die er maar bij. Op dit papiertje staan drie beertjes afgebeeld. Beertje één heeft geen trek, zijn buikje is helemaal vol. Beertje twee heeft een beetje trek, zijn buikje is half vol. Beertje drie heeft heel veel trek, zijn buikje is bijna leeg (*instructeur wijst aan beide kinderen de beertjes aan*). <Naam kind 1> kan je mij uitleggen hoe je buik voelt wanneer je net avondeten gegeten hebt? <Naam kind 2> kan jij mij ook uitleggen hoe je buik voelt wanneer je net avondeten gegeten hebt? Dankjewel, dit gevoel past het beste bij beertje 1, het beertje met de volle buik (*instructeur wijst het beertje aan beide kinderen aan*). <Naam kind 2> kan je mij nu uitleggen hoe je buik voelt vlak voor dat je avondeten gaat eten. <Naam kind 1> kan jij mij ook uitleggen hoe je buik voelt vlak voordat je avondeten gaat eten? Dankjewel, dit gevoel past het beste bij beertje 3, het beertje met de bijna lege buik (*instructeur wijst het beertje aan beide kinderen aan*). Dan ben ik nu benieuwd hoeveel trek jullie nu hebben, kunnen jullie een stempel zetten bij het beertje dat hier het beste bij past (*instructeur controleert of één stempel achter de vraag is gezet*)?

Testfase

Dan zijn we nu bij het knutselen aangekomen. Voor jullie ligt een pauw gemaakt van groente (*instructeur wijst de voorbeeldpauw aan op de tafel van beide kinderen*). Het is de bedoeling dat jullie deze pauw zo goed mogelijk na gaan maken met kralen. De verschillende stapjes staan op dit vel uitgelegd in de vorm van plaatjes (*instructeur wijst naar instructievel*). Dit vel ligt ook op jullie tafel (*instructeur wijst het instructievel aan op de tafel van beide participanten*). Het lichaam van de pauw is al voor jullie in elkaar gezet (*instructeur wijst stap 1 aan*), nu heeft hij nog veren nodig. Eerst leg je de prikkers om de pauw heen (*instructeur wijst stap 2 aan*). In de bakjes voor jullie liggen groene, rode en oranje kralen. Hiermee ga je de veren knutselen. De kleuren van de kralen zijn hetzelfde als de kleuren van de komkommer (groen), tomaat (rood) en wortel (oranje) (*instructeur wijst dit aan*). Deze kralen kun je één voor één op de prikker prikken. Zorg ervoor dat de volgorde van de kralen hetzelfde is als op het plaatje, en dat het aantal kralen dat erop zit ook hetzelfde is (*instructeur wijst stap 3 aan*). Dus begin eerst met een groene kraal, daarna een rode kraal, daarna een oranje kraal en ga zo door totdat er zes kralen op een prikker zitten. In totaal moeten er vier veren geknutseld worden, deze hoeven niet aan de pauw geklikt te worden, maar kun je er gewoon omheen leggen (*instructeur wijst stap 4 aan*). En dan is de pauw af! Als je klaar bent met je pauw steek je je vinger op (*instructeur wijst stap 5 aan*). Het maakt niet uit hoelang je over het knutselen van de pauw doet. Hebben jullie nog vragen? Je kunt altijd naar de plaatjes en de voorbeeldpauw kijken tijdens het knutselen. Veel succes! *De instructeur meet de totale knutseltijd.*

Consumptiefase

De uitleg van deze fase is individueel, behalve als beide participanten even snel klaar zijn met de testfase. De instructeur verwisseld de kralenpauw met de groentepauw en zet drie bakjes met komkommer, tomaat en wortel op tafel. Nu mag jij zoveel groenten eten als je zelf wilt, eerst van de groentepauw en daarna als je wilt uit de bakjes. De groenten mag je niet mee naar huis nemen. Als je klaar bent met eten steek je je vinger op. De instructeur meet de totale consumptietijd en meet de tijd dat de ene participant op de andere participant moet wachten. Daarnaast telt de instructeur het resterende aantal stukjes komkommer, tomaat en worteltjes.

Evaluatiefase

*Deze fase wordt gezamenlijk uitgevoerd. Vanaf dit moment mag je niet meer uit de bakjes of van de pauw eten. Naast jullie ligt een vragenlijst, pak die er maar bij. Ik ga jullie nu een aantal vragen stellen over het eten. Vond je de veren lekker of vies? Op dit papiertje staan vijf poppetjes afgebeeld. Het eerste poppetje vindt de veren heel vies, hij heeft twee duimen omlaag. Het tweede poppetje vindt de veren vies, hij heeft één duim omlaag. Het derde poppetje vindt de veren niet vies en niet lekker, hij steekt geen duimen op. Het vierde poppetje vindt de veren lekker, hij lacht en steekt één duim omhoog. Het vijfde poppetje vindt de veren heel lekker, hij lacht en steekt beide duimen omhoog (*instructeur wijst aan beide kinderen de poppetjes aan*). Vonden jullie de veren lekker of vies? Zet een stempel bij één van de vijf poppetjes (*instructeur controleert of één stempel achter de vraag is gezet*).*

*Vond je de komkommertjes lekker of vies? Het eerste poppetje vindt de komkommertjes heel vies. Het tweede poppetje vindt de komkommertjes vies. Het derde poppetje vindt de komkommertjes niet vies en niet lekker. Het vierde poppetje vindt de komkommertjes lekker. Het vijfde poppetje vindt de komkommertjes heel lekker (*instructeur wijst aan beide kinderen de poppetjes aan*). Vond je de komkommertjes lekker of vies? Zet een stempel bij één van de vijf poppetjes (*instructeur controleert of één stempel achter de vraag is gezet*).*

Vond je de tomaatjes lekker of vies? Het eerste poppetje vindt de tomaatjes heel vies. Het tweede poppetje vindt de tomaatjes vies. Het derde poppetje vindt de tomaatjes niet vies en niet lekker. Het

vierde poppetje vindt de tomaatjes lekker. Het vijfde poppetje vindt de tomaatjes heel lekker (*instructeur wijst aan beide kinderen de poppetjes aan*). Vond je de tomaatjes lekker of vies? Zet een stempel bij één van de vijf poppetjes (*instructeur controleert of één stempel achter de vraag is gezet*).

Vond je de worteltjes lekker of vies? Het eerste poppetje vindt de worteltjes heel vies. Het tweede poppetje vindt de worteltjes vies. Het derde poppetje vindt de worteltjes niet vies en niet lekker. Het vierde poppetje vindt de worteltjes lekker. Het vijfde poppetje vindt de worteltjes heel lekker (*instructeur wijst aan beide kinderen de poppetjes aan*). Vond je de worteltjes lekker of vies? Zet een stempel bij één van de vijf poppetjes (*instructeur controleert of één stempel achter de vraag is gezet*).

Draai de vragenlijst maar om. Ik heb nog twee laatste vragen voor jullie over de geknutselde pauw (*instructeur wijst geknutselde pauw aan*), hier komt de eerste; Hoe trots ben je op je knutselpauw? De eerste pauw is helemaal niet trots, hij heeft géén veren. De tweede pauw is een beetje trots, hij heeft twee veren. De derde pauw is heel erg trots, hij heeft vier veren (*instructeur wijst aan beide kinderen de pauwen aan*). Hoe meer veren de pauw heeft, hoe trotser je bent. Hoe trots ben je op je knutselpauw? Zet een stempel bij één van de drie pauwen (*instructeur controleert of één stempel achter de vraag is gezet*).

Hoe erg heb je je best gedaan op je knutselpauw? Het eerste poppetje heeft helemaal niet zijn best gedaan, hij heeft één duim omlaag. Het tweede poppetje heeft een beetje zijn best gedaan, hij steekt geen duimen op. Het derde poppetje heeft heel erg zijn best gedaan, hij lacht en steekt één duim omhoog (*instructeur wijst aan beide kinderen de poppetjes aan*). Hoe erg heb je je best gedaan op je knutselpauw? Zet een stempel bij één van de drie poppetjes (*instructeur controleert of één stempel achter de vraag is gezet*).

Afsluiting

Heel erg bedankt dat jullie mee hebben gedaan aan het onderzoek, ik hoop dat jullie het een beetje leuk hebben gevonden! Heb je nog een vraag aan mij? Jullie mogen alles op de tafel laten liggen, en ik zal jullie terugbrengen naar de groep. *Wanneer de participanten zijn terug gebracht naar hun groep telt de instructeur het aantal overgebleven stukjes groenten.*

Algemene aandachtspunten

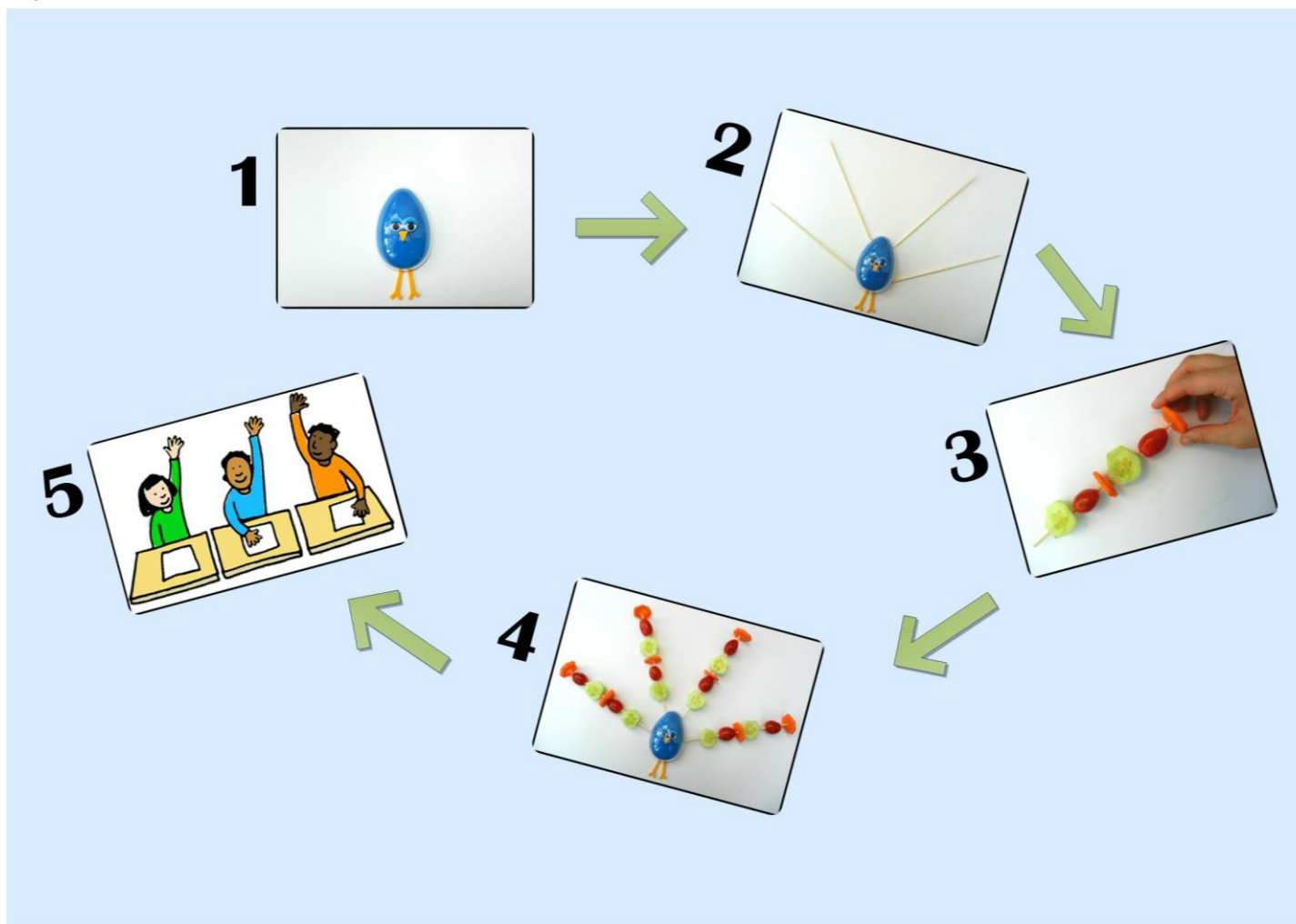
Een aantal algemene aandachtspunten die tijdens het gehele proces gelden zijn:

- Druk de vragenlijsten enkelzijdig af, in verband met het feit dat stempels door het papier heen drukken;
- De instructeur maakt gebruik van zijn of haar eigen vragenlijst en instructievel tijdens de uitleg van het proces;
- Gebruik geen gele stempels, deze zie je niet goed;
- Zorg ervoor dat de participanten op de 'juiste' plek hun stempel zetten, en dat deze duidelijk zichtbaar is;
- Als participanten meerde stempels zetten bij een vraag, zet dan een kruis door de foutieve stempels;
- Let op dat tijdens het onderzoek participanten elkaar niet kunnen zien en niet met elkaar communiceren (zowel verbaal als non-verbaal);
- Tijdens de test- en consumptiefase is het niet de bedoeling dat participanten communiceren met de instructeur;
- De instructeur blijft tijdens het gehele proces neutraal, dat wil zeggen dat er geen complimenten (verbaal en non-verbaal) gegeven worden aan de participanten;

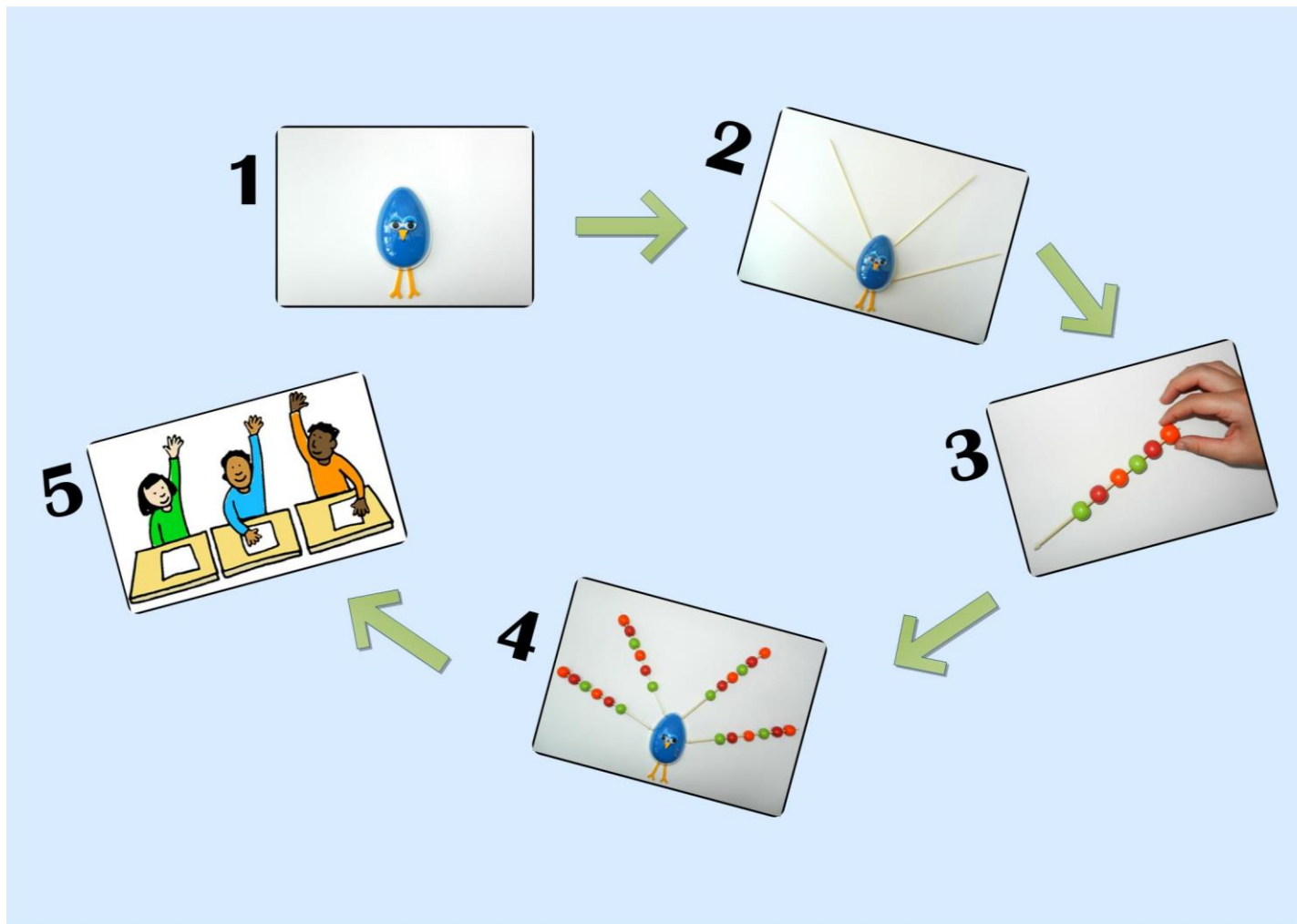
- Tijdens de test- en consumptiefase trekt de instructeur zich terug en richt zich op een tijdschrift. Het evaluatieformulier is onopvallend in het tijdschrift geplaatst.
- Als participanten de groenten rechtstreeks van het stokje af willen eten, aangeven dat ze beter eerst de groenten van het stokje af kunnen halen voordat ze het op gaan eten.
- Neem de tijd om alles uit te leggen, lijkt een participant het in eerste instantie niet te begrijpen, herhaal de stap nogmaals;
- Als zich onvoorziene omstandigheden voordoen, noteer deze dan direct op het evaluatieformulier;
- De participant geeft aan wanneer hij of zij vindt dat het werk af is, indien dit niet geheel overeen komt met wat op het voorbeeld staat is dit geen probleem. Het gaat er om dat de participant vindt dat het knutselwerk 'succesvol' afgerond is;
- Zorg ervoor dat de stoelen hoog genoeg zijn voor de participanten zodat ze bovenop de tafel kunnen kijken. Neem eventueel kussens mee indien de tafels te hoog zijn;
- Het kan zijn dat een participant het lokaal moet verlaten, bijvoorbeeld bij een toiletbezoek of wanneer een participant wilt stoppen. Loop dan rustig mee met de participant en noteer de bijzonderheid op beide evaluatieformulieren, inclusief de tijd dat de bijzonderheid heeft geduurd. Daarnaast is het belangrijk dat de instructeur kort aan de andere participant uitlegt wat er aan de hand is en dat de instructeur aangeeft zo weer terug te zijn.

Appendix 3 – Instruction sheets

Experimental condition












Control condition



Appendix 4 – Questionnaire

Experimental condition

	 Geen trek	 Een beetje trek	 Heel veel trek
Hoeveel trek heb je nu?			










		 Heel vies	 Vies	 Niet vies en niet lekker	 Lekker	 Heel lekker
Vond je de veren lekker of vies?						
Vond je de komkommertjes lekker of vies?						
Vond je de tomaatjes lekker of vies?						
Vond je de worteltjes lekker of vies?						


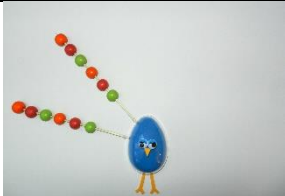

			
	Helemaal niet trots	Een beetje trots	Heel erg trots
Hoe trots ben je op je knutselpauw?			

			
	Helemaal niet je best gedaan	Een beetje je best gedaan	Heel erg je best gedaan
Hoe erg heb je je best gedaan op je knutselpauw?			

Control condition

	 Geen trek	 Een beetje trek	 Heel veel trek
Hoeveel trek heb je nu?			

		 Heel vies	 Vies	 Niet vies en niet lekker	 Lekker	 Heel lekker
Vond je de veren lekker of vies?						
Vond je de komkommertjes lekker of vies?						
Vond je de tomaatjes lekker of vies?						
Vond je de worteltjes lekker of vies?						

			
Hoe trots ben je op je knutselpauw?			

			
Hoe erg heb je je best gedaan op je knutselpauw?			

Appendix 5 - Evaluation form

Evaluatieformulier

Leeftijd:

Geslacht:

Datum:

Tijd:

Locatie:

Tijd registratie	Minuten
Totale knutseltijd	
Totale consumptietijd	

Wachttijd registratie	Ja/Nee	Minuten
Wachten op andere participant na de consumptiefase		

Consumptie registratie	Aantal
Resterende komkommertjes	
Resterende tomaatjes	
Resterende worteltjes	

Observatie	Ja/Nee	Uitleg
Extra uitleg nodig		

Volgorde/hoeveelheid knutselpauw hetzelfde als volgorde/hoeveelheid voorbeeldpauw		
Aanmoediging/complimenten		
Opvallende/uitgesproken emoties van de participant		
Externe invloeden		
Interactie tussen de participanten		
Overige		