

Children's sustainability stories: nightmares or fairy tales?

An in-depth study into children's awareness and concerns regarding sustainability and its influence on their behavior and consumption.

"Then he [the earth] is warmed up and then the North Pole melts and then we flood. We are nowhere safe anymore" (a ten-year-old boy, #28).

"I just want the earth to stay, because I like to play outside" (a nine-year-old boy, #4).



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Abstract

In light of children's recent demonstrations against climate change, this thesis investigates children's awareness and concerns regarding sustainability and its influence on children's behavior and consumption. As previous research has mainly focused on sustainability concerns of (young) adults, this study focuses on children between seven and eleven. Children between seven and eleven have developed the necessary cognitive- and social capabilities to participate in this study. A qualitative approach was taken by interviewing a total of 33 children and 22 parents. Findings were analyzed via ATLAS.ti and suggest that children between seven and eleven are aware of sustainability. Furthermore, they express concerns about nine topics: animals, plastic, pollution, nature, energy, transport, recycling, climate change and their future. These concerns impact a child's behavior. The majority of children often translate concerns about plastic, pollution, energy, transport and recycling into behavior. Behavior regarding animals and nature is less common. In addition, children express a desire to consume sustainably and are positively disposed towards sustainable products. However, the majority of children does not consume sustainably in practice yet. Overall, the findings suggest a relationship between awareness, concerns, behavior and product choice. Future research could test this relationship in a large-scale study or future research could study on of the other six developed propositions. This thesis suggests managers should clearly communicate a product's sustainability credentials and use sustainability in their product positioning to create additional value. Society at large could benefit from this thesis as it stresses children understand sustainability problems well and should be included into designing their future.

Table of Contents

1. Introduction	1
1. Literature review	5
1.1. Children's cognitive development.....	5
1.2. Children as consumers.....	6
1.3. Children's sustainability awareness and concerns.....	6
1.4. Children's sustainable behavior.....	8
1.5. Children's sustainable consumption and product choice.....	8
1.6. General overview of missing aspects in current literature.....	9
2. Method.....	11
2.1. Introduction.....	11
2.2. Sample.....	11
2.3. Data collection.....	12
2.4. Data Analysis	13
2.5. Research ethics	14
2.6. Validity and Reliability	15
3. Results	16
3.1. Children's sustainability awareness and concerns.....	16
3.2. Children's sustainable behavior.....	25
3.3. Children's sustainable consumption and product choice.....	30
3.4. Additional findings.....	35
Conclusion	37
4. Discussion	39
4.1. Interpretation and development of model.....	39
4.2. Propositions and suggestions for future research	44
4.3. Implications.....	47
4.3.1. Theoretical contribution.....	47
4.3.2. Managerial implications	47
4.3.3. Societal implications	48
4.4. Limitations	49
5. References.....	50
Appendix	54
Appendix A: Interview guide child.....	54

<i>Appendix B: Interview guide parent.....</i>	<i>57</i>
<i>Appendix C: Overview of respondents.....</i>	<i>60</i>
<i>Appendix D: Numerical and graphical overview of findings.....</i>	<i>63</i>
<i>Appendix E: Examples of coding.....</i>	<i>64</i>

1. Introduction

“There is no planet B” reads Lilly’s banner. Lilly is a ten-year-old Dutch girl who skips her classes every Friday to protest against climate change. She has been doing that for 19 weeks straight and she is not the only child (Dankbaar, 2019). Greta Thunberg, a Swedish girl of only 16 years old, is inspiring children around the world to strike against climate change under the slogan #FridaysForFuture (BBC, 2019). Successfully, as more than 1.5 million children worldwide protested against climate change (Wahlström, Kocyba, De Vydt & de Moor). For example, in Brussels, thirty thousand children have gone up the streets (Kester, 2019). Furthermore, children in Australia, France, the United Kingdom, Sweden, Japan and the United States organized protest marches to put sustainable development on the political agenda (Carrington, 2018). In the Netherlands too, more than ten thousand children protested for a sustainable future (NOS, 2019; Nu.nl, 2019). This demonstrates children all over the world come together to protect their future, because “it is our future” and “the only planet with French fries” (Kester, 2019).

Besides these practical illustrations, academic research has consistently shown children are aware of environmental problems such as climate change (Barraza, 1999; Francis & Davis, 2013; Tucci, Mitchell & Goddard, 2007; Evans et al., 2007; Hicks & Holden, 2007; Strife, 2012; Strong, 1998; Sargeant, 2007). Furthermore, many children worry about the future (Sargent, 2008). They think the world will be in a worse shape in 50 years (Barraza, 1999) and express pessimistic or even apocalyptic feelings about their future (Strife, 2012). Only a small minority of children is not concerned with environmental problems yet (Hicks & Holden, 2007; Barraza, 1999).

Although academics demonstrated children are aware of environmental problems and are concerned with these issues, it is still unknown whether children act upon their environmental concerns (Francis & Davis, 2013). For example, Strife (2012, p. 51) states: “Unquestionable, more research is needed to further understand how (or if) early environmental concerns play a role in shaping immediate environmental behavior”. Furthermore, Evans et al. (2007, p. 657) end their study with these final words: “How children come to frame environmental issues for themselves and then translate these beliefs into actions have critical implications for the future of our planet. Research on this important topic is truly in its infancy. Much important, path-breaking work lies ahead”.

On the one hand, children might feel overwhelmed or feel helpless which may hamper pro-environmental behavior (Strife, 2012). On the other hand, children view themselves as actors of change and environmental issues stimulate them to take action (Hicks & Holden, 2007). The protest marches organized by children indicate that children nowadays act upon their environmental concerns, but research is needed to confirm this proposition, since empirical research into children's views about sustainability remains limited (Green, 2017).

It is problematic that although children are considered to be key actors in turning towards a sustainable future, most studies remain focused on (young) adults' sustainability attitudes and behavior (Stern, 2000; Gardner & Stern, 2002; Steg & Vlek, 2009; Schultz, 2001). It is crucial to start studying the impact of children's sustainability concerns on behavior in order to achieve long term sustainable development (Evans et al., 2007). Currently, this knowledge lacks. Studies exploring children's environmental concerns are conducted outside the Netherlands (Barraza, 1999; Francis & Davis, 2009; Strife, 2012; Hicks & Holden, 2007). The majority of these studies are executed in Australia as this country is considered to be up front in tackling sustainability issues (Sargeant, 2008; Tucker & Izadpanahi, 2017; Green, 2017; Tucci et al., 2007). However, this limits generalization possibilities and compromises a clear gap in literature.

Another gap in literature is that it remains unknown whether children recognize sustainability in products and prefer sustainable products. Previous studies showed that adults show a preference for products manufactured sustainably (Saari, Baumgartner, & Mäkinen, 2017). Adults also actively search for sustainable products and are willing to pay more for them (Saari et al., 2017). With regard to children, research has shown that children have a desire to consume sustainably but also experience difficulty connecting sustainability to their own consumption (Francis & Davis, 2013). Research has not looked into children's motivations to consume sustainability or their ability to recognize and prefer sustainability on the product level. As society is in the middle of a transition towards a sustainable society in which children, and their consumption patterns, play a key role (Battro, Léna, Sánchez Sorondo, & von Braun, 2017), this gap needs to be addressed immediately.

Following the problem statement and identified research gaps, the aim of this explorative thesis is twofold. Firstly, to examine how children are concerned with the environment and, if they are, how these concerns influence their behavior. Past studies have not succeeded to clarify this and ask for further research (Francis & Davis, 2013; Strife, 2012; Tucker & Izadpanahi, 2017;

Green, 2017; Evans et al., 2007). Secondly, to analyze children's ability to recognize sustainability in products and, if they are, how this alters their product preference and choice.

This thesis explores this twofold aim for children in the age of seven to eleven. Children in this age category are selected for two main reasons. Firstly, children in the age of seven to eleven drastically develop their cognitive as well as social skills and are therefore expected to be able to express themselves and explain their choices (John, 1999; Achenreiner & John, 2003; McAlister & Cornwell, 2010). Secondly, children aged seven to eleven are particularly concerned with environmental problems (Hicks & Holden, 2007). In line with the aim of this thesis, the following research question is formulated:

How are children aged seven to eleven aware of and concerned with sustainability, and if they are, how does this affect their behavior and product choice?

Knowing this is of importance to managers since children have large consumer power. Not only do children have spending power themselves but they also influence the consumption patterns of their parents (John & Sujan, 1990; Strong, 1998). This results into children being increasingly recognized as a valuable market segment (John & Sujan, 1990; John, 1999). Children also compromise a large market segment as the Netherlands currently counts 2.362.230 children under twelve (CBS, 2019). Additionally, since children are the consumers of the future, they contain a large future economic value (Achenreiner & John, 2003).

This thesis is specifically relevant to marketing managers since it tries to stress the contribution marketing can have in transitioning towards a sustainable society. Marketing plays a crucial role in developing and promoting green products, thereby having a vital role in protecting and preserving the environment (Olson, 2012). In order for green products to achieve mass-market status and to truly have a positive impact on the environment, marketing should highlight green attributes and strongly link them to reduced environmental degradation (Olson, 2012).

This thesis is also relevant to governmental institutions for three reasons. Firstly, because children are the voters and decision makers of the future (Strife, 2012). Studying their environmental concerns and subsequent actions could be an indication of how they will manage sustainable development in the future (Strife, 2012) because environmental attitudes and behavior in early childhood shape later thinking in adults (Tucker & Izadpanahi, 2017). Secondly,

highlighting children's environmental concerns could stimulate broader public support for sustainable development as adults main concern is the well-being of their children (Strife, 2013). Governments could use outcomes of this thesis in justifying and designing future policies or educational programs. Thirdly, it highlights the perspectives of members of society, children, that are considered to be crucial into the transition towards a sustainable society (Strife, 2012; Francis & Davis, 2013). Their impact is already demonstrated by the organized protest marches for climate change (NOS, 2019).

This explorative thesis also contributes to academic research. Firstly, it has a unique approach by studying sustainability concerns and behavior of children whereas the majority of studies focusses on (young) adults (Stern, 2000; Gardner & Stern, 2002; Steg & Vlek, 2009). Secondly, this thesis explores the sustainability concerns and behavior of Dutch children whereas the majority of previous studies focused on sustainability concerns and behavior of Australian children. Gathering results from another country provides an opportunity to generalize results. Thirdly, this thesis adds knowledge to marketing literature as it provides insights into children's consumer behavior and their ability to link sustainability to products.

The next chapter provides a literature review on children's cognitive development, children as consumers, and children's awareness, concerns, behavior and consumption regarding sustainability. The fifth chapter presents the qualitative method used in this thesis. Chapter six presents the results, after which conclusions are drawn in chapter seven. Lastly, chapter eight contains a discussion including limitations and recommendations for future research.

1. Literature review

1.1. *Children's cognitive development*

Children's cognitive development functions as a relevant background when studying children's awareness, concerns, behavior and product choice regarding sustainability. It also substantiates the choice to opt for children in the age of seven to eleven. The Theory of Cognitive development by Piaget (1960) describes how children develop their cognitive functions throughout early childhood to adolescence (McAlister & Cornwell, 2010) and explains how children develop as consumers and start to make product choices (John, 1999). The cognitive developments are categorized according to four stages: the sensorimotor stage (birth to two years old), the preoperational stage (two to seven years), the concrete operational stage (seven to eleven years), and the formal operational stage (eleven through adulthood). During every stage, the child develops different cognitive skills.

During the first stage, *the sensorimotor stage*, children from birth to two years old slowly become aware of the external world and learn basic movements, sensations and perceptions (McAlister & Cornwell, 2010; John, 1999).

In the second stage, *the preoperational stage*, children aged two to seven develop mental abilities such as using words to represent objects (John, 1999). They start to form concepts and logic reasoning but make fundamental errors due to not yet fully developed information processing skills. Their perspective is still highly egocentric (McAlister & Cornwell, 2010).

In the third stage, *the concrete operational stage*, children in the age of seven to eleven enormously develop their cognitive thinking, consumer knowledge, information processing abilities and decision-making skills (John, 1999). This makes them able to critically evaluate and compare products based on product information (Valkenburg & Cantor, 2001). As their knowledge of concepts grows drastically, children are likely to become familiar with sustainability. Consequently, sustainability could be one of the features they base their product choices on. Especially, since children at this stage become sincerely interested in real-world phenomena and can accurately represent them in their mind (Moses & Baldwin, 2005). Children of seven to eleven also better understand their own feelings and thoughts and become able to express themselves (John, 1999).

The fourth and final stage is the *formal operational stage* in which children develop as adults. They develop skills to think about complex, abstract situations and understand other person's perspectives in a social context (John, 1999).

This thesis focuses on children in *the concrete operational stage*. Children between seven and eleven participate in this thesis to explore their awareness and concerns regarding sustainability as well as their behavior and consumption.

1.2. Children as consumers

Consumer behavior can be defined as “the totality of consumers’ decisions with respect to the acquisition, consumption, and disposition of goods, services, activities, experiences, people, and ideas by (human) decision-making units [over time]” (Hoyer, MacInnis, & Pieters, 2018, p.5). Consumer behavior is dynamic in nature and can be influenced by a change in someone's priorities, goals, attitudes, digital communications and connections to others (Hoyer et al., 2018).

Children are socialized as consumers earlier than ever before (Ekström, 2007). Socialization is defined as “the processes by which young people acquire skills, knowledge, and attitudes relevant to their functioning as consumers in the marketplace” (Ward, 1974, p. 2). Children are emancipated as consumers at a young age, because modern western families encourage children's opinions and participation in decision-making (Valkenburg, & Cantor, 2001). Consequently, children spend money on products to satisfy their own wants and needs at a younger age (Valkenburg & Cantor, 2001). Children also put pressure on their parents to buy them products they like (Strife, 1998). For example, children increasingly influence simple household purchases such as snacks and sweets but also larger purchases such as a new car and holiday destination (Valkenburg & Cantor, 2001). These trends show that children increasingly influence domestic consumption (Larsson, Andersson, Osbeck, 2010).

1.3. Children's sustainability awareness and concerns

Children are socialized to sustainable development at a young age (Francis & Davis, 2013). Sustainable development is defined as “the development that meets the needs of the present without compromising the ability of future generations to meet their own needs” (World Commission on Environment and Development, 1987, p. 41). Sustainability has three fundamental

pillars: environmental sustainability, social sustainability, and economic sustainability (Hansmann, Mieg & Frischknecht, 2012). In short, environmental sustainability is concerned with the depletion of natural resources, social sustainability describes issues regarding the quality and continuity of people's lives, and economical sustainability deals with consumption issues (Kahriman-Öztürk, Olgan & Gülar, 2012).

Ever since the concept of sustainable development was defined, children have been considered as key actors (World Commission on Environment and Development, 1987). Although children sometimes do not know the exact word of sustainable development, they have well-developed ideas and sophisticated thoughts about it (Green, 2017). They are also highly aware of problems related to sustainable development, which strongly affect young children's everyday life (Strife, 2012; Barraza, 1999). For example, children as young as four are concerned about the environment (Hicks & Holden, 2007). The environment is also of key concern to older children who often feel a strong need to protect the earth (Barraza, 1999; Evans et al., 2010; Francis & Davis, 2013; Tucci et al., 2007; Hicks & Holden, 2007; Green, 2017; Strife, 2012; Sargeant, 2007; Strong, 1998).

In specific, children in the age of seven to eleven (*the concrete operational stage*) show a genuine concern about environmental issues (*the environmental pillar of sustainable development*) (Hicks & Holden, 2007). For instance, they feel concerned about the loss of parks to play in, the many trees being cut down, a loss of wildlife and increased pollution and traffic (Hicks & Holden, 2007). Other concerns are the impact of climate change, pollution, car emissions, eco-damage, resource depletion, harm to animals, oceans and rivers and the ozone layer (Tucci et al., 2007; Francis & Davis, 2013; Strong, 1998). Children understand these problems very well (Strong, 1998; Green, 2017). Furthermore, they feel concerned about their own quality of life as well as the welfare of friends and family, nature, animals and future generations (*the social pillar of sustainable development*) (Sargeant, 2007).

Children develop their own thoughts and feelings on these issues early in life (Sargeant, 2007). For instance, children express feelings of fear, sadness, frustration and anger when talking about environmental problems (Sargeant, 2007). Some children even express apocalyptic and pessimistic feelings about the future of the earth (Barraza, 1999; Strife, 2012; Sargeant, 2007; Hicks & Holden, 2007). Consequently, past studies concluded that many children fear the future (Barraza, 1999; Strife, 2012). "Children believe that, unless something is done now, damage to the

environment will have a direct impact on their society within their own lifetimes” (Strong, 1998, p. 350).

1.4. Children’s sustainable behavior

Children believe they can bring about change with regard to sustainable development. They wish to be better informed about environmental issues, so they know how to behave in a more sustainable way (Hicks & Holden, 2007). Examples of such sustainable behavior are not dropping litter, recycling, saving energy, bringing products with less packaging and walking to school (Hicks & Holden, 2007). Children wanted to behave in favor of the environment even though they experienced environmental concerns (Strife, 2012). To illustrate, many children depicted themselves or others taking personal action for social and environmental change, because they were worried about the future (Barraza, 1999). The need to take action to protect the earth was at the heart of many children’s stories (Green, 2017).

Other children feel powerless with regard to changing the environment, because they experience negative emotions (Strife, 2012). Consequently, they are not involved in actions of change (Hicks & Holden, 2007) and children’s environmental worries do not lead to pro-environmental behavior (Evans et al., 2007; Larsson, Andersson & Osbeck, 2010). Children also have limited options for behaving in favor of the environment (Evans et al., 2007). They face obstacles and difficulties, which largely determine whether children behave in favor of the environment (Evans et al., 2007). Overall, children have the intention to behave responsibly and their environmental awareness could lead to environmental behavior (Evans et al., 2007).

1.5. Children’s sustainable consumption and product choice

Little is known about actual practices of children’s sustainable consumption (Larsson et al., 2010). Sustainable consumption is defined as “the use of services and related products which respond to basic needs and bring a better quality of life while minimizing the use of natural resources and toxic materials as well as emissions of waste and pollutants over the life cycle of the service or product so as not to jeopardize the needs of future generations” (Oslo Symposium on Sustainable Production and Consumption, 1994, as cited in Fuchs & Lorek, 2005).

Children of seven to eleven (*the concrete operational stage*) genuinely care about sustainability and have a strong desire to consume sustainably (*the economic pillar of sustainable development*) (Francis & Davis, 2013). However, they also experience difficulty with connecting sustainability to consumption. The majority of children does not see a connection between their environmental concerns and their own consumption of products. The minority of children who are able to connect their environmental concerns to their own consumption, rarely act on it (Francis & Davis, 2013). For example, a child expressed concerns about big factories creating pollution and the dominance of products made in China but would not stop buying products related to these problems. Children also expressed concerns for counterfeit products and materialism (Francis & Davis, 2013). However, they were not willing to pay more for a product produced in a sustainable way (Larsson et al., 2010).

A minority of children acted upon their environmental concerns. These children gave their pocket money to organizations that protected the environment and animals, because they were concerned about the welfare of animals (De Goede & Hoeks, 2013). Furthermore, a few children were able to link sustainability to food consumption as they tried not to waste food or throw away as little food as possible. They were also familiar with fair trade products and organic products (De Goede & Hoeks, 2013). Other children actively influenced their family's sustainable consumption (Larsson et al., 2010). They influenced their parents in sustainable product choices such as ecologically produced food, unbleached paper, and green laundry detergent. Because environmentally products are widely available as alternatives to traditional products nowadays (Strife, 1999), choosing sustainable products becomes an accessible option. Therefore, children's environmental awareness and concerns could influence their buying decisions (Strong, 1998).

1.6. General overview of missing aspects in current literature

Research of a child's perspective on sustainability is still in its infancy. The few studies so far have discovered children are aware of and concerned with environmental problems. However, an in-depth analysis of environmental concerns is lacking. In most studies, examples of children's concerns were encountered, but clear descriptions such as the cause of these concerns or how these concerns are related to one another, misses. Furthermore, research contradicts each other in terms

of whether these concerns lead to sustainable behavior. Previous research has not been able to link a specific concern to a subsequent action. Moreover, examples of children's sustainable behavior are limited, and they are not put into a broader perspective, e.g. categories.

Lastly, literature on children's sustainable consumption and product choice is mostly limited. It is not known whether children are positively disposed towards environmentally friendly products and prefer a sustainable product, leading to a sustainable product choice. Previous studies also contradict each other in terms of children's ability to link sustainability to consumption. Therefore, this study explores *how children aged seven to eleven are aware of and concerned with sustainability, and if they are, how this affects their behavior and product choice*. This thesis tries to look for relations between the elements, which has not been done by previous research.

2. Method

2.1. Introduction

The aim of this thesis is twofold: first, to examine how seven- to eleven-year-old children are aware of and concerned with sustainability and secondly; if they are, how this influences their behavior as well as consumption and product choice. Children between seven and eleven are qualified for this study, because they are able to express themselves due to a drastic development in their cognitive as well as social skills (Barraza, 2001; John, 1999; Achenreiner & John, 2003).

To address these two aims, a qualitative research, in the form of semi-structured in-depth interviews, is conducted. In-depth interviews should lead to a deep understanding and detailed information about children's awareness, concerns, behavior and consumption (Boyce & Neale, 2006). In-depth interviews also allow informants to elaborate on their personal experiences and opinions (Boyce & Neale, 2006), which is of importance in this thesis. Both children and parents are interviewed to obtain a complete insight.

2.2. Sample

In this thesis, 33 children in the age of seven to eleven participated in in-depth interviews; seven children per age category except for five participating seven-year-olds (see appendix C). The average age of the children was 9.33 years and 54.55% were girls. In addition, 70.59% of the children had one or more siblings. The families lived in different provinces, cities and villages throughout the Netherlands such as Rotterdam, Amsterdam, Utrecht, Nijmegen and Arnhem. Furthermore, for each participating child, one of the parents was interviewed to get additional and valuable insights into children's sustainability concerns, behavior and product choice. In this study, 11 pairs of siblings participated. In these cases, parents were only interviewed once. Unfortunately, I was unable to speak to the parent of a sibling, resulting in a total of 21 interviews with parents. Twenty of those parents were mothers. In total, 54 interviews were conducted between May 3th and May 21th. A t

A convenience sampling within my personal network was used to get in contact with families with children between seven and eleven. Firstly, friends and family were asked whether they had any friends, family or neighbours with children in the required age range. This was very successful

and brought me in contact with 21 children. Secondly, I put a message on Facebook, which was shared by friends and got many responses, resulting in another 12 participating children. If parents and children were willing to participate in the research, I received their contact details and set up a meeting for the interview. The number of interviews was stopped after new interviews did not provide any new information, reaching data saturation.

2.3. Data collection

The majority of interviews were conducted at the child's home, so children were in a familiar setting and felt comfortable. A few parents indicated a preference to call, in which case a skype meeting was arranged. If children felt comfortable with a parent present during the interview, the parent could stay. In that case, the parent was asked not to interfere with the interview. All interviews were anonymous, conducted in Dutch and recorded after given permission by the parent.

Because children as well as their parents were interviewed, two interview guides were developed. Both interview guides covered the topics that are of focus of this thesis: (1) children's awareness and concerns regarding sustainability (2) children's sustainable behavior and (3) children's product choice and consumption (see appendix A and B). The interview guides provided a clear structure and should result in consistency among the interviews and in turn reliability of the findings. Furthermore, both interview guides were designed to support and encourage informants to elaborate on their initial answers. Before conducting the interviews, both interviews were pretested twice via convenience sampling to ensure the informants, children as well as their parents, would accurately understand the questions. While designing the interview guide, it was kept in mind that children have a short attention span (Barraza, 1999), resulting in short, understandable, child-friendly questions. Another important consideration in developing the interview guide was the word 'sustainability'. Children often do not recognize this word, although they accurately understand issues related to it (Green, 2017; Barraza, 1999; Evans et al., 2007; Hicks & Holden, 2007; Francis & Davis, 2012; Strife, 2012). It was also carefully considered to refer to sustainability as neutral as possible since it is a sensitive topic and answers could become biased quickly. Therefore, it was decided to not use the word 'sustainability' in the interview guide for children.

All interviews were recorded after having permission of the parents. The length of the interviews with the children ranged from 02:51 to 29:28 minutes. The length of the interviews with the parents ranged from 04:50 to 24:21.

2.4. Data Analysis

After the interviews were conducted, they were carefully and precisely transcribed. The transcripts were added to ATLAS.ti 8 as documents. Before starting the data analysis, the transcripts of children were split from those of parents, resulting in two groups of transcripts. Transcripts of these two groups were coded separately. ATLAS.ti 8 assisted me with conducting the two data analyses as it helped me discover patterns and relationships as well as identify themes.

A combination of a deductive and inductive approach was used to analyze the transcripts. Deductive coding since the transcripts were analyzed according to the three main categories covered in the literature review. Hereafter, an inductive analysis was applied to establish and develop further sub categories through interpretations made by the researcher. This means sub categories were established during the analysis itself, as it progressed, rather than being established before-hand (Boeije, 't Hart and Hox, 2009). This allows new themes to be discovered during the coding process. Inductive coding consists of three phases; open coding, axial coding and selective coding (Bleijenbergh, 2013).

During the first phase, open coding, passages relevant for answering the research question were coded with a single word. They were firstly coded according to the three main themes covered in the literature review: (1) awareness and concerns, (2) behavior, and (3) consumption. Secondly, passages were coded with a subsequent sub category. These labels naturally emerged during the coding process (see appendix E). During the second phase, axial coding, passages were compared with one another in order to find relationships and several sub categories were merged or deleted. In the last phase, selective coding, the final sub categories were established and the transcripts were reread to code data that related to the final categories. For awareness and concerns, nine sub categories emerged: 'pollution', 'nature', 'animals', 'plastic', 'climate change', 'transport', 'energy', 'recycling' and 'future'. In the category behavior, eight sub categories occurred: 'nature', 'pollution', 'transport', 'plastic', 'recycling', 'animals', and 'energy and water'. In the category of consumption, three sub categories emerged: 'plastic', 'pollution', and 'animals'. This resulted in a

total of four main categories and 21 subcategories. However, many subcategories overlapped, and only nine unique sub categories exist (see appendix D).

Furthermore, interesting findings not covered in the literature review, but naturally emerging during the interview, were coded as well. This led to three additional main categories: ‘opinions’, ‘feelings’ and ‘information source’. Information source consisted of three sub categories: school, parents and media.

The subcategories emerging in the transcripts of the parents completely overlapped with the transcripts of the children in order to establish consistency. Once all the transcripts were coded, they were overlooked twice more to ensure consistency.

2.5. Research ethics

Because children were involved in this thesis, research ethics were crucial and carefully considered. It was important that children felt safe and comfortable with talking to me. Therefore, I spent time with the children before conducting the interview started in order for children to get to know me.

During the interview, I stressed all answers were helpful and that they could not give a wrong answer. Children were told they could pause or stop the interview at any moment as the interviews were on a voluntary basis. I also told them their parent could stay with them during the interview if they wanted to. After the interview, children were rewarded with a small gift; an animal pen.

It was important that parents understood the purpose of the interview clearly. They were informed that anonymity was guaranteed and that their own as well as their children’s names would not be mentioned in the thesis. If interested, parents were informed that I would be more than happy to share a copy of the thesis or their child’s transcripts with them. Children were just very shortly and in simple language informed about the purpose.

Results of this study will not be misused in any way or shared with third parties that have interests not in line with this thesis. For example, the results will not be shared with companies who directly target children.

2.6. Validity and Reliability

Two pre-tests were executed to ensure the questions in both interview guides were clear. Therefore, a younger family member (12) was interviewed as well as her parent. After conducting the pre-tests, the children's interview guide was adapted. Firstly, two questions were slightly reformulated to ensure they were well understood. Secondly, two questions were added: "what do you think the future will look like?" to get an idea of their concerns for the future and "what should people do to make sure people and animals can live nicely on the earth?". The latter question was added to make it easier for children to talk about their own behaviour, since it appeared this was difficult. Thirdly, one question was deleted: "How did this behaviour begin?", since this question was not understood. Lastly, the questions about product choice were also slightly reformulated to make them easier to understand as this seemed to be the most difficult topic. The parent's interview guide remained unchanged as all questions were clear and could be answered without difficulty.

3. Results

3.1. *Children's sustainability awareness and concerns*

The majority of children (24) was aware that some people try to live in a way it is nice to the earth, people and animals. Most of these children simply confirmed they had heard of this lifestyle, others said they heard about this lifestyle frequently and some children wanted to live like this themselves. Many children formed immediate associations with living in a way it is nice to the earth, people and animals.

“Yes, they become vegetarian to save animals. They take solar panels or other green energy” (a ten-year-old boy, #27).

“Yes, people use less water and, yes, often do much more with it” (an eleven-year-old girl, #5).

“Yes, they become vegetarian and they take nature into account and they throw plastic in the trash” (a nine-year-old boy, #7).

Seven children had not heard of this lifestyle before. In addition, three children had heard of living in this way, but could not remember or tell what they had heard. These children were asked if they ever talked about nature or the environment. The majority of children (7) was then able to talk about the subject.

“Well, that we have to take care of nature better, because people always throw away plastic and everything and pollute nature. And a lot with cars and that there should be electric cars, because there is so much CO2 emissions” (an eleven-year-old boy, #44).

Only two seven-year-old girls did not know anything related to living in a way it is nice to the earth. One girl (#10) started to laugh while asking questions. The other girl (#34) only said “water and food are good for your head”.

Although the vast majority of children (31) was aware of people living in a way it is nice to the earth, people and animals, they were not familiar with the word sustainability yet. Only one eleven-year-old girl used the word sustainability. Most children referred to sustainability as being good to the environment.

In addition, the majority of parents (14) thought their child was (highly) aware of sustainability although their child did not know the word sustainability yet.

“Yes of course! I don't even know if my answers are as good as those of my children. They are very aware of what is going on in the world. ... When I said you would talk about sustainability, they said “what is sustainability?”. So, I explained it and then they said, “oh that’s it”. So, awareness of the earth, of the climate. Then she could have said ‘it’s about the environment’” (mother of an eight- ten- and eleven-year-old child, #29).

Seven parents thought their child is a little or unconsciously aware of sustainability. Two parents, those of two seven-year-old girls, confirmed their daughter was not aware of sustainability yet.

“Of course, it’s still a kind of vague concept to him. He knows very concretely “okay I cannot throw anything around”, but what exactly is going on, that is just a little too far for him yet. He is not really concerned with that, I must say, he is still too busy with a lot of other things” (mother of an eight-year-old boy, #50).

During the interviews, nine categories related to children’s sustainability awareness and concerns were discovered: pollution, plastic, animals, climate change, nature, transport, recycling, energy and the future. The sustainability issues are further discussed separately below.

	Animals	Pollution	Plastic	Climate change	Nature	Energy	Transport	Recycling	Future
Awareness	28	27	26	17	16	16	15	15	7
Concern	10	3	2	3	4	0	0	0	5

Table 1: Number of children aware and concerned per sustainability issue.

Animals

Almost all children (28) associated living in a way it is nice to the earth with the welfare of animals. Children expressed love and affection for animals such as calling animals beautiful, sweet, and important for the existence of nature. Consequently, one third of the children (10) was concerned about animals. These children were afraid of the extinction of animals, such as the bee and rhino, and they linked it to the survival of nature.

“It is getting worse with insects and also with the bee, but the bee is very important for nature and for the flowers and for the trees. So, I think that’s bad news” (an eleven-year-old girl, #53).

“You should be good to the environment. Because every day more than 200 birds, fish and animals die” (a nine-year-old boy, #42).

“In a few years there may be no more rhinos and I think that’s a shame” (an eleven-year-old girl, #5).

Children strongly believed people should be kind to animals. Two children associated the extinction of animals with the welfare of people, more specifically, people’s food supply.

“We also have to think about them, about the animals, because more and more animals are dying and soon there will be almost no more animals. And then we don’t have much food either. Also, for the people who live after us” (an eleven-year-old girl, #2).

“For example, sowing a few plants so that there are bees. If there are bees, we can just eat and that is good. And if the bees die out, we cannot eat good fruit and vegetables, which is bad for the environment. And a lot of animals have already been killed by the CO₂ from the cars” (an eight-year-old boy, #28).

Half of the parents (9) indicated their child loves and cares about animals. Their children were concerned with the welfare of animals and talked about animals many times. Children expressed feelings of sadness when animals were hurt. Three parents thought their child’s concern for animals was the starting point for becoming aware of other sustainability issues, such as pollution. Additionally, parents felt the welfare of animals was closer to their child’s heart than other sustainability problems.

“They both talk a lot about animals and that is closer than, for example, energy. They care more about animals, because animals have a face and they sometimes see it on the television and then they find it sad and ahh” (mother of a nine- and eleven-year-old girl, #3).

“She also loves animals very much. I think it might have started a bit with that. That you once saw that birds eat it all [plastic]” (mother of a nine-year-old girl, #21).

Pollution

The majority of children (27) was highly aware of pollution and its consequences. They described matters concerning two themes: waste and gas emissions. Nine children expressed concerns about

gas emissions and specifically CO₂. These children were aware cars and factories release gases and knew these gases are bad for the environment and the people living in it. Children also linked pollution to global warming and the future of the earth.

"I do remember that exhaust gases contain CO₂ and those exhaust gases are released by factories, because they burn coal there and at the exhaust of a car or truck. That CO₂ is therefore very bad for the environment" (a nine-year-old boy, #42).

"If they do too much CO₂, then you ... the atmosphere gets smaller and oxygen goes away a bit and you live a little less maybe or the earth goes away fast" (an eight-year-old boy, #47).

"On the news they sometimes say, 'it is not good [with the environment]', because there are always exhaust gasses from cars and because of that CO₂ comes out and then the sun cannot get out and therefore more and more ice caps melt. And when the ice melts, the dike must be raised and strengthened" (an eight-year-old boy, #28).

In addition, twelve children were concerned about waste. These children frequently encountered waste in their own environment and easily recalled such occasions. For example, they saw waste when they were playing outside or when they went to school.

"Don't leave cans on the street, because we see that very often in our neighborhood. We have a little square and there are also a lot of plastic things and I just saw, when I was outside, a bag of chips" (an eight-year-old boy, #47).

Because they were confronted with waste frequently and cared about a clean environment, they loudly expressed people should not litter but should put trash in the destined trash cans. Three children thought it would be a good idea to put more garbage bins on streets and parks to stop pollution. Children (6) also related pollution to the welfare of animals and nature as they were scared animals would eat waste and die from it. Their examples of waste mainly included packaging of unhealthy food products such as candy packaging, coke cans and chips bags. They were aware some waste does not perish in nature.

"Well, for example, you can throw an apple on the street and the birds will eat it, but the animals will suffocate in other garbage and they will die. So, you should not throw garbage on the ground, because the wind will take it to the sea and a lot of garbage will enter the sea and the animals will die from it. You just have to throw trash in trash bins, because that's what the trash bin is for" (an eight-year-old girl, #24).

“Well, it is very bad for nature when people throw waste in nature. For example, plastic cans or something and bags. ... They should not leave it on the street, but simply throw it in the trash” (a ten-year-old girl, #40).

“There should be more trash cans, because in the park opposite us, at my father’s place, I already see a lot of trash cans there. Only still, I see a lot of plastic and waste there, in the park” (a nine-year-old girl, #22).

Plastic

Problems with plastic were highly salient in the minds of children. The vast majority (26) of children associated living in such a way it is good to the earth with using less plastic or using it more responsibly, because there is too much plastic. For example, they believed people should not throw away plastic in nature, because this causes the environment and nature to pollute and is harmful to animals. Some children also associated plastic pollution with climate change.

“I love animals very much and if animals eat it [plastic], they can die from it. ... If we throw away more plastic, the weather will also change a bit” (a ten-year-old girl, #18).

“There is a lot of plastic in nature and that does not just digest, and animals eat that, and animals die from it” (an eleven-year-old girl, #8)

One third of the children (12) was aware of the phenomenon called ‘plastic soup’, which they talked about in much detail.

“The plastic soup are the 5 large mountains of waste that float in the ocean. The plastic layer is sometimes 10 meters thick and kilometers wide. Every year, 8 billion kilos of plastic is added to the sea. If we do nothing, in 30 years, more plastic floats in the sea than fish. It is called plastic soup, because you can see it as a soup pot with pieces of vegetables but then with plastic” (a nine-year-old girl, #20).

“The plastic soup are big plastic things that swarm over the ocean. It is bigger than the Netherlands and Belgium combined, because there is a lot of it. ... Soon all countries will be full of plastic and then we will hardly be able to walk and cycle through it anymore.” (a ten-year-old girl, #22).

Children were aware the plastic soup is caused by people throwing away plastic in nature and seas, and consequently, strongly disapproved of this behavior. The plastic soup was perceived to be harmful to nature and animals. Children feared marine animals would eat the plastic soup and die as a consequence. Two children recalled examples of animals dying from plastic pollution.

“In Canada an animal was discovered that contained 40 kilos of plastic. It was because of the people throwing plastic cans into nature and that it was all polluted in the sea and that many animals were killed” (a nine-year-old girl, #40).

“A whale had washed up. I just think it's stupid for people to just dump plastic into the sea. That makes me angry” (a nine-year-old boy, #7).

Many parents (7) indicated their child is aware of problems related to plastic, such as the plastic soup. Parents believed their child cared about this, because it is closely linked to the welfare of animals.

Climate change

Half of the children (17) was aware of climate change. More specifically, they were aware of global warming. Most of them thought the earth is getting warmer, because they noticed differences in their environment. For example, they explained the weather is changing, water is rising, and temperatures are increasing.

“It is getting much warmer and the sea is rising. We already notice that it is getting too warm in the Netherlands, because it doesn't snow that much in winter anymore (an eleven-year-old girl, #26).

“In the winter it is quite hot and, in the summer, quite cold, which is weird. ... In a few years, because the ice is melting, the sea will rise and then it can flood. (an eleven-year-old girl, #5).

“Well, it's getting warmer on the earth and that's why the North Pole is melting. It melts and then there is more and more water, which can have consequences for the earth” (an eleven-year-old boy, #44).

Six children expressed deep concerns about climate change and global warming. They were aware the North- and South pole are melting and strongly linked it to the welfare of the Netherlands, because they were afraid the Netherlands is going to flood in the future. One ten-year-old boy (#27) was so deeply concerned that we might not have the earth in a while, he started crying.

“Because in a while we might not have the earth anymore. ... Then he warms up and then the North Pole melts and then we flood. We are nowhere safe anymore. ... If we start doing something good for the environment too late, it makes no sense” (a-ten-year-old boy, #27).

“If it gets only 1 degree warmer, the ice will melt and you must be better protected, the dyke must become larger and more solid, because if the dikes do not become firmer, the water will go through the dikes and if you are not well protected then you must flee again” (an eight-year-old boy, #28).

“Global warming can put the Netherlands under water” (a nine-year-old boy, #7).

In contrast, only one parent thought their child was aware of global warming. Most of the parents thought this topic was too far away.

Nature

Half of the children (16) associated living in a way it is good to the earth with being good to nature and the environment. They liked flowers in gardens, enjoyed playing outside and were aware of the crucial role of trees as several children (6) knew trees provide oxygen. Children were also aware nature is deteriorating. Consequently, some children (4) expressed concerns about the deterioration of nature and trees being cut down. They strongly linked the condition of nature to the welfare of animals and people.

“If there was no nature, then we would not live. Plants provide oxygen. Nature is actually why we can live, because everyone needs oxygen. If we cut all the trees away, then we die too” (a seven-year-old boy, #51).

“Actually, we live in nature. If nature finally leaves, then we can no longer live in it and the animals no longer have any houses and then the flowers are gone and the trees and because of the trees, we live, because trees provide oxygen (a ten-year-old girl, #22).

“People should plant many trees, because they provide breath and air” (a ten-year-old girl, #34).

Energy

Sixteen children were aware of the influence of energy and water on the environment. They argued people should use less electricity and water in order to live in a way it is nice to the earth. They gave specific examples such as turning of the lights, heating and water tap after using it. Furthermore, eight children were aware of renewable energy sources. They were positively disposed towards it, because they thought renewable energy was better for the environment. Children (6) were mostly familiar with solar panels, followed by water and wind energy (2).

"We have solar panels and a boiler where hot water comes out when the sun shines on it. I think that's pretty nice! Especially for all the energy that we can get from there. That also saves tree felling and everything" (an eleven-year-old boy, #31).

"Green energy is energy that never runs out. The best known are water energy, wind energy and solar energy" (a ten-year-old boy, #27).

Eight parents talked about energy issues with their children. For example, about the responsible use of water and electricity or about the benefits of renewable energy.

"She is also aware that water wastage, but also electricity wastage, turning on a light during the day that that is just nonsense" (mother of an eight-year-old girl, #25).

Transport

Fifteen children were aware of the effect of transport to the environment. Eleven of them believed cars are bad for the environment. They were aware cars emit gases and thought these gases were bad for the environment as well as animals and people. Additionally, all children who expressed cars are bad for the environment, were aware of electric cars. They perceived electric cars to be better for the environment, because they do not emit exhaust gases. Consequently, children believed people should buy electric cars. Especially boys (7) expressed this opinion. They were fascinated by electric cars and could give specific details about them. Five boys expressed the desire to own an electric car, preferably a Tesla. Whereas boys expressed a strong desire to own an electric car, girls (4) mostly thought electric cars were convenient and better for the environment. Parents (6) confirmed their child liked electric cars, knew they were better for the environment, and talk about it at home.

"He is obsessed with electric cars. We have a very simple car, we don't care about cars at all, but he keeps saying when we are on the bike "oh that's a Tesla and that's a Tesla" and he wants to do his presentation about electric cars too" (mother of an eight-year-old boy, #50).

"My son would really like an electric car. Preferably a Tesla" (father of ten- and eleven-years-old boys, #33).

"I really wanted an electric car, because that is also good for the environment, but we can't buy that yet. We just have a new car" (a nine-year-old boy, #4).

"I like them, because they are better for the environment and then we are one of the few people who have an electric car" (a seven-year-old boy, #51).

Besides cars, two eight-year-olds perceived airplanes as harmful to the environment and one nine-year-old girl believed trains were more environmentally friendly than trucks.

“A train can just drive almost in one piece and if the train runs at the same pace, it emits fewer gases. But a truck has to brake and then it releases a lot of gasses and then it has to drive on and use gasses again” (a nine-year-old girl, #20).

Recycling

Fifteen children were aware of recycling. Although some (6) of them did not know the exact word for recycling, they were aware of its meaning. For example, a seven-year-old boy explained people could reuse something that is no longer good for something else. They thought it was good to reuse things or craft things from waste as this decreases the amount of waste. Children liked giving waste a second life instead of throwing it away. In addition, four parents learnt their child about recycling, because they thought it is an important thing to do.

“People use things again so as not to waste the earth” (a seven-year-old boy, #45).

“One time, a gentleman talked about making things with waste again and about making things themselves from waste. ... I find that very good, that we do that and learn something about it” (an eleven-year-old girl, #8).

“If you collect plastic, you can also make something beautiful out of it.” (an eight-year-old boy, #49).

The future

Some children (5) were worried about their future, because they linked the discussed issues to the future of the earth. These children were afraid that if we do not change our behavior, people and animals will not be able to live on the earth in the future. They expressed fear that the earth will eventually decay.

“People are afraid the hole in the ozone layer will break and nobody can live anymore. I’m scared this can happen at any moment and that everyone can’t breathe anymore” (a ten-year-old girl, #34).

“I don’t think that it will happen very quickly, but I think the world will end” (an eight-year-old girl, #52).

“If it continues like this, then maybe we can no longer live in 2090. I just want the earth to stay, because I like to play outside.” (a nine-year-old boy, #4).

Luckily, the majority of children were not worried about the future, because they believed things would change. They were positive, hopeful and had a bright future in mind with different types of animals, electric cars, renewable energy sources, less waste, and sufficient trees. Many children (19) were able to articulate actions people should take to achieve this bright future. Naturally, all parents wished a bright future for their children.

“More electric cars, more solar panels, more wind turbines, and people should separate a lot of waste. In the future it is actually normal that everyone has an electric car and it is also normal that everyone has solar panels, because now is ... now everyone does not really have it yet, but in the future I think it will just become very normal” (an eleven-year-old girl, #53).

3.2. Children’s sustainable behavior

The vast majority of children (29) believed people should behave in a way it is nice to the earth, people and animals. Children could clearly describe what people should or should not do.

“Well, say that ... then they get plastic out of the sea and all the things that are not good and then they go, for example, to people you see that they make things swing, they say “hey, put it in the trash” (an eight-year-old girl, #54).

“They have to cut down fewer trees and they should release fewer substances with the factories” (a nine-year-old girl, #4).

“The car dealers must become cheaper, so for example the Renault dealer, the BMW dealer, the Tesla dealer, the Ferrari dealer, the Peugeot dealer ... that must be cheaper, less money has to be spent on cars and that money should be spent on nature” (a seven-year-old boy, #51)

When it came down to their own actions, most children (29) could give an example of something they did to be good to the environment. On average, children gave two or three examples of their behavior. Four children did not do anything, because they were either not aware of sustainability (2), found it a job for adults (1) or was too overwhelmed by the problems related to sustainability to come up with an example (1). Their actions were centered around seven re-emerging topics: pollution, energy, plastic, recycling, transport, nature, and animals.

	Pollution	Energy	Plastic	Recycling	Transport	Nature	Animals
Behavior	14	14	11	10	9	4	2

Table 2: Number of children behaving sustainably per sustainability issue.

Pollution

Fourteen children did something related to pollution. Most of these children (8) cleaned up the environment or picked up garbage from the streets. Some children referred to this as a fun activity to do at school or a nice activity to organize with friends.

“Then we will do "Nederland Schoon". You are going to take out all the plastic bags or other things between the bushes. Sometimes we come across some bad things, such as drugs or other things” (a nine-year-old boy, #7).

“I already picked up stuff when I was two or something. Then I thought it was fun to play with it and then mom said put it in the trash. Then I put it in the trash” (a ten-year-old boy, #30).

Furthermore, children claimed they do not throw their garbage on the ground and referred to this as the normal thing to do. Consequently, children were angry at people who did just throw away their garbage. Some children (4) took personal action when they saw someone familiar throwing away garbage on the ground. Children asked if they could pick it up or picked it up themselves.

“I don’t throw it on the streets, because I’m not like that. ... With children in my class I say, “pick it up” or something” (an eight-year-old girl, #24).

“People should say to people that litter "hey, put it in the trash" (an eight-year-old girl, #52).

“People should not throw so much garbage on the street. The environment must be cleaned up better” (a nine-year-old boy, #42).

In addition, six children separated waste, because they believed this was good for the environment. An eleven-year-old girl started a project at her school to separate waste better.

“Well, I take great care that I separate waste very well. And sometimes when we walk on the beach, I sometimes take waste with me. I am now working together with the teacher, because we do have a paper bin and residual waste, but all the plastic now also goes with

the residual waste, so the teacher and I will make sure that there is a plastic bin ” (an eleven-year-old girl, #53).

The majority of parents (14) thought it is important to learn their children not to litter and how to separate waste. They were sure their child knew exactly how to separate waste.

“When they tidy up the room, I always give three bins. I tell them this one is for the plastic, this is for the paper and this is for the other things ” (mother of a ten-year-old girl, #23).

“She knows that it is important that the waste really needs to be separated and that we try to create as little waste as possible together ” (mother of an eight-year-old girl, #25).

“Yes! Yes, yes, I think so. She really keeps us to the lesson, and she can be really offended when she sees something, well plastic in the trash can or something, then she says "hey what is this?" (mother of an eleven-year-old girl, #54).

Energy

Fourteen children behaved responsibly in terms of electricity (8) and water usage (6). Actions regarding energy usage were mainly performed in the house. For example, children tried to put their lights off when they left their rooms or turned off the water tap when they no longer needed water. Three children also indicated they rather took a bath than a shower, because this saved water.

“Dad left the water tap open today and then I quickly closed it, because then you only waste water ” (a nine-year-old boy, #7).

“I almost never turn on the light in my room, because it is better and nicer to open the curtains, and then it is lighter in my room ” (a nine-year-old girl, #22).

“I come from Iceland and in Iceland we never turn off the tap, because there is just endless water they always think. And also, just the heating on and the windows open, that is just the Icelandic mentality. ... So, I know his grandfather was here and he did close the tap. That was a long time ago, years ago. At that time, he was already aware of closing the tap and even in Iceland he does that ” (mother of a nine-year-old boy, #43).

“Well, we take a bath all together in the morning to just save water ” (mother of a ten- and eleven-year-old boy, #32)

Half of the parents (10) found it important their child used energy responsibly, because it was, firstly, perceived to be better for the environment, and secondly, better in terms of financial costs. Parents tried to make their children aware of responsible energy- and water usage but did not always succeed. Parents indicated they had to repeat very often to turn off the lights or to close the

water tap. As a consequence, some parents, in contrast with children, thought their child did not use electricity and water responsibly.

“When they take a shower, I always say: you have been showering for 5 minutes and now you should be ready. Because they are like, especially in winter, oh it’s nice and warm, just a little longer. I tell them: “no, come on, you don’t have to take a long shower, that’s not good” (mother of three eight-, ten- and eleven-year-old children, #29).

“You often forget to turn off your light, but when I do, you say it’s a waste of power (mother of a nine-year-old girl”, #41).

“They are not very economical with things, they often leave lights on at home” (mother of a nine- and eleven-year-old girl, #3).

Plastic

Eleven children took action with regard to plastic. They either used less plastic or used plastic multiple times. Children also tried to motivate other people to use less or no plastic at all. They were very passionate about this.

“I just don’t dare to take a plastic sandwich bag in the morning, because I really know I’m getting criticism” (mother of an eleven-year-old girl, #54).

“The teacher always had a sandwich bag with him and with Santa Claus I had drawn him with lots, so I had made a poem that Saint Nicholas was a little angry with him and then I had given him a lunchbox” (an eleven-year-old girl, #53).

“Because a girl next to me in the class very often has such a plastic bottle and then I have said it [she should use a Dopper] many times and then she says “ye-hes”. And then I try to keep my mouth shut because she doesn’t like it, but I can hardly keep my mouth shut about that” (a nine-year-old girl, #20).

“If I have a plastic bag with something in it and when I have something else, I also need to put in a plastic bag, I will put it in the same plastic bag” (a ten-year-old girl, #18).

Eight children picked up plastic bottles from the streets or the beach, so it would not end up in nature. Related to this, a nine-year-old girl wrote her paper about the plastic soup, so her teacher would know about this problem. She hoped her teacher would tell the story to other teachers and children. These children in turn could tell their parents and friends. After a while, she argued, many people would know about the plastic soup. Her mother confirmed she would like to raise awareness for this problem, preferably every day.

"She would prefer to take action every day. She asks at least once a week: "can I go around doors to raise money for the plastic soup?". I tell her you can't just do that, but if you just start to pay more attention to what we do at home and if you see waste, you clean it up, and occasionally motivate the class to do so, you are already doing very well" (mother of a nine-year-old girl, #21).

Recycling

Ten children recycled by either reusing things or crafting things from materials they did not use any longer or would throw away. Children viewed recycling as an important activity, because it is a way to reduce waste. Two children gave creative examples of things they made from waste.

"We started crafting with things that actually belong in the trash. For example, dirty socks that you throw away. We just went to tinker with them, so now we have sock dolls" (an eight-year-old girl, #24).

"We indeed have Pringles trays, which she can use from me to tinker with ... then she will use it as a pencil box or as a slime tray or whatever. But also, old buttons or whatever. Whatever we have in the house, which I think "hey this could have a second life, it does." (mother of an eight-year-old girl, #25).

"From all the plastic they had collected, they made a penguin" (an eleven-year-old girl about her friends, #54).

Two mothers showed the social aspect of recycling by explaining their children's old clothes and toys were shared and reused by other families.

"Or your own clothes, if you no longer use them, we will not throw them away, but that just goes to neighbors who also have small children and that way we sometimes get clothes from friends. We do things like that, but they don't see that as something for the environment, because that has become such a habit that they see it as normal" (mother of eleven- ten-, and eight-year-old children, #29).

"We are also very fond of passing on, recycling toys or things that we no longer play with. And things that others no longer play with, go to us. We are not necessarily into buying everything new and having all gadgets. No, I think that is a bit of nonsense" (mother of two nine- and eleven-year-old children, #6).

Transport

Nine children went to places by bike or foot. One boy biked just because it was convenient, but the others proudly told they biked everywhere and did it, because it was good to the environment.

Furthermore, ten parents thought it is important to use a bike as often as possible. One family introduced ‘cycling holidays’ as an alternative to flying. In contrast, one parent thought her children could not translate their worries about the environment to specific behavior, such as taking the car.

“I cycle to school and back every morning. Only when it rains very hard, my mom brings me, but I'd rather go cycling, especially with the environment in mind” (an eleven-year-old girl, #8).

“But we almost always take the bike, if possible, not the car. We never go to a sports competition by car, we never do that” (mother of a ten-year-old girl, #17).

“They know there are problems with sustainability, nature, and the environment, but they don't translate it 1-on-1 to I shouldn't ask mom to catch Pokémon Go by car. ... The boys don't say: “we are not going to fly, because that is bad for the environment” (mother of two seven- and eleven-year-old boys, #46).

Nature

Three children took care of nature. These children planted flowers and plants at their school or in the neighborhood. However, as earlier discussed in relation to pollution, many children (8) took care of the environment by picking up garbage.

“Every year we all plant plants in it” [planters at school] (an eight-year-old girl, #38).

Animals

Whereas children were very concerned about the welfare of animals, actions specifically aimed at the welfare of animals were scarce. Only two children indicated people should leave animals alone and one ten-year-old girl started a club to count the animals in her neighbourhood.

“I once started a club with other girlfriends. We once wrote down which animals we encountered and how many, because then you can also estimate a little how many animals there are in our neighborhood and whether that is too much or too little” (a ten-year-old girl, #40).

3.3. Children's sustainable consumption and product choice

The majority of children (25) thought people should think about the earth when buying something and clearly explained why. Most of them believed if one person thought of the earth, other people would do the same, creating an overall positive impact on the environment.

“Then you think yes now I also think a bit about the environment and then other people should actually do the same” (a nine-year-old boy, #7).

“Because then you help the earth a little more and that people start to think more about it, then they also get it and then they might do it themselves” (an eight-year-old boy, #47).

“Actually, that is better for the animals and for the environment and then there is less pollution in the air” (an eleven-year-old boy, #31).

Parents greatly underestimated this as the majority of parents (14) thought their child did not care whether people thought about the earth. Furthermore, most children (19) believed the things people buy influence how well people live. In addition, half of the children (16) liked a product better when it is good to the earth. Three children liked organic food and one girl specifically liked misfits, because these products were better for the environment.

“Organic food is sometimes very much tastier” (a ten-year-old boy, #30).

“At Albert Heijn they have misfits. There’s more and they are cheaper. They are only curved and that is not bad at all. ... They are better” (a ten-year-old girl, #16).

Although children clearly argued people should think about the earth when buying something, children did not do this themselves yet. Except for one nine-year-old girl, not any child thought about the earth when buying something. Children simply did not do groceries yet or did not think about it and forgot it. All parents, except the mother of the nine-year-old girl, believed their child was not able to make a product choice based on information regarding sustainability. Children based their decision on whether they wanted to have the product and whether it looked nice. Three parents indicated price already plays a role in children’s product decision-making.

“I have never heard her say, “Well, mom, will we choose that one day, because I think it is better for the environment or has less packaging”. No, not at all; the more packaging, the better as far as she is concerned. So, the nicer, the more colorful. Children, or at least my daughter, are very impressed by the packaging. If something looks nice and attractive, she would rather want that than anything else. And she is price-conscious. If something is cheaper, she just goes for the cheaper one” (mother of an eight-year-old daughter, #25).

“No, not on their own, they need help with that. They don’t think in the Action: “oh what is this made of” or “this is perhaps less good for the environment”. They really don’t take that into account” (mother of two nine- and eleven-year-old children, #6).

“He also looks at the price tag. Because if it is a lot more expensive, I think he would choose the other one” (mother of a nine-year-old boy, #43)

Although children did not put their sustainability beliefs into practice yet, they had strong and clear motivations why people should keep the earth in mind while buying something. Twenty-two children could explain their motivations, which fell in three re-emerging categories: plastic, animals, pollution and recycling. In addition, two children had a unique explanation, which did not fit into these themes. One eight-year-old boy (#49) reasoned people should think about the earth, because *“if the trees are broken and there are no more trees, we can no longer breathe”*; and one eleven-year-old girl (#53) thought people should think about the earth, because of climate change.

	Plastic	Pollution	Animals
Consumption	13	12	11

Table 3: Number of children wishing to consume sustainably per sustainability issue.

Plastic

Many children (13) believed people should think about the earth when buying something because of plastic. More specifically, they thought products contain much plastic packaging. Plastic packaging was perceived to be very harmful if it ends up in the environment, because they were aware plastic does not perish quickly. They also linked plastic packaging to the welfare of animals, because animals could eat plastic packaging in nature and die from it. These beliefs influenced children’s ideas about consumption. Children complained about products being too heavily wrapped in plastic. They easily gave examples of products they believed contained too much packaging, such as cookies, shampoos, candy, straws, and cans of coke.

“We recently went for a drink somewhere and then she grabbed a straw from the McDonalds, and she put it in and later she said: “hey mom, I shouldn’t have taken that straw, because that is plastic” (mother of an eleven-year-old girl, #53).

“She can be very angry when you open cookies and that they are in plastic again and again. You know, the packaging that is actually a bit double-wrapped. She can be very concerned about that” (mother of an eleven-year-old girl, #54).

“For example, if you are just lazy to say “no, just do a bottle of water or do plastic” then the animals can ... If you say that, an animal will die of it”. (an eight-year-old girl, #13).

Children (5) also related retailers and snack bars to plastic consumption. For example, three children thought Albert Heijn and Jumbo sell too many products containing plastic packaging. In addition, two children knew snack bars switched from using plastic containers to using cardboard bins and believed this switch was good for the environment.

“We had many products from the supermarkets Albert Heijn and Jumbo and that was all plastic. They are better off packing it in something else, because almost half from the supermarket is made of plastic. They can also do it in glass, because they also have glass containers for the supermarket in which you can put glass and it will not end up in nature” (a ten-year-old girl, #22).

Five children possessed a Dopper, so they did not have to buy plastic bottles. They thought Dopper is a positive alternative to plastic bottles, because plastic bottles do not end up in nature this way. In general, children thought people should buy fewer plastic products. If they did, they should reuse it.

“We all now have our own Dopper, so we don't have plastic bottles, because that is just waste. And when we have a plastic bottle, we use it very often. Because if you drink it once, you throw it away, and that is just a bit of a waste. Because then you just throw the plastic away” (a ten-year-old girl, #40).

Pollution

Children (12) believed people should think about the earth when they buy something, because of pollution. They thought about what happened to a product when it was no longer used. They believed people would easily throw it away in nature, which is, again, harmful to nature and animals.

“Well, because if you don't think about it [consumption], there is 1 person who already throws waste on the ground” (an eight-year-old girl, #52).

“Yes, because if you don't use it anymore, you might throw it away and imagine that the garbage bag is broken and someone takes it with you and plastic falls out everywhere” (an eleven-year-old girl, #34).

“Very many people when they have eaten something, they just throw it on the street. Then it can also end up in the water. Animals also live there and then they can eat it and then they die” (a nine-year-old girl, #1).

Therefore, a minority of the children (4) argued people should reuse their products or give it to someone instead of throwing it away so easily.

“If people also throw away plastic bottles and you should actually use them again and again” (a seven-year-old boy, #45).

“Also, real toys, you just throw them on the street ... and you shouldn't do that, you should throw them in the trash or sell them, I give things I don't want to the poor or I sell them to people” (an eight-year-old girl, #24).

Animals

Many children (11) thought people should keep the earth in mind when buying something, because of the welfare of animals. They specifically cared about meat consumption. They found it sad animals have to die for meat and believed animals should have a good life. Six children ate vegetarian at least once a week. Another girl was vegetarian for almost a year, because she thought this was nicer to animals. In addition, four children mentioned ‘Beter Leven Sterren’. They were aware of the meaning of this label and felt better about eating meat when it contained the label.

“It's not good for all animals to be slaughtered. Not to have a good life. If I were an animal, I would like to have a good life. We eat organic, because we think it is important that animals have lived well. The meat of a cow that only stayed in the stable is 1. not tasty and 2. not good for you, because the cow did not live well. We only eat three stars or two. Three stars is that the animal has had a very good life, so that it has been outside a lot and has eaten good food. Then the meat is very tasty, nice and tender” (a seven-year-old boy, #51).

“We buy meat that has such a sticker with a better life. That gives me a good feeling when you eat it” (an eleven-year-old girl, #5).

“We always look at how much ‘better life stars’ they have. The meat had a maximum of two stars. Fewer stars means that the animals are cared for less well. When we eat chicken, we always try to buy free-range chicken” (an eleven-year-old girl, #26).

3.4. Additional findings

Information sources

Children have three main information sources to learn about sustainability and its issues: parents, school, and media. Most children (14) mentioned school as the primary source for learning about sustainability. In addition, half of the parents (11) indicated school is an important information source for children. Schools mainly learnt theories to children and organized projects with sustainability themes such as recycling, separating waste, plastic or animals.

“Many school materials are about sustainability. For example, sustainability is simply used as a topic for reading comprehension” (mother of a ten-year-old girl, #23).

Twelve children said they learnt about sustainability through the news. Many parents (8) also thought the news was an important information source. Parents often watched the news together with their children after which children got curious and started to ask questions. Furthermore, many children watched ‘Jeugdjournaal’ and ‘Klokhuis’, or programmes about animals and nature such as Freek Vonk.

“He also watches and goes to Freek Vonk, I think that has something to do with this. He talks about deforestation, the plastic soup and the extinction of animals” (mother of two eight- and ten-year-old children, #39).

“I notice that if there is something on the news that it keeps them busy and then they ask questions about it, they are interested in it” (father of a ten- and eleven-year old boy, #33)

Parents also appeared to have a crucial role in the process of children becoming aware of sustainability. Parents taught their children how to behave responsibly and sustainably. Children were not aware of their parent’s influence as only three children indicated they learnt from their parents. The crucial role of parents became clear when comparing interviews of two families, who both had solar panels. One family specifically told their children they purchased solar panels, because it is better for the environment. In contrast, the other family did not explain this to their children. As a consequence, the attitudes of the children differed with regard to solar panels and sustainability, e.g. thinking more positively about solar panels.

Opinions and feelings

Many children (15) expressed strong opinions when talking about sustainability problems. For example, children often mentioned they find something (very) good or bad.

“I don’t think it’s good that people don’t handle nature well. We have to be very careful about that. ... I don’t think it’s really respectful to nature” (a seven-year-old boy, #51).

“I really don’t like that [plastic in the sea]” (an eleven-year-old boy, #31).

Children sometimes expressed feelings of sadness and anger. One ten-year-old boy (#27) was very sad and started crying because of the consequences of climate change. Furthermore, three children felt angry when they thought about plastic and pollution.

“I just think it’s stupid of people that they just dump it in the sea. That makes me angry” (a nine-year-old boy, #7).

Links between sustainability problems

Children were able to link sustainability topics with one another. Children especially linked the welfare of animals to plastic. They were concerned plastic ended up in nature or the sea and would be eaten by (marine) animals, who would die from it as a consequence. Another frequently occurring link was the one between welfare of animals and pollution. Again, children were worried waste would end up in nature, be eaten by animals, who would die from it. One child linked the welfare of animals with nature, as the child was certain if it went bad with nature, animals would suffer from this too. Five children argued plastic had a negative influence on nature. Lastly, five children connected pollution to climate change, as a filthy environment would change temperatures.

	Plastic	Pollution	Nature
Welfare of animals	15	8	1
Plastic	-	1	5
Climate change	1	5	-

Table 4: Common relations between five sustainability topics.

Conclusion

The present study investigated how children aged seven to eleven are aware of and concerned with sustainability, and if they are, how this affects their behavior as well as consumption. Children and their parents participated in in-depth interviews to get insights into this unexplored area.

Sustainability awareness and concerns the majority of children is aware of sustainability. Although children are not familiar with the word ‘sustainability’, they know the general meaning of it. Children’s awareness is specifically centered around nine sustainability themes: nature, animals, plastic, transport, pollution, energy, recycling, climate change, and the future. The majority of children is aware of problems related to the welfare of animals, pollution, and plastic. Half of the children is aware of problems related to nature, transport, energy, recycling and climate change. A minority of children worries about animals, plastic, pollution, nature, climate change and the future.

Sustainable behavior children desire to behave sustainably and mention at least one example of their sustainable behavior. Their behavior is centered around seven re-emerging topics: pollution, plastic, animals, nature, transport, recycling, and energy. Half of the children behave in a way it causes minimal pollution as well as responsibly using energy, water and plastic. One third of the children recycle, and travel by bike or foot. A minority of children does activities related to animals and nature. Although children’s actions are not specifically aimed at climate change or the future, they try to have an impact on this via their other actions.

Sustainable product choice the majority of children likes to consume sustainably and possesses strong beliefs about it. These beliefs concern plastic and plastic packaging, the welfare of animals and meat consumption, and pollution after disposing a product. A minority of children acts on these beliefs by eating vegetarian when caring about animals or trying to consume less plastic or find an alternative product when worrying about too much plastic. However, the majority of children does not consume sustainably yet. Children mainly create a link between sustainability concerns and consumption in their mind but does not translate it into actual sustainable consumption. Therefore, it rather shows children’s sustainable purchase intention than actual product choice. Children are positively disposed towards sustainable products.

Conclusively, answering *how children aged seven to eleven are aware of and concerned with sustainability*, shows children are aware of and concerned with one or more of the following nine discovered themes: animals, plastic, pollution, nature, energy, recycling, transport, climate change,

and the future. Their awareness is specifically related to one of these topics instead of the overall topic of sustainability as children are not familiar with this word.

Answering *how does this influence their behavior as well as consumption*, demonstrates children's awareness and concerns influence their behavior as well as beliefs about consumption. Firstly, the nine discovered sustainability issues re-occur in children's behavior, demonstrating a child is able to act upon its sustainability concerns. However, concerns or beliefs about a sustainability issue are not always translated into behavior. In specific, half of the children translate their concerns into behavior when it considers pollution, plastic, and transport. Beliefs about recycling and energy are very often translated into actions. Children do not translate their concerns into behavior when it considers animals, nature, climate change or the future.

Secondly, sustainability awareness and concerns influence consumption beliefs rather than actual consumption. Children desire to consume sustainable and hold strong beliefs about it, but the majority of children does not put these beliefs into practice yet. Therefore, children have a sustainable purchase intention rather than actual product choice.

Lastly, it could be concluded that the closest sustainability issues to children are plastic, pollution, and animals as most of the children are aware of these topics, mention problems related to these topics most frequently, and reflect these problems into their behavior and beliefs about sustainable consumption.

4. **Discussion**

4.1. Interpretation and development of model

4.1.1. Sustainability awareness

In line with previous research, this study found children are aware of sustainability from a young age (Francis & Davis, 2013) and understand the topic well (Barraza, 1999). This study also confirms Green's (2017) previous finding that children, although having well-developed ideas about it, are not aware of the term sustainability yet.

In contrast to previous research (Hicks & Holden, 2013), this study demonstrates not all seven-year-olds are aware of sustainability yet, presenting an indication when awareness of sustainability starts. It might suggest awareness of sustainability is formed at the age of eight as all children between eight and eleven are aware of sustainability. Furthermore, awareness and knowledge regarding sustainability seems to grow with age as eleven-year-olds had firstly, more sophisticated thoughts about sustainability, and secondly, were aware of more topics than younger children. This could be explained by the cognitive development theory, which suggests children between seven and eleven enormously grow their cognitive skills (John, 1999).

The nine discovered sustainability topics of which children between seven and eleven are aware of largely overlap with previous research (Tucci et al., 2007; Francis & Davis, 2013; Strong, 1998; Sargeant, 2007). However, plastic is a completely new emerging theme. Previous researchers could have categorized plastic as a sub category of pollution. However, many children specifically mentioned problems related to plastic, which functioned as a strong motivation to create a distinct category for plastic, adding a new category to current literature. Furthermore, most children were aware of multiple topics, suggesting children develop a relatively broad awareness regarding sustainability. Overall, the level of awareness differs per child and could depend on various factors, such as age, interest and learning resources.

4.1.2. Sustainability concerns

Without any doubt, children are mostly worried about the harm to animals as well as the loss of animals. This finding is not surprising as previous research found that children care about animals (Sargeant, 2007) and are concerned about the loss of wildlife (Hicks & Holden, 2007) as well as

harm to animals (Tucci et al., 2007; Francis & Davis, 2013). This study confirms this is a highly salient problem in the minds of children.

A second salient concern of children is too much plastic. This was a surprising result, as a worry on plastic was not encountered in any research so far. However, this result could be explained by two factors. Firstly, the media recently paid much attention to plastic and the phenomenon called plastic soup. This caused schools and parents to discuss it with children, which could have increased children's awareness and concerns related to the problem. Secondly, problems around plastic are strongly related to the welfare of animals. The welfare of animals is a key concern to children and therefore, it makes sense children worry about plastic and plastic soup too.

Thirdly, in line with previous research, pollution is a key concern to children (Hicks & Holden, 2007; Tucci et al. 2007; Francis & Davis, 2013; Strong, 1998). This study also demonstrates the reason for children being concerned about pollution; the welfare of animals as children are scared waste ends up in nature, causing harm to animals.

With regard to transport, this thesis confirms children worry about car emissions (Green, 2017; Strong, 1998). Furthermore, this thesis shows children are aware of electric cars and possess positive perceptions about them. This was not encountered in previous research, which suggests children's awareness of electric cars is a recent development. It could be explained by the fact that electric cars are becoming more popular and parents as well as media devote attention to it.

In terms of recycling, results are in line with previous research of Hicks & Holden (2007) but adds that children are fond of the idea of crafting things from materials they no longer use. This is caused by a desire to create less waste.

Findings about energy and renewable energy are in line with previous research (Green, 2017) but adds children are most familiar with solar panels. This could be caused by children encountering solar panels more frequently than other sources of renewable energy.

Lastly, the majority of children is concerned with climate change. Previous studies (Tucci et al., 2007; Strife, 2012; Sargeant, 2007) also reported children fear climate change. This study also demonstrates concerns regarding climate change cause the most severe fears as children experience a feeling of powerlessness. In addition, a unique concern to Dutch children, because of the Netherlands being below sea level, might be the fear that the country will flood. Multiple children mentioned this fear whereas this was not found in any previous research. In addition,

previous research reported children hold pessimistic and apocalyptic feelings about the future (Barraza, 1999; Strife, 2012; Sargeant, 2007; Hicks & Holden, 2007). This study shows some children indeed fear the future, because they think the world will end or fear people can no longer live on the planet. However, the majority of children has a bright future in mind. They are hopeful about the future and think the future will be better instead of worse, which is in contrast to previous research (Barazza, 1999; Strife, 2012).

4.1.3. Sustainable behavior

The majority of children desires to behave in favor of the environment, which is in line with previous research (Hicks & Holden, 2007; Barraza, 1999; Green 2017). The majority of the seven discovered categories of sustainable behavior were found by Hicks and Holden (2007). This thesis adds an order to them in terms of being performed by most children (pollution) to fewest children (animals). It could be questioned whether all activities of children are examples of sustainable behavior or general examples of responsible behavior. However, as children have limited options for behaving responsibly as Evans et al. (2007) already demonstrated, they are considered to be sustainable behavior. These actions are in children's reach and specifically done, because children think they are good for the environment. This thesis also shows children's concerns function as a motivation to behave sustainably. Many children are able to connect concerns into behavior, which has not been demonstrated before. For example, beliefs about recycling, pollution and plastic are often translated into actions.

Three categories of behavior are worth highlighting. The first category is transport, in which children indicate to travel by bike or foot. However, it could be questioned whether this behavior stems from concerns regarding sustainability or simply because children have no other option and therefore, bike or walk out of convenience and habit. Secondly, a surprising and nice result, as this was not encountered in previous research, were activities regarding recycling. Children gave very creative examples and crafted beautiful objects with waste while enjoying it. Thirdly, a completely new finding was that children try to activate and motivate other people to take action if they cared about a sustainability problem. For example, plastic and pollution are close to children's hearts and children tell friends to pick up their garbage or tell parents they should use less plastic.

4.1.4. Sustainable consumption and product choice

In line with previous research (Francis & Davis, 2013), the majority of children express a desire to consume sustainably but do not put this in practice yet. Findings suggest linking sustainability to products is still difficult. It could also be explained by the fact that children have limited opportunities to buy their own food, toys and clothes as Evans et al. (2007) also concluded.

In contrast to Francis and Davis (2013), a minority of children consumes sustainably and is able to connect concerns to consumption. For example, consuming less meat when concerned about animals or using less plastic or an alternative product when believing there is too much plastic. De Goede & Heks (2013) also demonstrated a few children linked sustainability to food consumption. This thesis generalizes findings to products outside the food category as children care, in general, about the consumption of plastic products and generating pollution of disposed products.

This thesis also adds to literature that children are positively disposed towards sustainable products. This suggest a link between sustainability and actual sustainable product choice might develop later in life. Especially, since findings show parents just start to think about sustainable product choice themselves. This might influence children in terms of creating positive associations about sustainable products.

4.1.5. Relations between awareness, concerns, behavior and consumption

Children's sustainability awareness and concerns seem to affect their sustainable behavior and intention to purchase sustainable products (see appendix D). Logically, children should be aware of a sustainability problem in order to act accordingly. Only occasionally, children acted sustainably, without being aware of the underlying problem, suggesting they put effort in their behavior. If children are aware of a sustainability problem and are concerned about this, they are likely to behave sustainably.

Awareness does not always lead to concerns, but in order to be concerned, a child should be aware of the sustainability problem. Therefore, behavior could be influenced by awareness alone or both awareness and concerns. The relation between concern and behavior was highly visible for the sustainability problems of plastic and pollution.

Furthermore, five factors seem to influence the relation between sustainability awareness, concerns, behavior and purchase intention: (1) age, (2) closeness, (3) opportunity, (4) motivation,

and (5) ability. Firstly, age is of influence, because older children seem to better understand cause and effect, and therefore, better able to connect their concern to specific behavior.

The factors opportunity, motivation and ability are derived from the *Motivation-Opportunity-Abilities theory* (Hoyer et al., 2018) and seem to help to explain why children act and consume sustainably as a consumers' motivation, ability, and opportunity influence the effort consumers put into their behavior and decision-making.

Motivation is "an inner state of activation that provides energy needed to achieve a goal" (Hoyer et al., 2018, p. 45). When a child is motivated, it is more willing to put energy into its sustainable behavior and decision-making. For example, children who care more about the environment in general or a specific problem seem more motivated to put energy into behaving sustainably. Furthermore, for example, when a problem is close to a child and a child is confronted with the problem on a daily basis, e.g. problems related to plastic, it seems more motivated to behave in a responsible way than when the problem is far out of their reach, e.g. energy.

However, motivation only leads to specific behavior when consumers have the ability and opportunity to engage in the behavior. Ability refers to a consumer's resources to make a certain outcome happen, such as financial-, cognitive-, emotional-, physical-, social-, or cultural resources. In this case, social relationships that teach children about sustainability are important in order for children to gain the required knowledge. The three discovered information sources; schools, parents, and media, are an important influence. If these social resources find sustainability important, they are more likely to teach children about sustainability. Furthermore, children should be physically and financially able to buy their own products in stores.

Opportunity refers to not being distracted by complex information and having sufficient time (Hoyer et al., 2018). Children could face some barriers that inhibit their opportunity to behave sustainably such as not understanding too complex information. Only actions within children's reach lead to sustainable behavior.

The link with sustainable consumption is less straightforward. Children desire to consume sustainably, but do not do this in practice yet. Therefore, this factor is called sustainable purchase intention. Sustainable purchase intention is influenced by awareness, concerns and behavior regarding sustainability. Only children who behaved sustainably, thought about sustainable consumption. Furthermore, this relationship could be dependent on the ability of the child to

connect sustainability to products, the motivation of the child to purchase sustainable products because of the importance it places on sustainability, and the opportunity to buy sustainable products, e.g. whether the child already buys its own products. However, more factors could be of influence on this relation.

These observed relations and estimated explanations can be viewed in the model below.

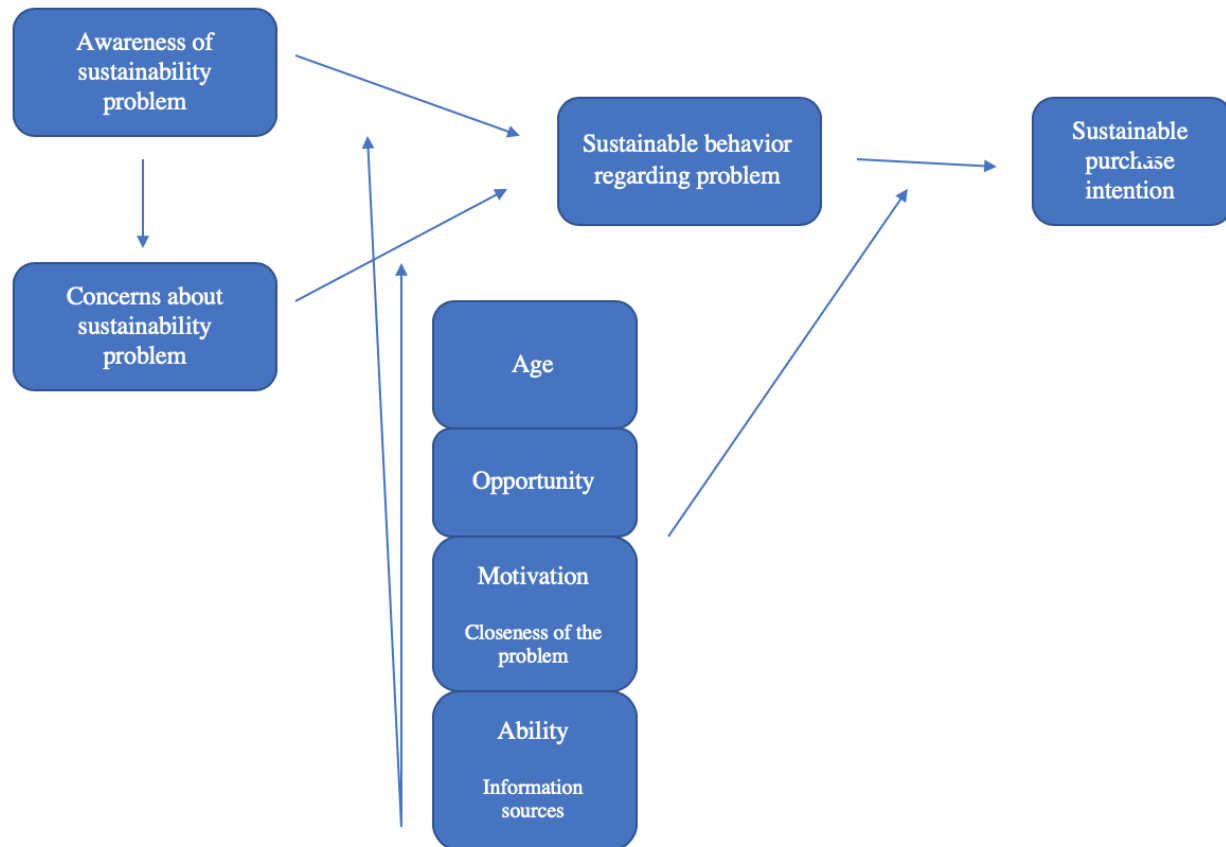


Figure 1: Model of observed relationships and expected moderators

4.2. Propositions and suggestions for future research

The findings suggest a relationship between children's sustainability awareness, concerns and behavior, because the same themes re-emerged during the interviews. However, the relation between awareness, concerns and behavior seems to be dependent on several factors as not all sustainability concerns were translated into actions. This thesis proposed a model to explain the relation between awareness, concerns and behavior. It would be interesting to test whether this relation actually exists in a large-scale study among children in the age category of seven to eleven.

Proposition 1: Sustainability awareness and concerns of children aged seven to eleven influences sustainable behavior. This relation is moderated by age, opportunity, motivation, and ability.

Children aged seven to eleven desire to consume sustainably. However, they do not translate this desire into actual practices of consumption yet. It would be interesting to further research why this relation is absent. This is expected to be due to a child's absent ability to connect sustainability to products and absent opportunity to buy sustainable products, although many children expressed a motivation to use sustainable products. It also would be interesting to research what other factors influence this relation. This is important to study to better understand the decision-making and consumption of children. Results could be used to move children's consumption towards a more sustainable one.

Proposition 2: Children aged seven to eleven desire to consume sustainably, but do not do this in practice yet.

Children possessed strong opinions about consumption. They seemed to develop positive associations and attitudes regarding sustainable products such as Tesla and Dopper. It would be interesting to study what associations children possess about environmentally friendly products, and brands, and whether these associations are distinct from products and brands that do not emphasize environmental characteristics. These outcomes could be very valuable to marketers.

Proposition 3: Children develop positive, and possibly distinct, associations towards environmentally friendly products and brands.

The results suggest older children are more aware of and are better able to understand sustainability issues than younger children. Older children had broader awareness as they were aware of more sustainability issues than younger children and had more in-depth knowledge as they could elaborate more on a sustainability issue than younger children. Future studies could further

investigate the differences in awareness between children of distinct ages with a large-scale study and generalize results.

Proposition 4: Children's level of sustainability awareness and the degree to which sustainability is important to them increases with age.

Results of the interviews suggest sustainability awareness starts at the age of eight. However, due to increasing sustainability attention of schools, parents, and media, younger children could be exposed to sustainability at a very young age and therefore, already be aware of sustainability at a younger age. For example, parents indicated their child first learnt about sustainability in first grade, when they are four-years-old. Especially plastic pollution occurs as a theme that younger children might be aware of. It would be interesting to further research this by conducting this study with younger children.

Proposition 5: Children younger than seven are exposed to sustainability and might therefore be a little aware of sustainability.

Results suggest the character and personality traits of a child influences whether a child is concerned with sustainability and behaves sustainably. For example, some children were more concerned with the environment in general than others or were more likely to follow their parents' rules regarding sustainability practices, e.g. separating waste and putting off the lights, than others. It would be interesting to investigate how personality traits and a child's characters influences sustainability concerns and according behavior. For example, the big five personality traits framework would be a very interesting one to apply to sustainability awareness, concerns, and behavior regarding sustainability.

Proposition 6: The degree to which sustainability is important to a child is dependent on the character of the child.

Results of the interviews clarified children have three major sources to gain information regarding sustainability; parents, school and media. It would be interesting to investigate the importance of

each source for children to gain sustainability knowledge and explore the different aspects children learn about sustainability from the different sources. For example, some parents indicated they did not pay much attention to sustainability at home, but their child knew much about it because of school. Other parents learnt their child practical actions whereas school learnt children about theories. It is of importance to know the influence of these different actors as sustainability plays a crucial role in shaping the children's future.

Proposition 7: Children's level of sustainability awareness and the degree to which sustainability is important to them is highly influenced by parents, school and media.

4.3. Implications

4.3.1. Theoretical contribution

Four theoretical contributions emerge from the findings. First, this thesis lays a basic foundation and maps out the sustainability themes children are aware of and concerned about. This provides a clear framework and could be used for future research. Secondly, the results suggest a link between children's sustainability awareness, concerns and behavior. The sustainability themes children are aware of and concerned about lead to certain behavior, reflecting their concerns. Third, this study provided insights into children's sustainable product choice and consumption patterns. This study demonstrates the link between children's sustainability concerns and consumption is less straightforward as children have difficulty connecting sustainability concerns to product choice. Although they do have a strong desire to consume sustainably and have some knowledge regarding certain aspects of sustainable consumption, they do not put this into practice yet. Fourth, as an additional finding, this study has discovered three important sources of information, from which children learn about sustainability: media, school and parents.

4.3.2. Managerial implications

This study provides insights into an important consumer group; children. The results of this study suggest children are often positively disposed towards sustainability but are not capable to translate their sustainability beliefs and concerns into daily acts of consumption. Although children have a clear desire to consume sustainably, they do not recognize sustainability in products yet. This should motivate marketers to clearly articulate their product's sustainability

credentials. For example, marketers should state the sustainability credentials on the product's packaging or should design a campaign or advertisement demonstrating the sustainable product will help solve a particular sustainability problem (e.g. providing an alternative to plastic packaging). This could be done for products specifically aimed at children, but also for basic daily products as this study shows children influence parents' buying decision and have consumer power by requesting products. Communicating about sustainability could improve a product's positioning and is a way to differentiate the product from competitive products. In addition, by doing so, marketers could turn children into long life customers as product awareness early in life leads to product preference later in life (Marshall, 2006).

If products are advertised in a way sustainability is recognizable, a shift in consumption might be created. Children prefer a sustainable product and are likely to continue to consume these products in the future. As children are the consumers of the future, they can create a shift in consumption patterns. The sooner marketers start creating and advertising sustainable products, the greater the overall impact on sustainable consumption could be. Therefore, marketers should embrace sustainability as an opportunity to create value and acquire and maintain loyal customers.

4.3.3. Societal implications

This thesis has three implications for society. First, this thesis shows children care about sustainability and its related problems. This finding could be used to create broader societal support for sustainability practices and policies. Above all, parents care about the wellbeing and future of their child the most. Second, this thesis demonstrates children understand sustainability problems well. Therefore, children should be part of actions for a more sustainable future as actions today are going to influence children's lives the most. Third, this thesis provides insights into children's minds with regard to sustainability and could be particularly interesting and valuable to parents, caretakers and institutions working with children, such as schools and daycares. These actors are important in the process of familiarizing children with sustainability and this thesis provides insights into specific sustainability areas children could learn more about, which these actors should put effort into. This thesis also demonstrates the important role of media in acquiring sustainability knowledge. Media could be used by the government or other organizations to learn the general public, and in specific children, about sustainability. The

positive or negative framing of these messages could highly influence the perceptions and responses of children, e.g. creating fear and inactivity or evoking hope and strategies of coping and action.

4.4. Limitations

This study has a few limitations, which should be acknowledged. First, although much effort was put into gathering a representative sample of society with families from different cities, with different cultural backgrounds and socio-economic statuses, a sampling bias might have occurred. Families that are more involved into sustainability issues might have been more enthusiastic to participate in my study and be overrepresented in the sampling.

Second, the interviews were coded just by me, which could have caused an interpretation bias. An answer of the participant was coded into one category, but another person might have coded this sentence differently. For example, pollution and nature were closely related and my decision to put a code into the category pollution might not have been the decision of another coder. For instance, cleaning up the environment was categorized as an activity related to pollution, but another coder might have put these activities in the category of nature, as these activities can definitely be seen as an attempt to take care of nature.

Third, most of the participating children did not know me prior the interview. Although time was spent with the children prior the interview to make them feel as comfortable as possible, a few children remained a little nervous during the interview. This could have stopped them from sharing everything they know and therefore, have influenced the results. I tried to limit this by asking them an easy, unrelated question when suspected the child was nervous and did not tell me everything. Furthermore, at the end of the interview, the child was always asked if they wanted to add something. When remaining with a feeling the child did not tell me everything, this was discussed with the parent and they were asked for additional information.

Fourth, a social desirability bias might have occurred. Sustainability is a sensitive subject and the social norm is to act sustainably. However, children seemed to be less prone to give desirable answers. However, it might have influenced the answers of parents as they talked about opinions of others during the interview and seemed to care about them.

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Appendix

Appendix A: Interview guide child

1. Introduction

- Introduce myself (*Stel mezelf voor*)
- Spend some time with the child to make the child feel comfortable with talking to me. (*Breng wat tijd door met het kind, zodat hij/zij zich op zijn/haar gemak voelt om met me te praten*).
- Explain very shortly in simple words the reason for the interview: understand what you think about the earth, people and animals. Explain this is an assignment for school to create a connection. (*Leg in simpele woorden uit wat de reden voor het interview is: begrijpen wat je denkt over de aarde, dieren en mensen. Leg uit dat dit een opdracht voor school is om een band te creëren*).
- Ask if the child wants the parent to stay during the interview. (*Vraag of het kind het fijn vindt als de ouder bij het interview blijft*).
- Assure the child that there are no wrong answers. Every answer is interesting and helpful. (*Verzekert het kind dat er geen foute antwoorden zijn. Elk antwoord is interessant en nuttig*).

Additional notes: (1) it is important to let the child elaborate on every question and help them to carry on talking about each question till they (might) have something to say. (2) As children in the proposed age category might not be familiar with the term ‘sustainability’ or ‘sustainable development’, this term is not used during the interview.

2. Children’s awareness and concerns regarding sustainability

- Have you ever heard that some people try to live in a way it is nice for the earth, people, and animals? (*Heb je weleens gehoord dat sommige mensen op zo’n manier proberen te leven dat het fijn is voor de aarde, de dieren en de mensen?*)
 - Can you tell me a little bit about what you heard? (*Kun je me iets vertellen over wat je hierover gehoord hebt?*)
 - And what do you think about this? (*En wat vind je hiervan?*)

- Why? (*Waarom?*)
- Some people are concerned about the earth. Why do you think people are concerned? (*Sommige mensen maken zich zorgen over de aarde. Waarom denk je dat mensen zich zorgen maken?*)
- Are you concerned about this? (*Maak jij je hier weleens zorgen over?*)
 - Why? (*Waarom?*)
 - Do you often think about this? (*Denk je hier vaak aan?*)
- When did you first hear about this? (*Wanneer heb je voor het eerst hierover gehoord?*)
- How does this make you feel? (*Hoe voel je je hierdoor?*)
 - Why? (*Waarom?*)
- Do you think this influences your future? (*Denk je dat dit jouw toekomst beïnvloedt?*)

3. Children's sustainable behavior

- *What should people do in order for people and animals to live nicely on the earth?*
(*Wat zouden mensen moeten doen dat mensen en dieren fijn op de aarde kunnen leven?*)
- Do you do something so the earth, people, and animals can live longer and nicer?
(*Doe je zelf iets waardoor de aarde, mensen en dieren langer en fijner kunnen leven?*)
 - What? Could you give me an example? (*Wat? Zou je me een voorbeeld kunnen geven?*)
 - Why do you do this? (*Waarom doe je dit?*)
 - When did you first do this? (*Wanneer heb je dit voor het eerst gedaan?*)
 - Do other people and children around you do this too? (*Doen andere mensen en kinderen om je heen dit ook?*)
 - Why do you think they do this? (*Waarom denk je dat ze dit doen?*)
 - Would you like to do other things? (*Zou je nog andere dingen willen doen?*)
 - What? (*Wat?*)
 - Why? (*Waarom?*)

4. Children's sustainable product choice

These questions can be difficult to answer, so try to help the child as much as possible.

- Do you think that what you or your parents buy and how they buy things also influence how nice people and animals can live on the earth? (*Denk je dat wat jij of je ouders kopen en hoe ze dingen kopen ook van invloed is op hoe fijn mensen en dieren kunnen leven op de aarde?*)
 - o How? (*Hoe?*)
 - o Why? (*Waarom?*)
- Is it important to think about the earth when buying something? (*Is het belangrijk om aan de aarde te denken als je iets nieuws koopt?*)
- Do you or your parents keep the earth in mind when buying something? (*Hou je de aarde in je hoofd wanneer je iets koopt?*)
 - o Why? (*Waarom?*)
- Do you like a product that takes the earth into account more than a similar product that does not do that? (*Vind je een product dat rekening houdt met de aarde leuker dan een vergelijkbaar product dat dat niet doet?*)
 - o Why? (*Waarom?*)

5. Final remarks

- Is there anything else you would like to tell me? (*Zou je me nog iets anders willen vertellen?*)
- Do you have any questions? (*Heb je nog vragen?*)
- Thank you very much! (*Heel erg bedankt*)
- Give the child a small gift. (*Geef het kind een klein cadeautje.*)

Appendix B: Interview guide parent

1. Introduction

- Introduce myself (*Stel mezelf voor*)
- Thank the parent for participating in the research (*Bedank de ouder voor deelname aan het onderzoek*)
- Explain the reason for the interview: getting a richer understanding of children's concerns and behavior and consumption regarding sustainability. (*Leg het doel van het interview uit: inzicht krijgen in de zorgen en het gedrag en consumptie van kinderen met betrekking tot duurzaamheid*).
- Ask parent/guardian for permission to record the interview. (*Vraag ouder/verzorger toestemming om het interview op te nemen*).
- Assure them the interview is anonymous. Their names will not be mentioned in my thesis to assure privacy. (*Verzekert dat het interview anoniem is en de namen niet worden vermeld in mijn scriptie om privacy te garanderen*).
- Assure the parent/guardian there are no wrong answers. I'm very interested in their opinion and all answers are helpful. (*Verzekert de ouder/verzorger dat er geen foute antwoorden gegeven kunnen worden. Ik ben erg geïnteresseerd in hun mening en alle antwoorden zijn nuttig*).
- Inform the parent/guardian it is possible to receive a copy of the transcript and the final thesis when they are interested. (*Informeert de ouder/verzorger dat het mogelijk is om een kopie van het transcript en de definitieve scriptie te ontvangen als ze daar geïnteresseerd in zijn*).

2. Children's awareness and concerns regarding sustainability

- To what extent do you think your child is aware of sustainability and the related issues? (*In hoeverre denkt u dat uw kind zich bewust is van duurzaamheid en de daarmee samenhangende problemen?*)
- When did your child first learn/heard of sustainability? (*Wanneer heeft uw kind voor het eerst over duurzaamheid geleerd/gehoord?*)

- What do you think your child knows about sustainability? (*Wat denk je dat je kind weet over duurzaamheid?*)
- What do you think your child thinks about sustainability? (*Wat denk je dat je kind denkt over duurzaamheid?*)
- How often do you think your child thinks about sustainability? (*Hoe vaak denk je dat je kind nadenkt over duurzaamheid?*)
 - How do you notice? (*Hoe merk je dit?*)
- Do you think your child is concerned with sustainability? (*Denk je dat je kind zich zorgen maakt over duurzaamheid?*)
 - Why? (*Waarom?*)
 - Are their specific sustainability issues your child is concerned about? If so, which ones? (*Zijn er specifieke duurzaamheidsproblemen waar uw kind zich zorgen om maakt? Zo ja, welke?*)
- Does your child talk about sustainability? How often? (*Praat uw kind over duurzaamheid? Hoe vaak?*)
- To what extent do you think sustainability is important to your child? (*In hoeverre denkt u dat duurzaamheid belangrijk is voor uw kind?*)
 - How does this make your child feel? (*Hoe voelt uw kind zich hierdoor?*)

3. Children's sustainable behavior

- Does your child do something with regard to sustainability? (*Doet uw kind iets met betrekking tot duurzaamheid?*)
 - What? Could you give any examples? (*Wat? Zou u voorbeelden kunnen geven?*)
 - Why do you think your child does this? (*Waarom denk je dat uw kind dit doet?*)
 - When did this behavior begin? (*Wanneer is dit gedrag begonnen?*)
 - How did this behavior begin? (*Hoe is dit gedrag begonnen?*)
- Do you think your child would like to do other things too? What? (*Denk je dat uw kind ook andere dingen zou willen doen? Wat?*)

4. Children's sustainable product choice

- Do you think your child thinks that what and how you buy things affects sustainability issues? *(Denkt u dat uw kind denkt dat wat en hoe je dingen koopt duurzaamheidskwesties beïnvloedt?)*
 - o How? *(Hoe?)*
 - o Why? *(Waarom?)*
- Do you think your child is able to link sustainability to products? *(Denkt u dat uw kind duurzaamheid kan koppelen aan producten?)*
 - o Why? *(Waarom?)*
- To what extent do you think your child thinks it is important that (s)he or its parent buys products with the earth/sustainability issues in mind? *(In hoeverre denk je dat uw kind het belangrijk vindt dat hij/zij of zijn/haar ouder producten koopt met de aarde/duurzaamheid in zijn/haar achterhoofd?)*
 - o Why? *(Waarom?)*
- Do you think your child likes a product more that takes sustainability into account than a product that does not do this? *(Denkt u dat uw kind een product leuker vindt dat rekening houdt met duurzaamheid dan een vergelijkbaar product dat dat niet doet?)*
 - o Why? *(Waarom?)*

5. Final remarks

- Ask for comments/opinions about interesting things the child mentioned during the interview. *(Vraag naar toevoegingen en opmerkingen over interessante dingen die het kind benoemde tijdens het interview.)*
- Is there anything you would like to add or say? *(Wil je nog iets toevoegen/zeggen?)*
- Do you have any questions? *(Heb je nog vragen?)*
- Thank you very much! *(Heel erg bedankt!)*

Appendix C: Overview of respondents

Respondent Nr.	Name	Relationship to Child	Gender	Age	Residence	Length of Interviews
1	Shadia		f	9	Veenendaal	05:47
2	Helena		f	11	Veenendaal	07:47
3	Sandy	Shadia & Helena's mother			Veenendaal	08:34
4	Lars		m	9	Helvoirt	11:35
5	Bibi		f	11	Helvoirt	08:50
6	Karin	Lars & Bibi's mother			Helvoirt	11:45
7	Sjoerd		m	9	Helvoirt	08:35
8	Sanna		f	11	Helvoirt	07:24
9	Rene	Sjoerd & Sanna's father			Helvoirt	08:45
10	Lara		f	7	Rotterdam	03:45
11	Piet	Lara's father			Rotterdam	04:50
12	Gustav		m	9	Amsterdam	07:42
13	Cecile		f	8	Amsterdam	07:39
14	Frederik		m	7	Amsterdam	04:27
15	Ferry	Gustav, Cecile & Frederiks father			Amsterdam	06:23
16	Mare		f	10	Nijmegen	07:46
17	Jan-Jaap & Kirsten	Mare's father and mother			Nijmegen	17:22
18	Anna		f	10	Nijmegen	6:01
19	Ingrid	Anna's mother			Nijmegen	05:16
20	Doutsen		f	9	Arnhem	29:28
21	Hilde	Doutsen's mother			Arnhem	21:20
22	Uma		f	9	Elst	20:32

23	Loes	Uma's mother			Elst	24:21
24	Intissar		f	8	Veenendaal	14:23
25	Aziza	Intissar's mother			Veenendaal	16:11
26	Belinda		f	11	Utrecht	11:58
27	Sven		m	10	Utrecht	12:10
28	Owen		m	8	Utrecht	09:41
29	Fiorella	Belinda, Sven and Owen's mother			Utrecht	15:32
30	Samuel		m	10	Sprang Capelle	08:37
31	Benjamin		m	11	Sprang Capelle	09:42
32	Bibian	Samuel and Benjamin's mother			Sprang Capelle	19:16
33	Marc	Samuel and Benjamin's father			Sprang Capelle	15:07
34	Sofia		f	10	Oostvoorne	09:33
35	Nora		f	7	Oostvoorne	02:51
36	Maartje	Sofia and Nora's Mother			Oostvoorne	08:44
37	Tom		m	10	Zevenaar	07:49
38	Saar		f	8	Zevenaar	05:52
39	Hester	Tom and Saar's mother			Zevenaar	05:42
40	Faya		f	10	Arnhem	14:23
41	Marthe	Faya's mother			Arnhem	17:35
42	Isar		m	9	Rotterdam	07:02
43	Bryndis	Isar's mother			Rotterdam	10:13
44	Joris		m	11	Lochem	07:51

45	Tijn		m	7	Lochem	06:16
46	Elisa	Joris and Tijn's mother			Lochem	06:53
47	Luka		m	8	Rotterdam	10:29
48	Heleen	Luka's mother			Rotterdam	09:46
49	Zeke		m	8	Rotterdam	06:49
50	Wietske	Zeke's mother			Rotterdam	07:07
51	Jamie		m	7	Rotterdam	22:56
52	Vera		f	8	Rotterdam	14:47
53	Isaura		f	11	Elst	10:07
54	Annemieke	Isaura's mother			Elst	13:40

Appendix D: Numerical and graphical overview of findings

	<i>Animals</i>	<i>Pollution</i>	<i>Plastic</i>	<i>Climate Change</i>	<i>Nature</i>	<i>Energy</i>	<i>Transport</i>	<i>Recycling</i>	<i>Future</i>
<i>Awareness</i>	28	27	26	17	16	16	15	15	7
<i>Concern</i>	10	3	2	3	4	0	0	0	5
<i>Behavior</i>	2	14	11	0	4	14	9	14	0
<i>Consume</i>	11	12	13	1	1	0	0	0	0

Table 5: Overview of the number of children that are aware and concerned about a specific sustainability issue and how many times this leads to sustainable behavior and consumption.

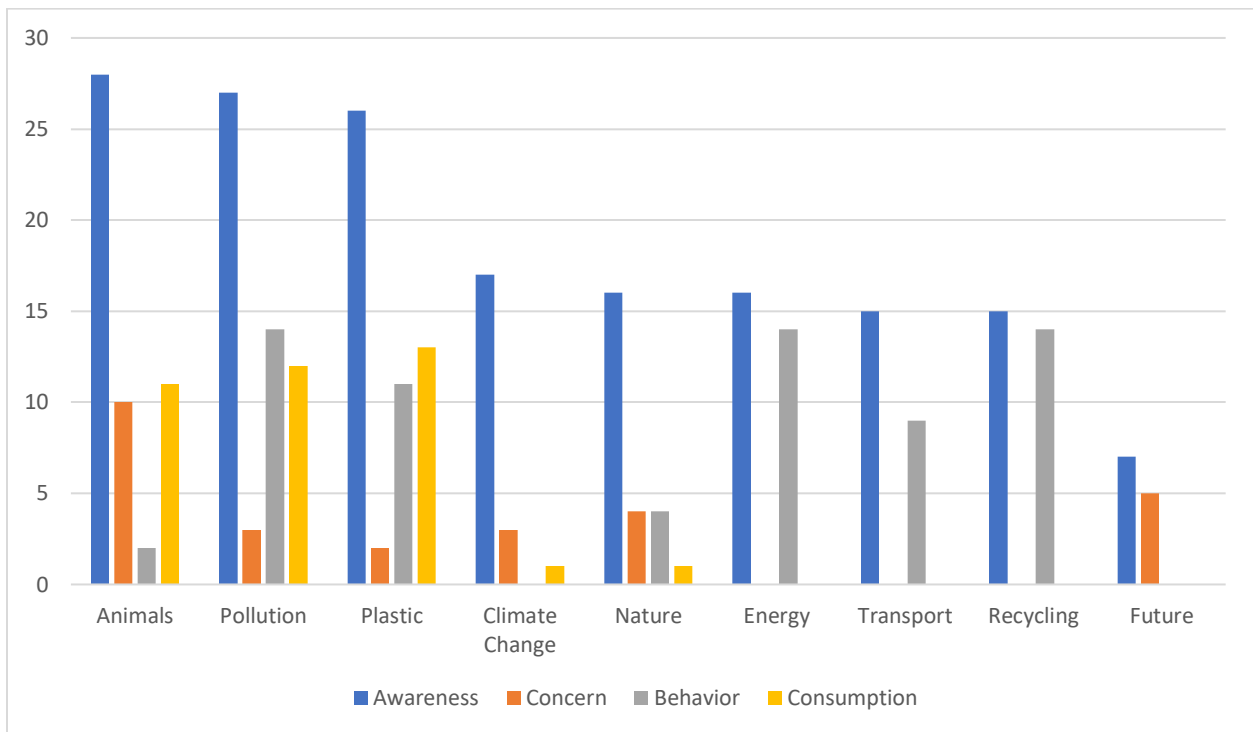


Figure 2: Graphical overview of children's awareness, concern, behavior and consumption per sustainability issue.

Appendix E: Examples of coding

I = En wat vind je verder van hoe het met de aarde gaat en de dieren?

K = Wel slecht, want plastic soep enzo

I = Wat is dat precies plastic soep?

K = Dat er allemaal plastic in de zee zit

I = Waarom is dat slecht?

K = Omdat de dieren het opeten en dan stikken ze

I = Ja, en sommige mensen maken zich zorgen om de aarde. Waarom denk je dat ze dat doen?

K = Omdat door de opwarming van de aarde kan Nederland onder water komen te staan.

I = Wat vind je daar zelf van?

K = Niet echt spannend

I = Jij denkt dat het wel goed komt?

K = Ja, want we kunnen altijd emigreren.

I = Maak je je weleens zorgen over de aarde?

K = Ja dat wel, door het plastic wel. Want als je bewust van als je rondkijkt om je heen dan zie je echt wel van allemaal troep liggen en dan denk je ja zal ik het gaan opruimen, alleen dan denk je nee want het is de troep van iemand anders. Eigenlijk moet je het dan wel zelf doen, ookal is het van iemand anders.

14 Awareness
Plasticsoep

14 Animals
Awareness

14 Awareness
Global warming

208 dat... Awareness
Pollution

I = Wat zeggen ze dan op school?

K = Dat je goed voor het milieu moet zijn. Anders gaan er heel veel vissen en vogels dood.

I = Ja, dat is goed! En waarom moeten we dat doen? Wat voor dingen zouden we dan moeten doen?

K = Niet meer zoveel afval weggooien op straat.

I = Ja, goed zo! En sommige mensen maken zich soms zorgen over de aarde. Waarom denk je dat mensen zich zorgen maken?

K = Omdat er elke dag wel meer dan 200 vogels, vissen en dieren doodgaan.

I = En wat vind je daarvan?

K = Dat het milieu beter moet opgeruimd worden.

I = Ja, en maak jij je weleens zorgen over de aarde of dieren?

K = Nee

I = Denk je dat het wel weer goed komt?

K = Ja

21 Animals
Awareness

21 Awareness
Pollution

21 Animals
Awareness

21 Awareness
Pollution

21 Concern